

# Australian Plants

The background of the cover is a photograph of a plant branch. The branch has several large, elongated, green leaves with prominent veins. Some leaves show signs of being eaten, with small holes visible. A cluster of small, round fruits hangs from the branch. The fruits are in various stages of ripeness, with some being green and others yellow or orange. The lighting is bright, highlighting the textures of the leaves and the colors of the fruit.

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The range of plants flourishing in our rainforests is immense. Hundreds have been described in many issues of *Australian Plants* in the past and this reference is given on page 247. There have been many incorrect statements made concerning their cultivation. The correct procedure is given in a new small book *Growing Tropical Australian Rainforest Plants* and an extensive quote from the book's introductory section is reprinted opposite. The book is available for \$14.95, post free from Frith and Frith Books, P.O. Box 581, Malanda, Qld 4885. This introductory offer will provide books personally autographed by the four authors, Anne and Peter Radke and Nada and Garry Sankowsky. These people are exceptional pioneers in the adaption of Australian rainforest plants to horticulture and the book displays the excellent photography of Garry Sankowsky in 95 large colour photographs.

This issue continues the series on Edible Australian plants by Harry Dick with supporting notes by renowned authorities such as Tony Irvine, Garry Sankowsky, Jan Sked, Peter Ball, Peter Brock and Ann and Hugh Nicholson. Our own Study Groups have contributed as in page 283. The contribution to the knowledge of Australian flora from the "bushy", Harry Dick, in this series of articles is gratefully acknowledged.

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COVER PLATE — Tar Tree *Semecarpus australiensis*, an Australian Cashew. See page 248 for description and 241 for photographs. Photography by Harry Dick.

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# Growing Tropical Australian Rainforest Plants

by Anne and Peter Radke  
Nada and Garry Sankowsky

Rainforest plants are easy to grow! They are admirably suitable for use in gardens, in landscapes and on farms, being both highly ornamental and very functional and adaptable.

First, however, let us dispel some of the myths! Rainforest plants are not "special", "different", or difficult to grow, and they do not require special gardening techniques. Many of the common exotic garden plants grown in Australia are rainforest plants from other parts of the world, as are many of the fruit trees such as mangoes, and these do not require any special treatment beyond normal good gardening practices.

Therein lies the key — normal, good gardening practices! Australian rainforest plants do not require "special" treatment. What they do require is a return to the good, old-fashioned gardening techniques perfected by the English and practised widely in Australia until about 30 years ago. Unfortunately, when Australian native plants started to become popular, many people saw them as the lazy gardener's dream come true. — it was commonly believed that, since they grew in the bush unaided by human help, they would grow in the garden without care and attention too. Of course this is not true, and there are countless failures bearing testimony to the error of this theory. For every plant in the wild which survives, hundreds of thousands die, and so for the gardener, the lazy man's dream is just that — a dream. Growing tropical Australian rainforest plants and, in fact, all Australian natives is no different from growing any other plant well. The basic principles are the same whether you are growing rainforest trees, general natives, roses or even vegetables.

## Soil Preparation

Well dug up, thoroughly loosened soil is absolutely essential. For a plant to produce good growth above the ground, it must have a strong and well-developed root system below the ground. Basically, plant growth is directly proportional to root growth. Roots cannot grow in hard ground, and this is particularly true of rainforest plants. In contrast to the aggressive root systems of the open forest eucalypts and wattles, rainforest trees have roots which are, in general, quite timid. The seedlings are adapted to stop growing and to remain dormant on the forest floor for years, waiting for a gap in the canopy to give them light and a space to grow in. In cultivation, this same dormancy is very readily induced by any kind of obstacle, such as hard ground or root competition from grass, weeds or existing trees. Rainforest trees must be given very well prepared soil if they are to grow.

The soil should be loosened to a depth of about 50 centimetres. Area is much more important than depth — prepare an area of at least 1 metre diameter for each plant. Rainforest plants should be planted about 1.5 metres apart (and no more than 2 metres). This means that entire garden beds should be prepared rather than individual holes being dug for each plant.



*Buchanania obovata*,  $\triangle$  a street tree in Darwin. Photograph by Peter Ball  
*Buchanania arborescens*,  $\nabla$  fruit and  $\nabla$  flower. Photograph by Harry Dick





*Semecarpus australiensis*, ▽ fruit and △ tree in Darwin Botanic Garden. Photos by Peter Ball  
Fruit on front cover and ▽ flowers. Photo by Harry Dick



Consider the use of machinery to prepare the soil. A bulldozer with rippers does an excellent job on acreage blocks. Smaller machines such as a backhoe or bobcat do a great job in suburban yards. A rotary hoe is suitable for most soils provided the ground is not rocky, although in heavy clay soils it may cause problems as the rotary action can leave a hard polished surface beneath the loosened layer. Be sure to set the cultivator as deep as it will go. Rotary hoes can also be used to thoroughly prepare the surface soil after a bulldozer or bobcat has done the initial loosening. Finely cultivated soil will improve both the growth rate and the survival rate because it allows the plant to produce the maximum number of feeder roots. Considering the amount of ground a machine can prepare in an hour compared to a man with a pick and shovel, bulldozers, bobcats and rotary hoes are extremely cost-effective and well worth the expense.

Nevertheless, always apply commonsense to a situation! For instance, it is quite unnecessary to use machinery to prepare a bed on beach sand, and it would be totally irresponsible to use a bulldozer to rip the soil on a steep creek bank.

Post hole diggers are totally unsuitable for preparing the soil for rainforest plants. Firstly, a deep, narrow post-hole is the wrong shape for rainforest plants which require just the opposite — a large area of loosened soil for their surface roots and a depth of only about 50 centimeters. Secondly, post hole diggers usually produce a hole with hard, polished sides through which the timid roots of rainforest plants have great difficulty penetrating. In most soils rainforest plants planted in post-holes have very poor growth rates.

It is often difficult to prepare a garden bed in heavy clay soil. In this case, a top dressing of gypsum will help to break down the clay and condition the soil. Do not use dolomite or lime as these will raise the pH of the soil, and may make the soil too alkaline for good growth.

## **Mulch**

A thick layer of organic mulch is absolutely essential for several reasons. It reduces evaporation of water from the soil thus reducing the amount of watering needed, and it conditions and enriches the soil as it decomposes. It provides a nutrient-rich layer for surface roots to feed in; prevents the growth of weeds and grass; and keeps the soil cool. It also enhances the populations of soil micro-organisms which are necessary to recycle nutrients and keep harmful disease organisms under control.

The importance of keeping the root-run cool and preventing the growth of grass and weeds cannot be stressed enough. Rainforest plants have a large network of surface roots obtaining nutrients from the decaying organic material on top of the soil. If the soil surface is hot, these important surface roots are killed and the growth rate of the plants is greatly reduced. Grass and weeds severely inhibit the growth of plants and, while this is true for all garden plants, it is especially important to bear in mind when dealing with rainforest species.

Any organic matter is suitable for mulch. Use whatever is available locally at a reasonable price. Peanut shell, bagasse, woodchip and hay are excellent. Use grass clippings and garden prunings — any mulch is better than no mulch at all.

Do not use black plastic or weed mat to control weeds — both materials cause the ground to heat up unless they are buried beneath a very thick layer of mulch, in which case there is no need to use them anyway. Black plastic prevents nutrients from the decaying mulch entering the soil and becoming available to the plant, and by preventing air movement through the soil can cause the soil to turn sour. Plants planted in weed mat may be strangled as the trunk diameter expands beyond the size of the initial hole. It is a complete waste of money to use these materials. If this money is available it is much better spent on mulch. Where weeds are a particularly difficult problem, one or two treatments with chemical weedicide will generally eliminate the problem for good.

### **Full Sun\***

Most rainforest plants require full sun to grow well and to flower. When planted in the full sun, rainforest plants become very bushy, retaining thick foliage quite low to the ground, and grow only to about a quarter to a third of their height in the forest. It is only the intense struggle for light inside the forest which creates the giants in the wild. There are a few exceptions of course, but in general, rainforest trees are quite manageable in home garden situations.

### **“Cover plants” or “pioneers”\***

It is a fallacy that rainforest trees need a cover of fast growing pioneer trees in order to become established. In fact, pioneer trees severely inhibit the growth of other rainforest trees for at least two reasons. Firstly, they create shade, thus limiting the sunlight which is necessary for growth. More importantly, these “pioneers” have extremely aggressive root systems against which a typical rainforest species has virtually no hope of competing.

About the only conditions under which the use of pioneers may be justified is in localities which are very frost prone, or which are exposed to extremely dry winds, and some form of protection is therefore necessary. However, a thick screen of callistemons, melaleucas and other natives around the windy edge is a preferable way of dealing with this problem.

### **Soil Type**

Rainforest plants can be grown in most soil types. Unlike other native plants, rainforest plants obtain most of their nutrients more or less directly from the decaying organic matter on the forest floor, rather than from the soil itself. Rainforest soils are usually very poor in nutrients and their role is that of a medium in which to anchor the plant rather than as a source of nutrients.

The pH of the soil is important for good growth. In the rainforest the large mass of organic material in the top layer of soil acts as a buffer to pH changes so that the layer in which most of the feeder roots are found usually has a pH of 5 or 6, regardless of the pH of the actual soil. A pH of between 5 and 6 is the optimum level at which nutrients are available for rainforest plants. Most Australian soils fall into this range, and so the pH of the soil is not usually a problem, especially when there is a thick layer of organic mulch.

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\*The paragraphs from this point have been only partly reprinted here. The book “Growing Australian Tropical Plants” presents further informed views on these subjects with further chapters headed “Garden Beds”, Fertiliser, Watering, Pruning, Height, Buying Rainforest Plants, etc.



**Corky Bark *Corallia brachiata*,**

Fruit  $\triangle$  and  $\nabla$  flowers.

Photos by Harry Dick

$\triangleleft$  The corky barked trunk.

Description on page 273.



If your soil is definitely too acidic, it may be corrected with lime; if too alkaline, it may be corrected with sulphur. For heavy clay soils a top dressing of gypsum is also a great advantage. As the organic material builds up in the soil from the initial mulch and leaf drop, the pH level will tend to stabilise.

## **Garden Beds**

Rainforest plants, like most plants, grow much better when in the company of others. Plants positioned on their own rarely grow as well as those planted in groups in beds. There are several reasons for this. Plants in groups work together to modify the micro-climate of their immediate area to their collective advantage; they trap humidity, break up the wind and cast dappled shade over the ground, all to the benefit of each other.

Correct spacing is important. In most situations, plants should be planted about 1.5 metres apart or, at the most, 2 metres, except in unusual circumstances such as extremely high rainfall. If plants are spaced further apart than this, they behave as though they are growing on their own with none of the benefits of belonging to a group.

Furthermore, in a garden bed, each plant has more loose soil for root development than is usually given to a plant on its own. Additionally, gardeners are more inclined to mulch heavily and to remove grass and weeds from garden beds than to do this around individual trees. When planting a specimen plant in a lawn, therefore, it should be given a minimum of one square metre of well prepared soil, and regular attention should be paid to applying mulch and removing grass and weeds.

## **Fertiliser**

Rainforest plants should be fertilised regularly. Another fallacy concerning Australian native plants is that they should not be fertilised. Native plants (and this includes rainforest plants) are no different from any others, and they respond well to fertiliser. Use any complete fertiliser (either organic or inorganic, depending on your own particular gardening philosophy) provided the phosphorous content is 4 per cent or less, because some plants are easily killed with excess phosphorous.

How often you need to fertilise will depend on how rich your soil is. Good plant growth depends on adequate nutrients being available to the plant. Plants grown in poor soils with inadequate nutrients will be stunted and open, so to maintain a thick bushy habit on poor soils, fertiliser will need to be added. This is particularly important when re-establishing rainforest on land which has been cleared, as degraded rainforest soils are often nutrient-deficient. It is also important when growing windbreaks because thick lush foliage is desirable. In growing timber trees, a tall tree with a thick trunk cannot be produced on poor soils without the addition of nutrients in the form of fertiliser (for fast release) and mulch (for slow release).

Fertilising not only makes plants grow but it also adds vibrancy to the colours of new growth and generally gives plants vigour and sparkle. Always read the directions on the packet and be careful not to apply at more than the recommended rate. Fertiliser is like medicine — when applied at the correct rate it is greatly beneficial; when this rate is exceeded, it becomes a poison.

## Watering

Rainforest plants require no more water than most other garden plants. When rainforest plants are being planted, they should be watered-in thoroughly with the equivalent of about a bucket of water per plant. They should then be watered every couple of days for a couple of weeks, and twice a week for the next couple of weeks, gradually increasing the time between waterings until the plants are established. This initial watering programme requires the use of common sense, as it will depend on weather patterns at the time. After the plants are established, the watering regime should be much the same as for any other types of plants. To promote good, strong root development, avoid frequent light waterings. Opt instead for a thorough watering every month or so, so that the roots are forced to grow downwards as the water level drops. Sprinklers are better than drippers, since by watering a larger area they draw roots outwards and give the plant better anchorage to withstand strong winds and cyclones.

## Pruning

Rainforest plants are very tolerant of pruning. As with any plant, if you want a rainforest plant to be thick and bushy, it is important to shape it from a young age by regular pruning. "Tip pruning" is the best method: gently remove the growing tip from the end of each branch with the fingers, thus forcing the growth of multiple side shoots from lower down the branch. Tip pruning regularly for the first year or so will generally produce a well shaped plant which requires little further attention. Rainforest plants will, however, tolerate quite drastic pruning into the hard wood if this is necessary. Conversely, if you want to produce tall straight timber trees, the lower branches should be pruned off from time to time, thus promoting the growth of the leading shoots. As always, common sense should prevail. Species which by their very nature are tall, single-trunked trees will often show no response to tip-pruning other than a scar and a bend in the trunk where pruning was attempted.

## Height

In general, rainforest plants in cultivation grow to only about a third of their height in the forest. It is almost impossible to state with accuracy the eventual mature height of a rainforest plant in cultivation, for this is affected by many different factors, such as rainfall (quality and distribution), temperature, humidity, soil (structure, nutrients and depth), wind, watering, fertilising, competition by other plants, etc.

However, it is certainly possible to state with confidence that, in general, rainforest plants in cultivation will grow only to about a quarter to a third of their height in the forest. In the forest, competition for light forces the young plant up to the very top of the canopy. In cultivation in full sun positions, there is no struggle for light and so the plant behaves as it does once it reaches the top of the canopy — it bushes out and flowers.

The well known Ivory Curl Tree, and Golden Penda, are excellent examples of this phenomenon — both are very large timber trees in the rainforests of north Queensland, yet both fit comfortably into average home gardens throughout the country, growing only to about 4 or 5 metres in height. As with every "rule", there are always exceptions, and some trees such as Blue Quandong and the pines (Hoop, Kauri and Bunya) will grow tall in all situations and so are not suitable for home gardens. These few exceptions aside, most rainforest trees are admirably suitable for general garden use.

**Buying Rainforest Plants** — The optimum size at which to plant a rainforest plant is when the plant is between 30 and 60 centimetres high, the stem has some woodiness, and the root-ball occupies a volume of at least one litre (i.e. the plant is in a 125 to 140 millimetre pot). A plant of this size is big enough to survive out of the nursery situation, but small enough to adapt to its new environment without undue stress.

The development of the root system is more important than the size of the plant, since it is the roots which must sustain the plant after planting. Tall plants with small root-balls are not advised. The well-known long narrow "native tubes" used for eucalypts and acacias are totally unsuitable for rainforest plants which have a shallow and spreading root system. Plants in pots with a volume of less than 1 litre, or diameter of less than 125 millimetres, generally have an unsatisfactory survival rate. Choose plants grown in pots rather than in bags. Plants grown in pots are easier to plant, and have better root development. Pots indicate that the nursery has a professional approach to its operation and you are more likely to get a well-grown and disease-free plant. Do not tease out the roots, or interfere with the root-ball, when planting.

It is most important that you do not purchase plants which are growing in soil or dirt, because the chance of introducing soil-borne diseases such as the root rot fungus, *Phytophthora*, into your garden is very high and not worth the risk. Professional nurseries practising acceptable levels of nursery hygiene always use a soil-less potting mix. ■

## Gardening in Tropical Climates

Editor

No single book can adequately cover the problems associated with gardening in any area of Australia. Gardening in tropical areas is a typical example where the practical experiences of competent horticulturalists living and gardening in the area, are documented in the various issues of *Australian Plants* over the years. A reference to some of these valuable recent articles is given below. While a major concern of people in northern areas is for cool shade provided by plants that will grace these living areas and survive the climatic conditions, this does not confine them to a rainforest garden. Many prefer a formal garden in at least one area and the following reports cover all aspects of tropical horticulture.

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## Reference Books for Rainforest Plants

|                                                                                     |              |
|-------------------------------------------------------------------------------------|--------------|
| Growing Australian Tropical Plants by Peter and Ann Radke, Garry and Nada Sankowsky | \$14.95      |
| Australian Rainforest Plants, Vol. 1, 2 and 3 by Nan and Hugh Nicholson             | each \$15.00 |
| Rainforest Plants of Eastern Australia by Steve and Alison Pearson                  | \$60.00      |
| Native Plants of Northern Australia by Peter Brock                                  | \$45.00      |

For ordering details see inside the rear cover.

## Tar Tree — *Semecarpus australiensis*

by Harry Dick

A medium sized tree of the dryer areas of the coastal, lowland rainforests which is of the same genus as the marking nut tree (*S. anacardium*) and of the same family as the cashew (*Anacardium occidentale*), both of India. It will sometimes reach a height of 20 m or more with a diameter at the butt of a metre, though rather smaller is usual. Photograph on page 241.

The trunk is round and emerges straight from the ground without any sign of buttresses or exposed roots. Lenticels roughen the yellowish brown bark into wavy, discontinuous, vertical ridges separated by smooth areas of similar size so that a quite pleasing pattern is produced. On the trunks of trees in exposed positions; or on trees that are unhealthy, there are often black stains of oxidised sap which has bled from the tree and which may serve as an identifying feature. These black stains are, however, seldom seen on healthy trees.

Leaves are alternate, about 20 cm long, a third as wide, leathery, dull green above and almost white below. The veins are clearly defined.

In spring it produces loose panicles of small, white flowers which are followed in summer by the unusual fruit. These fruit are very like the cashew fruit except that they are somewhat smaller and the seed — which is really the fruit — is oval and slightly flattened instead of sickle-shaped. What appears to be the fruit is an enlarged, succulent stem which may be yellow or bright orange, with the true fruit, a hard, olive-green "nut", attached to it.

All parts of the tree should be treated with caution. The almost colourless sap — which later oxidises to a dull black and so earns the tree its name — produces a quite violent allergic reaction in many people. This sap is resinous and needs a solvent to remove it, soap and water being almost ineffective, methylated spirits being suitable. Even small amounts of sap on the skin may cause swelling and inflammation and often discoloured blisters similar to those caused by a burn. That it is an allergic reaction is borne out by the fact that some people are completely unaffected. Tar Tree was often sawn for fruit cases. The wood seemed to be neutral though the sawdust containing sapwood and bark would, even when dry, cause a reaction in those sensitive to the sap — sore eyes, inflamed and swollen eyelids and uncontrollable sneezing, violent enough to cause the nose to bleed. The wood, by the way, is a very attractive honey-brown colour.

This allergy also extends to the fruit. Some can eat the succulent fruit without any ill effects, while others experience painful swelling in the throat which may persist for a couple of days. According to some sources the fruit are rendered innocuous by baking. Unless the baking is done very carefully and thoroughly the sap will merely be forced to the surface of the skin as a black, oily coat. Be careful of the rush of fumes issuing when the oven door is opened. The Aborigines threaded the fruit on twigs and roasted them in the flames of a fire, the sap in the skin being then heated and burned before the fruit became over cooked.

The nuts were rendered edible by the Aborigines by roasting in the sand. They were placed no more than three or four deep in a shallow depression scooped in the sand and covered with four or five centimetres of sand. A fire was lit on this and the trick was to know how much fire was needed. When the sand completely cooled the nuts would be dug up and eaten.

I must stress, however, that as the allergic reaction to most parts of this tree can be most painful and long-lasting, anyone would be well advised to be extremely cautious about using either fruit or seeds of this tree for food. In fact, it would be much wiser to avoid any close contact that was not entirely necessary with any part of the tree.

**Cultivation Notes from Peter Ball, Darwin** — A native cashew that was eaten by the Aborigines and the early settlers in old Darwin. It was also used as a writing utensil by breaking the nut to release a black sticky ink. Because of this the tree was sometimes referred to as the Marking Nut Tree. Used as a shade tree in Darwin, it is slow growing but becomes quite large. The white flower spikes appear in the new year. They cover the tree growing from almost every branch. Flowering is brief but is sometimes followed by later bursts. The flowers are attractive to bees, butterflies, etc.

**Cultivation Notes from Gary Sankowsky, North Queensland** — In cultivation this is a small to medium tree that can withstand long dry periods and salt spray. It is ideal for beach planting. It is not suitable for cold areas (below about 5°C). ■

### The Plant Family Anacardiaceae in Australia

by Peter Brock and W. H. Payne

*Blepharocarya depauperata* — Habit: small to moderate-sized tree 10–13 m high, young shoots covered with brown hairs; partly deciduous; male and female trees. **Bark:** rough, grey, flakey to tessellated. **Leaves:** opposite, pinnate, whole leaf 7–15 cm long, divided into 4–7 slightly stiff oblong leaflets, blade 3.5–7 cm × 1.5–3.5 cm, smooth and grey-green above, pale, whitish and hairy underneath, rounded tip; rusty-hairy stalk. **Flowers:** male and female flowers on separate trees; male flowers very small, cream to green, on erect branching panicles 4–10 cm long produced terminally or in upper leaf axils; female flowers carried in hard brown woody structures. **Fruit:** small, hairy, kidney-shaped single-seeded fruits about 0.6–0.8 cm long, several inside dry woody structure 1–1.7 cm long which turns reddish brown and splits into many narrow segments when mature. **Flowering:** April–June. **Fruiting:** July–Sept. **Features:** pinnate leaves much pale and hairy underneath; unusual funnel-shaped woody structures which remain on the tree long after fruits are shed, commonly found on the ground. **Habitat:** sandstone escarpment country: in mixed woodland on rocky slopes, outcrops and ridges, also in monsoon forest by streams or in drier vine-thickets on slopes — endemic.

*Blepharocarya involverigera*, Rose Buttenut, is a very hardy small to medium tree, 3–6 m high which will withstand surprisingly dry conditions. It has a delightful timber closely resembling that of the Queensland Maple. It is a shapely shade tree as a specimen or a street tree where overhead powerlines are not a problem. It can be included in windbreaks and screens. Slow growing at first, it grows strongly when established. The small cream flowers are in terminal clusters in spring. The fruits are unusual, claw-like, woody pods.

*Buchanania aborescens* and *B. obovata*, page 250 and *Pleiogynium timorense*, the Burdekin Plum, described on page 251.

*Euroschinus falcata*, Pink Poplar, is described in Growing Australian Tropical Plants (with a colour photograph) a small hardy tree, suitable as a shade tree for most areas of Australia. It is fast growing to a height of 6 metres with a single trunk and a spreading dense crown. The small red-purple berries produced in profusion, attract many birds, especially rosellas.

*Rhodospaera rhodanthema*, a tree to 25 m in rainforest, or a small spreading shrub in the open, with small red flowers in dense panicles followed by dry shiny light brown berries. *Australian Plants* Vol. 13, page 70, recommends this and other rainforest plants for indoor pot culture.

*Native Plants of Northern Australia* by John Brock — see page 247. This is a recommended book for those interested in rainforest plants. The species are well described in terms most can understand and illustrated by good colour photographs.

## Booncherry — *Buchanania aborescens*

by Harry Dick

This is a tree of the rainforest edges, gallery forests (narrow strips of rainforest along watercourses), monsoon forests and a pioneer. It is not found in primary rainforest except that it will often grow on the edges of clearings where the seed has been deposited by birds. It is quite a handsome tree, superficially resembling in shape a mango tree, which is of the same family. There will be a short, bulky trunk and a rounded head with a thick growth of leaves. Its usual height is about 10 m, but it will grow much higher in forests.

The leaves, which are up to 20 cm long and about a third as wide, are arranged more or less spirally at the ends of the twigs. They are inclined to be obovate in shape, dark green and leathery. In August or September, a number of 20 or 30 cm long panicles of small, cream flowers will emerge from among the leaves near the tips of the twigs. Sometimes the flowering is so profuse as to turn the whole tree into a creamy, fluffy mass. Soon after the flowers start to bloom new reddish-brown leaves will begin to develop.

Fruit are round, about a centimetre across and contain a single black seed. When ripe they become dark brown or purple, or black, while the flesh becomes soft and juicy. These will be found to be very pleasant tasting fruit if one is able to get to them before the orioles, fig birds and seemingly every other fruit eating bird for miles around. The explorer Leichhardt relished this fruit on his overland journey from Moreton Bay to Port Essington. The green fruit were stewed while the ripe fruit were eaten raw. He called it the "little gooseberry tree".

This tree makes a handsome shade-tree. Growing readily from fresh seed it will reach 3 or 4 m in the first five or six years when it could be expected to bloom. It can tolerate rather poor soils, fairly dry conditions and full sun.

**Cultivation Note from Garry Sankowsky** — This is a very hardy tree and can be grown in a wide variety of situations from the beach to the dry inland. It must be planted in full sun. ■

## *Buchanania obovata*

by Peter Ball, Darwin

One of the toughest of the dry area plants, it can be a hardy shade tree. It has been used as part of clump plantings around ovals and on median strips. It is used as a garden plant by ecology-minded gardeners as it is on the food chain of various birds who eat the seed. Large white flower sprays radiating out from the growing tips appear in the early wet season often putting up a bright display. Some comment that the tough-looking leaves and corky bark trunk look quite odd. Photograph on page 240.

Plant in full sun, mulch and water for best results. Be prepared for some straggly years while it is young. Its good points are that it is not troubled by insects or white ant attack.

*Buchanania arborescens* (Satinwood or Lightwood) is also found in the top end but in rainforest. It has much slimmer leaves. The most notable feature of these trees that will assist identification in the wild is the large thick leaf on which is an odd square or rectangular pattern. ■

## Burdekin Plum — *Pleiogynium timorense*

by Harry Dick

To say that this is a rainforest tree is to use the word "rainforest" in its broadest sense. In high rainfall areas it grows on scrubby ridges and in littoral rainforest, but its preference is for the lower rainfall areas. There it grows beside streams and watercourses in scrub or gallery rainforest, in monsoon rainforest or sclerophyll forest with an undercover of scrub or undergrowth.

It is a medium sized tree reaching a height of 15 m (rarely 20 m) although trees may become very large with age attaining a trunk diameter of a metre and a half with a large spreading crown. The wood is dark brown, hard and durable and almost impossible to split. It used to be popular in some places for making pick handles. The bark of younger trees, to 30 cm or so in diameter, is grey with a few darker longitudinal cracks. On older trees it is very dark, much fissured and scaly, the scales being roughly rhomboid.

Leaves are alternate at the ends of the stems. They are compound of 7 or 9 leaflets which are elliptical and up to 12 cm long with the terminal leaflet much smaller than the others. The flowers, which bloom in summer, are small and seldom noticed and carried on 5 cm racemes arising from the leaf axils.

The reports on the quality of the fruit are extremely conflicting and this is not at all surprising if one is familiar with the fruit as they are even more variable than the reports about them. They vary in size from 2 to 5 cm across; in colour of skin from brown to black; in colour of flesh from pale to very dark red, from almost white to green (these last colours often with red flecks or red areas); in texture from hard and dry to quite soft; in flavour from sour and astringent to sweet (though never very sweet) and most palatable. The only attribute in which the fruit agree is shape which is rounded and slightly flattened, with the diameter a little less at the stem end. Photograph on page 260.

The fruit are very hard when they drop from the trees from about August to October, so must be gathered and kept for a few days until they soften. Aborigines used to harvest them from the trees and bury them in the sand. The reason was that the time of the year that the fruit ripens is the dry season with — in most places where the Burdekin Plums grow — very low humidity, so if the fruit were left exposed they would dry out before softening. However, a plastic container with a lid works just as well as burying them, and in high rainfall areas where the humidity remains high this is not needed.

The seeds are contained in a large, woody stone very like the shape of a Queensland Blue Pumpkin. This stone is deeply grooved from the stem end to the perimeter while the domed top is pitted. Around the perimeter 12 rounded depressions mark the sites of the long, narrow seeds. Planted so that the stem axis of the stone is vertical the seeds will sprout in a month or two. Trees grown from seed will bear in six years but will the fruit of the new tree resemble the fruit that the seed came from? It is better to obtain a marcott from a selected tree, especially as marcotts root quite readily.

Seeds of this tree are dispersed by tube nosed bats (*Nyctimene robinsoni*). These small fruit and nectar eating bats will carry mature, though hard, unripe, fruit up to a kilometre to consume the flesh in a favourite tree and drop the clean seed to fall among the many other clean seeds of various kinds from earlier meals. ■

Whichever it is decided to make one starts off in the same way — with about half a pan of fully mature though still hard fruit. Cover the fruit with water and boil for half an hour. Strain and retain the liquid which will be a rich red colour. **To make jelly:** measure the liquid and add to it  $\frac{3}{4}$  to 1 cup of sugar to each cup of liquid — depending on taste — and boil until sugar is dissolved. Then add enough pectin to cause it to set following the instructions on the pectin packet. **To make jam:** add ripe paw-paw pulp to the plum juice to bring it to a good jam consistency — about the same quantity of paw-paw pulp as juice. Boil this for 20 minutes before adding sugar at the rate of  $\frac{1}{2}$  to  $\frac{3}{4}$  cup to one cup of juice and pulp. Boil again and add pectin according to instructions. The addition of paw-paw pulp in no way alters the flavour. Being rather bland it is completely dominated by the flavour of the plums.

**Cultivation Note from Garry Sankowsky** — This is an extremely hardy plant and makes a good shade tree in the dry inland or near the beach. ■

## Hard Plum — *Niemeyera prunifera*

by Harry Dick

A small understorey tree of the tropical lowland rainforest reaching a height of 6 or 8 m, also referred to as Plum Boxwood. A description of the tree fits many others growing in the same habitat — a rather straight trunk to 10 cm in diameter; grey, smoothish bark, and thin, more or less, horizontal branches. The oval or elliptical leaves are 12 cm long and 5 cm wide, alternate and carried towards the ends of the twigs. Young leaves and stems are covered with fine, brown hairs which are lost on maturity. Flowers, small and insignificant and borne singly on the stems, are almost sessile. Photograph, page 253.

The round fruit, about 4 or 5 cm across, are covered with the same brown hairs as the young leaves and stems. As they mature they progress from green to brick-red to almost black, by which time their covering of hairs has been shed. When mature they fall from the tree and the single seed will often be found to be loose within the fruit, so that if the fruit is shaken the seed will be felt to rattle. This seed is round and of a dull, very dark brown colour except for a small oval area where it is smooth and shiny.

The fruiting season can be rather extended. The first fruit ripen during winter when the tree will often have unripe and immature fruit along with flower buds and flowers. The 5 mm of dark red flesh surrounding the seed is edible, though the fruit must be quite ripe or it will be bitter. The flavour is similar to, though more pronounced than, the flavour of the Black Sapote, one of the recently introduced tropical fruits from South America. The flesh may be a little tough for some people's liking, in which case it may be cooked as a vegetable.

**Comment by Tony Irvine** — Perhaps this is a fruit that may require maturing after picking before it becomes edible or palatable. My experience is that it is very bitter and I suspect toxic. The Musk Rat Kangaroo (*Hypsiprymnodon moschatus*) eats the flesh and Cassowaries swallow the fruit whole. The Dyirbal and Yidiny language Aboriginal groups between Cairns and Cardwell and the Atherton Tablelands never ate this fruit.

**Cultivation Note from Garry Sankowsky** — This is a rather slow growing plant best grown in semi-shade. Regular watering is essential. ■



Hard Plum *Niemeyera prunifera*, fruit above and below. Photos by Harry Dick



# Burny Bean — *Mucuna gigantea*

by Harry Dick

This is one of the larger vines of the lowlands found in a variety of habitats all of which could be loosely called rainforest — wet primary rainforest, littoral rainforest, gallery rainforest along more or less permanent streams, "scrubby gullies", monsoon upland rainforest and sclerophyll forest with an understorey that will not usually carry a fire as this plant is quite fire-sensitive.

The leaves are pinnately tri-foliolate with each leaflet about 10 cm long and half as wide. The terminal leaflet is ovate. The two lateral leaflets, as with most beans with tri-foliolate leaves, are oblique with a much greater proportion of leaf blade on one side of the mid-vein than the other. Photograph, page 256.

The flowers are unusual. Clusters of ten or a dozen hang on a stem little thicker than a thread usually about 30 cm long. Sometimes the stem will hang a further, similar distance and produce a second bunch of flowers. They are green, about 3 or 4 cm long and resemble birds hanging by the tops of their heads. All green parts of the vine, including the flowers, become black if bruised or damaged. As the flower stem is so long and thin it is not uncommon for the flowers to have black blotches by the wind blowing them against surrounding leaves.

The main flowering period is winter, and though the flowering may continue into summer, it is the winter flowers that seem to set the most beans. The pod is thin and papery, between 10 cm and 15 cm long and about 3 cm wide with two wings or fins along each edge. They usually contain four seeds about as round as a ten cent coin and half a centimetre thick. While they are green they are covered with stiff, gingery hairs which easily penetrate the skin and can be quite irritating. When the beans ripen and dry they turn black, by which time many of the hairs have fallen. The sheen which these hairs give to the pods has prompted one common name, Velvet Bean, though the hairs are so stiff and irritating that the name is very inappropriate. The name Burny Bean refers to the fact that the seeds so very quickly become hot by a little friction — rubbing on clothing or dry wood.

I have tried the beans as food. I poured boiling water on some and allowed them to soak. A week later they were still floating and no softening whatever could be noticed. A fresh lot were boiled for about an hour, by which time the skin had expanded and become like old, dry leather which could be peeled off with the thumb nail. These now white, peeled beans were boiled for another quarter of an hour and the water changed because it had become black. A further ten minutes boiling and the water was again black. By this time the beans had become grey on the outside and were soft enough to eat. They were quite good. Not much flavour, but enough to make them acceptable.

The Aborigines lightly roasted them on hot stones or sand. This caused the skin to crack and become brittle and make them comparatively easy to peel. They were then ground to flour and this, mixed with a little water, was then wrapped in leaves and baked.

**Comment from Lenore Lindsay, Study Group Leader** — *Mucuna gigantea* bears the most magnificent flowers, large, pale green, pea-shaped, in pendulous corymbs full of nectar which attracts birds, bats, possums, insects, etc. It is the host plant for two Australian butterflies, the Green Awl (*Hasora discolor mastusia*) and the common Aeroplane (*Phaedyra shepherdi*). The seed pods are covered with fine golden irritant hairs, hence its name of Velvet Bean and Burny Bean. The seeds are beautiful, shiny silky black flattened discs which often turn up in the drift along coastal beaches. My kids used the seeds as game counters. Leichhardt, the explorer, ate a porridge made from the seeds.

**Cultivation Note from Garry Sankowsky** — This vine requires a very large tree (or trees) on which to climb. It grows so large it can strangle and pull down small trees. ■

# Liche Vine — *Salacia chinensis*

by Harry Dick

A woody vine of the rainforests bordering estuaries and seashore where the ground is almost clean sand. Often the vine is high in the trees so that the only fruit obtainable are those that are over-ripe or bad because they do not fall readily; while just as often the vines will be found in a more or less sheltered spot festooning the trees and shrubs to the sand at high-water. Photo, page 257.

Leaves are dark green and leathery, opposite, ovoid, about 10 cm long and half as wide. The blade usually rises slightly from the mid-rib and the whole leaf curves a little downward along its length.

Fruiting is spasmodic. The yellow flowers, about 1 cm across and consisting of five narrow petals rayed around a tuft of short, brown stamens, bloom whenever there is enough rain to thoroughly wet the sand, so that a few fruit may be expected to be present at almost any time. The main flowering, however, begins during July and August with the fruit ripening in the spring. Thereafter, fruiting and flowering goes on continuously until late summer.

The red fruit, which are about 3 cm across and taper slightly to the stem, contain a sweet, white, translucent flesh surrounding a single round seed much after the manner of the litchi from which it derives its common name. Occasional vines have a slightly larger fruit which contains four smaller seeds. Other common names used have been Lolly Fruit or Snotties.

As this species bears so prolifically over such a long period, and as the flavour is quite good, it would be thought that judicious selective breeding would be worthwhile. The main aim being to develop a variety in which the flesh came cleanly away from the seed, as the pulp sticks to the seed — as in the poorer varieties of litchi and rambutan — is the main drawback to the full enjoyment of the greater majority of these fruit. However, it is nice to suck the seed.

This plant grows throughout Indonesia and south-east Asia, so such selective cultivation would be expected to have been attempted, though I have been unable to find any mention of it being cultivated. Perhaps, although the seeds sprout readily enough, the plants may not do well — or even grow — away from their salty, sandy habitat.

**Cultivation Note from Garry Sankowsky** — This is quite a hardy vine in cultivation though it is rather slow growing and may take 10 years to fruit. It should be grown where the mature foliage will be in full sun. ■

## Fire and Wildflowers

Editor

The "greenies" are to blame. This was commonly heard around Sydney after the recent disastrous fires. I agree. Not because of the reasons given by uninformed "knockers" which relate to not being able to burn back regularly and the chopping down of all trees within sight, but because we are not providing the technical service that we should be.

Control of bushfire destruction of property requires a more careful study than has been done in the past. There are at least three types of wildfire to be protected from but not in every situation: (a) a violent tree canopy fire that races along, forced by high wind and fed by eucalyptus oil vapour, — the type that savaged the edge of Sydney recently; (b) a ground scrub fire that may extend to the tree canopy; and (c) grass fires.

The protective action taken in each case depends on the location of the property in relation to the wild plant mass and the type, density and extent of the forest.

Those who live on the edge of a forest usually do so because they value the benefits it provides. These people may continue to enjoy this situation provided certain periodic action is taken and this does not mean burning off. It will mean a change in attitude by Local Government and National Parks Authorities. It could mean the planting of certain fire-shield trees near the house to force the hot explosive gasses up and over the house. These fire-resistant trees will burn but not until after the furnace type fire has passed and lower temperature fires behind it can be controlled.

South Australia and Victoria have survived similar holocausts to that which hit NSW but what has been learnt and applied? What competent research has been carried out and applied? The Society proposes to facilitate the necessary study and provide recommendations for the future. Will those who have already studied this problem please advise the Editor.



▽ fruit





△ Liche Vine, *Salacia chinensis* flowers and fruit.

*Elaeagnus triflora*, flowers and fruit ▽

Photos by Harry Dick



# *Elaeagnus triflora*

by Harry Dick

A common woody climber of most areas of the north-eastern rainforests. Normally one is seldom aware of its presence as it is out of sight in the tree-tops, but on the edges of clearings or along wide roads in the rainforest, it will often drape the trees to the ground with a curtain of greenery. Like most climbers that do not twine or have any mechanical means of support such as hooks or tendrils, the lateral stems are relatively short and grow at right angles from the leader. Photograph on page 257.

The alternate leaves are elliptical, up to 10 cm long and about half as wide. They are dark green above while below they are covered with white and brown scales that give the undersides a shining silvery-coppery sheen. It would be thought that this would be rather spectacular when the vine is disturbed by the wind. This is not the case unless there happen to be long pendulous stems as the vine itself is rather stiff and rigid so that it is not often turned by the wind to display the shining undersides of the leaves.

The flowers consist of a white or cream, four-lobed perianth, about 5 mm across and borne in ones, twos or threes in the leaf axils in the spring.

The fruit ripen during the summer. They are 2 to 3 cm long and 1 cm wide and ripen to a maroon/red or sometimes pink colour. The single seed is elliptical in shape with eight longitudinal ridges. The flesh is soft and juicy with a very good flavour with degrees of acidity which vary from plant to plant, but seldom, if ever, reaching proportions as to make them disagreeable.

The leaves of this vine have been observed to be eaten by the climbing kangaroo.

**Comment by Lenore Lindsay, Study Group Leader** — *Elaeagnus triflora* is a most attractive plant with its silver-backed foliage, though in the wild it is an untidy scrambly bush. The small elongated berries are delicious and quite fleshy for their size, with a single ribbed seed. The children in our party demolished handfuls.

**Cultivation Note from Garry Sankowsky** — With regular pruning this plant can be kept as a large weeping shrub. For fruiting it should be grown in full sun and not allowed to become a climber. ■

## The Plant Family Vitaceae in Australia

The Grape Family, Notes by Editor

Vines, the distinctive feature being leaf opposed tendrils although not at every node. Readers may be able to report on these species — Editor.

*Ampelocissus*: *A. acetosa*, *A. frutescens* and *A. gardineri*. Leaves divided into three and further subdivided.

*Cayratia*: *C. acris* described opposite. Leaves also divided into three but flower parts in four not five.

*Cissus*. 14 species: *C. antarctica*, Kangaroo Vine and *C. hypoglauca* are cultivated.

*Clematicissus angustissima* found only in Geraldton area of Western Australia.

*Tetrastigma nitens* described opposite.

## Native Glossy Grape — *Tetrastigma nitens* by Harry Dick

The rainforests are the home of a number of native grapes, but this is one of the few that has none of the microscopic, stinging crystals which make many others of the native grapes so unappetising. It has a wide distribution over a large range of climatic differences — from northern New South Wales to North Queensland; from sea level to 800 m. It occurs in very wet rainforests in the Boonje–Palmerston area, > 3,000 mm per annum.

The vine, which is supple and ropey, climbs by means of thin, wiry tendrils which are placed in pairs opposite each leaf. It often attains a diameter of 10 cm at the base. The older portions of the vine are of a rather dark colour and deeply fissured. This vine will climb to the canopy and spread across it for a considerable distance. Normally it is quite benign, but sometimes it will reach a sunny spot on the side of a tree — beside a creek or where the canopy has been broken — and there, branch so profusely with such a mass of foliage that the weight will break the branches that support it. Photo, page 260.

The leaves are alternate, composed of three roughly elliptical leaflets 10 to 15 cm long, each leaflet having a few randomly placed serrations. They are smooth and shiny and rather thick and have little fibre so that even the older leaves make a very good cooked green vegetable.

Ripening in summer, the fruit are about a centimetre across, black when ripe, with dark, juicy flesh and one, two or three small greenish seeds. The flavour is very much like cultivated grapes and they may be eaten in any quantity as they cause none of the prickling, stinging discomfort in the throat associated with many other of the native grapes of the genera *Cayratia* and *Cissus*.

**Cultivation Note from Garry Sankowsky** — This is a very hardy plant in cultivation though as it is a very large vine, suitable support must be provided. The foliage must be in the sun if it is to fruit. ■

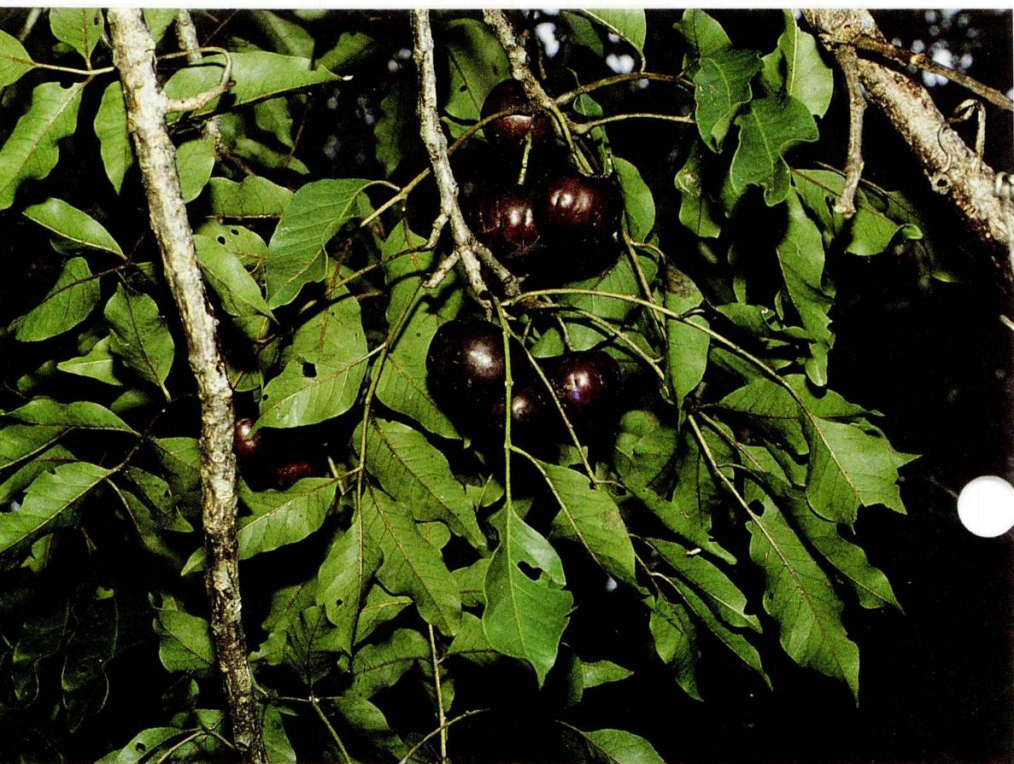
## White Grape — *Cayratia acris* by Harry Dick

A robust vine of the dryer types of rainforest and quite common in littoral rainforest where it rambles over trees and shrubs to the high water. The vines are very supple and may attain a diameter of 10 cm towards the base where the light brown bark will be deeply fissured. Leaves are trifoliate with each leaflet up to 15 cm long. They are light green with paler mid-rib and veins, thick, oval and with a few teeth around the margin. The growing ends of the vine and immature leaves have a velvety feel. Flowers are pale green, small and insignificant.

The white fruit are about a centimetre across. Which, when first tasted, have a most agreeable flavour. It is about ten seconds before the most uncomfortable prickling commences at the back of the throat. After photographing the fruit pictured, I passed them on to Dr Hugh Spencer of the Cape Tribulation Field Study Centre. His photomicrograph clearly shows the thin crystals of calcium oxalate contained in the pulp of the fruit and which are the cause of the unpleasant prickling sensation.

Only some native grapes were eaten by Aborigines, and although most species of *Cayratia* and *Cissus* are cited as being edible, they should be treated with caution. I do not mean by this to entirely avoid them; just be careful when you try one with which you are unfamiliar. Some are quite good fruit, while even the worst of them cause no more than temporary discomfort that lasts, at the most, about a quarter of an hour and may be relieved very quickly by slowly drinking a little acidic fruit juice or vinegar.

**Comment by Tony Irvine** — Native White Grape initially tastes sweet but is rapidly followed by a burning sensation in the back of the throat that may last for 15 minutes so beware. ■



△ Burdekin Plum — *Pleiogynium timorense*. See page 251 for description  
▽ Native Grape — *Tetrastigma nitens*. Photos by Harry Dick



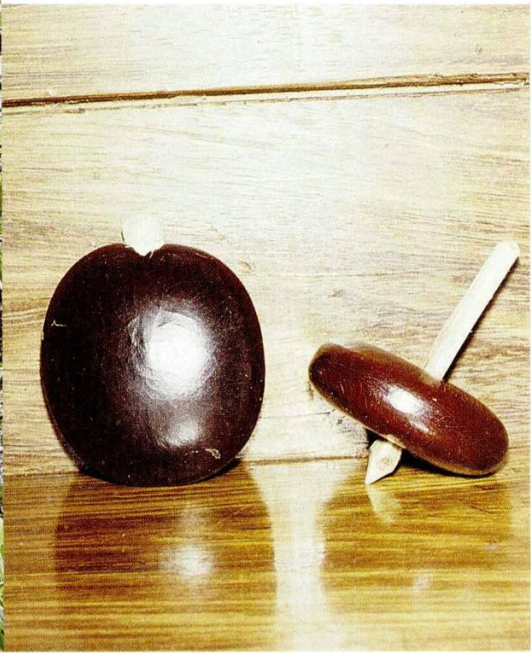


**Matchbox Bean — *Entada phaseoloides***

△ flower,

△ fruit

▽ matchbox and top from seed



# Matchbox Bean — *Entada phaseoloides*

by Harry Dick

The largest vine of the rainforest, often attaining a diameter in excess of 30 cm. It is supple, comparatively soft and rope like and often hangs from the trees in loops and spirals which were the loops and spirals that it made long ago climbing some high up branch that has since broken off by the increasing weight of the vine and subsequently rotted away. Photograph, page 261.

The colour of the vine is an overall pale reddish-brown, the results of the many reddish lenticels scattered profusely over the grey bark. The leaves are bipinnate, the primary rachis, which ends in a pair of tendrils, carrying two pairs of opposite secondary rachis each with six leaflets 6 or 8 cm long.

At any time from August to mid-summer the vine will produce its 15 to 20 cm long spikes of small, tightly packed flowers with their strange, though very sweet, scent. These flowers, which bloom progressively from the base of the spike, are white at first, but turn cream or yellow by the next day. Pollination must be very poor as the flowering is usually most profuse while the pods produced are sparse.

At about the same time as the flowering, the pods that were the result of last year's flowers, begin to dry and turn brown. The pods may be as much as a metre long and contain a dozen handsome, shiny brown seeds 5 or 6 cm across and 1 cm thick. These seeds remain viable for a considerable time and can often be collected in quite large quantities from among flood debris along watercourses.

Aborigines used the bruised vines, stirred into a water-hole, to stun fish so that they could be easily speared. Any toxins that a plant contains often concentrate in the seeds, and this is true of the Matchbox Bean. However, the process of rendering them wholesome is quite simple and may be carried out safely because, if any poison remains, the seeds will have a bitter taste.

They must first be roasted; but be careful of them as they are inclined to explode — sometimes quite violently. If the roasting is being carried out on a campfire the explosions can scatter hot coals for quite a distance. So crack them before roasting. All they need is a crack in the shell so that the gasses generated by the heat of roasting can escape. If they are to be roasted in an oven, crack them so that the cotyledons may be separated so one may see when they are done. When roasting is completed the cotyledons should be lightly browned like a biscuit or a peanut. Remove the shells and place the cotyledons in an open-weave bag — one of those net bags that vegetables are sold in is excellent — and suspend in running water. The time required in the water varies, seemingly, from place to place of where the beans were growing. Sometimes the bitter taste will be leached out in 4 hours, sometimes it takes 12. Taste to find out. If you become impatient; once the soaking has softened them — about an hour — boil them in a number of changes of water until the bitter taste has gone. Then boil them with salt.

When processed by Aborigines, the cooked nuts would be grated and the meal soaked in dilly bags (lined with leaves to keep the fine matter in) in running water. Soaking time may be up to several days determined by the presence of the bitter taste. The meal would then be cooked again before eating.

When they are ready they have the texture of slightly under-cooked macaroni and a rather bland taste, making them an excellent vegetable to go with meat.

The vine got its name from the fact that the seeds were used by bushmen to make waterproof matchboxes. This was in the days of wax matches which were only about half the length of today's wooden matches and which would strike on almost any rough surface; it was when small, waterproof containers like essence bottles were scarce in the bush. To make a matchbox, the bushman bored a hole with the point of his pocket-knife through the shell of the seed in the area of the embryo and gouged out the contents — the cotyledons — with a piece of wire. The matchbox was corked with a piece of soft wood. Of course, jewellers soon got into the business of attaching to the seeds a hinged, silver lid for those with more money than need.

When we were children we made tops out of them. Choosing a round seed, we would — again with the point of a pocket-knife — bore a hole in the middle of each side and push a sharpened stick about 5 cm long through the holes so that it jammed tight with the point protruding about a centimetre.

**Cultivation Note from Garry Sankowsky** — The size of this vine dictates that it be grown only over a very large tree. It is very easy to grow except in areas of heavy frost. ■

## Queensland Brittlewood or White Bark *Claoxylon tenerifolium*

by Harry Dick

One of the pioneers of lowland rainforest, this small tree is found usually on ridges where the rainforest is advancing on sclerophyll forest or in clearings — particularly about the edges. Eight or ten metres is about the very limit of the height to which it will grow with its quite open, spreading habit. The comparatively smooth bark is almost white — especially on the twigs and smaller branches — making it stand out from the trees around it and earning it its name. It is not as fast a grower as one would expect from a pioneer. It is just another of those unprepossessing little trees that grow on the advancing edge of the rainforest and poses little of note — though it has a common name, more than can be said for the majority of its mates. Photograph, page 264.

The leaves are alternate, appearing to be spiralled, at the ends of the twigs. They are elliptical and serrated, up to 20 cm long by 8 cm wide with mid-rib, primary nerves and petiole a very pale yellow or cream. The petioles are rather long — about half the length of the leaf.

Flowers are green and tiny — 2 or 3 mm across — carried on numerous 10 cm long spikes arising from the leaf axils early in spring.

The smooth, shiny leaves of this tree may be used as a cooked green vegetable, though there is little to recommend them. Young leaves are tender enough, but older leaves should have the tough mid-rib removed before cooking.

**Cultivation Note from Garry Sankowsky** — If planted in well prepared soil, the plant is quite fast growing. It makes a handsome specimen when planted on the edge of a rainforest plot. Extra water will be required in the dry season. ■



△ Queensland Brittlewood *Claoxylon tenerifolium* flowering stem. Photo by H. Dick  
▽ Wild Banana *Musa banksii* in fruit. Photo by H. Dick





Giant Wandering Jew *Polka macrophylla*, flower ▽ and understorey to Wild Banana and Wild Ginger △  
Photos H. Dick



# Wild Banana — *Musa banksii*

by Harry Dick

There appears to be at least three species of Wild Banana in north Queensland. One species, *Musa fitzalanii*, is poorly known, being collected only once in Cape York Peninsula. Two species, *M. jackeyi* and *M. banksii* occur in the wet tropics area. Only one, *M. banksii* has palatable fruit. It is the most widespread, inhabiting the lowland rainforests between Iron Range, Cape York Peninsula and Mt Elliot near Townsville.

It prefers damp areas beside slow flowing creeks or near springs and in gullies, often in the company of one or another of the native gingers and Giant Wandering Jew, *Pollio macrophylla*. In favourable situations of plenty of moisture and light and rich soil the “trunk” may attain a height of 3 m while the leaves may be of almost equal length. The trunk is a reddish, rusty colour on yellow, with the leaves a paler green than one usually expects of a banana.

They bear their first fruit in the same way as cultivated bananas, on a stem that grows from a corm and up the middle of the trunk — which is formed of rolled leaf-sheaths — and droops from the crown. The first real difference that one notices is that the bracts that protect the flowers until they are mature are pale yellow, while in all the cultivated varieties they are purple. Photo, page 264.

Bunches may contain a hundred individual fruit or they may contain only half a dozen, depending on the situation. The fruit are 2 or 3 cm in diameter and up to 15 cm long. They are usually quite round with a thin skin. Peel off the skin and one comes across the second real difference. They consist of hard, shot sized seeds stuck together by a little white pulp. Although one can extract some banana flavour from this pulp, that is all one will extract; because the seeds are hairy and it is impossible to part the pulp from them. These seeds are a source of food for the scrub turkey.

Aborigines in the areas north of Mossman used to cut the tree down just as the flower emerged. The trunk was cut into lengths and the lengths peeled of leaf-sheaths until only two or three were left covering the flowering stem which, of course, had grown up from the corm or butt. These lengths of stem were baked on hot stones or in hot ashes. It contains a fair amount of starch and the flavour was very like cooked green bananas or plantains. Aborigines south of Cairns only ate the fruits and did not eat the central starchy stems.

If wild bananas are allowed to grow near some of the tall varieties of cultivated bananas — particularly Gross Michael — they will cross pollinate causing the cultivated variety to produce a few seeds. I once grew some of these seeds, but they came to a very sad end when about half a metre high. I have not had the opportunity to try again.

It will be obvious from the above that seeds grow readily, or they may be grown from suckers just like the cultivated varieties.

**Comment by Tony Irvine** — I have eaten this fruit quite often. There is ample flesh around the seeds but the banana should be fully ripe when eaten. Eaten at this stage the soft flesh is quite sweet. It separates easily from the seeds, one simply has to spit out a mouthful of seeds after eating. When eaten before maturity one obtains a “starch-stopping” taste which inhibits further eating.

**Cultivation Notes from Garry Sankowsky** — *Musa* is quite hardy in cultivation, the main requirements being a sheltered position and extra water during the dry periods. ■

## Giant Wandering Jew — *Pollia macrophylla*

by Harry Dick

At times called Rainforest Spinach this ground creeper, related to Wandering Jew or Scurvy Weed — *Commelina cyanea* — of the open forest, is rather common in lowland rainforest in open places that are wet — moist creek flats and gravel beaches, springs and small creeks, often growing out over the water. The green or yellow stems are about a centimetre thick and very smooth between the distinct nodes which are 15 to 30 cm apart and from which nodes it is often rooted to the ground. The vine snaps easily at the nodes and the pieces grow readily. The alternate leaves are 15 to 30 cm long, about a third as wide, thin and smooth and sheathing on the stem.

The flowers are attractive. Carried on a rather open panicle 15 to 20 cm high, they are slightly less than a centimetre across, light blue with yellow centres. They bloom in the late spring so that the floods of summer can disperse the seeds carried in the blue-grey fruit which are spongy enough to float. Because of the similarity of preferred habitat, this plant will often be found in the company of various Wild Gingers, Wild Banana and, of course, Stinging Tree.

Just as the Wandering Jew of the open forest, so this plant may be used as a green vegetable. Young, tender leaves and especially the "cabbage" of folded leaves of the growing tip, should be avoided as these have a rather bitter, unpleasant flavour. Only the older, fully expanded leaves should be chosen and will be found to be quite adequate when cooked as a green vegetable.

As a garden plant its value would be questionable, but whoever would wish to grow it would find that three or four nodes taken from almost any part of the plant would grow quite successfully in a wet area with broken shade.

**Comment from Tony Irvine** — I often eat the cabbage and young leaves and have never noticed any particular bitterness. ■

***Pollia crispata*** — This herb resembles a very robust plant of the South American introduced Wandering Jew, *Tradescantia albiflora*. Unlike the weed which can be a serious pest in rainforest remnants, *Pollia* is not aggressive. Its need for very moist or boggy areas with both shelter and light, such as in canopy gaps, prevents it from spreading extensively. In ideal situations the juicy stems may reach 1 m in height but being soft, they generally weep over. Most reach only 25–30 cm. During the warm months, groups of small, white flowers appear out of clusters of leaves. Neither flowers nor the little blue fruits are very noticeable. **In the garden** — *Pollia* makes a lush shiny ground-cover for difficult wet places. It withstands cold conditions but should not be exposed to frost. Roots are produced at each leaf node, making it easy to propagate. From *Rainforest Plants* by Nan and Hugh Nicholson, three volumes, each \$15.00.

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***Pultenaea***. A reader is making a special study of all species of *Pultenaea*, those lovely yellow peafflowers. He would like to hear from anyone who would like to be involved or can assist with colour slides, flowering specimens or notes. Contact David Keane, 25 Warwick St, Walkerville, South Australia 5081.

Species of *Pultenaea* are very well described (in previous issues of *Australian Plants* 12: 95, 304; 13: 71, 321; 15: 123, 126; 17: 104) and illustrated by simple sketches such that you may readily identify them. Excellent plants for horticulture and readily grown from seed.



△ *Hypsophila dielsiana* Photo by H. Dick

*Elatostema reticulatum* ▽ Photo M. Fagg



## *Hypsophila dielsiana*

by Harry Dick

An understorey plant of high rainfall areas from a little above sea level to 1,100 m. It seldom reaches a height of more than three metres and, although the main stem will be almost straight, the tree usually looks straggly except where it is getting plenty of light, in which case it becomes quite leafy with the branches spaced more regularly. The branches are horizontal. The alternate, elliptical leaves, about 12 cm long and half as wide, are distinctive; they bulge slightly between the secondary veins and, although there is no marginal vein, there is a flat area about half a centimetre wide around the margin.

During the summer, twigs become festooned with pendulous, flat-stemmed panicles of erratically blooming, tiny red flowers. By March the first fruit of the year will be ripening. These fruit are a capsule 7 or 8 cm long, which splits into three parts to reveal the seeds which are almost, but not quite, covered by an orange or red aril and remain attached to the sections of the capsule for some days. Even when the seeds have been eaten by birds or have fallen, the capsule sections remain on the plant, changing from yellow to orange to a bright, dark red. In some the crisp aril is sweet and tastes very like watermelon; in others it is virtually tasteless. The ripe capsule sections may be used as a vegetable — cooked as they are inclined to be a little tough. The green ones are bitter.

The seeds do not seem to sprout readily and it is doubtful whether it would be a subject for cultivation. I would say that it is a slow grower and as the flowers are so small — 3 or 4 mm across — the plant would hardly have appeal as an ornamental, especially as it is doubtful whether it would set fruit outside its native habitat. It flowers profusely a number of times during the early months of the year and after that may produce a few flowers at any time, yet the fruit are seldom plentiful. Photograph on page 268.

**Cultivation Note from Garry Sankowsky** — This is an extremely difficult plant to grow and should be attempted if you live in a very high rainfall area. It must be grown in shade and have constant high humidity. ■

## *Elatostema reticulatum* — Rainforest Spinach

From Wild Food Cookbook\* by Jan Sked

Rainforest Spinach is a perennial herb with bright green succulent stems and rough-textured, strongly-veined, dark-green leaves. Photograph on page 268. It grows along streams in rainforests, often right in the water. It is closely related to the Stinging Nettle but lacks the stinging hairs. The succulent stems and leafy tips are the parts to use in cooking. Boiled, they taste rather like beans and are a very pleasant tasting vegetable which can be used in many ways. They may also be used in a tossed green salad or a potato salad with other natives as described. This plant can be easily cultivated in a cool, moist, shady position in the garden. It makes an excellent container plant.

### **Prawn and Mushroom Soup**

A tasty Oriental style soup

Ingredients: 1.5 litres of chicken stock, ½ cup rice, 1 cup mushrooms (finely sliced), 1 cup chopped *Elatostema reticulatum* stems, ½ cup oysters (optional), 1 cup prawns, 1 teaspoon of soy sauce.

Method: Bring stock to the boil; add rice and mushrooms; cover and simmer for 1 hour; add soy sauce and serve.

\*Wild Food Cookbook compiled by Jan Sked for the Pine Rivers Society for Growing Australian Plants, available for \$8.00 posted to P.O. Box 41, Lawnton, Queensland 4501.

## Savoury *Elatostema*

Ingredients: 2 cups *Elatostema* stems (chopped), 2 medium onions (chopped), 1/4 cup oil, sprinkle of garlic powder, 2 tablespoons grated parmesan cheese.

Method: Cover *Elatostema* with onions with boiling water and simmer uncovered for 5 minutes, drain. Heat oil in pan, add *Elatostema* and onions and sauté for 2 minutes. Add garlic powder. Put onto serving plate and sprinkle with grated parmesan cheese.

*Elatostema stipitatum* is a weaker looking plant with smaller sparser leaves. While they are very similar looking plants, the female flower heads are on a peduncle up to 2 cm long whereas those of *E. reticulatum* are sessile. In both species, the male flower heads are on peduncles. I have seen plants growing along the edge of rainforest streams in full shade in the Lamington National Park. I imagine that both species would taste somewhat the same.

## *Urtica incisa* — Stinging Nettle Soup From Wild Food Cookbook by Jan Sked

This is a perennial herb widespread in temperate Australia especially near water courses and in wet highland areas in warmer latitudes. It is a sprawling perennial herb, 1–2 m high, not to be confused with the introduced *U. urens* which is an annual and only grows about 50 cm tall. Stinging Nettles are covered with fine stinging hairs containing formic acid, which gives a painful guide to their presence. Wear gloves when handling them. Once they are cooked for a few minutes they lose their sting. The leaves make a good substitute for spinach.

Ingredients: 1 litre of stock, 250 g of Nettle tops (chopped), 2 tablespoons of oil, 1 medium onion (thinly sliced), 150 ml light cream or milk, 125 g cooked rice, 1 teaspoon of curry powder and salt.

## The Plant Family Urticaceae\*

The Stinging Nettle Family  
Notes by W. H. Payne

### Those species with irritant stinging hairs:

*Dendrocnide*, Stinging Trees with five Australian species, *D. moroides*, described opposite is the more virulent stinger, unique in the genus in having bisexual inflorescences in which the few male flowers are surrounded by female flowers in each floral fascicle; *D. cordata* is similar but is confined to Cape York Peninsula; *D. excelsa* also has hairy leaves but may become a large buttressed tree to 35 m. It occurs from the Bunya Mountains, Queensland, south to Kiama, New South Wales.

The Shiny-leaf Stinging Trees do not have the irritant hairs on the leaves or they are confined to the veins on the underside of the leaf. *D. photinophylla* is described on page 271. *D. coralloides* is similar but with a narrow elliptic leaf and confined to Australia, to Cape York.

*Laportea interrupta*, an annual herb to 2 m confined in Australia to northern Northern Territory and Cape York, Queensland. *Urtica incisa*, is described above.

### Species without irritant hairs:

*Australina pusilla* a herb to 50 cm with almost circular leaves. Ideal as an undershrub in shady areas as used in a shady garden, *Australian Plants*, Vol. 15, page 259.

*Boehmeria macrophylla*, a shrub to 2 m for rainforest ground cover.

*Elatostema reticulatum*, and *E. stipitatum* with shorter leaves, are described above.

*Pipturus argenteus*, False Poison Peach, described on page 272.

*Procris pedunculata* a small shrub, sometimes epiphytic with glabrous leaves.

*Pouzolzia zeylanica* and *P. hirta*, perennial herbs in tropical north.

*Nothocnide repanda*, a climber or liane from rainforest of Cape York, Queensland.

*Parietaria debilis* and *P. cardiostegia*, herbs for damp shaded positions.

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\**Flora of Australia*, Volume 3, provides an excellent reference to the plant family Urticaceae as well as Hamamelidaceae, Ulmaceae, Cannabaceae, Moraceae, Balanopaceae, Betulaceae, Fagaceae and Casuarinaceae, the she-oaks. \$30.00.

# Stinging Trees/Bushes

by Harry Dick

*Dendrocnide moroides* and *Dendrocnide cordata*, Stinging Bushes. Seldom exceeding 3 m in height. They grow throughout the rainforest wherever the canopy is broken — at the sides of roads, along timber tracks and other wide tracks, where trees have fallen or where the normal growth is thinner because of rocks, etc. The leaves of *D. moroides* are up to 30 cm across, rounded or roughly heart-shaped with a rough, hairy appearance and a toothed margin. In *D. cordata* the petiole connects on the margin in the cleft of the heart-shaped leaf. With *D. moroides* this cleft is spanned by the leaf blade so that the petiole connects within the margin.

Both leaves and stems — even older stems — are covered with stinging hairs, and contact with any part of the plant can be extremely painful. When a severe sting is experienced the pain will last for 24 hours and be accompanied by swollen lymph nodes and depression. If the sting is on the arm or head there will be a tightness in the chest; if the sting is on the legs the bladder will feel to be constricted. Thereafter, for up to three months, a stinging sensation will be felt during cold weather or when the affected area comes into contact with cold water.

There are innumerable "cures", a sure indication of the ineffectiveness of any of them. They range from the sap of the Cunjevoi (*Alocasia macrorrhiza*), the sap of the root of the stinging tree itself, thorough shaving, cow dung poultices and sticking plaster stuck on and torn off (to remove the stinging hairs) to methylated spirits poured on to the affected area and lighted. Aborigines of the Girramay and Jirrbal tribes of the Murray Upper use urine but they say it only provides temporary relief. (From Tony Irvine — I find doing nothing, tolerating the pain, best ensuring that the area is not rubbed or scratched. This appears to reduce the length of time that pain persists.)

The flowers are greenish and insignificant. The large bunches of attractive red or purple, warty fruit that follow are a centimetre across and ripen during June, July and August. Although edible, they must, of course, be gathered with care as even the thin stems holding the berries have stinging hairs. The fruit are crisp and juicy with no troublesome seeds and no vestige of flavour.

Aborigines will have nothing to do with them. They assert that to eat them one will become wrinkled like an old man and the hair will turn grey. So why include these hazardous trees/bushes here? This is a record of edible plant products. However, the inclusion is warranted as inevitably people will get stung and this bad news concerning treatment is a valuable record.

## Shiny-leaf Stinging Tree — *Dendrocnide photinophylla*

This is a tree of the dryer types of rainforest where there is a rather long seasonal drought. The bark is a yellowish grey, smooth in young plants, but soon developing a scattering of corky lenticels. Older trees have raised, rounded areas up to 10 cm across in which the bark is very much roughened, looking like a very much enlarged lenticel or a recently healed wound. The wood — if it can be called such — is very soft, being little more than fibre and water. Leaves are alternate, roughly ovate and toothed. In young plants the leaves may be 40 cm long. Older plants have leaves to 15 cm. They are dark green and shiny with pale nerves.

The sting is delivered by fine hairs scattered sparsely over the leaf — particularly on the veins and the edges — and on the green growing portion of the stem where, in young plants, there will also be short prickles which are later shed. Older plants have few stinging hairs; in fact, they often have none at all.

The flowers, though very tiny and of a pale green colour, are quite attractive as they are carried on much-branched stems up to 10 cm long, the whole thing being very like fine, delicate lace. They appear in autumn and in the winter, the bunches of tiny fruit mature. These are cream coloured, packed tightly on the stems, kidney-shaped, like tiny beans, with their stem connecting at their shorter axis. Before eating them examine the bunch carefully for any hairs which must, of course, be brushed off. They are juicy and crisp, but the flavour consists of little more than a slight acidity. Still, I have known many who really relished them.

**Cultivation Note from Garry Sankowsky** — Do not grow *D. moroides*, it is a dangerous plant. *D. photinophylla* is a bushy shrub in cultivation. It performs best in semi-shade but survives well in quite dry conditions. ■

## False Poison Peach — *Pipturus argenteus*

by Harry Dick

A small tree of the wet lowland rainforest. It prefers damp situations along creeks, in clearings or where there is a break in the canopy made by a windfall or a road. It is a much-branched, twiggy little tree that seldom exceeds 6 or 7 m and, as there is hardly a straight section in either branches or trunk, is quite attractive. In agreement with its preference for damp places this tree often produces stilt roots from up to half a metre above the ground. The bark is smoothish and of a pleasing brown colour.

Leaves are alternate, elliptical, about 10 cm long and finely serrated, dull green above and very pale, almost white, below.

Plants are dioecious, though the flowers of male and female plants are, superficially, very much the same. Spikes of flowers will be produced in summer — often there will be two or three flowerings. On the spikes the tiny flowers are borne in small clusters, each cluster of five or six having a common pedicel. When pollination has taken place, this round communal flower-stem expands into a sweet, white, succulent fruit carrying the very small brown seeds in pits on the surface. Although the "fruit" are small — 5 or 6 mm across — they can usually be gathered in quite large quantities.

The leaves make a rather good cooked green vegetable, though some may find them a bit too "woolly".

The tree looks somewhat like young trees of the true Poison Peach which is also a pioneer of the same areas. There are a number of Poison Peaches, but the one referred to here is *Trema orientalis*. This is a large tree often attaining a diameter of a metre and not at all related to *P. argenteus*, but having some similarities, particularly in leaf shape and appearance and the fact that they are both relished by cattle. Seedlings of False Poison Peach, Poison Peach, Sarsaparilla or Pink Almond (*Alphitonia petriei*) and Brown currajong (*Commersonia bartramia*) often grow in an almost solid mass on land after it has been cleared of rainforest and burned. As this was good forage, cattle would be turned in on it.

**Cultivation Note from Garry Sankowsky** — This is an extremely hardy plant, the main requirements being regular watering. It fruits best when grown in full sun but will perform well in semi-shade. ■

## Corky Bark — *Carallia brachiata*

by Harry Dick

A medium sized tree that may be found in a variety of habitats providing it receives partial shade for the first few years and the soil is of an open structure and moist for at least a few months of the year. Their preference seems to be the more or less narrow strips of rainforest bordering rivers and large creeks (gallery rainforest), but they also occupy swampy or damp areas in scrub and in primary rainforest and grow as pioneers in wet areas of secondary rainforest or in rainforest that is spreading. Photo, page 244.

In dryer, exposed situations these trees have small buttresses and pale brown or fawn bark covered with corky lenticels that may be rubbed off with the palm of the hand. In wet, sheltered areas the buttresses are rather larger and more numerous, they often develop stilt roots and the bark is a pale cream colour covered by a thick corky mass.

The opposite leaves are ovate, glossy and leathery, often minutely serrated in young plants. Two stipules enclose the bud and leaves, when fallen, a raised scar completely encircling the stem immediately below where the leaves connect. The branches in young plants are in pairs, are opposite and grow outward almost horizontally, each pair being set at 90° to the pair below.

Flowers have only a pale green calyx with eight pointed lobes forming a cup shape containing eight stamens each with a slightly expanded portion on the filament. The red berries carried on short stems in the axils of the stiff, opposite leaves and the fact that they ripen at about Christmas are probably the reasons for one common name, Holly. (The common name Northern Holly is more widely applied to *Ilex arnhemensis* and we would be wise to leave it thus). These fruit are a little under a centimetre across, can be gathered in large quantities and have a pleasant sweet-acid flavour. Birds also find them attractive.

The family to which this tree belongs, Rhizophoraceae, although containing a number of rainforest trees of the Indo-Malaysian region, contains three genera of mangroves consisting of 15 species, 10 of which are found in Australia. Rhizophora is found throughout the tropics. The other two genera are *Bruguiera* and *Ceriops*. Although the many small buttresses — as in the genus *Ceriops* — or the stilt roots — as in the genus *Rhizophora* or *Bruguiera* — are the most noticeable of the mangrove-like feature, the flowers and fruit also have similarities with the genus *Bruguiera*, though not so obvious at first glance. Fruit of both *Carallia* and *Bruguiera* contain a single seed in a persistent calyx having a large number of pointed lobes. *Carallia* has eight calyx lobes which are brought together in a tuft at the apex of the fruit as the fruit develops. *Bruguiera* has 12 to 16 similarly pointed calyx lobes which remain expanded leaving room for the seedling stem (the hypocotyl) to grow out from the fruit because the seed, as in many species of mangrove, germinate while the fruit is still attached to the tree.

*Carallia brachiata* makes an attractive shade tree and can be quite useful in low-lying areas as it does well in any open soil that is often wet. It can, in fact, cope happily with almost stagnant water. It can also grow in quite dry situations as well.

**Cultivation Note from Garry Sankowsky** — This is a very hardy plant (except for frost) and will do well in both full sun and semi-shade. ■

# Australian Mangosteens

by Fred Bell  
with notes by Tony Irvine

People who know about the delectable mangosteen of Malaysia and Indonesia are usually surprised to learn that a similar, closely related fruit is native to Australia. The Malaysian/Indonesian mangosteen, *Garcinia mangostana*, was once an expensive and highly esteemed fruit of gourmet sultans and wealthy aristocrats in South East Asia. It is spherical in shape, 6 to 8 cm in diameter, and has a thick, reddish-purple rind surrounding five or six segments of delicate, translucent white flesh. The texture of the flesh is somewhat similar to watermelon and the flavour has been described as "subtly sweet — reminiscent of the highest quality peach with a faintly acid tinge".

Garcinias are small to large trees which have opposite leaves and lack stipules. Leaf stalks, twigs and cut bark produce clear or yellow or milky-white sticky exudate depending on the species. Leaves of many species appear to have two sets of veins running at different angles. The finer veins are latex canals (Hyland 1982). Some species seem to lack veins and only have latex canals.

There are at least seven species of *Garcinia* native to Australia. All except *Garcinia warrenii* have restricted distributions in Australia. All bear edible but not necessarily palatable fruit. In some species the skin and flesh of the fruit may be edible but usually the edible part of mangosteens is the fleshy aril that surrounds the seed. Some comments on the poor taste of fruit can often be associated with the skin and flesh being sampled instead of the aril around the seed.

One of our most restricted species is *Garcinia mestonii* (Meston's Mangosteen). It occurs on the eastern slopes of Bellenden Ker Range, North Queensland between 300–1200 metres altitude in the wettest part of Australia where the mean annual rainfall exceeds 4600 mm per annum. It also occurs on the western slopes of the range which form the eastern watershed of the Mulgrave River. Here it extends from 100–1000 metres altitude in areas where the minimum rainfall regime probably exceeds 2500 mm per annum. The populations cluster in small gullies, along creeks and near ridge crests in these montane rainforests, over a straight line distance of some 15 km. The main populations can only be reached by ascending steep mountain slopes over rugged terrain.

The first recorded collection of the fruit and seed of *Garcinia mestonii* was in 1889 by the explorer Archibald Meston. The species had not been collected again, until January 1981, when CSIRO ecologist Tony Irvine came across it.

The fruit is much the same size and shape as *G. mangostana*, 4–6 cm long, 5–8 cm wide but remains a light green to creamy whitish-yellow at maturity in December-February. Tony Irvine describes the taste of the aril as something like the taste of a lemon with salt added. Sucking the aril together with the seed is similar to sucking a salty plum but more refreshing. The flesh and skin have a similar taste to the aril and the effect produces a "morish" taste. Some references claim wrongly that the mature colour of the fruit is purple and that it ripens in June but has not been confirmed. Since it occurs at high altitudes in north Queensland it could probably be grown in high rainfall areas in south-eastern Australia. Seedlings in pots placed in a protected position in Sydney are quite healthy after one year. Seeds have germinated in 253 days.

On my last trip to North Queensland Tony Irvine provided information on the other species of *Garcinia*.

***Garcinia brassii* C. T. White** — The fruit of this species are smaller and although not very palatable, are still quite edible. It is found at heights of 700 to 1,400 m on Mt Spurgern, Thornton Peak, Mt Hemnant area and Mt Lewis.

***Garcinia dulcis* (Roxb.) Kurz** — I collected and tasted the fruit of this species myself and found it sweet and juicy with a flavour something like custard apple. It is yellow and round with a diameter of about 4 cm. The seeds germinated readily in Sydney summer temperatures and so far the small plants have survived our winter well. *G. dulcis* is native to lowland rainforest in various parts of Cape York Peninsula and also in New Guinea, Indonesia and elsewhere.

***Garcinia gibbsiae* S. Moore** — The fruit looks like a capsicum and its mature colour is green. According to Tony Irvine the green rind tastes terrible but the translucent white aril around the seed has an acid flavour that is acceptable. This species occurs in the southeastern section of the Atherton Tableland up to an altitude of about 1000 m on the eastern and western slopes of Mt Bartle Frere. It is difficult to find mature fruit. Crops tend to be light and fruits often fall in immature stages. They are also beloved by the Musky Rat Kangaroo and other animals.

***Garcinia riparia* A. C. Smith vel aff.** — I was told about a species of *Garcinia* with sweet and tasty fruit growing in the Iron Range area of Cape York and I think it would be *G. riparia*. The mature fruit (December-January), pink in colour, is often laterally compressed being 20–25 mm long × 35–50 mm wide.

***Garcinia warrenii* F. Muell.** — This seems to be the best known and most common native species of *Garcinia*. The strongly fragrant white flowers and dark green leaves have gained the attention of some horticulturalists and it can be obtained occasionally from a few Queensland nurseries. I understand the fruit is similar to a plum in colour, size and flavour. I have had one potted specimen on my Sydney property for three years. In that time it has grown from about 20 cm to a very attractive shrub over a metre tall but has not yet produced any flowers or fruit.

***Garcinia* sp. aff. *G. hunsteinii* Lauterb.** — Is confined to the wet tropics area (Innisfail to Cape Tribulation hinterland) between 150–1,000 m altitude. It may also occur in New Guinea. It has a distinctive date-shaped fruit.

**Notes on *Garcinia* from Harry Dick** — The flowers of the species familiar to me are similar. They are white with petals a little over a centimetre long. The trees are dioecious. The male flowers open wide and have a tuft of yellow stamens. The petals of the female flowers clasp the rather large ovary so that only the red four lobed stigma on a very short, almost non-existent style, is exposed. This red stigma retains its colour until the fruit begins to colour and the immature fruit are quite attractive.

In all of them the flesh is a dark red and sour, though not as sour as *Davidsonia* Plumb. There is little to eat in them. There are four large seeds enclosed in fibre which holds a small amount of pulp. If the fruit are picked from the tree when fully coloured they may be allowed to ripen and used to make a quite tasty drink. Cut them up coarsely, remove the seeds and put into a glass or china container. Then mix with them about an equal quantity of sugar and leave overnight. Next day the sugar will have dissolved and the resultant syrup may be strained off. The syrup is mixed with about four times its quantity of water. A drink may be made from *Davidsonia* Plum in the same way.

## Medinilla — *Medinilla balls-headleyi*

by Harry Dick

A most attractive plant of the tropical, lowland rainforest which, with the help of adventitious roots, may climb to a height of 20 m or more. If the canopy is low and the light is fairly strong it meanders up its supporting tree as if in no hurry at all to reach the stronger light; while if the canopy is high and the ground is more shaded it proceeds straight up, putting out its tiny clinging roots from each node even before the leaves at that node are formed. However, it is equally contented at 2 or 3 m above the ground or sitting on a large leaf-mould-covered rock if it has enough light. Whether it is high or low its habit is the same when it reaches the light — it immediately gives up its vine-like habit and that part of it in the light will become dense and bushy with many much-branched stems. Older vines will develop quite thick roots by which to cling to their support. The stems have pronounced nodes and are quite brittle.

The oval leaves, about 10 cm long, are arranged in whorls of four. They are thick and fleshy, reddish brown when new, and of a shiny, dark green when mature, with three much lighter coloured veins. The fleshy brittle leaves may be used as a cooked vegetable. Photograph, page 277.

In early spring flowers are produced densely in clusters on older stems. These flowers, about 5 cm across, are of a translucent white brushed with the palest pink — perhaps a little deeper if the light is strong — and bloom over a period of three or four weeks or more.

The gumnut-shaped fruit start off at about a centimetre across and of the same colour as the flowers, but soon darken to a lolly pink that looks quite artificial; the plant seems to have got its colours rather mixed. After carrying these masses of brightly coloured fruit for four or five months — until late summer — they become plump and ripen to a dull olive green. They are now soft and juicy and may be eaten and will be found to resemble figs in both texture and flavour, though the flavour cannot be said to be pronounced.

Because of the attractive flowers and foliage, and the long period that it carries its brightly coloured fruit, this would make a very worthwhile garden plant. Cuttings taken from a leader will strike readily enough — cuttings taken from branches will not. A mature plant usually has only branches at the top and no leader but there are usually shoots from near the butt. Choose a piece about 30 cm long; preferably with one or two of the adventitious roots.

Judging by specimens growing naturally, any sort of strong support would be acceptable — trees, logs, stumps, rocks — and it does not need to be high — a metre or two will do. Those plants growing in trees with a crumbly outer bark that grows a fair bit of lichen, or those plants growing on large boulders that support some moss, etc. and upon which leaves settle, are most healthy and vigorous. The weight of the plant will often drag it from smooth-barked trees such as palms, so that it finishes as a tangled mass at the base. The plants other requirements are broken sunlight and plenty of water.

**Cultivation Note from Garry Sankowsky** — Prolific flowering will occur when foliage is in the full sun. It should be planted in the shade in a position to provide full sun for mature foliage. It makes a fine specimen in a hanging basket. ■



*Medinilla balls-headleyi* △ plant, ▽ flowers and ▽ ripe fruit. Fruit rear cover. Photos by H. Dick



## Urchin-fruited Pandanus — *Pandanus monticola* by Harry Dick

An understorey shrub of rainforests from sea level to 900 m, Scrub Pandanus prefers moist or swampy areas, but will also grow on well drained hillsides. Often the plants are scattered and often they will form quite dense communities. This is a slender *Pandanus*. The smooth, creamy coloured stem, though often reaching 3 m or more in height and sometimes branching once or twice, is only 5 cm in diameter; and it does not produce stilt or prop roots to help it as do many species of Pandanus. At the butt there is usually a cluster of suckers or off-shoots of various sizes. The crown is made up of a tight spiral of 2 m long, strap-like leaves about 5 cm wide, with a cross section roughly in the shape of the letter "M". There are numerous prickles along the margins of the leaves and along the underside of the mid-rib. Photo, page 280.

Flowering occurs in February and March, the flowers being borne on a stem arising from the crown of the plant, with male and female flowers on separate plants. The female flowers — looking like a miniature fruit, but white — are hidden deep among the leaves of the crown. The male flowers are packed tightly on to six or eight inflorescences branching from a central stem 40 cm long, with each inflorescence protected by a white bract. These male flowers have a sweet scent and are a great attraction to native bees and pollen eating beetles. The bracts are usually extensively eaten by large green, nocturnal, long horned grasshoppers.

As soon as the flower is pollinated the stem of the developing fruit begins to elongate until it is at least a metre long, and during this time the fruit will often be destroyed by rats which eat the immature seeds. Fruit are never plentiful and these depredations by rats account for many of them.

By spring the fruit are beginning to turn a bright orange-red as they ripen. The head is now about 8 cm across, almost round and covered by a sort of rind made up of 3 or 4 mm sections a centimetre high, with each section cone-shaped and tapering in a way as to terminate in a thin, yellow prickle. Each of these sections obviously represents the stigmas for below each one is a yellow seed like an elongated grain of wheat. The whole is reminiscent of a sea urchin in shape, hence the common name.

When this rind is removed the seeds will remain connected loosely to the core and sticking to one another by a small amount of yellow or pink jelly. There is not much of it, but what there is is sweet and pleasant tasting providing the fruit is quite ripe. If it is not quite ripe and the rind does not come away readily, one will notice a slight prickling sensation in the mouth after eating a quantity. Not enough to cause any real discomfort and not near as much as can be experienced with the majority of the other species of Pandanus.

The Scrub Pandanus should find a place as a garden plant. Though merely a clump of prickly leaves for a start, it can be quite attractive once a stem has been formed. The off-shoots from the butt take quite kindly to being transplanted and seeds sprout in a month or so. They prefer broken sunlight and ground that is continually moist.

**Cultivation Note from Garry Sankowsky** — This slow growing plant suitable for wet areas quickly shows stress due to lack of water. ■

## Cairns Pencil Cedar — *Palaequium galactoxylum*

by Harry Dick

A large tree of elevations below 300 m. The bark is pale, particularly in older trees, with shallow, vertical expansion cracks. The flanges or buttresses are comparatively thin and are often 3 m high. The trunk, usually round and straight, is commonly 20 m to the first branch. One common name used is the Cairns Pencil Cedar. A wound in the bark will produce a small amount of milky latex. Photograph on page 281.

The common name refers to the pink wood which is very similar to the wood of one of the northern hemisphere cedars that was used in the manufacture of the better quality lead pencils. It was a highly prized cabinet timber and was also used as a facing veneer on ply-wood, the pink wood being very decorative. It was also a favoured timber for the building of small boats.

The flowers, green and about 5 mm across, are crowded on the end 10 to 15 cm of the twigs. They are said to be pollinated by bats which is quite probable as they smell like a sweetly scented flying-fox.

Although each year in summer some trees will be found to be fruiting, individual trees are inclined to fruit very irregularly, sometimes going as long as five years without fruiting. The oval fruit are up to 4 × 2 cm. Make sure they are ripe. They must be soft and of a cream colour, often with brown discolorations on the skin from damage in falling. The flesh is the consistency of custard, white and very sweet. These fruit are, to my mind, among the better of the rainforest fruit.

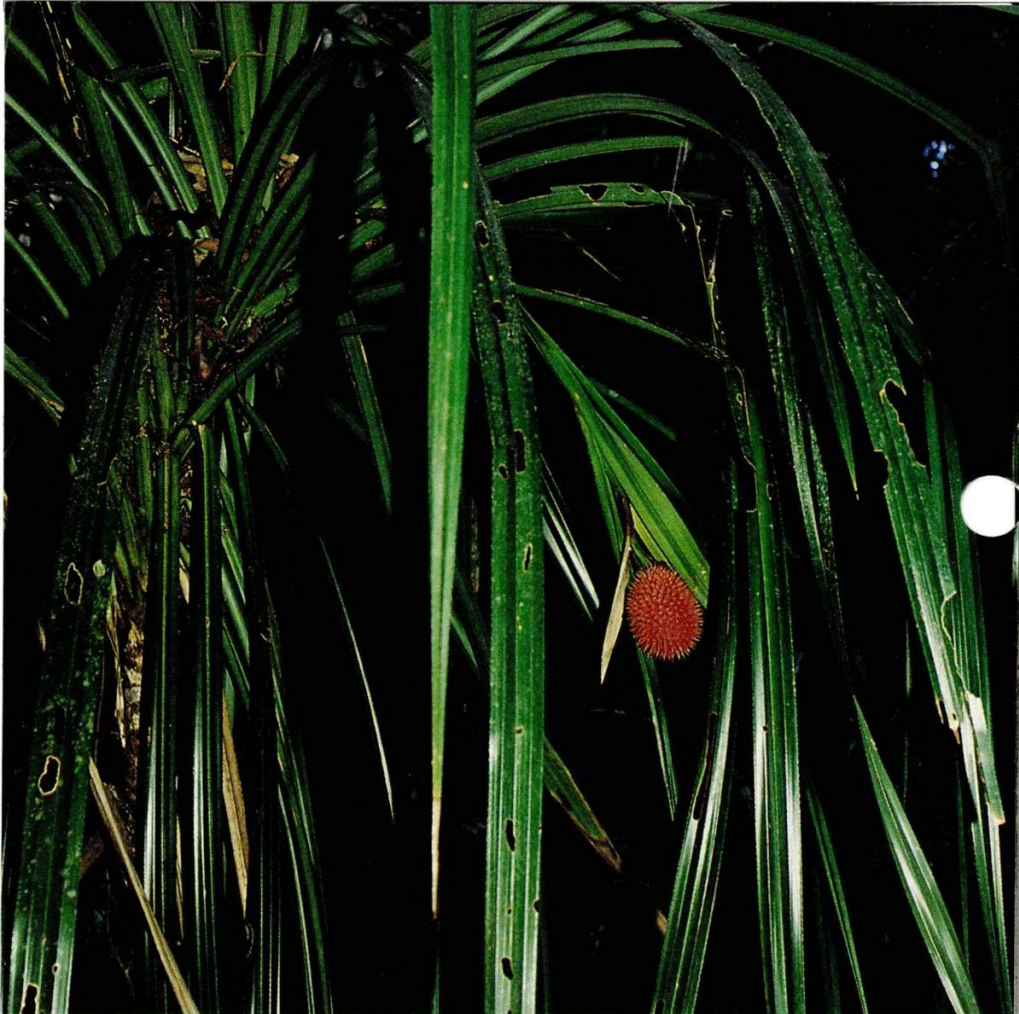
The single seed is oval, about twice as long as wide. A little more than half the seed is smooth and shiny and dark brown while the other portion is dull. One is given the impression that the smooth covering of the seed has been split by the seed expanding laterally so that portion of the seed coat consists of scar tissue. The seed is distinctive of the Sapotaceae family.

This tree is a close relative of the celebrated Wongi of Cape York Peninsula and the Torres Strait Islands — though after eating Wongi fruit I cannot say for what it is celebrated. Wongi fruit were often baked on hot stones or in the ashes before being eaten. If the green fruit of the Cairns Pencil Cedar are similarly treated the sticky sap is rendered more or less innocuous and the fruit become more or less edible.

Birds and animals are partial to these fruit so that it may be difficult to collect more than a few in some areas because, even if they get past the Wompoo and Torres Strait pigeons in the tree and fall to the ground, pigs, cassowaries and pademelons and even at times dingoes, are almost waiting below. They seem to do the rounds of the trees in an area where the trees are fruiting well, going from tree to tree in such regular order that tracks are formed from one tree to another.

Fresh seed will grow fairly readily. In an open situation the tree will put on horizontal branches and assume a broad cone shape with thick foliage. If it is desired that the tree produce a mill log it would need other trees around it to encourage it to grow upward and so make a long trunk. One on which I was able to keep a watch grew from a 15 cm diameter sapling 10 m high, to a half metre diameter 20 m high in 15 years. It then fruited for the first time.

**Cultivation Note from Garry Sankowsky** — In cultivation, this is quite a hardy plant. It rarely grows more than 10 m in height. It must be planted in full sun if it is to produce fruit. ■



*Pandanus monticola*,  $\triangle$  plant with fruit,  $\nabla$  young male flower. Photos by Harry Dick





Cairns Pencil Cedar, *Palaquium galactoxylum* (see page 279)

△ flowers and immature fruit ▽ fruit

Photograph by Harry Dick.



## Flora of New South Wales

by Gwen Harden

The flora of New South Wales, wildflowers, ferns trees, etc., comprises some 6,400 species. The way this series of books has been produced, it has required four large volumes each to 800 pages. The presentation has been superb, not just with the vast number of excellent colour photographs, but in the text. The thousands of species are adequately described in a manner most people would regard as a scientific text, which it is to a very high professional order. However, it has been very cleverly done by Gwen Harden. Amateurs could easily find their way around these volumes. In fact if they want to identify a wild plant in New South Wales they have to try. A patient "try" will be rewarded as not only will the photographs lead to the correct section but the very many sketches will assist in precise identification.

Volume 4 of this series (the last) describes all the monocotyledons. This means all the plants that grow directly from the ground without a main stem or branch. The leaves are usually on long or short stems arising in a tuft from the root in the ground. Hence it includes all the Lily-type plants, the grasses, the orchids, the sedges, etc. Naturally nature has provided species the scientists calls monocotyledons that do not appear to fit into this crude classification of mine, but most readers immediately know to what group of plants I am referring. I guess there are many who want to identify grasses that grow naturally. They can do this quite readily from the book. For the orchid enthusiasts, this volume probably is a must. Available for \$120.00.

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Study Groups comprise members who are interested in a particular group of plants as listed below. There is a leader to the group operating a largely corresponding service between members and co-ordinating the supply of seed, cuttings, etc. These groups not only provide a vehicle for special interest to members in remote areas or who cannot attend meetings, but have developed their specialised skills and knowledge to the extent that they are regarded quite highly in professional/scientific circles. Two of these groups have contributed to this issue, the Food Plants Group and the Rainforest Group. The groups have a small annual fee of \$4-\$5 to cover postal charges. Enquiries to participate in these groups should be directed through the Secretary of your state as listed further below.

*Acacia* Study Group, *Banksia*, *Blandfordia*, *Boronia* and Allied Genera, *Brachychiton* and Allied Genera, *Calectasia*, *Calothamnus* and Allied Genera, *Calytrix*, Container Plants, *Correa*, *Cycad*, *Zamiad* and *Palm*, *Daisy*, *Dodonaea*, *Dryandra*, *Epacris*, *Eremophila*, *Eucalyptus*, Fern, Food Plants, Garden Design, *Goodeniaceae*, *Grasses*, *Grevillea*, *Hakea*, *Hibbertia*, *Melaleuca* and Allied Genera, Orchids, *Prostanthera* and *Westringia*, Rainforest, *Rhamnaceae*, *Thysanotus* and Allied Genera, *Verticordia*, Wallum and Coastal Heath, Wildlife and Native Plants.

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*Medinilla balls-headleyi* — unripe fruit  
Photograph by Harry Dick