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N.S.W. RAINFOREST TREES

PART VII

FAMILIES:

PROTEACEAE

SANTALACEAE

NYCTAGINACEAE

GYROSTEMONACEAE

ANNONACEAE

EUPOMATIACEAE

MONIMIACEAE

AUTHOR:

A.G. FLOYD

FORESTRY COMMISSION OF N.S.W.

RESEARCH NOTE No. 35

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INTRODUCTION

This is the seventh in a series of research notes describing the rainforest trees of N.S.W.

Previous publications are:—

Research Note No. 3 (1960)—N.S.W. Rainforest Trees.
Part I Family *LAURACEAE.*
A. G. Floyd and H. C. Hayes.

Research Note No. 7 (1961)—N.S.W. Rainforest Trees.
Part II Families *Capparidaceae, Escalloniaceae, Pittosporaceae, Cunoniaceae, Davidsoniaceae.*
A. G. Floyd and H. C. Hayes.

Research Note No. 28 (1973)—N.S.W. Rainforest Trees.
Part III Family *Myrtaceae.*
A. G. Floyd.

Research Note No. 29 (1976)—N.S.W. Rainforest Trees.
Part IV Family *Rutaceae.*
A. G. Floyd.

Research Note No. 32 (1977)—N.S.W. Rainforest Trees.
Part V Families *Sapindaceae, Akaniaceae.*
A. G. Floyd.

Research Note No. 34 (1977)—N.S.W. Rainforest Trees.
Part VI Families *Podocarpaceae, Araucariaceae, Cupressaceae, Fagaceae, Ulmaceae, Moraceae, Urticaceae.*
A. G. Floyd.

In this part, a further 27 species of rainforest trees in the families *Proteaceae, Santalaceae, Nyctaginaceae, Gyrostemonaceae, Annonaceae, Eupomatiaceae* and *Monimiaceae* have been described and illustrated with the emphasis on field characteristics. This and future research notes in the series will deal with the families of rainforest trees in the order adopted by the National Herbarium of N.S.W. Diagnostic features are shown in italics. Standard Trade Names used are those in Australian Standard AS02-1970 **"Nomenclature of Australian Timbers".**

The locations in N.S.W. for each species are shown in latitudinal order of the major river systems; and where on State Forests (S.F.), Flora Reserves (F.R.), National Parks (N.P.) and Nature Reserves (N.R.), their location from the nearest large town is listed in the appendix.

FAMILY PROTEACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

Represented by thirteen species in ten genera which are confined to the subfamily Grevilleoideae which also contains all the South American genera, thereby suggesting a partial common origin at least. *Lomatia, Oreocallis* and *Orites* occurs in both continents today.

Most N.S.W. species are trees of medium size, rarely exceeding 30 m in height and 75 cm diameter. However, *Grevillea robusta* may reach 35 m tall and 90 cm diameter. Several are only small trees (*Helicia spp., Hicksbeachia, Lomatia* and *Triunia*).

Some are well known ornamental species such as *Grevillea robusta* (Silky Oak), *Grevillea hilliana* (White Yiel Yiel), *Oreocallis pinnata* (Dorrigo Oak) and *Stenocarpus sinuatus* (Wheel of Fire Tree). Others have edible fruits in addition to their attractive flowers, such as *Hicksbeachia pinnatifolia* (Red Boppel Nut) and *Macadamia tetraphylla* (Macadamia Nut). *Triunia youngiana* is an important exception in that its red succulent fruits are poisonous.

The trunk is scarcely buttressed except for larger trees of *Stenocarpus salignus.*

Outer Bark—Generally grey to brown but dark brown in *Stenocarpus salignus* and black in *Triunia youngiana.* Mostly smooth or slightly scaly or pimply, but wrinkled in *Floydia, Helicia spp., Hicksbeachia, Macadamia* and *Stenocarpus sinuatus.* It is fissured in *Grevillea robusta* and *Stenocarpus salignus.*

Inner Bark—Characteristically a mixture of fibres and brittle granules forming the typical silky oak grain. Colour ranges from light brown to orange brown (*Helicia spp., Hicksbeachia, Stenocarpus sinuatus*) and pink to red brown for the remainder.

Leaves—Mostly alternate (opposite or whorled in *Macadamia* and *Triunia*) and simple (mostly lobed or pinnate in *Grevillea spp., Hicksbeachia, Oreocallis, Orites* and *Stenocarpus sinuatus*). Usually leathery and entire, (often toothed in *Helicia ferruginea, Hicksbeachia, Lomatia, Macadamia, Orites* and *Triunia*). The underside may be paler green, white or silvery (*Grevillea spp., Orites*) or rusty-brown (*Helicia ferruginea*).

Flowers—White to cream except *Hicksbeachia* (purple), *Macadamia* (pink), *Oreocallis* and *Stenocarpus sinuatus* (red) and *Grevillea robusta* (yellow). Most are scented and have copious nectar. Usually arranged in a raceme (spike in *Orites*, umbel in *Stenocarpus spp*, and corymb in *Oreocallis*). The sepals and petals are similar, forming a tubular perianth when young but later splitting into four segments each with a stamen attached.

Fruit—A succulent drupe (red in *Hicksbeachia* and *Triunia*, black to dark blue in *Helicia*) or a follicle. The seeds are edible in *Hicksbeachia* and *Macadamia*; but the whole fruit is poisonous in *Triunia*. The follicle of *Floydia* does not split open to release the seeds, in *Macadamia* it partially opens to release the round seed, whilst in the remainder (*Grevillea, Lomatia, Oreocallis, Orites* and *Stenocarpus*) it opens wide to expose the narrow thin seeds which are winged.

Habitat—Mainly in subtropical, riverine and warm temperate rainforests. However, *Grevillea robusta* is also common in dry rainforest, whereas *Lomatia, Orites* and *Triunia* are also in cool temperate rainforest.

Distribution—Most species extend north of the McPherson Range into Queensland; but *Helicia ferruginea, Lomatia arborescens, Macadamia tetraphylla, Oreocallis pinnata* reach their northern limit along this range. Of those found extending further north, *Hicksbeachia, Orites* and *Triunia* occur isolated on the Atherton Tableland in North Queensland. Five species (*Floydia praealta, Grevillea hilliana, G. robusta, Helicia ferruginea* and *Macadamia tetraphylla*) recently occurred south to the Clarence River, whilst another four (*Hicksbeachia, Oreocallis, Stenocarpus sinuatus* and *Triunia*) reached the Nambucca-Dorrigo area. Two species (*Lomatia arborescens* and *Orites excelsa*) are not found south of the Hunter River, whilst two species (*Helicia glabriflora* and *Stenocarpus salignus*) reach their southern limit in the Illawarra district. Such a distribution pattern suggests a preference for cooler and/or moister conditions than is found in many east coast rainforests today, from which they have presumably been excluded over the last few thousand years.

Timber—All exhibit the characteristic oak grain due to the prominent and differently coloured medullary rays. The wood may be white (*Helicia glabriflora, Stenocarpus sinuatus*), yellow-brown (*Grevillea robusta, Hicksbeachia*), pinkish-brown to red-brown (*Grevillea hilliana, Helicia ferruginea, Orites excelsa*) or red (*Floydia, Lomatia, Macadamia, Oreocallis* and *Stenocarpus salignus*).

KEY TO THE RAINFOREST TREE SPECIES OF PROTEACEAE IN N.S.W.

A. USING LEAVES AND BRANCHLETS ONLY

1. Leaves pinnate, lobed or deeply divided .....
  2. Margins toothed .....
    3. Leaves over 30 cm long . *Hicksbeachia pinnatifolia* F. Muell.
    3. Leaves under 30 cm long .....
      4. Leaves white or grey beneath ..... *Orites excelsa* R. Br.
      4. Leaves paler green beneath ..... *Lomatia arborescens* Fraser & Vickery
  2. Margins not toothed .....
    5. Young branchlets and underside of leaves silky-hairy ..
      6. Leaves broadly three-lobed ..... *Grevillea hilliana* F. Muell.
      6. Leaves divided into many narrow-lobed segments ... *Grevillea robusta* A. Cunn.
    5. Leaves and branchlets not hairy .....
      7. Leaf stalk 1-2 cm long ..... *Stenocarpus sinuatus* Endl.
      7. Leaf stalk over 2 cm long ..... *Oreocallis pinnata* (Maid. & Betche) Sleumer
1. Leaves simple .....
  8. Margins usually toothed .....
    9. Fully expanded leaves rusty-hairy beneath ..... *Helicia ferruginea* F. Muell.
    9. Fully expanded leaves not rusty-hairy beneath .....
      10. Leaves white or grey beneath ..... *Orites excelsa* R. Br.
      10. Leaves green beneath .....
        11. Leaves often in whorls of three to four .....
          12. Teeth up to three per side ..... *Triunia youngiana* (C. Moore & F. Muell.) L. Johnson & B. Briggs
          12. Teeth over twenty per side ..... *Macadamia tetraphylla* L. Johnson
        11. Leaves not in whorls ..... *Lomatia arborescens* Fraser & Vickery

8. Margins entire or occasional leaves toothed .....

13. Leaves silky-hairy beneath ..... *Grevillea hilliana* F. Muell.

13. Leaves not silky-hairy beneath .....

14. Leaves white or grey beneath ..... *Orites excelsa* R. Br.

14. Leaves green beneath .....

15. Leaves with a pair of lateral veins extending from the base to over half the leaf ... *Stenocarpus salignus* R. Br.

15. Leaves without such lateral veins .....

16. Leaf stalks 2-5 mm long .....

17. Young leaf stalks and shoots smooth ..... *Helicia glabriflora* F. Muell.

17. Young leaf stalks and shoots rusty-hairy .... *Triunia youngiana* (C. Moore & F. Muell.) L. Johnson & B. Briggs

16. Leaf stalks over 10 mm long .....

18. Mature leaves less than four times longer than broad ..... *Stenocarpus sinuatus* Endl.

18. Mature leaves more than four times longer than broad

19. Leaves tapering to a fine point, lateral veins less than 45° to midrib, inconspicuous ... *Oreocallis pinnata* (Maid. & Betche) Sleumer

19. Leaves tapering to a rounded tip, lateral veins more than 45° to midrib, distinct..... *Floydia praealta* (F. Muell.) L. Johnson & B. Briggs

B. USING BARK ONLY

1. Outer bark black with cream horizontal lenticels ..... *Triunia youngiana* (C. Moore & F. Muell.) L. Johnson & B. Briggs

1. Outer bark grey to brown .....

2. Bark vertically fissured ..... *Grevillea robusta* A. Cunn.

2. Bark corky .....

3. Inner bark with unpleasant smell, darkening on exposure *Stenocarpus sinuatus* Endl.

3. Inner bark without smell, not darkening on exposure ..
Hicksbeachia pinnatifolia F. Muell.

2. Bark smooth, pimply or scaly .....

4. Sapwood surface changing from yellow to deep orange
Lomatia arborescens Fraser & Vickery

4. Sapwood surface not changing from yellow to deep orange

5. Blaze yellow or brown without pink or red .....

6. Blaze darkening on exposure, unpleasant smell ...
Stenocarpus sinuatus Endl.

6. Blaze not darkening nor with an unpleasant smell .

7. Blaze yellow-brown, inner bark slightly bitter ...
Helicia ferruginea F. Muell.

7. Blaze orange-brown, inner bark sweet .....
Helicia glabriflora F. Muell

5. Blaze with pink or red colours .....

8. Sapwood surface turning yellow on exposure .....

9. Dead bark red-brown beneath .....
Oreocallis pinnata (Maid. & Betche) Sleumer

9. Dead bark dark brown beneath .....
Stenocarpus salignus R. Br.

8. Sapwood surface not turning yellow .....

10. Blaze becoming darker after ten minutes .....

11. Blaze turning dark brown ... *Orites excelsa* R. Br.

11. Blaze turning darker orange-brown .....
Stenocarpus sinuatus Endl.

10. Blaze fading or unchanged after ten minutes ...

12. Horizontal lenticels on bark surface cream ..
Macadamia tetraphylla L. Johnson

12. Horizontal lenticels on bark surface light brown

13. Bark surface finely wrinkled and rough throughout ..... *Floydia praealta* (F. Muell.) L. Johnson & B. Briggs

13. Bark surface smooth except at base .....
Grevillea hilliana F. Muell.

FLOYDIA PRAEALTA (F. Muell.) L. Johnson & B. Briggs

Synonym—*Helicia praealta* F. Muell.

Macadamia praealta (F. Muell.) F. M. Bail.

Reference—Bot. Journ. Linn. Soc. 70, 2, 176, 1975.

Derivation—Floydia after A. G. Floyd, Research Section, Forestry Commission of N.S.W., Coffs Harbour who researched N.S.W. rainforest trees; praealta from Latin "praealta" very high or tall.

Common Name—Ball Nut, Possum Nut, Big Nut, Beefwood.

Standard Trade Name—Macadamia.
A tree up to 35 m tall and 60 cm diameter.

Trunk—Slightly buttressed only on large trees.

Outer Bark—*Brown finely wrinkled and rough*, marked by numerous very small paler corky pustules which are elongated horizontally. Underbark fawn. Outer surface of live bark red-brown.

Inner Bark—Blaze on a tree 30 cm diameter *pink* with paler fine vertical stripes forming an oak grain on the inner half. The surface fades after a few minutes exposure. Astringent taste but no smell. 3 mm thick. Large trees have a red-brown blaze with the bark up to 15 mm thick.

Branchlets—Smooth, brownish, marked by numerous pale dots.

Leaves—Alternate, simple, entire, *margins mostly wavy*, blades lanceolate 10-25 cm long, tapering at both ends, glabrous, thick and shiny. Leaf stalks 6-12 mm long.

Venation—Midrib, lateral and net veins cream and distinct on both surfaces.

Flowers—*Creamy-brown in bud, becoming cream* when open with a musty odour, in short racemes 5-12 cm long situated in the forks of the leaves or at the scars of fallen leaves; flower stalklet 3-6 mm long. Flowering period January and February.

Fruit—Follicle, *woody, brown, globular, up to 5 cm diameter*. The outer shell which *does not split open* at maturity, up to 6 mm thick enclosing one or two seeds. Fruit ripe June.

Habitat—Chiefly riverine and subtropical rainforest.

Distribution—From the Clarence River N.S.W. to Gympie Queensland. Recorded in N.S.W. from Clarence River, Ballina, Booyong, Victoria Park N.R., Wilsons Creek, Boatharbour, Lismore, Whian Whian S.F., Broken Head N.R., Limpinwood N.R. and Numinbah Creek.

Timber and Uses—Wood of the Silky Oak type, reddish in colour, close-grained and fairly durable. Suitable for cabinet work.

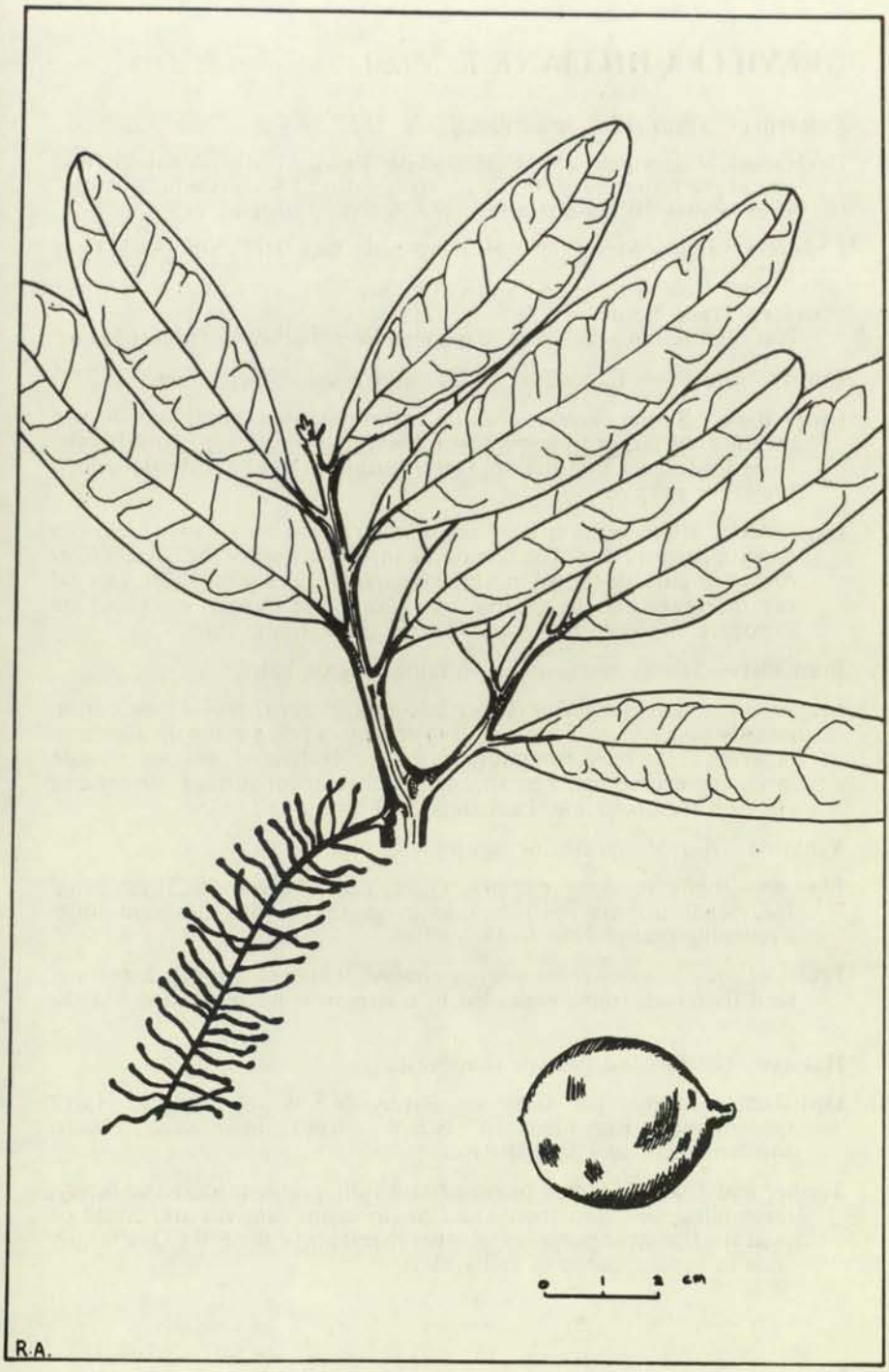

Plate No. 1

Floydia praealta **(F. Muell.) L. Johnson & B. Briggs**

GREVILLEA HILLIANA F. Muell.

Reference—Trans. Phil. Inst. Vict. ii, 72, 1857.

Derivation—"Grevillea" after C. F. Greville, a noted British Algologist and one of the founders of the Royal Horticultural Society and "hilliana" after Walter Hill, a director of the Botanic Gardens, Brisbane.

Common Name—White Yiel Yiel, White Silky Oak, Hill's Silky Oak, Grey Oak.

Standard Trade Name—Hill's Silky Oak.
A tree attaining a height of 30 m and a stem diameter of about 35 cm.

Trunk—Sometimes flanged or slightly buttressed in large trees.

Outer Bark—*Brown or grey, smooth* with numerous raised light brown pustules, or larger trees may be *slightly rough and scaly* towards the base. Underbark mid-brown. Outer surface of live bark deep reddish-brown or purple.

Inner Bark—Blaze on a tree 30 cm diameter with an *outer wide, deep reddish-brown band.* The remaining three quarters of the blaze is *light brown* or pinkish-brown in which the numerous darker short, vertical ray markings can be clearly seen. No rapid change in colour on exposure. No taste but gritty. Biscuit smell. 6 mm thick.

Branchlets—*Silvery or rusty* due to minute dense hairs.

Leaves—Alternate, *simple or deeply lobed elliptical to oval-oblong*, entire, usually under 15 cm long, tapering often to a point at the tip, or blunt, tapering at the base. Immature leaves deeply divided into two or more lobes and exceeding 25 cm in length. Green upper surface, *silvery and silky on the underside.* Leaf stalk 3-13 mm long.

Venation—Raised and distinct on both surfaces.

Flowers—*White in dense axillary, cylindrical racemes*, 10-20 cm long. Individual flowers 7-10 mm long on thin stalks 2-3 mm long. Flowering period June to December.

Fruit—*A follicle, woody, brown, egg-shaped*, flattened, about 2.5 cm long, seed flattened, round encircled by a narrow wing. Fruit ripe May to August.

Habitat—Littoral and riverine rainforest.

Distribution—From the Clarence River, N.S.W. to Cairns, North Queensland. Recorded in N.S.W. from Brunswick Heads, Mullumbimby and Tweed River.

Timber and Uses—Reddish-brown, beautifully grained, hard and heavy, resembling *Grevillea striata* and *Stenocarpus salignus* and could be used for the same purposes as other members of the Silky Oak family such as veneer, cabinets and violins.

Plate No. 2
Grevillea hilliana **F. Muell.**

GREVILLEA ROBUSTA A. Cunn.

Reference—R. Br. Prot. Nov. 24, 1830.

Derivation—Robusta from Latin "robusta" robust, referring to the large size attained by this species of a predominantly shrubby genus.

Common Name—Silky Oak, Southern Silky Oak.

Standard Trade Name—Southern Silky Oak.
A tree attaining a height of about 35 m and a stem diameter of 90 cm. A beautiful fast growing tree and a fine species for avenue planting.

Trunk—Often straight, cylindrical, sometimes slightly flanged at the base.

Outer Bark—Grey to dark greyish-brown, usually *vertically fissured and* ridged, often with firm scales on the crest of the ridges. Underbark mid-brown. Outer surface of live bark dark red.

Inner Bark—Blaze on a tree 60 cm diameter *pinkish-red* becoming paler at the inner margin, somewhat firm and fibrous in texture and showing the *characteristic ray markings* of the family. Does not change colour very rapidly, except the inner margin which changes to yellow after a few minutes exposure. Astringent to taste, no distinct smell. 20 mm thick, half of which is dead bark.

Branchlets—Young branchlets green for up to 25 cm from the ends, often angular and ridged, hairy, *young shoots densely hairy*, marked by rows of brownish lenticels.

Leaves—Alternate, pinnate, divided into segments (11-24) which are again divided into lobes which are entire or sometimes again divided, giving the foliage a fern-like and silvery look. 15-30 cm long. Leaflets tapering at the base and to a fine point at the tip. Upper surface dark green, glabrous or sprinkled with appressed hairs, *under side covered with a silky down.*

Venation—Midrib distinct, lateral and net veins obscure, leaf rhachis often hairy.

Flowers—*Orange-yellow in branched toothbrush-like inflorescences* consisting of several racemes 8-10 cm long. Individual flowers 12-20 mm long on slender pedicels about 12 mm long. Flowering period October and November.

Fruit—A *follicle, brown, oblique or boat-shaped*, up to 20 mm long *with a long slender beak* up to 25 mm long. Fruit ripe January and February.

Habitat—Commonly in riverine rainforest but also in subtropical and dry rainforest on basaltic soils.

Distribution—From the Guy Fawkes River, N.S.W. to about Maryborough, Queensland. Recorded in N.S.W. from Bagawa S.F., Kangaroo River S.F., Horton's Creek, Boundary Creek S.F., Guy Fawkes N.P., Lower Orara River, Susan Island, Grafton, Mt. Pikapene S.F., Myrtle Creek, Rivertree, Toonumbar S.F., Unumgar S.F., Yabbra S.F., Beaury S.F., Koreelah, Moore Park, Roseberry S.F., Wiangaree S.F., Lismore, Boatharbour and Murwillumbah.

Timber and Uses—Yellow-brown, medium-hard with prominent medullary rays producing the typical oak grain. The ornamental wood was once much used for cabinet work, furniture and coach building, but is now rarely seen and has been replaced on the market by the other more common Silky Oak (*Orites excelsa*). 600 kg per cubic metre.

Plate No. 3
Grevillea robusta **A. Cunn.**

HELICIA FERRUGINEA F. Muell.

Synonym—*H. bauerlenii* C. T. White.

Reference—F. Muell. Fragm iii, 37, 1862.

Derivation—Helicia from Latin "Helix" a snail, referring to the perianth segments being coiled like a snail's shell; ferruginea from Latin "ferrugineus" rusty, because of the rusty hairs on the stem and leaves.

Common Name—Rusty Oak, Hairy Honeysuckle.

Standard Trade Name—None.
A small tree up to about 20 m high and a stem diameter of 20 cm.

Trunk—Crooked, often with multiple stems. Not buttressed or fluted.

Outer Bark—*Brown or greyish-brown, smooth, or wrinkled* due to numerous pustules and a little rough at the base in large and older trees. Underbark chocolate-brown. Outer surface of live bark pinkish-fawn.

Inner Bark—Blaze on a tree 20 cm diameter *yellow-brown with numerous paler and darker vertical veinings.* No rapid change in colour, slightly bitter to taste, gritty, no distinct smell. 6 mm thick. Sapwood with a prominent oak grain.

Branchlets—Brown, hairy towards the ends, but becoming smooth. *Young shoots and leaves densely clothed with deep reddish-brown hairs.*

Leaves—Alternate, *simple, sharply toothed, ovate, elliptic or oblong* 9-25 cm long, gradually tapering at the tip, *unequally rounded at the base. Smooth above, densely rusty hairy beneath.* Leaf stalks 3-6 mm long.

Venation—Distinct both surfaces, prominently raised beneath.

Flowers—Covered by dense reddish-brown hairs, in *short rusty-hairy racemes* up to 9 cm long. Flowers in pairs on a common stalklet about 2 mm long. Perianth 5-6 mm long. Flowering period October and November.

Fruit—*Drupe, succulent, indehiscent, shiny purplish-blue turning black when ripe, oval* about 12 mm long with a persistent style 3 mm long. Stalks rusty-hairy, 3 mm long. Usually single but occasionally in pairs. Flesh stains the hands purple. The single seed 10 mm long has a smooth hard covering. Fruit ripe January and February.

Habitat—Riverine and warm temperate rainforest on rhyolite or syenite.

Distribution—Clarence River, New South Wales to Lamington N.P., Queensland. Recorded in N.S.W. from Clarence River, Uralba N.R., Goonimbar S.F., Whian Whian S.F., Boomerang Falls, Nullum S.F., Mullumbimby, Mooball S.F., Mt. Warning N.P., Limpinwood N.R., Numinbah Creek, Chillingham and Murwillumbah.

Timber and Uses—Brown to pinkish, close grained, rough and firm with a figure similar to that of other members of the family. Used for cabinets.

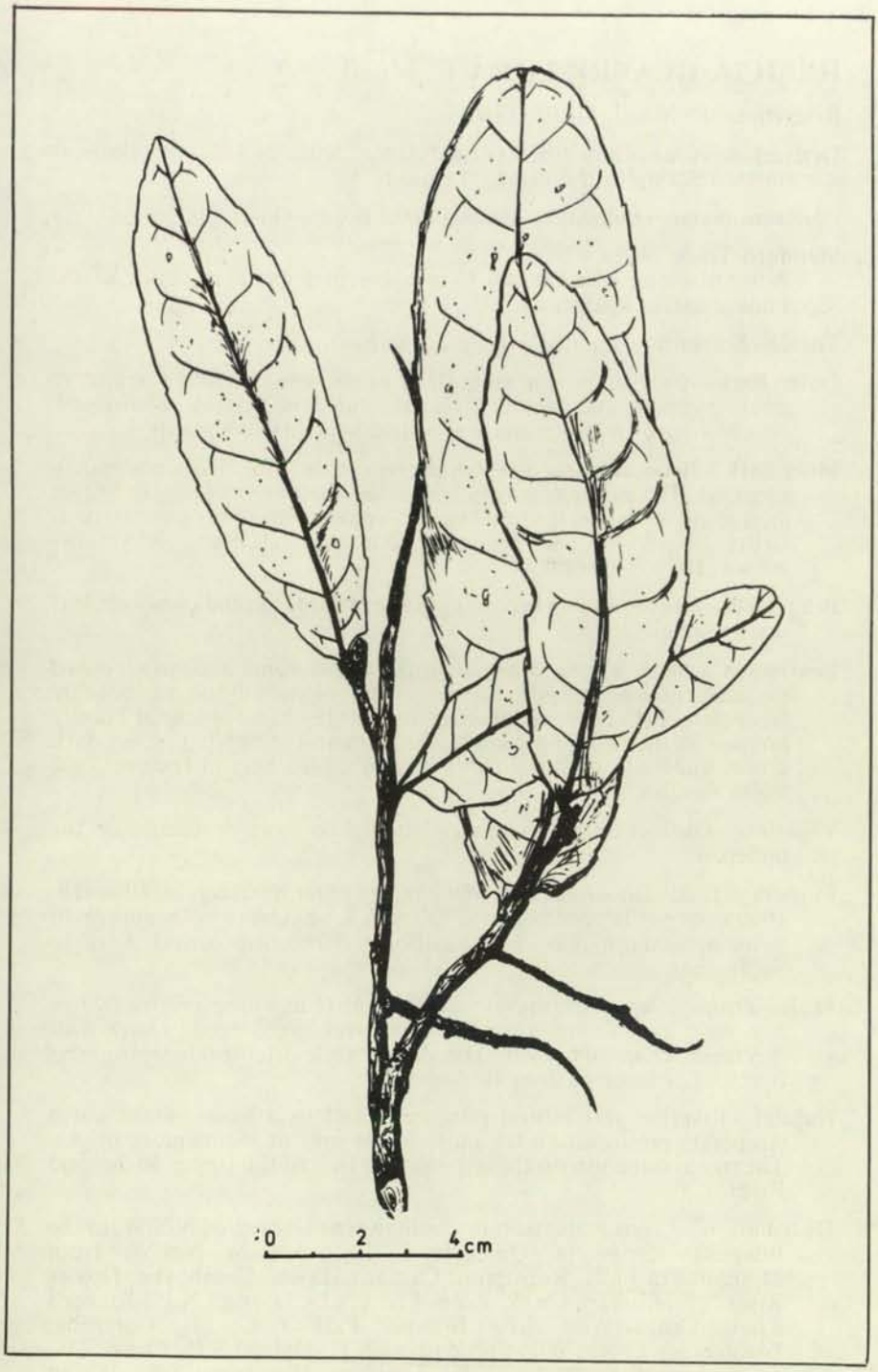

Plate No. 4
Helicia ferruginea **F. Muell.**

HELICIA GLABRIFLORA F. Muell.

Reference—F. Muell. 11, 91, 1860.

Derivation—Glabriflora from Latin "glaber" without hair and "flora" a flower relating to the glabrous flowers.

Common Name—Pale Oak, Leather Oak, Brown Oak.

Standard Trade Name—None.
A tree attaining a height of 6-15 m and stem diameter of about 30 cm. Foliage rather sparse.

Trunk—Sometimes slightly flanged at the base.

Outer Bark—Grey or brown, smooth or finely wrinkled and marked by small pimples and scattered horizontal raised lines. *Underbark chocolate-brown.* Outer surface of live bark orange-brown.

Inner Bark—Blaze on a tree 30 cm diameter orange-brown, often *minutely* speckled. The prominent *rays* appear *as short vertical darker brown lines*, more dense on the inner half. No change in colour on exposure. Gritty. Sweet taste later becoming sour, no smell. Sapwood yellow-brown. Bark 6 mm thick.

Branchlets—Grey or brown becoming green towards the ends, smooth, leaf scars visible.

Leaves—Alternate, *simple, margins entire or sometimes distantly toothed* particularly on juvenile leaves, ovate, ovate elliptic or broadly lanceolate, 5-15 cm long tapering towards the base, obtuse or bluntly pointed at the tip. Upper surface smooth and somewhat glossy dark green, underside dull and paler, somewhat leathery in texture. Leaf stalks swollen, 2-3 mm long.

Venation—Distinct on both surfaces but slightly more prominent on the underside.

Flowers—*Yellowish-white in slender axillary or terminal racemes* about 8-10 cm long. Flowers glabrous 8-9 mm long. Ovary with appressed hairs or smooth (var. *conjunctiflora*). Flowering period April to September.

Fruit—*Drupe, deep purplish-blue, oval*, about 16 mm long, *grooved down one side*, containing a single large oval green seed. *Outer part succulent*, crisp and sweet. The slender style often persistent on the ripe fruit. Fruit ripe June to November.

Habitat—Riverine and littoral rainforests and to a lesser extent warm temperate rainforest on the more fertile soils of sedimentary origin. The tree is common on the red volcanic soils of the Upper Richmond River.

Distribution—From Robertson in the Illawarra District of N.S.W. to the Eungella Range in Queensland. Recorded in N.S.W. from Minnamurra Falls, Robertson, Camden Haven, Comboyne, Doyles River S.F., Comara Creek, Roses Creek S.F., Dorrigo N.P., Tucker's Knob, Orara West S.F., Bruxner Park F.R., Mt. Coramba, Woolgoolga Creek, Wild Cattle Creek S.F., Hyland S.F., Cangi S.F., Toonumbar S.F., Beaury S.F., Tooloom, Wiangaree S.F., Whian Whian S.F., Leycester Creek, Booyong, Wollongbar, Rous, Brunswick Heads, Burringbar, Mt. Cougal and Murwillumbah.

Timber and Uses—Pale, medium hard and tough. Very little seems to be known about the timber and its possible use but it should be suitable for brushware, turnery, carving and small tool handles.

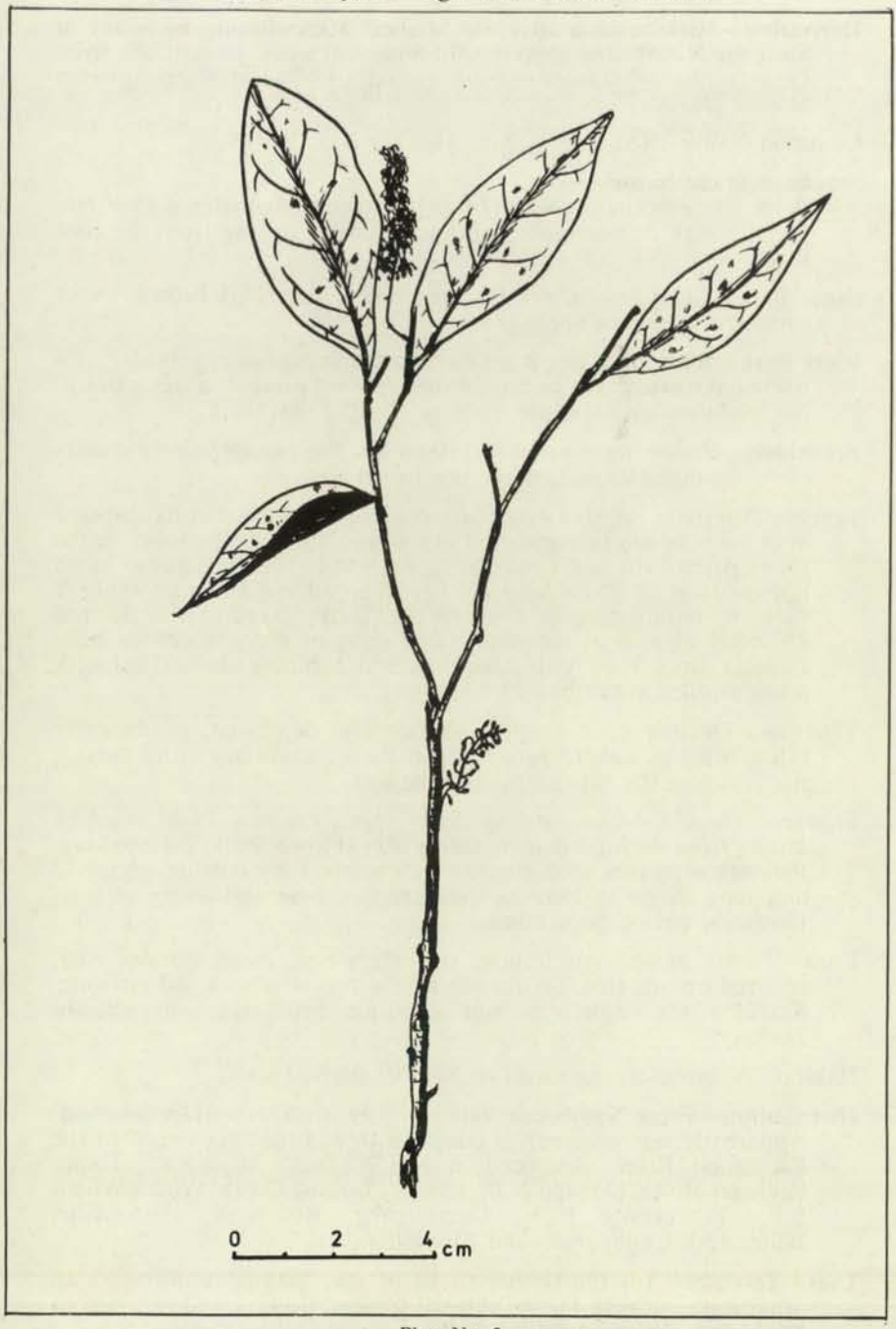

Plate No. 5

Helicia glabriflora **F. Muell.**

HICKSBEACHIA PINNATIFOLIA F. Muell.

Reference—Wing's S. Sci. Rec., iii, 33, 1883.

Derivation—Hicksbeachia after Sir Michael Hicks-Beach, Secretary of State for N.S.W. and supporter of botanical work; pinnatifolia from Latin "pinnatus" pinnate or feathery and "folia" a leaf, referring to the pinnate leaves.

Common Name—Red Boppel Nut, Monkey Nut, Red Nut.

Standard Trade Name—None.

A small tree attaining about 12 m in height and a diameter of 25-30 cm. Usually with one or more unbranched stems arising from the root stock.

Outer Bark—*Light brown, wrinkled and corky*, underbark brown. Outer surface of live bark apple-green.

Inner Bark—Blaze on a tree 8 cm diameter *biscuit-brown*, granular *with white oaky grain*. The surface of the sapwood presents a lacy pattern. No oxidation on exposure, taste or smell. 2 mm thick.

Branchlets—Brown, *terminal shoots* clothed in *fine brown hair*. Leaf scars about 12 mm diameter, numerous raised lenticels.

Leaves—Alternate, *deeply lobed or divided* into distinct leaflet-like lobes, *1 m or more in length*, composed of *sixteen-24 lobes*. The lobes on the lower part of the leaf towards the base have the appearance of an ordinary leaf, 20-25 cm long and 12 mm broad, *rigidly and irregularly toothed*, terminating in a sharp needle-like point at the tip and distinctly oblique at the base. Lobe margins wavy, green on both surfaces, smooth on both sides, darker and shining above. Leaf stalk much swollen at the base, 1-6 cm long.

Venation—Distinct on the upper surface and depressed, prominently raised beneath. *Leaf rachis winged* on the upper surface with a distinct rib travelling the entire length of the leaf.

Flowers—*Purplish-brown*, strong sickly scent, *racemes 15-35 cm long arising from the leafless stem*, rachis silky. Flower stalks 2-4 mm long. Perianth segments soon curving backwards, silky outside, about 12 mm long. Style as long as the perianth, base and ovary velvety. Flowering period September.

Fruit—*Fleshy indehiscent* follicle, *red* when ripe, *oval, 2-5 cm long*, grooved on one side, tip oblique with a long thin beak, 4-5 cm long. Kernel of the single oval "nut" is edible. Fruit ripe September to January.

Habitat—Subtropical rainforest on basaltic derived soils.

Distribution—From Nambucca Valley N.S.W. to Northern Queensland. Apparently was originally a common tree in the "big scrub" of the Richmond River. Recorded in N.S.W. from Missabotti, Upper Bellinger River, Dorrigo N.P., Kyogle, Terania Creek, Whian Whian S.F., Boomerang Falls, Durroughby, Rosebank, Alstonville, Billinudgel, Chillingham and Murwillumbah.

Uses—Too small for the timber to be of use. Has possibilities as an ornamental subject for its unusual foliage, flowers and racemes of bright red, attractive, edible fruit.

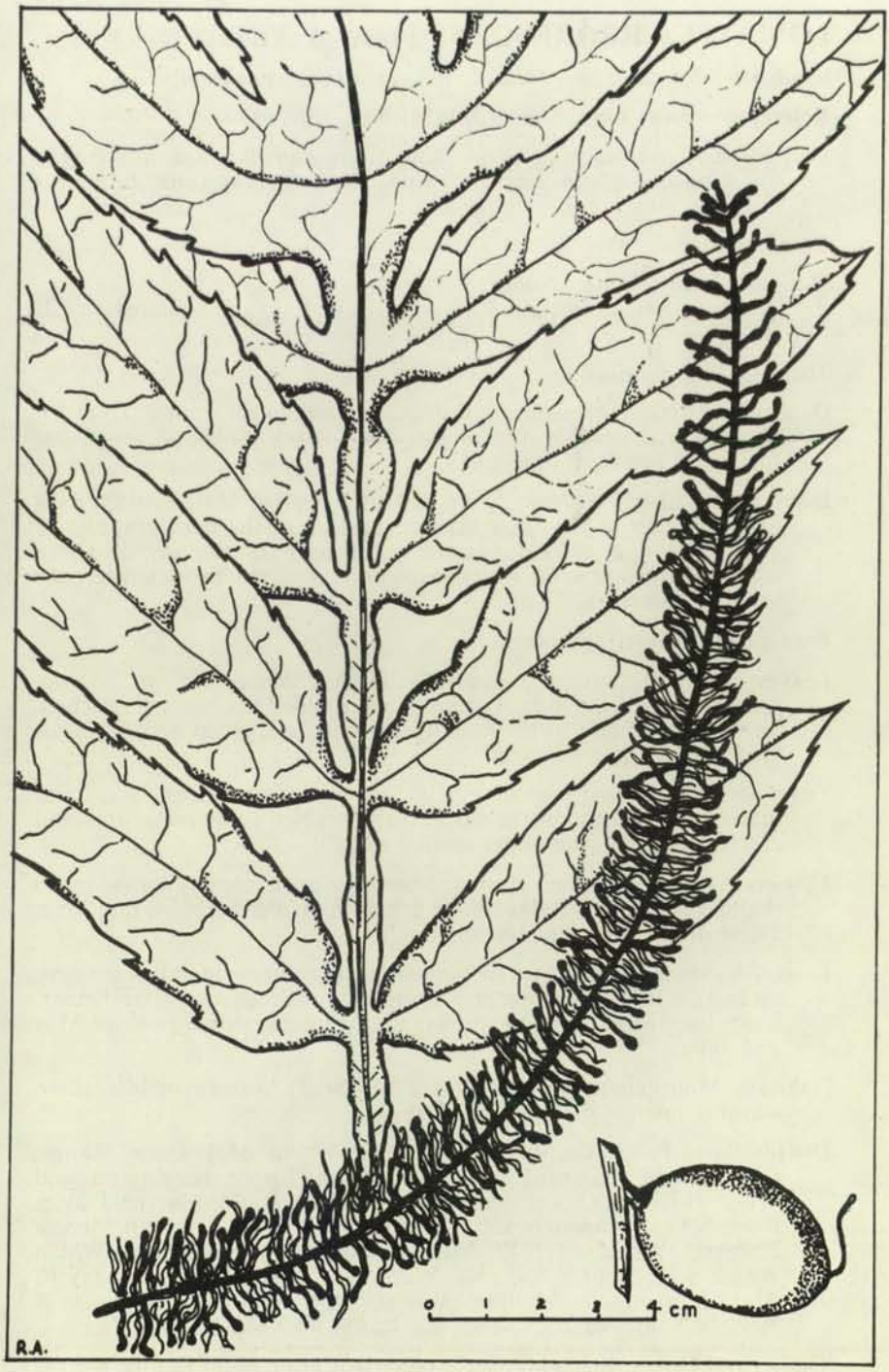

Plate No. 6

Hicksbeachia pinnatifolia **F. Muell.**

LOMATIA ARBORESCENS Fraser & Vickery.

Synonym—*Lomatia longifolia* R. Br. var *arborescens* Benth.

Reference—Proc. Linn. Soc. N.S.W., LX11, 286, 1937.

Derivation—Lomatia from Greek "lomation" a small fringe, referring to the winged seeds; arborescens from Latin "arborescens" becoming tree-like, alluding to its large size.

Common Name—Tree Lomatia.

Standard Trade Name—None.

A shrub or small tree attaining a height of 10 m and a diameter of 22 cm.

Trunk—Often crooked.

Outer Bark—*Grey-brown, smooth with horizontal raised rings or sometimes pimply* on older trees. Underbark pinkish-fawn. Outer surface of live bark lime-green.

Inner Bark—Blaze on a tree 22 cm daimeter *pinkish-brown* with a dark brown border at the outer margin. Texture of the bark granular or gritty. The *inner margin is faintly yellow at first, soon turning a deep orange*. Sapwood white with conspicuous rays. No distinct taste, cane smell. 3 mm thick.

Branchlets—Brown, smooth.

Leaves—Alternate, simple, *coarsely-toothed, lanceolate or oblong-lanceolate,* 5-10 cm long. Tapering to a rounded tip, blunt or notched. Tapering gradually at the base. Firm in texture, green both surfaces, *glossy above, paler beneath.*

Venation—Midrib and lateral veins visible on both surfaces, raised and more conspicuous on the upper surface. Net veins numerous and clearly visible on the upper surface only.

Flowers—*Cream in lateral racemes*, often shorter but sometimes as long as the leaves. Flower stalks about 6 mm long. Perianth 7-8 mm long. Flowering period January to March.

Fruit—A *follicle, dark brown or almost black*, splitting in half when ripe, up to 4 cm long including the persistent style. Seeds several triangular, 5 mm long with a broad wing 8 mm long on one side. Fruit ripe May and June.

Habitat—Mountain ranges in Northern New South Wales in or adjacent to warm temperate and cool rainforests.

Distribution—From Barrington Tops, N.S.W. to McPherson Range, Queensland. Recorded in N.S.W. from Upper Barrington and Williams Rivers, Gloucester, Rowley's Rock F.R., Comboyne, Doyles River S.F., Yarrowitch, Carrai, Oakes S.F., Point Lookout, Acacia Plateau, Donaldson S.F., Mt. Lindesay, Wiangaree S.F., Whian Whian S.F., Mebbin S.F., Mt. Warning N.P. and Limpinwood N.R. Also occurs in sclerophyll forest west of the Great Dividing Range at Norfolk Falls, Nundle, Nandewar Range and Mt. Kaputar N.P.

Timber and Uses—Red, with the characteristic grain of the family, but the tree generally too small to be of much use.

Plate No. 7

Lomatia arborescens **Fraser & Vickery**

MACADAMIA TETRAPHYLLA L. Johnson.

Reference—Proc. Linn. Soc. of N.S.W. 79, 15, 1954.

Derivation—Macadamia in honour of John Macadam, Secretary of the Philosophical Institute of Victoria before whom the genus was first described by F. Mueller; tetraphylla from Greek "tetra" four and "phyllon" a leaf, in reference to the grouping of leaves in whorls of four.

Common Name—Rough-shelled Bush Nut, Macadamia Nut.

Standard Trade Name—Macadamia.
A small to medium sized, usually densely bushy tree, occasionally attaining 18 m in height and a diameter of 45 cm.

Trunk—Cylindrical, not buttressed.

Outer Bark—Brown to greyish-brown, smooth or finely wrinkled, marked with numerous cream horizontally-elongated lenticels. Underbark mid-brown. Outer surface of live bark dark green.

Inner Bark—Blaze to a tree 25 cm diameter from *pinkish-red to very deep red or almost black* depending on the colour of the lines forming the net-like or silky oak pattern showing on the blaze surface which fades a little as it dries. Very astringent to taste with a cane smell. Very hard. 5 mm thick.

Branchlets—Brown to greyish-brown, *young shoots hairy* for some distance back from the ends of the branchlets. Sometimes there is a band of rust-coloured hairs encircling the branch above the whorl of leaves, and often the leaf stalks are hairy. The *numerous small pale lenticels* on the branchlets produce a roughened effect.

Leaves—*In whorls of four or three* sometimes only two, simple, margins always *prickly toothed with 35-40 teeth on each side*, oblong or oblong-lanceolate, 7-25 cm long, abruptly rounded to a short sharp point at the tip, truncate at the base, rigid in texture. Leaf stalks 2 mm long. The Queensland species *M. ternifolia* has leaves in whorls of three, or less, entire adult leaves and leaf stalks 4-15 mm long. Both species are widely cultivated for their edible fruit.

Venation—Distinct on both surfaces, midrib and lateral veins more prominent beneath. *Thirteen to twenty pairs of lateral veins* (seven to twelve in *M. ternifolia*).

Flowers—*Creamy-pink to purplish* (cream in *M. ternifolia*) *in narrow racemes up to about 25 cm long* springing from the axils of the leaves or from above the scars of fallen leaves. Individual flowers cylindrical in bud, about 10 mm long. Flowering period August to October.

Fruit—Follicle, *brown, globular, about 2-3 cm diameter*, consisting of a pericarp split into two valves and enclosing *one or sometimes two seeds* which are *enclosed in a very hard wrinkled bony, brown and shining outer covering*. (Smooth in *M. ternifolia*). Fruit ripe January.

Habitat—Subtropical rainforest near the coast.

Distribution—Confined chiefly to the Richmond and Tweed Rivers in N.S.W. extending into the Numinbah Valley and Coomera River, Queensland. Recorded in N.S.W. from Clarence River, (doubtful), Nimbin, Whian Whian S.F., Dunoon, Lismore, Ballina, Tintenbar, Bangalow, Goonengerry, Burringbar, Mt. Warning N.P., Limpinwood N.R., Numinbah Creek, Crystal Creek and Murwillumbah.

Timber and Uses—Wood reddish, hard and tough, prettily marked, but the fruits of the tree are considered too valuable for it to be exploited for timber purposes.

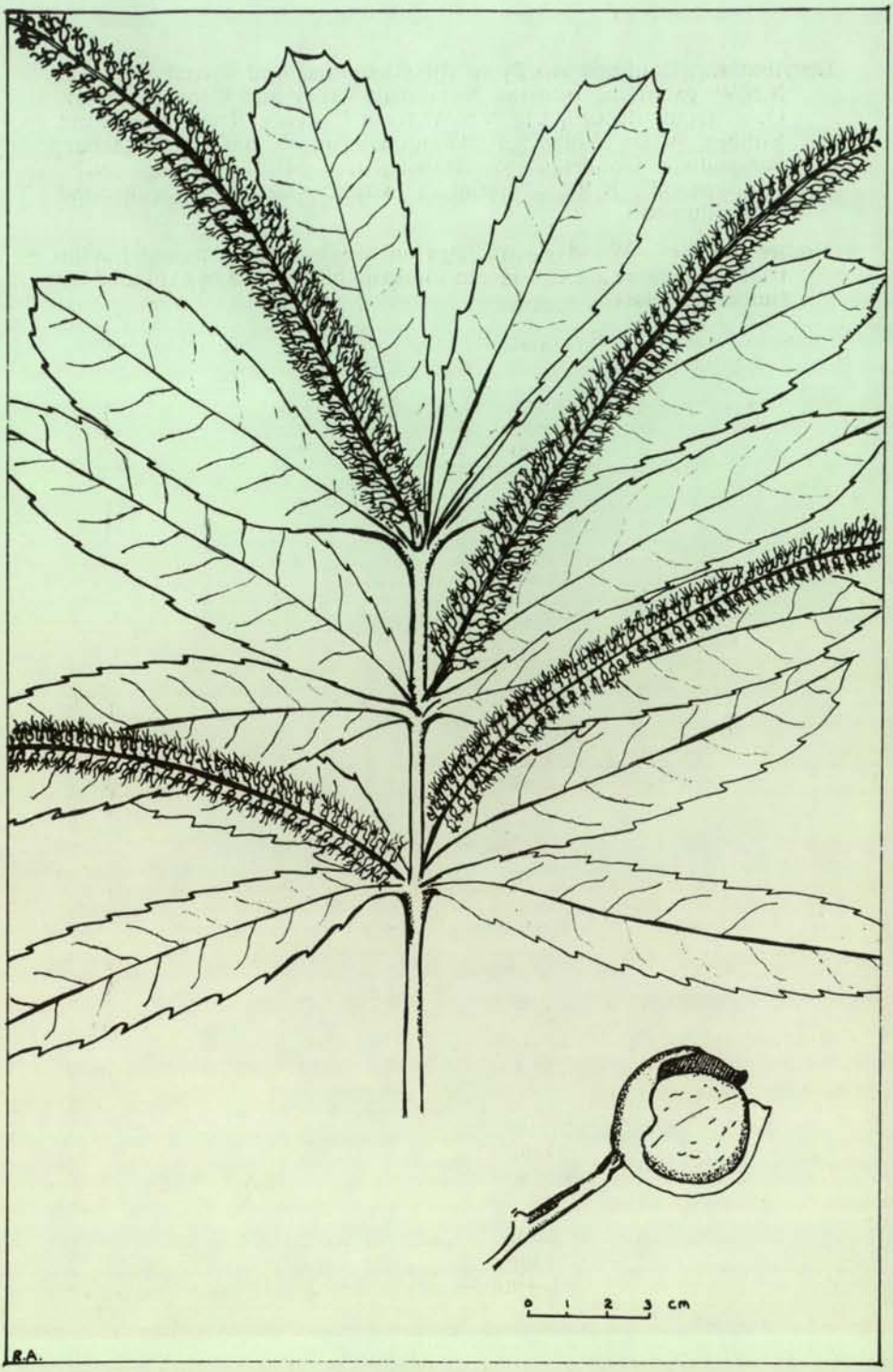

Plate No. 8

Macadamia tetraphylla **L. Johnson**

OREOCALLIS PINNATA (Maid. & Betche) Sleumer.

Synonym—*Embothrium pinnatum* C. T. White, *E. Wickhamii* F. Muell. var *pinnata* Maid. & Betche.

Reference—Maid. For. Flora N.S.W., 5, 93, 1913; Bot Jahr LXXV1, 203, 1904.

Derivation—Oreocallis from Greek "oreos" mountain and "calos" beautiful, referring to this showy mountain genus; pinnata from Latin "pinnatus" pinnate, because of the divided leaves.

Common Name—Tree Waratah, Red Oak, Pink Silky Oak, Dorrigo Oak, Red Silky Oak.

Standard Trade Name—Dorrigo Oak.
Tree attaining a height of 24 m and a stem diameter of 60 cm. A very ornamental species with attractive and distinctive light green foliage with a *few bright yellow dead leaves* and red conspicuous waratah-like flowers.

Trunk—Usually cylindrical and not buttressed.

Outer Bark—Grey-brown, usually finely and densely pimpled giving the surface a coarse sand-paper like feel. Underbark deep red brown. Outer surface of live bark pink-brown.

Inner Bark—Blaze on a tree 50 cm diameter red to pink-brown becoming paler towards the sapwood. The outer margin is mottled with paler flecks whilst the inner portion consists of rays forming an intricate diamond-like pattern with cream to brown vertical lines extending towards the inner margin which alone changes to yellow after a few minutes exposure. Bark astringent to taste with a distinctive smell. 5 mm thick.

Branchlets—Green with patches of brown hairs or covered with brown hairs.

Leaves—Alternate, *simple or pinnate on young trees, entire*. Simple leaves 15 cm or over in length, lanceolate *tapering gradually into a fine point at the tip* and into a long stalk at the base, 15-40 mm long. Leaflets sometimes oblique at the base. Upper surface *glossy* green, paler below. Leaflet stalklet and leaf rhachis swollen at the base.

Venation—Midrib and lateral veins visible in some specimens, in others only the yellow midrib can be clearly seen. Lateral veins more conspicuous above.

Flowers—*Red, in corymbs crowded at the ends of the branches. Flowers 4 cm long*, on stalks 5 cm long. Perianth tube 2.5 cm long, split down one side and curved. Anthers without stalks. Flowering period October to January.

Fruit—A follicle, *woody, brown, cylindrical, with a long beak, splitting down one side*, 8-10 cm long. Seeds arranged in two series, each seed within a thin flattened wing 3 cm long and 10 mm wide. Fruit ripe February to June.

Habitat—In warm temperate rainforest. Commonly in association with Coachwood on the poorer sedimentary soils of the Dorrigo Plateau but also with Crabapple and Sassafras on the McPherson Range.

Distribution—Dorrigo to McPherson Range, Queensland. Recorded in N.S.W. from Gladstone S.F., Dorrigo N.P., Dome Mountain, Never Never S.F., Wild Cattle Creek S.F., Moonpar S.F., Orara West S.F., Wiangaree S.F., Mts. Durigan and Wagawn, Limpinwood N.R. and Numinbah Creek.

Timber and Uses—Pinkish-red with a silky sheen, and typical oak figure due to the broad rays. Owing to its softness and lightness it is an excellent cabinet and furniture wood and used to advantage where an ornamental timber is required. 500 kg. per cubic metre.

Plate No. 9

Oreocallis pinnata **(Maid. & Betche) Sleumer**

ORITES EXCELSA R. Br.

Reference—Trans Linn. Soc X, 189, 1809.

Derivation—Orites from Greek "oreites" a mountaineer referring to its mountain habitat; excelsa from Latin "excelsa" tall being the tallest of the species in Australia.

Common Name—Prickly Ash, Silky Oak, White Beefwood, Southern Silky Oak, Mountain Silky Oak.

Standard Trade Name—Mountain Silky Oak.
A tree attaining a height of 30 m and a stem diameter of 75 cm.

Trunk—Not prominently buttressed, bole generally fairly cylindrical.

Outer Bark—Brown or grey, often minutely scaly and fairly smooth. Marked by numerous horizontal lenticels. Underbark orange-fawn. Outer surface of live bark purple-brown.

Inner Bark—Blaze on a tree 60 cm diameter *pinkish-brown*, becoming paler towards the sapwood. Surface marked by short vertical open rays with dark red margins. Texture of the bark somewhat granular and brittle. After about 10 minutes exposure the *blaze changes to a dark brown*. Astringent to taste but no smell. 12 mm thick.

Branchlets—Grey, becoming brown towards the tips; smooth, marked by leaf scars; young shoots downy.

Leaves—Alternate, simple or lobed if immature, entire or coarsely and often acutely toothed, lanceolate, 9-20 cm long, tip blunt or pointed, base tapering. Upper surface smooth and shining, *underside slightly grey to almost white*. On young growth and barren shoots the leaves are often larger and deeply divided into three or five acutely toothed lobes. Leaf stalks 6-20 mm long.

Venation—Midrib and lateral veins prominent on both surfaces, midrib prominently raised on the underside. Net veins indistinct below but more conspicuous above.

Flowers—*White, in slender axillary spikes*, shorter than the leaves. Individual flowers tubular, about 6 mm long. Flowering period June to September.

Fruit—A *follicle, 20-25 mm long, with a short fine point*, opening along one side and having the appearance of a small boat when opened. One or two triangular seeds to a follicle, 4-6 mm long, each with a wing up to 12 mm long at the upper end. Fruit ripe February to July.

Habitat—Warm temperate rainforest on the poorer sedimentary soils and in cool subtropical and cool temperate rainforests on volcanic soils at elevations above 750 m.

Distribution—From the Hunter River, N.S.W. to Mt. Mistake, Southern Queensland and again at Mts. Alexander and Lewis, North Queensland. Recorded in N.S.W. from most rainforest areas north of the Hunter River on poorer soils or at higher elevations on volcanic soils.

Timber and Uses—Pinkish, moderately hard, with an oak figure when cut on the quarter which closely resembles the true Silky Oak, *Grevillea robusta* and takes a good polish. Suitable for furniture, cabinet-making, lining, interior joinery, saddle frames, casks and shingles. Weight about 600 kg. per cubic metre.

Plate No. 10
Orites excelsa **R. Br.**

STENOCARPUS SALIGNUS R. Br.

Reference—Trans. Linn. Soc. Vol. X, 202, 1809.

Derivation—Stenocarpus from Greek "stenos" narrow and "karpos" fruit, referring to the slender fruits of some species; salignus from Latin "salignus" willow-like because of the appearance of the leaves.

Common Name—Scrub Beefwood, Red Silky Oak, Beefwood.

Standard Trade Name—Red Silky Oak.
A tree attaining a height of about 30 m and a stem diameter of 60 cm. Crown often sparsely foliaged.

Trunk—Often buttressed.

Outer Bark—*Dark brown, finely fissured and softly scaly* with the oak-like rays visible over the whole surface of the bark. Underbark dark brown. Outer surface of live bark red-brown to dark red.

Inner Bark—Blaze on a tree 50 cm diameter red-brown showing numerous darker vertical rays, paler towards the sapwood. *Inner margin turns yellow* after a few minutes exposure. Inner surface of the bark fibrous. No taste and a sugar cane smell. 8 mm thick.

Branchlets—Brown, smooth, marked by numerous small raised dots (lenticels), often ribbed or angular.

Leaves—Alternate, simple, entire, ovate, lanceolate or elliptic, 8-15 cm long, blunt or almost acutely pointed with a hard distinct point at the tip and gradually tapering at the base. *Dark green and glossy on the upper surface*, underside paler. Leaf stalk 2-6 mm long.

Venation—*Varying from a central midrib to three prominent longitudinal veins.* Only the midrib and main veins visible in some specimens, in others the net veins can also be seen.

Flowers—*White, fifteen-30 in globular clusters* (umbels) at the ends of the branches or in the forks of the leaves and usually shorter than the leaves. Individual flowers about 8 mm long, resembling those of a Grevillea. Flowering period October to January.

Fruit—A narrow follicle, brown, 5-10 cm long opening along one edge, packed with thin flat oblong seeds about 12 mm long. Fruit ripe March to June.

Habitat—Warm temperate rainforest on the poorer sedimentary soils or on volcanic soils above 750 m altitude.

Distribution—Coastal rainforests from Milton, N.S.W. to Rockhampton, Queensland. Recorded in N.S.W. from Milton, Yalwal, Wingello, Minnamurra N.P., Kiama, Royal N.P., Lane Cove, Epping, Kurrajong Heights, Colo River, Calga, Glen Davis, Rylstone, Upper Allyn River, Craven, Gloucester, Comboyne, Black Creek F.R., Port Macquarie, Doyles River S.F., Bellangry S.F., Way Way S.F., Roses Creek S.F., Oakes S.F., Dorrigo N.P., Tuckers Knob, Orara West S.F., Bruxner Park F.R., Mt. Coramba, Upper Orara, Kangaroo River S.F., Wild Cattle Creek S.F., Mobong Creek F.R., Moonpar S.F., Clouds Creek S.F., Hortons Creek, Gibraltar Range S.F., Forestland S.F., Ewingar S.F., Yabbra S.F., Acacia Plateau,

Donaldson S.F., Mt. Lindesay, Mt. Glennie, Levers Plateau, Wiangaree S.F., Whian Whian S.F., Mullumbimby, Mt. Warning N.P. and Limpinwood N.R.

Timber and Uses—Dark Red, soft when first cut but becoming harder with drying, durable and somewhat brittle. Suitable for furniture, cabinet work, joinery panelling, shop and office fittings. Weight about 850 kg. per cubic metre.

Plate No. 11

Stenocarpus salignus **R. Br.**

STENOCARPUS SINUATUS Endl.

Reference—Gen. Plant., Suppl. IV, 88, 1847.

Derivation—Sinuatus from Latin "sinuatus" waved, referring to the wavy margins of the leaves.

Common Name—Wheel of Fire Tree, White Beefwood, Tulip Flower, White Oak, White Silky Oak.

Standard Trade Name—White Silky Oak.
A tree attaining a height of 30 m and a stem diameter of 45 cm. A most ornamental species esteemed for its bright red flowers arranged like the spokes of a wheel, and conspicuous amongst the dark green foliage.

Trunk—Cylindrical, or sometimes irregular and flanged particularly towards the base.

Outer Bark—Grey to greyish-brown, wrinkled with short vertical fissures or at times somewhat corky. Under bark fawn. Outer surface of live bark red-brown.

Inner Bark—Blaze on a tree 25 cm diameter orange-brown with fine darker vertical lines, becoming paler towards the inner margin; surface changes slowly to a slightly darker shade when exposed. Freshly cut bark is tasteless but has a distinct and unpleasant smell. 5 mm thick.

Branchlets—Brown or greyish-brown, smooth.

Leaves—Alternate, may vary from simple to pinnatifid, margins wavy, variable in shape, simple leaves 12-20 cm long; bluntly pointed at the apex, tapering towards the petiole, texture somewhat thick and rigid. Upper surface dark green and glossy, paler on the underside. Leaf stalk 12-25 mm long.

Venation—Visible on both surfaces, but midrib and lateral veins raised on the underside and the numerous and fine net veins more distinct.

Flowers—Bright red in conspicuous wheel-like clusters (umbels) 7-10 cm diameter situated at the ends of the branches, in the forks of the leaves or springing from the scars of the fallen leaves. Individual flower buds 3 cm long with a globular terminal knob about 6 mm diameter. Flowering period February-March.

Fruit—A follicle, dark grey-brown, curved or somewhat boat-shaped, 5-10 cm long exceeding 2 cm wide containing numerous thin triangular flattened overlapping seeds, 12 mm long with a membranous wing of equal length. Fruit ripe April to September.

Habitat—Sub-tropical, littoral, riverine and warm temperate rainforest.

Distribution—From the Nambucca River, N.S.W. to the Atherton Tableland, North Queensland. Recorded in N.S.W. from Nambucca, Oakes S.F., Pine Creek S.F., Dorrigo N.P., Orara West S.F., Bruxner Park, Mt. Coramba, Waihou F.R., Bagawa S.F., Toonumbar S.F., Roseberry S.F., Wiangaree S.F., Whian Whian S.F., Dunoon, Lismore, Boatharbour, Brunswick Heads, Mooball S.F., Mt. Warning N.P., Limpinwood N.R., Crystal Creek, Mt. Cougal and Murwillumbah.

Timber and Uses—White, moderately hard, durable, somewhat tough with a close-grained figure like silky oak. Suitable for cabinet work, veneer and indoor fittings. Subject to attack by borers.

Plate No. 12

Stenocarpus sinuatus **Endl.**

TRIUNIA YOUNGIANA (C. Moore & F. Muell.) L. Johnson & B. Briggs.

Synonym—*Helicia youngiana* C. Moore & F. Muell.

Reference—Bot. J. Linn. Soc. Vol. 70, 2, 175, 1975.

Derivation—Triunia from Latin "tri", three, and "unus" one in reference to three of the sepals or petals being partly joined whilst the fourth is separate; youngiana after Sir John Young, Governor of N.S.W., 1861-67.

Common Name—Native Honeysuckle, Spice Bush.

Standard Trade Name—None.
A small tree or shrub up to 4 m tall and 5 cm diameter.

Trunk—Crooked, not buttressed or fluted. Often with several stems arising from one root stock.

Outer Bark—*Black with cream horizontally elongated lenticels.* Smooth to slightly roughened. Underbark brownish-black. Outer surface of live bark pink with red vertical streaks.

Inner Bark—On a tree 5 cm diameter pink with darker pink vertical streaks. Sapwood cream with a straw oak pattern. No change in colour on exposure. No taste or smell. 2 mm thick.

Branchlets—Slender, rusty-hairy but turning smooth and black on the older leafless sections.

Leaves—In *groups of three or four* or in pairs, simple, entire or with one or two teeth on either side towards the tip, lanceolate to elliptical, 5-13 cm long, tapering to a soft sharp point at the tip but more abruptly at the base. Smooth, dark green and glossy above, paler and dull beneath. Young expanding leaves however are silky silvery pink. *Leaf stalk* 3-5 mm long, *rusty or black hairy.*

Venation—Midrib and lateral veins sunken and visible above but more conspicuous and raised below. Net veins only visible below.

Flowers—*Creamy-pink in bud cream when open* with a strong *fragrant* perfume. In racemes, 5-10 cm long at the ends of the branchlets, *stalks rusty-furry*. Flowers cylindrical in bud, 10-15 mm long, rusty-furry opening into three segments partially joined together and one separate. Individual flower stalks 5 mm long or less. Ovary round, rusty-hairy. Flowering period November-December.

Fruit—*Drupe, red*, with a thin outer fleshy layer, round but somewhat pointed at both ends and grooved longitudinally on one side, 12-15 mm long. Seed round. Fruit is *highly poisonous*. Fruit ripe April-May.

Habitat—In cool temperate, warm temperate and subtropical rainforest but most common in the cooler mountain forests of the Eastern Dorrigo, McPherson and Tweed Ranges.

Distribution—Dorrigo, N.S.W. to Atherton, North Queensland. Recorded in N.S.W. from Roses Creek S.F., Dorrigo N.P., Brooklana, Tuckers Knob, Orara West F.R., Mobong Creek F.R., Moonpar S.F., Wiangaree S.F., Goonimbar S.F., Whian Whian S.F., Boomerang Falls, Johnstons Scrub, Victoria Park N.R., Davis Scrub, Hayters Hill, Mt. Warning N.P., Limpinwood N.R. and Upper Crystal Creek.

Timber and Uses—Too small to be used.

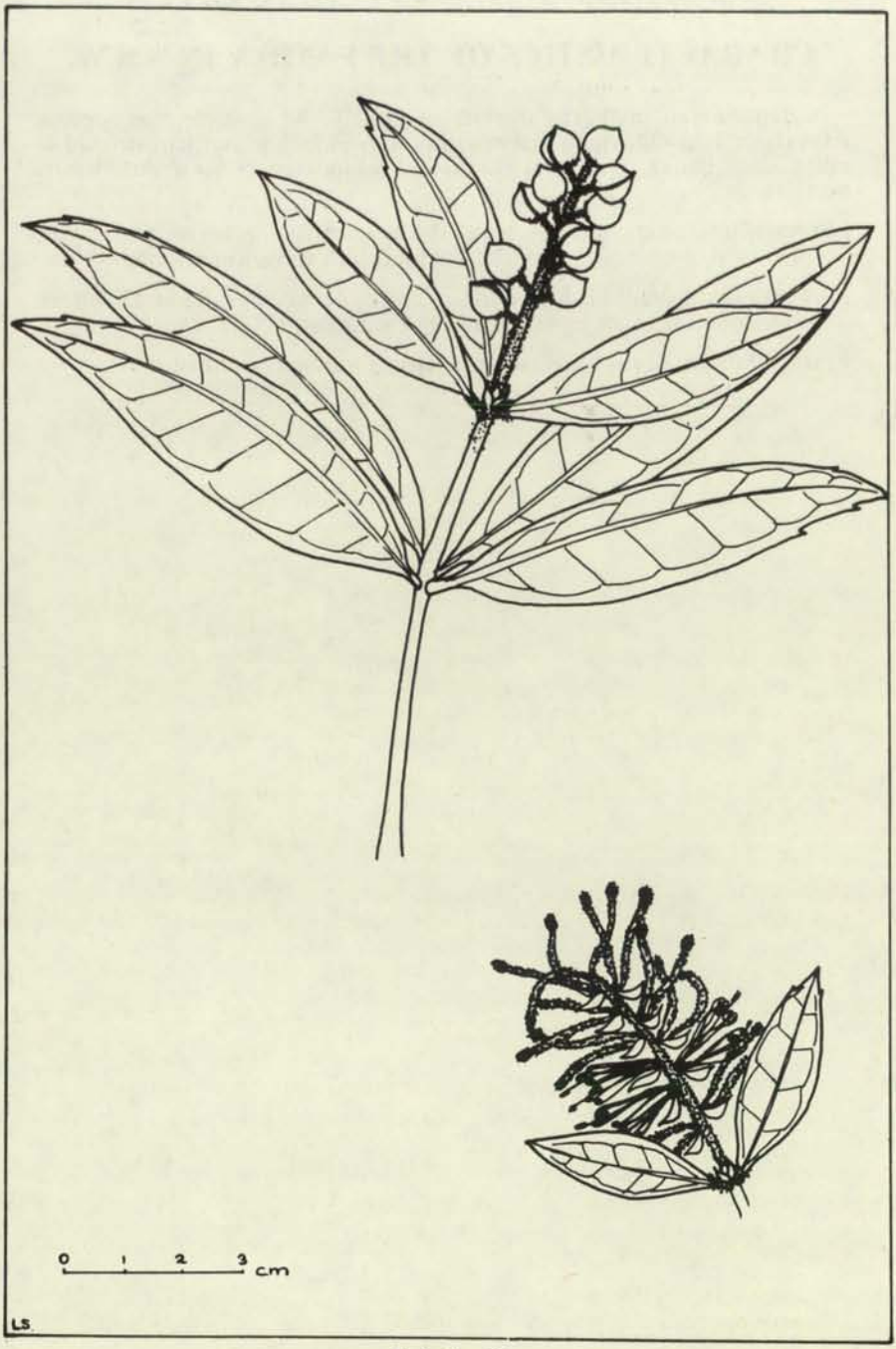

Plate No. 13

Triunia youngiana **(C. Moore & F. Muell.) L. Johnson & B. Briggs**

FAMILY SANTALACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

Represented in the rainforests of N.S.W. by a single tree species, *Exocarpos latifolia* which reaches only 8 m in height and is restricted to saline river banks or littoral rainforest behind the dunes from Ballina northwards.

Leaves—Not rudimentary or scale-like as in most species of *Exocarpos*, but oval to oblong, hoary, 2-5 cm long with seven longitudinal veins.

Flowers—Very small in short axillary spikes or racemes. Perianth four to five-lobed with an equal number of stamens.

Fruit—Nutlike, egg-shaped on an enlarged and succulent stalk.

EXOCARPOS LATIFOLIA R. Br.

Reference—Prodr. 356, 1810.

Derivation—Exocarpos from Greek "exo" outside and "carpos" fruit because the hard fruit is seated on a fleshy stalk and appears as a seed outside the fleshy fruit; latifolia from Latin "latus" broad and "folia" a leaf referring to the broad leaves.

Common Name—Broad-leaved Cherry, Dusky Cherry, Scrub Cherry.

Standard Trade Name—Broad-leaved Cherry.
A small tree growing to a height of 8 m and a diameter of 15 cm.

Trunk—Cylindrical.

Outer Bark—*Dark greyish-brown, very scaly*; the scales small and somewhat soft. *Underbark blackish-brown* with fawn vertical streaks. Surface of live bark pale pinkish-brown.

Inner Bark—Blaze on a tree 13 cm diameter *pale pink* towards the outer margin gradually changing *to yellow* about half way and extending to the inner margin. The severed ends of thin light coloured fibres in the bark impart a dotted appearance to the surface. No rapid change in colour. A faint distinctive taste and smell. 5 mm thick.

Branchlets—Green for some distance back from the ends usually with a *minute pubescense towards the ends* including the young shoots.

Leaves—Alternate, simple, entire, broadly ovate to oval oblong, 2-5 cm long, *rounded* or obtusely pointed *at the tip*, abruptly tapering into the petiole at the base. *Dark green and fluted on the surface*, somewhat shiny above and dull beneath. Leaf stalks about 3-20 mm long, often hairy on young branches.

Venation—Commonly *seven veins* diverge *from the base* and extend along the leaf towards the tip, equally conspicuous on both surfaces. Net veins sometimes visible.

Flowers—Greenish-yellow, solitary, or several in a short slender raceme about 12 mm long in the upper axils. 1-2 mm diameter. Perianth four to five-lobed with an equal number of stamens. Flowering period January to August.

Fruit—*Drupe, dull red, egg-shaped*, about 5 mm long, *seated on a thick fleshy top-shaped, orange-green stalk* about 12 mm long. Fruit ripe November.

Habitat—Littoral or riverine rainforest close to the sea.

Distribution—Common from the Richmond River N.S.W. to the Gulf of Carpentaria, Queensland. Recorded in N.S.W. from Ballina, Byron Bay, Brunswick Heads N.R., Cudgen Lake, Tweed Heads.

Timber and Uses—Dark in colour, very hard, coarse and close-grained and slightly fragrant. Suitable for small turnery, cabinet work and fancy work.

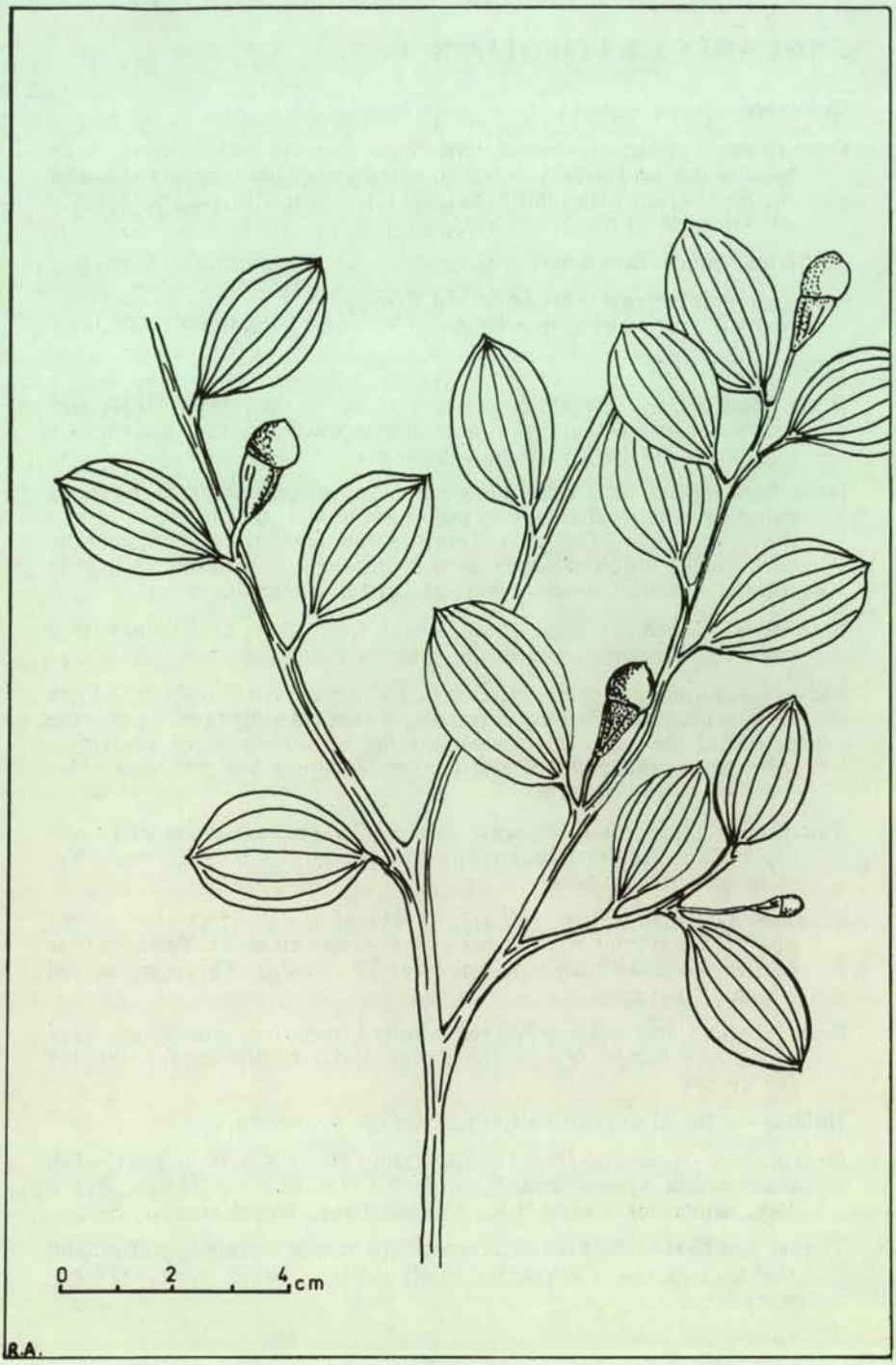

Plate No. 14

Exocarpos latifolia **R. Br.**

FAMILY NYCTAGINACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

One rainforest tree species only in N.S.W., namely *Pisonia umbellifera*. A small tree in littoral rainforest on offshore islands, behind coastal sand dunes and on headlands and cliffs from the Illawarra to North Queensland.

Leaves—Simple, entire, alternate or in groups of two to five, large, 10-20 cm long, oval, soft and glossy, drying black and papery and thus resembling tobacco leaf.

Flowers—Pale green, tubular, 6 mm long, with four or five perianth lobes. The upper part of the tube withers and is shed, but the lower part remains enclosing the fruit.

Fruit—A nut, enclosed in the persistent base of the perianth to form an anthocarp which is a five-ribbed narrow cylinder tapering to a neck, 4 cm long and covered by a sticky exudate.

PISONIA UMBELLIFERA (Forst. et f.) Seem.

Synonym—*Heimerliodendron brunonianum* (Endl) Skottsb., *Pisonia brunoniana* Endl.

Reference—Blumea 12, 2, 275, 1964.

Derivation—Pisonia after the botanist Piso who is alleged to have presented the work of Marcgraf as his own. The original species was of sinister appearance with thorns; umbellifera from Latin "umbella" an umbrella and "fer" carrying, referring to the flowers in umbels.

Common Name—Bird Lime Tree.

Standard Trade Name—None.
A small tree in New South Wales up to 6 m tall and 25 cm diameter; but what appears to be a larger and different form in tropical Queensland attains a height of about 18 m and a stem diameter of 75 cm. The *crown* is a *distinctive light green* colour.

Trunk—Cylindrical, not buttressed or fluted. Often branching close to the ground.

Outer Bark—Greyish-brown, smooth to faintly wrinkled with transverse raised lines of lenticels and slightly ridged vertically. Underbark chocolate-brown. Outer surface of live bark green.

Inner Bark—Blaze on a tree 25 cm diameter *almost white* which may *change to a dirty brownish colour* after five minutes exposure. The freshly cut bark has a salty potato-like taste and smell. About 6 mm thick.

Branchlets—Thick, grey or greyish brown, often wrinkled, green towards the ends. Leaf scars indistinct.

Leaves—Alternate or *often in groups of two to five*, simple, entire, ovate or elliptic, 10-20 cm long, or up to 55 cm on young growth. Bluntly pointed, rounded or emarginate at the tip, *soft, green and glossy on both surfaces*, dark green above, paler beneath. *Leaf stalks* 2-8 cm long, *purple-red* and smooth.

Venation—Midrib and lateral veins distinct. Net veins not numerous but usually visible on the upper surface, more distinct on the underside.

Flowers—Pale green, without petals in small terminal leafless panicles; perianth funnel-shaped about 6 mm long when expanded. Flowering period September to January.

Fruit—Nut, *green with brown ribs, narrow cylindrical with four to five angles*, up to 4 cm long and 3-5 mm diameter, generally *exuding a dark sticky gum* which entangles the feet and feathers of birds, hence the name Bird Lime Tree. Fruit ripe February to May.

Habitat—Littoral rainforest.

Distribution—From Illawarra N.S.W. to the Mulgrave River, North Queensland. Recorded in N.S.W. from Jervis Bay, Minnamurra Falls, Kiama, Austinmer, Clifton, Nelsons Bay, Cabbage Tree Island, Mungo Brush, Forster and Ballina.

Timber and Uses—Wood pale, soft and light in weight and of no particular use.

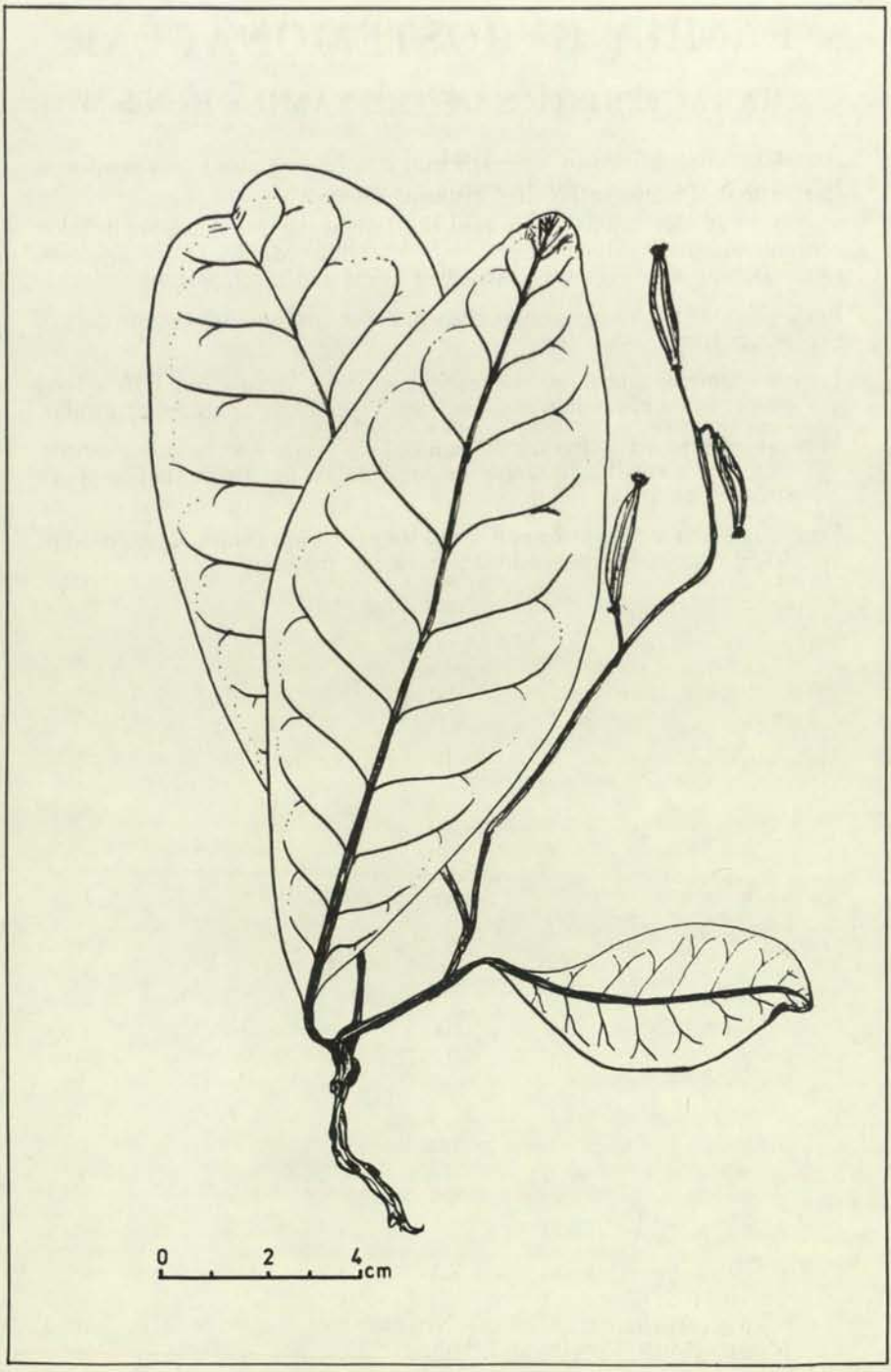

Plate No. 15

Pisonia umbellifera **(Forst. & f.) Seem.**

FAMILY GYROSTEMONACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

A family confined to Australia and represented by a single rainforest tree in N.S.W., viz. *Codonocarpus attenuatus.*

A small tree found in dry rainforest or in the dry sclerophyll forest ecotone on steep inland slopes from the Blue Mountains to Gympie, Queensland. Often colonises disturbed or cleared rainforest.

Bark—Smooth, creamy-grey on the smaller stems but corky at the base of larger trees.

Leaves—Simple, alternate, entire, yellow-green, drawn out into a long point. Branches pendulous and thus resembling a willow or poplar.

Flowers—Unisexual, the sepals reduced to teeth and without petals. Female flowers borne singly on long stalks, but the male flowers in spikes with a ring of stamens.

Fruit—Bell-shaped, light brown, 2 cm long on a long stalk. Composed of 40-50 winglike carpels which separate at maturity.

CODONOCARPUS ATTENUATUS (Hook.) H. Walt.

Synonym—*Codonocarpus australis* A. Cunn.

Reference—Engler, Pflanzenreich, Phytol. 78, 1909.

Derivation—Codonocarpus from Greek "codon" a bell and "carpos" fruit, referring to the bell-shaped fruit; attenuatus from Latin "attenuatus" thinned, in relation to the tapering leaf tips.

Common Name—Bellfruit Tree, Native Poplar, Bellbush.

Standard Trade Name—Bellfruit Tree.
A small tree sometimes attaining a height of 12 m. The bright green crown is pyramidal or cone shaped. Young trees are generally more bushy and ornamental than older specimens which are often sparsely foliaged. *Leaves and branches pendulous like a willow.*

Trunk—Cylindrical and not buttressed.

Outer Bark—Grey-fawn, *smooth and shiny above* but *developing vertical corky fissures at the base.* Underbark creamy-fawn. Outer surface of live bark bright green.

Inner Bark—Blaze on a tree 15 cm diameter *straw coloured.* No change in colour, bitter to taste with a slight smell. 10 mm thick of which 3 mm is of dead bark.

Branchlets—Slender, smooth, round.

Leaves—Alternate, simple, entire, lance shaped, 5-8 cm long, *tapering into a long attenuated point* and narrowed gradually into the stalk. *Bright or yellow-green* on both surfaces, smooth with a glyceride smell. Leaf stalks 10-15 mm long.

Venation—Midrib visible and lateral veins indistinct on both surfaces. Net veins not visible.

Flowers—Yellow-green, solitary on stalks 2-3 cm long, in the leaf axils, without petals, the numerous anthers forming a ring around the flat disc, 4-5 mm diameter. Flowering period January and February.

Fruit—Consisting of *40 to 50 thin wing-like carpels* on a stalk 2-5 cm long, light brown, *bell shaped, about 2 cm long*, separating from each other when ripe and easily dispersed by the wind. Seed light brown, flattened, round, about 2 mm diameter, enclosed at the base of the double wing. Fruit ripe August to December.

Habitat—Elevated dry situations in open forest country or dry rainforest. Common on steep basalt hillsides particularly after clearing and burning.

Distribution—From the Blue Mountains New South Wales to Gympie, Queensland. Recorded in N.S.W. from Mt. Wareng, West Maitland, Dungog, Gloucester, Bulga, Ellenborough Falls, Yarras, Kiwarrak S.F., Comboyne, Willi Willi Creek, Bellingen, Dorrigo National Park, Urunga, Mt. Coramba, Woolgoolga, Hortons Creek, Buccurumbi Range, Unumgar S.F., Beaury Creek, Acacia Creek and Tweed River.

Timber and Uses—Wood white, soft, not durable and of no particular use.

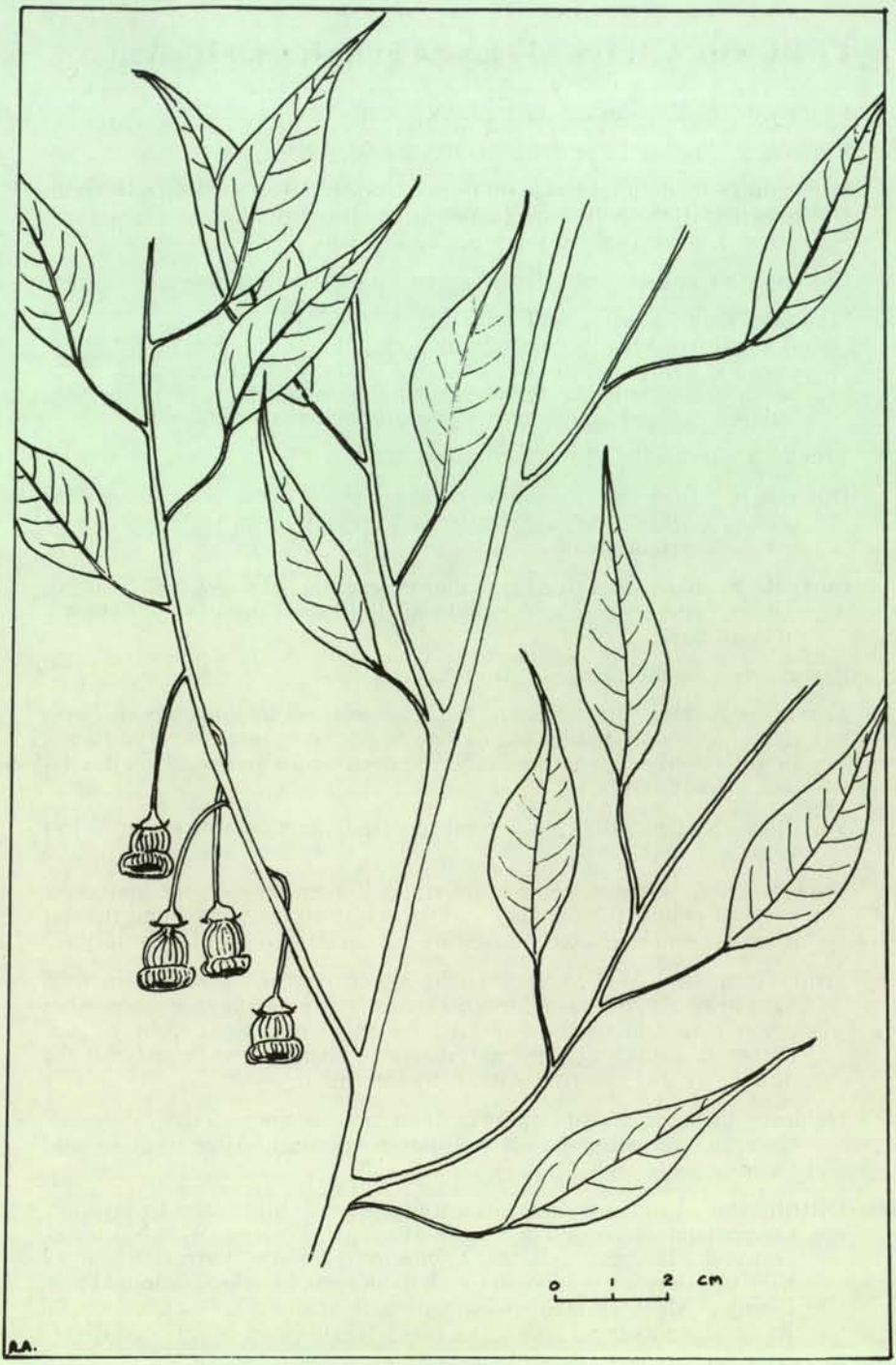

Plate No. 16

Codonocarpus attenuatus **(Hook) H. Walt.**

FAMILY ANNONACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

A large family of tropical rainforest trees in Africa and Asia; but with only two tree species in N.S.W., viz:—

Fissistigma stenopetala, a small tree or shrub.

Polyalthia nitidissima, a tree up to 18 m tall.

A third species occurs in N.S.W., namely *Rauwenhoffia leichhardtii*, which although sometimes a weak straggly shrub is usually a climber.

Bark—Outer bark dark grey to black, smooth (*Fissistigma*) or with loose flakes and fissures (*Polyalthia*). Underbark dark brown. Blaze cream with a darker network in *Fissistigma* or with alternate broad brown and white vertical stripes in *Polyalthia*.

Branchlets—Grey and pimply due to the raised round lenticels. In *Fissistigma* they are zig-zag.

Leaves—Alternate, simple, not toothed, broad lanceolate, elliptic or egg-shaped, 5-13 cm long with a blunt point. Thin and somewhat dull in *Fissistigma* but thick and shiny in *Polyalthia*.

Flowers—Usually fragrant, solitary, often on the leafless branches in *Fissistigma*. Sepals three, small. Petals six, large, 10 mm long smooth in *Polyalthia* and 20-25 mm long hairy in *Fissistigma*. Carpels numerous and free as also in family Monimiaceae.

Fruit—Berry, dark brown and sparsely hairy (*Fissistigma*) or glossy black (*Polyalthia*), consisting of several stalked carpels in *Fissistigma* or more numerous and radiating in *Polyalthia*. Carpels single-seeded and round in *Polyalthia*; but often three-seeded in *Fissistigma* and cylindrical.

Habitat—Littoral rainforest (*Polyalthia*) or lowland subtropical rainforest (*Fissistigma*).

Distribution—Originally from the Clarence River northwards into Queensland. *Polyalthia* is now rare in N.S.W. due to widespread clearing of its hind-dune habitat; but *Fissistigma* is still common in the Richmond and Tweed valleys.

FISSISTIGMA STENOPETALA (F. Muell.) R. E. Fries

Synonym—*Ancana stenopetala* F. Muell.; *Unona ancana* F. Muell.

Reference—R. E. Fries in Ark. Bot. 2nd Ser. 3:37 (1955).

Derivation—Fissistigma from Latin "fissi" split and "stigma" a stigma referring to the separate stigmas on each carpel in the flower; stenopetala from Greek "stenos" narrow and "petalon" a petal relating to the long narrow petals.

Common Name—None.

Standard Trade Name—None.

A small tree or tall shrub up to 5 m tall and a diameter of 4 cm. Usually of a sparse rigid habit with a dull dark green crown.

Trunk—Not buttressed or fluted. Often with several stems arising from a single root stock.

Outer Bark—*Black*, smooth with cream transversely elongated lenticels and raised transverse rings. Underbark dark brown. Outer surface of live bark orange-brown.

Inner Bark—On a tree 4 cm diameter, cream with a darker network. No change in colour on exposure. No taste or smell. 2 mm thick.

Branchlets—*Slender, zig-zag*, grey with paler raised round lenticels, hairy on the young shoots. *Flowers and fruits commonly on the leafless branches.*

Leaves—Alternate, simple, not toothed, broad lanceolate to ovate, 7-13 cm long, gradually tapering to a blunt point at the tip but rapidly tapering at the base. *Thin* in texture, somewhat dull on both sides, expanding leaves hairy otherwise smooth. Dark green on both sides. Very small numerous oil dots visible only with a lens. Leaf stalk short, 2-3 mm long, thick, black, wrinkled with occasional hairs.

Venation—Midrib, lateral and net veins equally visible and raised on both sides. Lateral veins numerous, straight at 60° to the midrib.

Flowers—*Greenish-brown, fragrant, single* in the axils of the fallen leaves on thick hairy stalks 2-3 mm long. Sepals three, small, triangular, 3 mm long. *Petals six, 20-25 mm long*, narrow pointed, covered *with creamy-brown felt.* Stamens numerous, short. Carpels several, rusty hairy. Flowering period November-April.

Fruit—*Berry*, dark brown, sparsely hairy when mature, with one to three seeds. *Round with a small point* at the tip if one-seeded, *or cylindrical with a slight constriction* towards the tip, 10-25 mm long. Fruit ripe August-November.

Habitat—A common understorey species in lowland subtropical rainforest.

Distribution—From Clarence River N.S.W. to southern Queensland. Recorded in N.S.W. from Whian Whian S.F., Wilson Park Lismore, Davis Scrub, Broken Head N.R., Hayters Hill, Brunswick Heads N.R., Nullum S.F., Mt. Warning N.P., Limpinwood N.R., Murwillumbah and Stotts Island N.R.

Timber and Uses—Too small to be used.

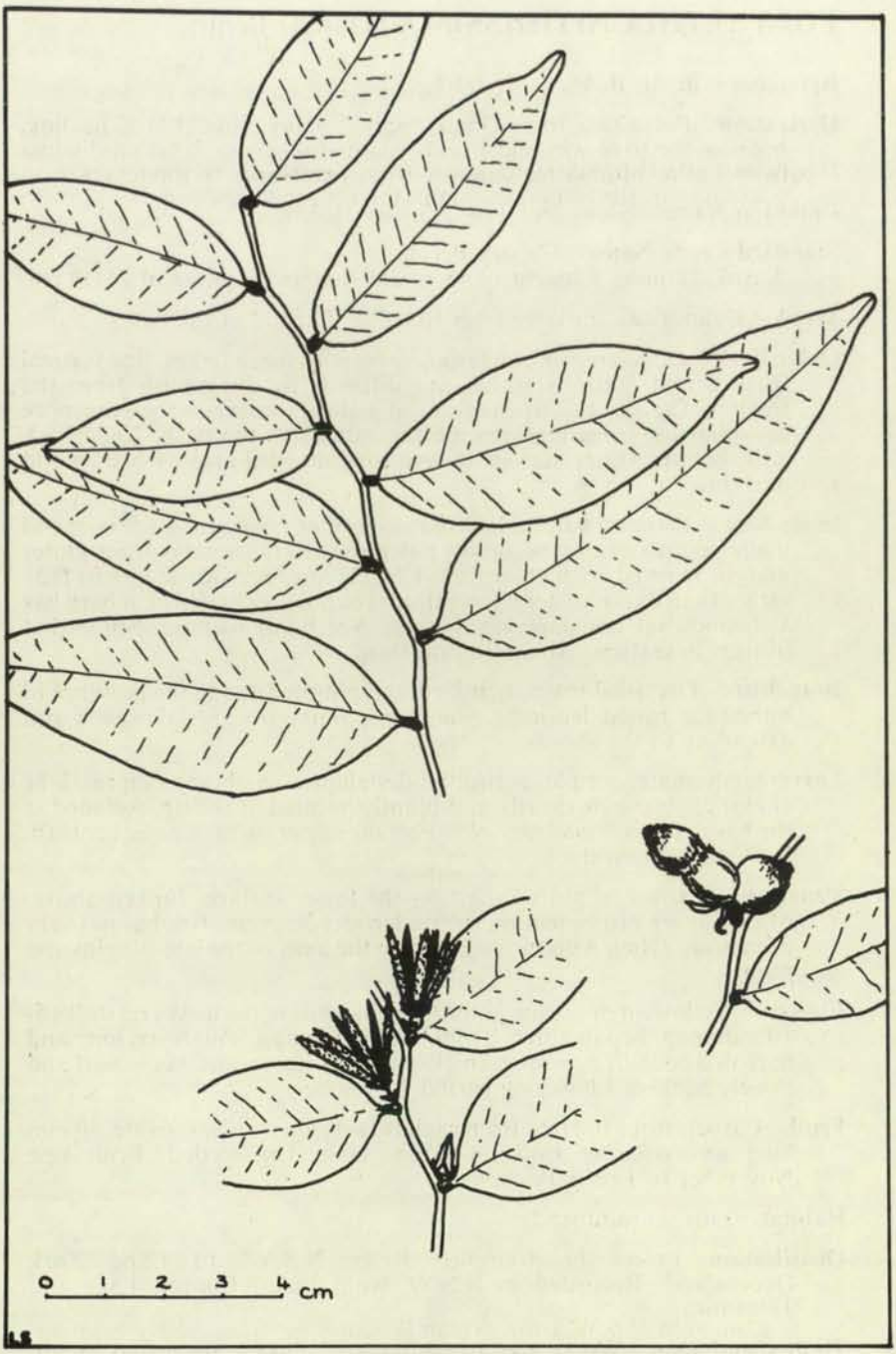

Plate No. 17

Fissistigma stenopetala **(F. Muell.) R. E. Fries**

POLYALTHIA NITIDISSIMA (Dunal) Benth.

Reference—Benth B. Fl. i, 51, 1863.

Derivation—Polyalthia from Greek "polys" many and "althos" healing, because the bark was said to cure many diseases in Java; nitidissima from Latin "nitidissima" most shiny, in reference to the leaves.

Common Name—Shiny-leaf Tree, Canary Beech.

Standard Trade Name—Canary Beech.
A tree attaining a height of 18 m and a stem diameter of 25-30 cm.

Trunk—Cylindrical, on large trees fluted or flanged at the base.

Outer Bark—*Dark grey or blackish-brown*, with loose flakes, fine vertical fissures and lenticels which are difficult to distinguish from the fissures. The lenticels when arranged in short transverse rows are more conspicuous, sometimes resembling stitches in the bark. Underbark dark brown. Outer surface of live bark mottled creamy-brown and dark brown.

Inner Bark—Blaze on a tree 22 cm diameter of *alternate broad brown and white vertical stripes*, becoming paler towards the inner margin. Outer margin marked by a thin almost black line. Surface seems to fade rather than darken after a few minutes exposure. Freshly cut bark has a distinct but not unpleasant smell. Not bitter to taste. Somewhat fibrous in texture. About 10 mm thick.

Branchlets—Greyish-brown, wrinkled and pimpled due to the presence of numerous raised lenticels. Sometimes hairy towards the ends and extending to the shoots.

Leaves—Alternate, simple, entire, blades elliptic or oblong-elliptic, 5-11 cm long, obtuse or shortly and bluntly pointed at the tip, rounded at the base. *Smooth and very glossy on the upper surface*, paler beneath. Leaf stalk 3 mm thick.

Venation—Distinct, slightly raised on the lower surface, sunken above. Midrib more prominent on the underside. Net veins fine but not very numerous. Often with tufts of hairs in the axils of the lateral veins and midrib.

Flowers—Yellowish or cream, solitary in the axils of the leaves on stalks 5-10 mm long. Sepals three, 2 mm long, triangular. *Petals six*, long and narrow about *10 mm long*, thick. Stamens numerous, very short and closely packed. Flowering period November.

Fruit—Carpels three to eight from each flower, *glossy black*, ovate, 10 mm long *on radiating stalks* 4-6 mm long. One-seeded. Fruit ripe November to February.

Habitat—Littoral rainforest.

Distribution—From the Clarence River N.S.W. to Cape York Queensland. Recorded in N.S.W. from Iluka, Cudgen Lake and Terranora.

Timber and Uses—Wood grey to white, soft, close grained and tough, fragrant. A rare tree in N.S.W. and little seems to be known about its timber and uses.

Plate No. 18

Polyalthia nitidissima **(Dunal) Benth.**

FAMILY EUPOMATIACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

Previously included in the family *Annonaceae* from which it differs in the apparently inferior fused carpels (not superior and free), compound fruit and conical operculum of the flower bud (not separate sepals and petals).

A small family of a single genus containing two species, both in N.S.W. *Eupomatia laurina* is a small tree or shrub; but *E. bennettii* is only a small shrub up to 70 cm tall with a single terminal creamy-yellow flower.

Leaves—Alternate, simple, not toothed, without stipules. Numerous small oil dots.

Flowers—Cream, highly perfumed, single in the leaf axils, bisexual, up to 2.5 cm diameter. The petals and sepals are modified into a cap as in many species of *Eucalyptus*, which is shed as the flower opens. The flower resembles a daisy with the three outer rows of ray-like fertile stamens and numerous inner rows of petaloid infertile stamens. The numerous carpels are joined and set in the broad base or receptacle.

Fruit—An edible berry-like aggregate fruit resembling that of the garden rose and containing numerous one to two-seeded achenes embedded in the fleshy receptacle.

Habitat—Found in all types of rainforest as well as in the wet sclerophyll forest fringe.

Distribution—Gippsland, Victoria to West Irian, New Guinea.

Timber—There are secretory sacs and cells in all the woody parts including the fruit.

EUPOMATIA LAURINA R. Br.

Reference—Flind. Voy. ii, 597, 1814.

Derivation—Eupomatia from Greek "eu" well and "pomation" a small cap in reference to the operculum of the flower; laurina from Latin "laurus" the laurel, because of the resemblance of its leaves to those of a laurel.

Common Name—Bolwarra.

Standard Trade Name—None.

A straggling shrub or small tree with weak branches, sometimes attaining a height of about 15 m and a stem diameter of 30 cm.

Trunk—Crooked. Not buttressed.

Outer Bark—*Brown, somewhat corky and scaly* with fine vertical fissures. Underbark mid-brown. Outer surface of live bark dark brown.

Inner Bark—Blaze on a tree 20 cm diameter, cream with vertical projecting fibres, becoming gradually paler to white at the inner margin. Very soft. The surface darkens to creamy-brown after a few minutes exposure and the inner margin and surface of the sapwood turns brown. No taste but has a faint carrot or cane smell. 6 mm thick.

Branchlets—Green and smooth, the *more slender shoots often turning bluish-black when dried.* Leaf scars visible.

Leaves—Alternate, simple, entire, oblong elliptic, 6-13 cm long, contracted into a short point at the tip and quickly tapering at the base, *glossy* and glabrous on both surfaces, paler on the underside. Petioles about 3 mm long.

Venation—Visible both surfaces but a little more prominent on the underside.

Flowers—*Cream with an overpowering* strong and distinctive *fragrance*, solitary in the axils of the leaves or arising from the scars of fallen leaves on stalks 7 mm long. The *petals and sepals are modified into a cap* which is shed as the flower opens. The numerous petal-like stamens give the flowers a *daisy-like appearance* and when expanding may attain 2.5 cm diameter. Flowering period November to February.

Fruit—Achenes, one or two seeded, numerous, in an enlarged *succulent*, edible *urn-shaped green perianth tube about 2 cm diameter and resembling the fruit of the garden rose.* Fruit ripe April to June.

Habitat—Rainforest of all types and also in adjoining wet sclerophyll forest.

Distribution—Fairly common throughout the whole Coastal division from Gippsland Victoria to North Queensland. Found in most State Forests in N.S.W. which contain rainforest.

Timber and Uses—Wood yellow, medium hard, close grained and prettily marked. Seldom if ever used because of its small size.

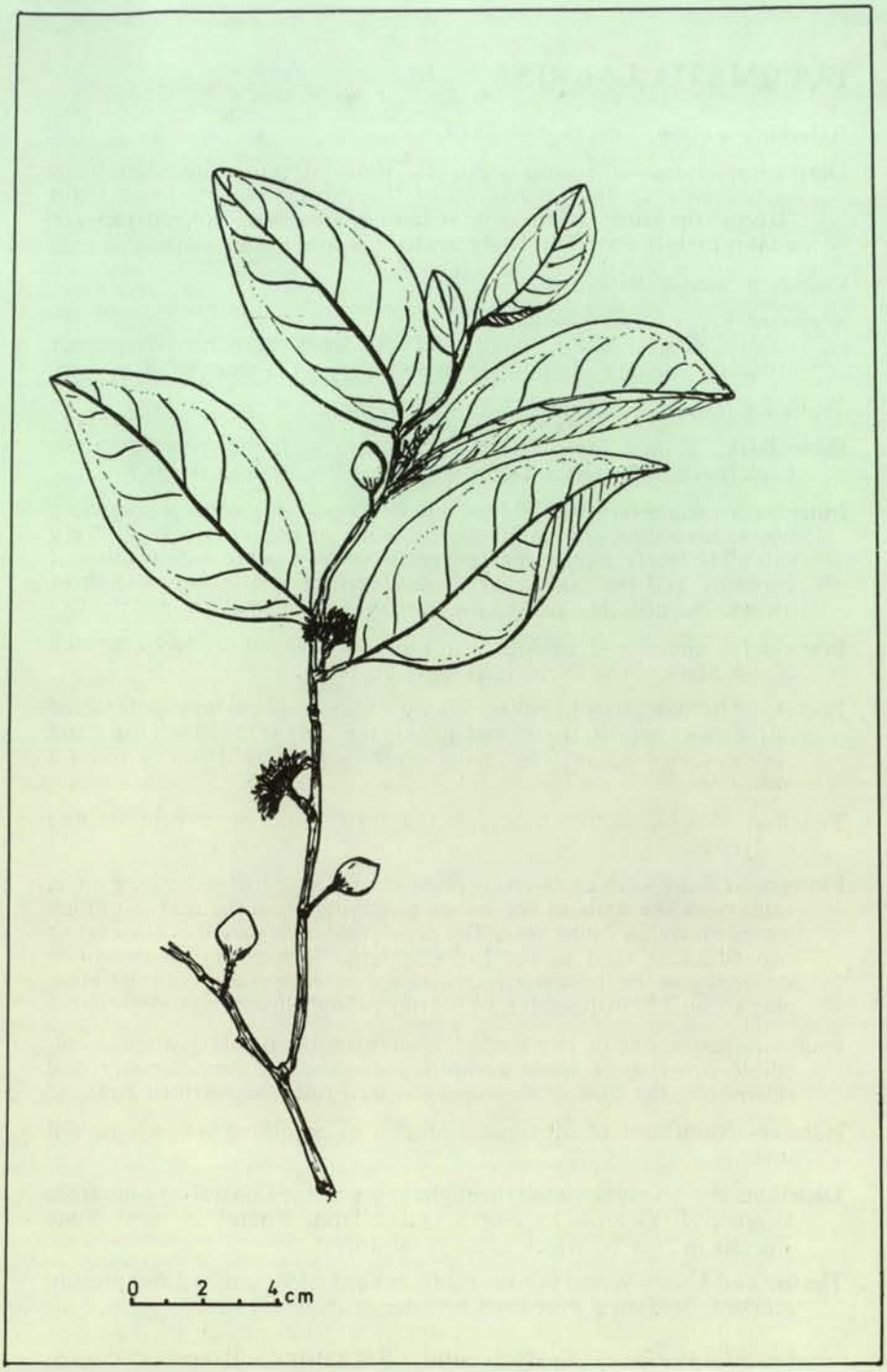

Plate No. 19

Eupomatia laurina **R. Br.**

FAMILY MONIMIACEAE

CHARACTERISTICS OF THE FAMILY IN N.S.W.

Occurs on nearly all the land masses of the southern hemisphere, to which it is mainly confined. In Australia it is found only on the east coast from Tasmania to Atherton Tableland, North Queensland. Five of the ten genera in Australia are endemic, three of which occur in N.S.W., namely:—*Atherosperma, Doryphora* and *Wilkiea*. The remaining two genera of trees in N.S.W. extend to New Guinea (*Daphnandra*) and the Solomon and Fiji Islands (*Hedycarya*). Hence the genera in N.S.W. appear to have an Australian or southern origin.

Two species may exceed 20 m in height (*Daphnandra micrantha* and *Doryphora*), the remainder being medium to small trees only.

Bark—Outer bark grey, corky-scaly except in *Atherosperma* (brown, smooth), *Wilkiea austroqueenslandica* (brown, wrinkled) and *Hedycarya* (grey, smooth). Blaze may be yellow (*Daphnandra* spp.), speckled brown (*Atherosperma* and *Dorphora*), yellow-brown (*Wilkiea macrophylla*), light brown with darker lines (*W. huegeliana*) or pink (*W. austroqueenslandica* and *Hedycarya*). It is strongly aromatic in *Atherosperma* and *Doryphora*, but weak in *Daphnandra* spp. and *Wilkiea macrophylla*.

Leaves—Opposite, simple, toothed, without stipules (hence distinguished from the family Cunoniaceae). Often with small aromatic translucent oil glands. White underneath in *Atherosperma*.

Flowers—Unisexual (*Atherosperma, Hedycarya* and *Wilkiea*) or bisexual (*Daphnandra* and *Doryphora*). Sepals and petals often globular of four or more segments. Carpels several to many, free and distinct, superior to the sepals and petals.

Fruit—Several one-seeded carpels or drupes seated on the broad flat perianth tube (*Hedycarya, Wilkiea* spp.) or as hairy achenes included in the enlarged tube to form an aggregate fruit (*Atherosperma, Daphnandra, Doryphora*).

Habitat—*Daphnandra* and *Wilkiea* spp. are typically found in subtropical rainforest, although *Wilkiea huegeliana* is also common in warm temperate rainforest. *Atherosperma* inhabits cool temperate rainforest, whereas *Doryphora* and *Hedycarya* are in both cool and warm temperate rainforest. Hence the latter three genera are often associates of *Nothofagus*.

Distribution—Three species (*Daphnandra micrantha, Wilkiea huegeliana* and *W. macrophylla*) extend north into central coastal Queensland, whilst *Atherosperma* reaches its northern limit 50 km north of Barrington Tops. The remaining four species are not found north of the McPherson Range. Their southern limits are Tasmania (*Atherosperma*), Cape Otway Southern Victoria (*Hedycarya*), N.S.W.-Victorian border (*Doryphora*), Mt. Dromedary (*Wilkiea* huegeliana), Illawarra (*Daphnandra micrantha*). Comboyne (*Daphnandra tenuipes*) and Richmond River (*Wilkiea austroqueenslandica* and *W. macrophylla*).

KEY TO THE RAINFOREST TREE SPECIES OF THE MONIMIACEAE IN N.S.W.

A. USING LEAVES AND BRANCHLETS ONLY

1. Leaf margins not toothed .....

  2. Lateral veins at less than 45° to the midrib, leaves usually white beneath ..... *Atherosperma moschatum* Labill.

  2. Lateral veins at more than 60° to the midrib, leaves never white beneath ..... *Wilkiea huegeliana* (Tul.) A.DC.

1. Leaf margins mostly toothed .....

  3. Leaves white beneath ..... *Atherosperma moschatum* Labill.

  3. Leaves not white beneath .....

    4. Lateral veins at 25°-35° to the midrib, not looping at the ends to form an intramarginal vein .....

      5. Midrib raised midway along the upper surface — use finger nail . *Daphnandra micrantha* (Tul.) Benth.

      5. Midrib grooved midway along the upper surface .... *Daphnandra tenuipes* Perk. and some forms of *D. micrantha* (Tul.) Benth.

    4. Lateral veins over 40° to the midrib, looping to form an intramarginal vein .....

      6. Leaves very glossy above, leaf buds smooth ..... *Wilkiea macrophylla* A.DC.

      6. Leaves scarcely glossy, leaf buds furry under a lens ..

        7. Main lateral veins over 15 ..... *Wilkiea austroqueenslandica* Domin.

        7. Main lateral veins 6-12 .....

          8. Net veins prominent on the upper surface .....

            9. Leaf stalk mostly under 1 cm long ..... *Wilkiea huegeliana* (Tul.) A.DC.

            9. Leaf stalk over 1 cm long ..... *Hedycarya angustifolia* A. Cunn.

          8. Net veins not prominent on the upper surface .. *Doryphora sassafras* Endl.

B. USING BARK ONLY

1. Blaze pink .....

  2. Blaze fading on exposure ... *Hedycarya angustifolia* A. Cunn.

  2. Blaze darkening on exposure .. *Wilkiea austroqueenslandica* Domin.

1. Blaze yellow to brown .....

3. Blaze yellow to yellow-brown .....

4. Dead bark yellow-brown, blaze turning dirty brown ... *Daphnandra micrantha* (Tul.) Benth.

4. Dead bark fawn, blaze unchanged or turning yellow-brown

5. Blaze bright yellow ..... *Daphnandra tenuipes* Perk.

5. Blaze yellow-brown ..... *Wilkiea macrophylla* A.DC.

3. Blaze brown .....

6. Dead bark creamy-orange, blaze not speckled ..... *Wilkiea huegeliana* (Tul.) A.DC.

6. Dead bark brown, blaze speckled .....

7. Blaze turning orange-yellow .. *Atherosperma moschatum* Labill.

7. Blaze turning dark brown ..... *Doryphora sassafras* Endl.

ATHEROSPERMA MOSCHATUM Labill.

Reference—Nov. Holl. Pl. ii, 224, 1806.

Derivation—Atherosperma from Greek "athere" goats and "sperma" seed, referring to the bearded carpels; moschatum from Latin "moschatus" musk-scented, referring to the odour of the bark and branchlets.

Common Name—Southern Sassafras, Black Sassafras.

Standard Trade Name—Southern Sassafras.
A small to medium-sized tree seldom reaching 30 m in height.

Trunk—Fairly cylindrical, not buttressed at the base.

Outer Bark—*Brown, smooth*, often spotted with areas of greyish-white lichens. Underbark brown. Outer surface of live bark pale green.

Inner Bark—Blaze on a tree 30 cm diameter *speckled light brown* but darker towards the paler inner margin. *Turns orange yellow* after a few minutes exposure. Freshly cut bark has a *strong* aromatic or *sassafras-like odour*. About 5 mm thick.

Branchlets—Brown, often green, smooth, then *densely woolly-hairy towards the ends*. Young shoots densely silvery hairy.

Leaves—Opposite, simple, entire or irregularly toothed, elliptic or oblong elliptic, 4-8 cm long tapering to a short sharp point at the tip. Gradually tapering into the leaf stalk at the base. Upper surface often hairy at first but later smooth and glossy. *Underside grey or greyish white and densely woolly*. Leaf stalk 3-8 mm long.

Venation—Midrib and lateral veins raised and distinct on the upper surface. Midrib raised and distinct beneath but the lateral veins visible or indistinct.

Flowers—*Pale mauve towards the tips, streaked with purple at the base* inside and out, flowers solitary in the forks of the leaves, 13-20 mm diameter, perianth segments eight to ten in two rows, 6-10 mm long. Stamens 8-20. Flowering period September to November.

Fruit—*Numerous carpels 10-12 mm long covered with long greyish hairs* enclosed *in a cup-shaped calyx*, 8-10 mm diameter. Fruit ripe January.

Habitat—Along streams and scrubby gullies at fairly high elevations. Commonly associated with *Nothofagus* spp. in cool temperate rainforest.

Distribution—Confined to a few areas in N.S.W. such as the Southern Highlands (Geehi, Mt. Kosciusko, Glenbog S.F., Brown Mtn.,) Blue Mountains, (Wentworth Falls, Blackheath, Mt. Wilson) and Northern Tablelands (Barrington Tops N.P. and head of Tia River). Also in Victoria and Tasmania. The form at Barrington Tops has entire leaf margins.

Timber and Uses—Wood pale, close-grained and fairly strong. Suitable for cabinet work, sashes and doors, clothes pegs, turnery, bobbins, shoemakers lasts, sounding boards for musical instruments, cotton reels and carpenters bench screws. Weight approximately 700 kg. per cubic metre.

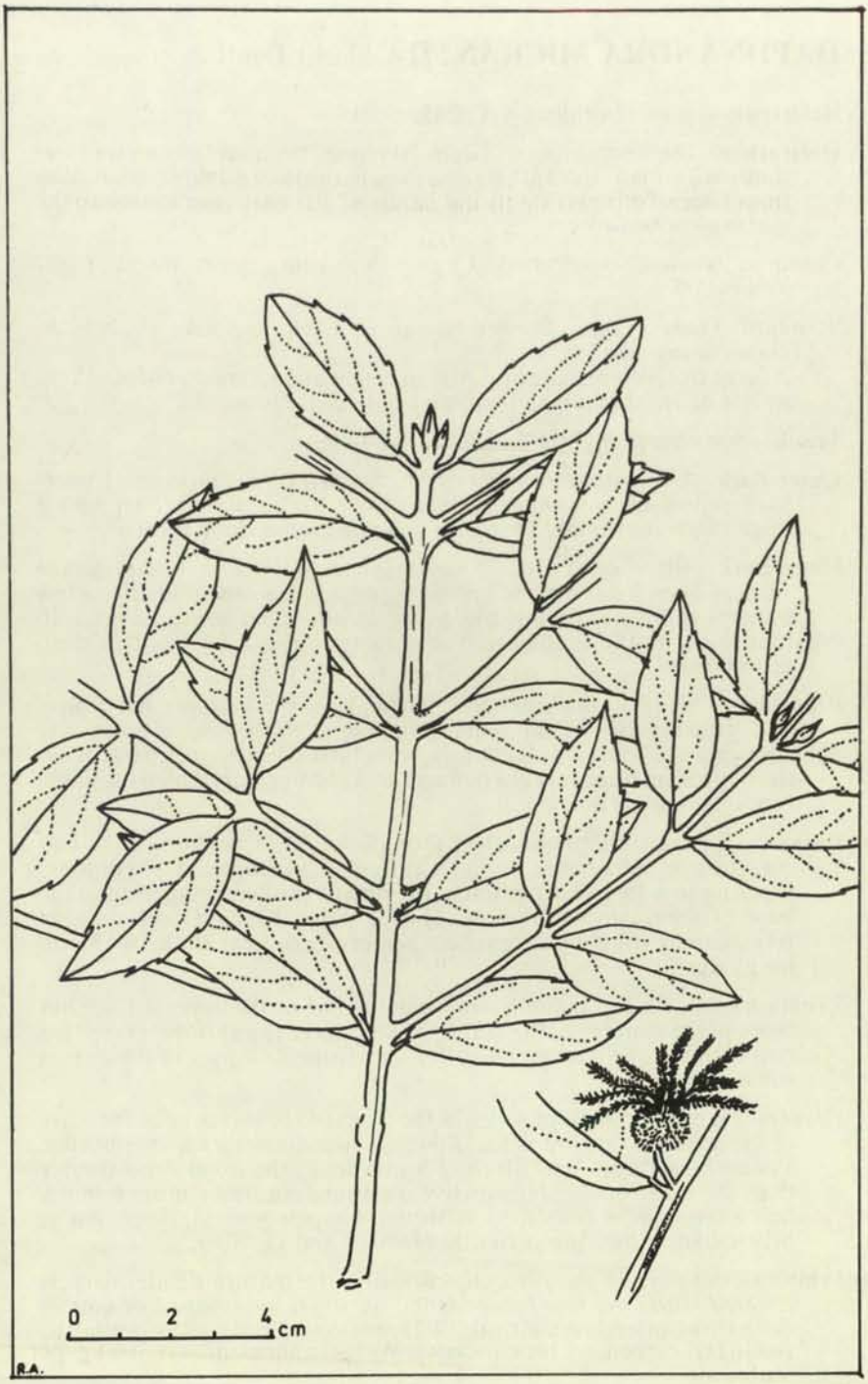

Plate No. 20

Atherosperma moschatum **Labill.**

DAPHNANDRA MICRANTHA (Tul.) Benth.

Reference—Flora australiensis V, 285, 1870.

Derivation—Daphnandra from Greek "daphne" the laurel or bay tree and "andros" a man, the anthers resembling those of a laurel; micrantha from Greek "mikros" small and "anthos" a flower in reference to the inconspicuous flowers.

Common Name—Socketwood, Canary Sassafras, Satin Wood, Light Yellowood.

Standard Trade Name—Socket Sassafras. (Also includes all N.S.W. *Daphnandra spp.*)
A large tree, often exceeding 30 m in height and a diameter of 60-75 cm with a dense spreading crown and horizontal branches.

Trunk—Sometimes slightly flanged at the base.

Outer Bark—*Grey, often roughened by crowded corky, pustules.* Underbark yellow-brown. Outer surface of live bark yellow-brown with a tinge of green, rapidly changing on exposure to dirty brown.

Inner Bark—Blaze on a tree 75 cm diameter *pale yellow with darker vertical lines*, a darker line appearing next to the sapwood after a few minutes exposure. Bark *granular brittle, bitter and faintly scented.* 16 mm thick. In the Richmond valley there is also a form with a deep yellow blaze.

Branchlets—Slender, finely woolly, particularly the younger branchlets and growing tips. Leaf scars prominent. *Branchlets prominently flattened at the nodes.* The larger branchlets when broken away from the main stem often reveal a *ball and socket-joint* from which the name "socketwood" is derived.

Leaves—Opposite, simple, toothed though the basal portion of the leaf margin is usually entire, broadly lanceolate to elliptic, 8-10 cm long, tapering to a long sharp point at the tip and gradually tapering to the base. Green, smooth, shiny above, paler beneath, oil dots in reticulations. Slightly aromatic when crushed. Leaf stalk 10-13 mm long, green.

Venation—Midrib and major lateral veins distinct on the upper surface but more prominent beneath. Midrib raised on the top surface, except for two forms in the Richmond valley and Taree-Kempsey in which it is sunken.

Flowers—White, in small panicles in the forks of the leaves or at the scars of the fallen leaves. Individual flowers 8 mm diameter on short stalks. Perianth segments ten-fifteen, 2-3 mm long, the outer ones shorter than the inner ones. Stamens five, surrounding six or more minute, hairy staminodia (modified stamens). Carpels several, finely hairy, bristle-like. Flowering period September and October.

Fruit—*Lower part of the perianth* enclosing the mature slender carpels *covered with long fine brown hairs, narrowly egg-shaped or almost cylindrical*, often assymetrical, 12-25 mm long. Fruit ripe December to February.

Habitat—Common in subtropical rainforest on basalt or the more fertile sedimentary soils.

Distribution—Common from the Illawarra district northwards to Imbil, Queensland. Recorded in N.S.W. from Minnamurra Falls, Albion Park, Spring Creek, Kiama, Murrurundi, Allyn River, Coneac, Bulahdelah, Wingham, Black Creek F.R., Doyles River S.F., Bellangry S.F., Mt. Boss S.F., Carrai S.F., Styx River S.F., Bellingen, Urunga, Bundagen, Tuckers Knob, Coramba, Woolgoolga, Madmans Creek F.R., Waihou F.R., Kangaroo River S.F., Wild Cattle Creek S.F., Clouds Creek S.F., Hortons Creek, Boundary Creek S.F., Hyland S.F., Glenugie F.R., Cangai S.F., Gibraltar Range N.P., Forestland S.F., Mt. Pikapene S.F., Mt. Belmore S.F., Toonumbar S.F., Unumgar S.F., Beaury S.F., Toolom, Acacia Plateau, Donaldson S.F., Mt. Lindesay, Moore Park, Roseberry S.F., Wiangaree S.F., Kyogle, Terania Creek, Whian Whian S.F., Boatharbour, Victoria Park N.R., Rous, Newrybar, Limpinwood N.R. and Murwillumbah. Some botanists consider it should be split into four species:—

Southern—Illawarra only. Mid-yellow blaze and raised midrib above.

Mid-north coast—Taree to Kempsey. Pale yellow blaze and sunken midrib.

Richmond River—Wollongbar to Whian Whian. Deep yellow blaze and sunken midrib.

Queensland—Hunter River, N.S.W. to Imbil, Qld. Pale yellow blaze and raised midrib.

Timber and Uses—Yellow grey or brown, soft and weak, non-durable but resistant to lyctus attack, even in texture, figure not attractive due to dirty appearance with age. Uses for cabinet work, joinery, tool handles, turnery, veneer and cases. 700 kg. per cubic metre. The bark contains alkaloids which have a physiological action resembling but much milder than that of strychnine.

Plate No. 21

Daphnandra micrantha **(Tul.) Benth.**

DAPHNANDRA TENUIPES Perk.

Reference—Englers Pflanzenreich. Monim. 75, 1901.

Derivation—Tenuipes from Latin "tenuis" slender, and "pes" a foot referring to the slender flower stalks.

Common Name—Red Flowered Socketwood.

Standard Trade Name—Socket Sassafras.

Small to medium tree, 20 m tall and 45 cm diameter.

Trunk—Usually straight and cylindrical, sometimes large trees slightly flanged at the base. Commonly with many stems from a root base.

Outer Bark—Cream to grey-brown, fairly smooth but often marked by numerous small horizontally-elongated corky pustules. Underbark pale fawn. Outer surface of live bark yellow-brown.

Inner Bark—Blaze on a tree 25 cm diameter *bright mottled yellow and brown* with a few paler vertical lines; inner margin and surface of sapwood changing to a yellow-brown after a few minutes exposure. Surface of blaze gradually changing to a greenish-yellow. Bitter to taste. Weaker sassafras odour than in *D. micrantha*. 6 mm thick.

Branchlets—Green with scattered hairs towards the ends; much flattened at the nodes as in *D. micrantha*.

Leaves—Opposite, simple, toothed, elliptical, 5-11 cm long, protracted into a long point towards the tip and usually terminating in a short distinct point. Tapering at the base, sometimes abruptly. Scattered hairs along the midrib, lateral and net veins underneath. Upper surface dark green, paler beneath and noticeably shinier. Leaf stalk 3-6 mm long.

Venation—*Midrib* visible and *grooved on the upper surface*, lateral nerves and net veins less clearly visible. Raised and distinct on the underside. Main lateral veins at 25°-30° to the midrib.

Flowers—*Reddish*, few, in short panicles in the forks of the leaves. Individual flowers about 5 mm diameter. *Larger and on longer stalks than D. micrantha*. Flowering period March to June.

Fruit—Fruiting perianth enclosing a number of hairy carpels. Perianth *orange-yellow* when ripe, globular, about 8 mm diameter. *D. micrantha* has smaller fruit. Fruit ripe November to January.

Habitat—Subtropical rainforest on volcanic soil and the more fertile sedimentary soils. Often beside small streams and festooned with mosses.

Distribution—From Comboyne, N.S.W. to Springbrook, S. Queensland. Recorded in N.S.W. from the Comboyne Plateau, Oakes S.F., Bellinger River S.F., Chapmans Plain F.R., Eltham, Mt. Nardi, Whian Whian S.F., Boomerang Falls, Mt. Warning N.P., Limpinwood N.R., Numinbah Creek and Mt. Cougal.

Timber and Uses—Resembles *D. micrantha* in weight and grain but of a much *deeper yellow* and could be used for the same purposes. *D. tenuipes* can be separated from *D. micrantha* by its red flowers; orange-yellow fruits and the intense yellow colour of the bark and wood.

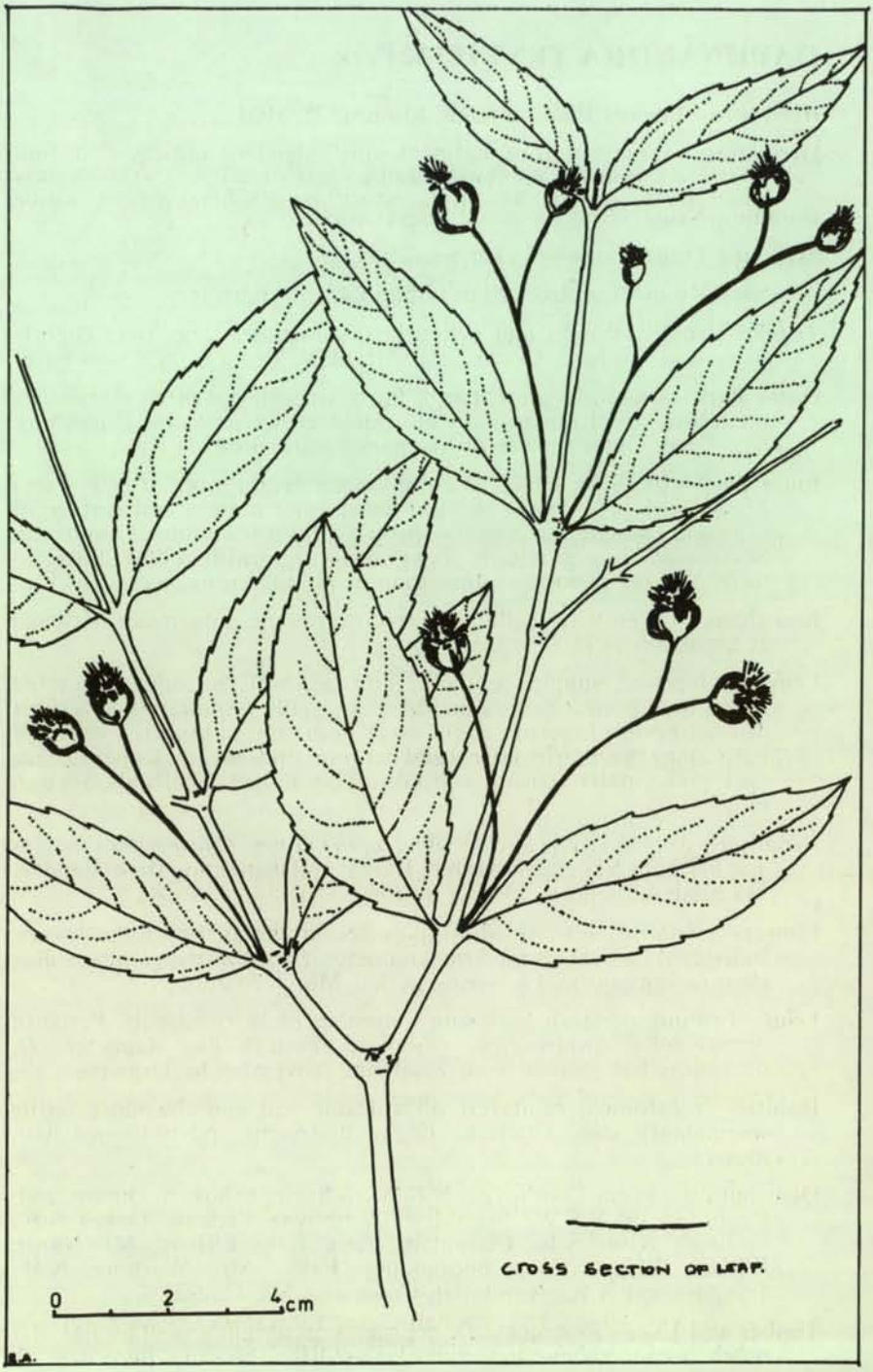

Plate No. 22
Daphnandra tenuipes **Perk.**

DORYPHORA SASSAFRAS Endl.

Reference—Incongr. t. 10, 1838.

Derivation—Doryphora from Greek "doratus" a spear and "phoreus" carrier, referring to the bristle-like points of the anthers, sassafras after the North American laurel, *Sassafras albidum* with a similar fragrance.

Common Name—Sassafras, Yellow Sassafras, Golden Deal, N.S.W. Sassafras, Golden Sassafras, Canary Sassafras.

Standard Trade Name—Sassafras.
A tree attaining a height of 42 m and a stem diameter of 120 cm.

Trunk—Usually straight and cylindrical, often tall, and the *crown somewhat small and compact.*

Outer Bark—Grey or brownish grey, *finely and softly scaly*, the scales small and pustular-like. Underbark fawn-brown. Outer surface of live bark dark pink-brown.

Inner Bark—Blaze on a tree 75 cm diameter *brown speckled light and dark brown* (pepper and salt effect), the speckles becoming smaller towards the inner margin. Both outer and inner *margins change to dark brown* a few minutes after exposure, the whole surface gradually darkens. Bark is bitter to taste, fragrant and somewhat brittle, 8 mm thick.

Branchlets—Young branchlets green and angular often with scattered hairs towards the ends. Young shoots silky, downy. Leaf scars fairly prominent.

Leaves—Opposite, simple, *coarsely toothed*, elliptical, 7-10 cm long, bluntly pointed but narrowed at the base, smooth, green both surfaces, paler beneath, fragrant. In var *microphylla* the leaves are only 5-6 cm long. Leaf stalks 3-6 mm long.

Venation—Midrib distinct, lateral and net veins faintly visible or indistinct on the upper surface, raised and distinct on the underside.

Flowers—*White, usually three* at the end of a short axillary stalk, 2-10 mm long. Flowers silky downy, 2-3 cm diameter on stalklets 3-6 mm long. Perianth lobes six, tapering to fine points. Stamens six with six alternating shorter staminodes. Flowering period May to July or as late as October.

Fruit—An *enlarged perianth tube, egg-shaped,* 6-20 mm long *with a long narrow neck, splitting down one side* when ripe exposing several dark brown hairy carpels. Fruit ripe March to August.

Habitat—On the basaltic soils at high elevations in cool or warm temperate rainforest but more typically on sedimentary soils at moderate elevations in warm temperate rainforest. Commonly forming one of the dominant species with Coachwood and Crabapple.

Distribution—From the Victorian border to Upper Nerang River, South Queensland. Recorded in N.S.W. from most temperate rainforest areas. Var. *microphylla* is small-leaved form from Doyles River S.F., Oakes S.F., Dome Mtn., and Nullum S.F.

Timber and Uses—Yellow, darkening on exposure, soft. Used for floorings, cabinet work, linings, mouldings and turnery. 550-600 kg. per cubic metre.

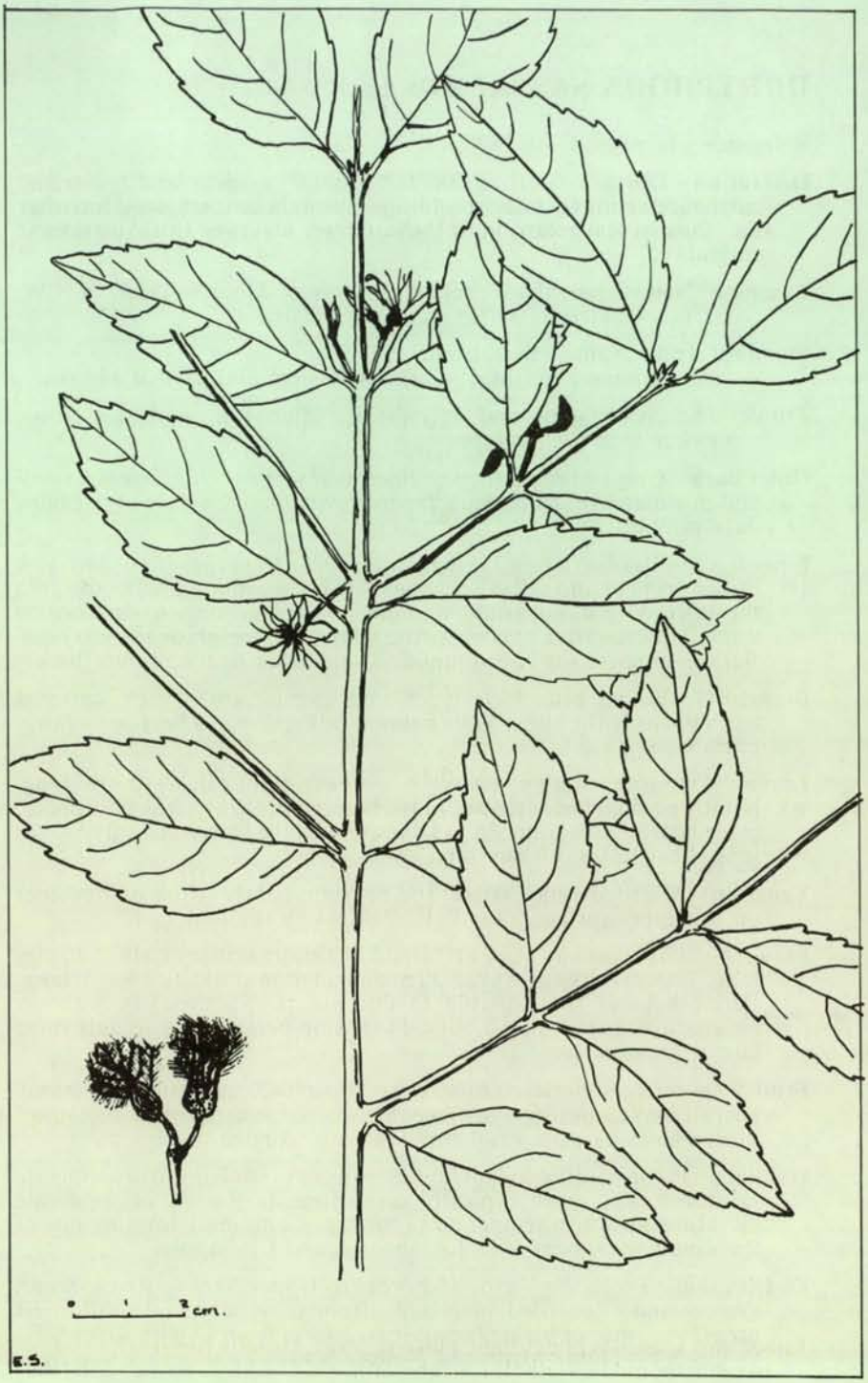

Plate No. 23
Doryphora sassafras **Endl.**

HEDYCARYA ANGUSTIFOLIA A. Cunn.

Reference—Ann. Nat. Hist. S'er 1, i, 215, 1838.

Derivation—Hedycarya from Greek "hedys" sweet and "caryon" a nut, the fruit of one species is sweet; angustifolia from Latin "angusti" narrow and "folia" a leaf referring to the narrower leaves of this Australian species.

Common Name—Native Mulberry, Australian Mulberry.

Standard Trade Name—Australian Mulberry.
A tall shrub or small tree 3-7 m high.

Trunk—*Often crooked* with several basal stems.

Outer Bark—Greyish-fawn, smooth. Dead bark very thin. Underbark greyish-fawn. Surface of live bark green.

Inner Bark—Blaze on a tree 8 cm diameter with a thin cream outer layer then pink towards the sapwood, turning paler pink on exposure. No taste or smell. 4 mm thick.

Branchlets—Green or purplish but *slightly hoary on the young shoots*, later turning brown.

Leaves—Alternate, simple, *irregularly toothed*, ovate-elliptical to oblong-lanceolate, 8-10 cm long, pointed at the tip and tapering at the base. Glossy, smooth on the mature leaves, dark green above paler below, rigid. Leaf stalks 8-20 mm long.

Venation—Midrib and lateral veins conspicuous on both surfaces, raised below but sunken above, looping to form a large network.

Flowers—Greenish, in short axillary raceme-like cymes, each flower stalk 4-10 mm long. Perianth flatly hemispherical, the female up to 6 mm diameter with eight to ten inflexed lobes which later become reflexed as the fruit enlarges. Male perianth somewhat larger at first with numerous stamens. Flowering period August and September.

Fruit—Succulent *drupe, yellow, ten-twenty carpels each 2-3 mm diameter, closely packed into a globular fruit*, 6-8 mm diameter. Seeds with a hard finely roughened shell. Fruit ripe December and January.

Habitat—Common in moist mountain gullies in cool and warm temperate rainforest and bordering on or under wet sclerophyll forest.

Distribution—From Cape Otway, Victoria to Mt. Superbus, Southern Queensland. Recorded in N.S.W. from Mt. Dromedary, Kioloa, Milton, Cambewarra, Minnamurra Falls, Robertson, Kiama, Bulli, Blue Mtns., Mt. Irvine, Bilpin, Murrurundi, Mt. Royal S.F., Upper Williams and Allyn Rivers, Doyles River S.F., Mt. Boss S.F., Styx River S.F., Thumb Creek, Oakes S.F., Cascade, Clouds Creek S.F., Mt. Hyland, Newton Boyd, Copmanhurst, Gibraltar Range N.P., Forestland S.F., Ewingar S.F., Boonoo Boonoo Falls, Toonumbar S.F., Yabbra S.F., Beaury S.F., Acacia Plateau, Mt. Clunie, Wiangaree S.F. and Mebbin Rock.

Timber and Uses—White, tough, close-grained. Usually too small to be of use, but would be suitable for cabinet work. Used for spear ends by the aborigines.

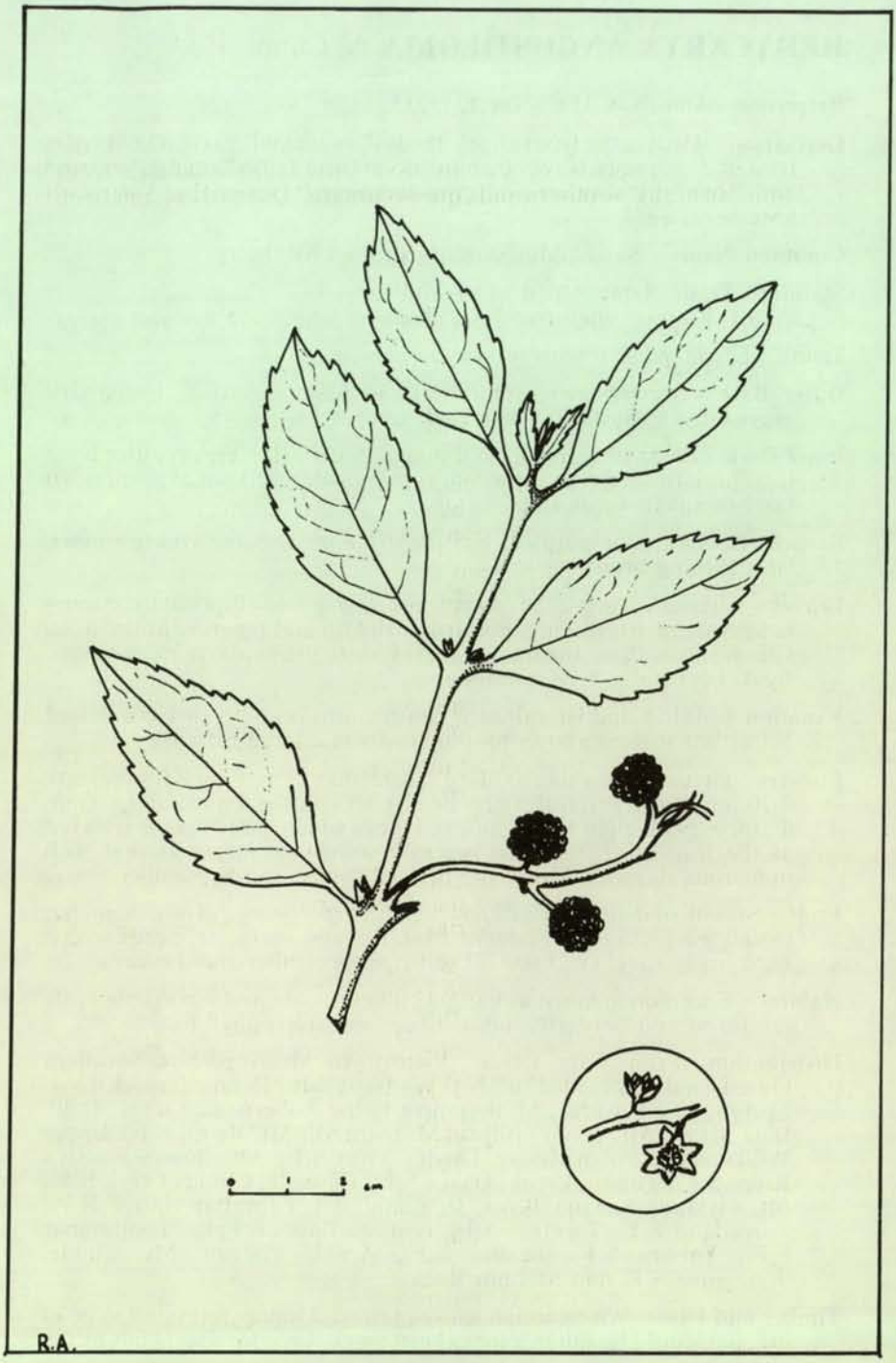

Plate No. 24.

Hedycarya angustifolia **A. Cunn.**

WILKIEA AUSTROQUEENSLANDICA Domin.

Reference—Biblioth. Bot. LXXXIX, 118, 1925.

Derivation—Wilkiea after Dr. D. E. Wilkie, Vice President of the Philosophical Society of Vic. in 1857. Austroqueenslandica from Latin "australis" southern and "queenslandica" Queensland, referring to its occurrence.

Common Name—Furry-flowered Wilkiea.

Standard Trade Name—None.
A shrub or small tree sometimes attaining a height of 9 m and a stem diameter of 18 cm.

Trunk—Large specimens often flanged at the base.

Outer Bark—Brown, smooth or the surface finely wrinkled on large plants. Underbark fawn, outer surface of live bark yellow-brown.

Inner Bark—Blaze on a tree 18 cm diameter *pale pink with fine darker red vertical streaks*. Surface of the blaze changes slowly to a deeper pink. No distinct taste or smell. 3 mm thick.

Branchlets—Brown becoming green towards the ends, smooth. *Young shoots hairy*. Leaf scars distinct.

Leaves—Opposite, simple, margins *distantly and irregularly toothed* with short rigid points, sometimes entire, oblong-lanceolate, 8-18 cm long, bluntly pointed or rounded at the tip and quickly tapering at the base, *upper surface glossy*, paler beneath, *rather thin* in comparison with *W. macrophylla* and *W. huegeliana*. Leaf stalk 6-13 mm long.

Venation—Visible on both surfaces, raised and distinct on the underside. *Lateral veins* more numerous *ten to sixteen pairs* and net veins not as close as in *W. huegeliana*.

Flowers—Yellow-green, *inflorescence densely hairy*, axillary or terminal, consisting of a raceme or raceme-like panicle about 30 mm long. Male and female flowers separate on the same tree or on different trees, cup-shaped, 6 mm diameter. Flowering period September to November.

Fruit—One seeded carpel, *black, oval, 12 mm long, one or several seated on a yellow tubercular disk* about 12 mm diameter, each disk borne on a stalklet 6-12 mm long. Fruit ripe May-July.

Habitat—Subtropical rainforest chiefly on basaltic or alluvial soils.

Distribution—From the Richmond River, N.S.W. to the McPherson Range, Queensland. Recorded in N.S.W. from Toonumbar S.F., Beaury S.F., Roseberry S.F., Wiangaree S.F., Terania Creek, Whian Whian S.F., Boomerang Falls, Lismore, Cooper's Creek, Wollongbar, Tintenbar, Goonengerry, Brunswick Heads, Mooball, Mebbin S.F., Mt. Warning N.P., Limpinwood N.R., Crystal Creek, Mt. Cougal and Murwillumbah.

Timber and Uses—Wood yellow close-grained and nicely marked but generally too small to be of much use.

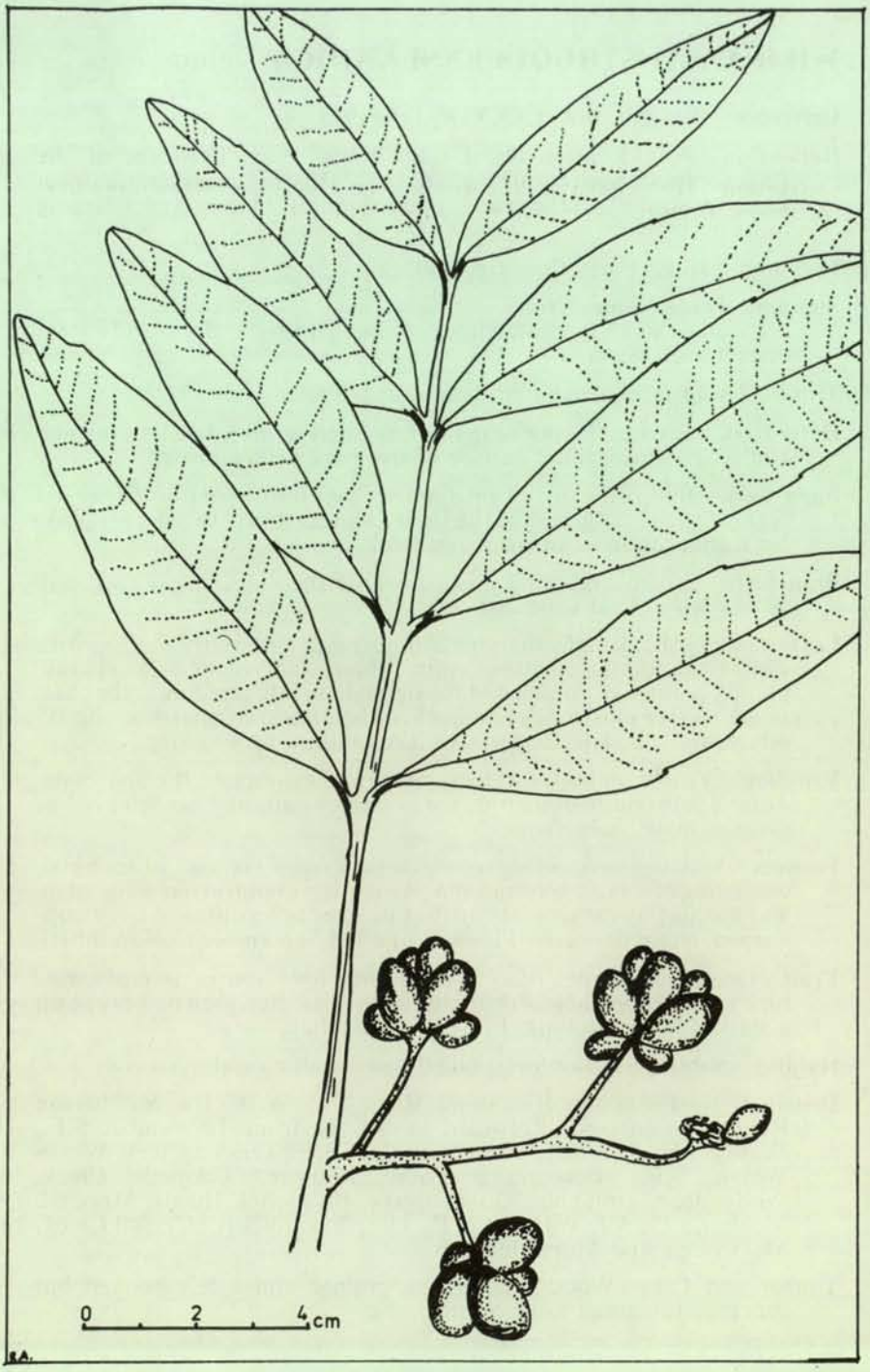

Plate No. 25

Wilkiea austroqueenslandica **Domin.**

WILKIEA HUEGELIANA (Tul.) A.DC.

Synonym—*Mollinedia huegeliana* Tul.

Reference—Prod. XVI, ii, 669, 1868.

Derivation—Huegeliana after Baron C. von Huegel, a German botanist and collector.

Common Name—Common Wilkiea, Tetra Beech.

Standard Trade Name—Tetra Beech.
A small glabrous or downy tree up to 8 m high and 10 cm stem diameter.

Trunk—Not buttressed but irregular at the base, often crooked.

Outer Bark—Greyish-brown, smooth on small trees but large trees often scaly with thin scales. Underbark creamy orange. Outer surface of live bark blotched pale-brown and faintly greenish fading to a greyish shade.

Inner Bark—Blaze on a tree 8 cm diameter *pale brown with darker vertical* lines, fading to a greyish colour after several minutes exposure when the darker vertical lines may disappear. Freshly cut bark has no taste but a faintly aromatic smell. About 2 mm thick.

Branchlets—Moderately thick, green or yellow-green towards the ends.

Leaves—Opposite, simple, margin with acutely pointed teeth or sometimes entire, lance-shaped or narrowly elliptical, 5-13 cm long, rounded or shortly pointed at the tip, quickly tapering at the base, glossy above, dull and paler below, sometimes hairy, green or yellowish-green. Leaf stalk 3-11 mm long.

Venation—*Distinct and strongly closely reticulate veined*, more prominently raised on the under side.

Flowers—Male and female flowers on separate trees (dioecious) yellow-green, axillary in little cymes or raceme-like panicles, 2.5 cm or less in length. Individual flowers cup-shaped about 2 mm diameter. Carpels shortly hairy. Flowering period December to February.

Fruit—Several stalkless one-seeded *carpels seated on a tubular disk*. Shortly hairy, *black and shining when ripe, egg-shaped*, 12-16 mm long. Fruit ripe July to December.

Habitat—Rainforest of various types but seems to attain its best development in subtropical rainforest on red volcanic soils. Also common in warm temperate rainforest.

Distribution—Mt. Dromedary near Narooma N.S.W. to about Maryborough Queensland. A very common species in practically every rainforest area in N.S.W. except cool temperate rainforest.

Timber and Uses—Brownish, hard and tough, close-grained, with prominent rays. Should be suitable for small turnery.

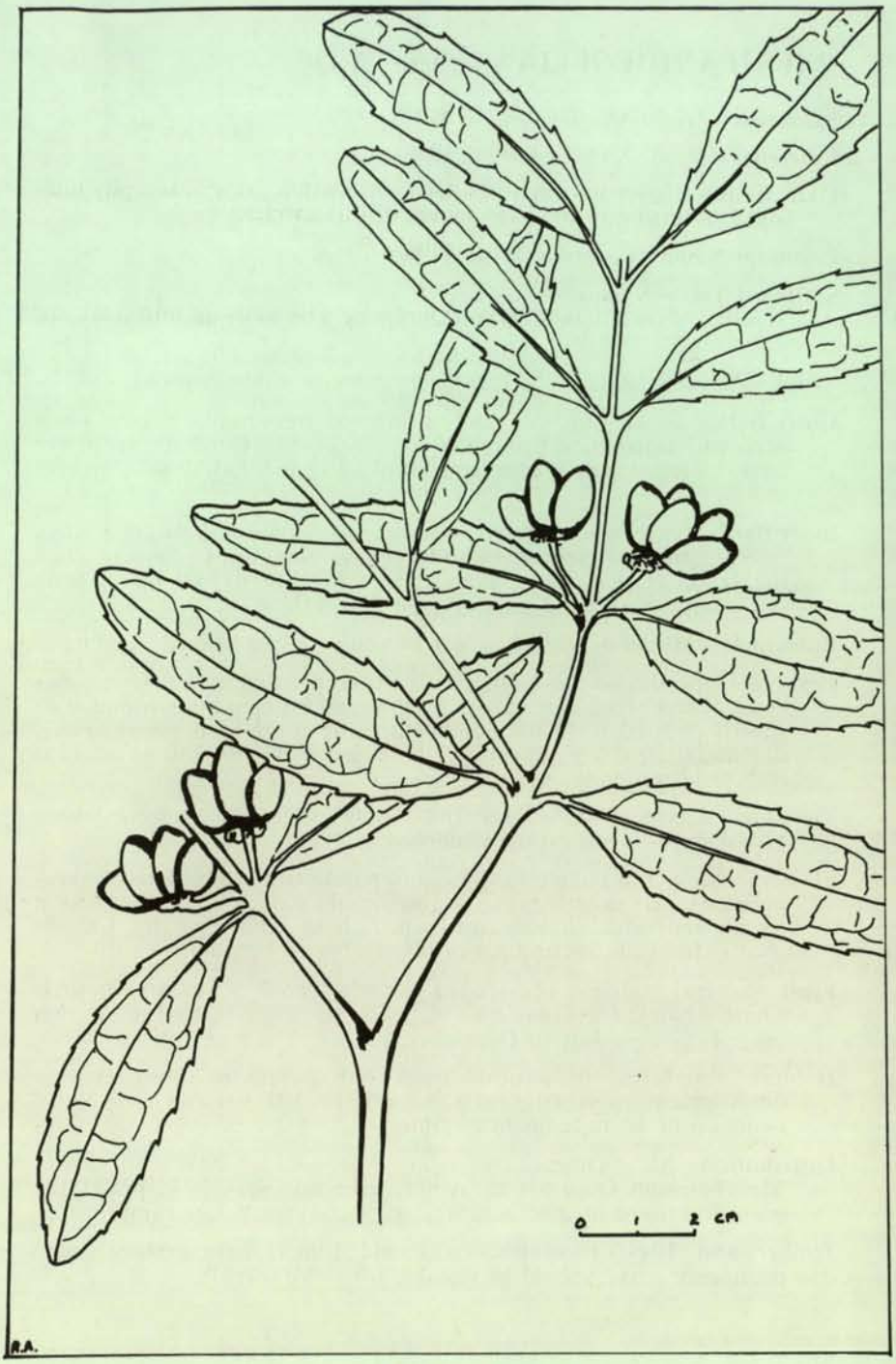

Plate No. 26

Wilkiea huegeliana (Tul.) **A.DC.**

WILKIEA MACROPHYLLA A.DC.

Synonym—*Kibara macrophylla* Benth.

Reference—Prodr. XVI, ii, 669, 1868.

Derivation—Macrophylla from Greek "macros" large and "phyllon" a leaf, referring to the large leaves of this species.

Common Name—Large-leaved Wilkiea.

Standard Trade Name—None.
A tree of considerable size in Queensland but only up to 4 m tall and 8 cm diameter in N.S.W.

Outer Bark—Creamy-grey, smooth to softly finely scaly. Underbark fawn. Outer surface of live bark dark brown.

Inner Bark—Blaze on a tree 8 cm diameter with a *dark brown outer layer, then dull yellow-brown.* No change in colour on exposure. No taste but a slightly fragrant smell. The sapwood surface shows an oak-like grain. 2 mm thick.

Branchlets—*Yellow-green, thick and smooth* even at the tips.

Leaves—Opposite, simple, with short sharp teeth or entire, oblong or oblong-lanceolate, 8-25 cm long, abruptly pointed at the tip, *blunt or heart-shaped at the base, very glossy,* quite smooth, *thick and rigid,* dark green, paler on the underside. Leaf stalks very short, 1-6 mm, smooth.

Venation—Midrib and lateral veins distinct on both surfaces. Net veins usually obscure on both sides forming a close network.

Flowers—Yellow-green, in short, axillary or branched cymes or panicles rarely over 2 cm long. Flower stalks only 4-6 mm long. Perianth globular, quite smooth, 2 mm diameter. Female flowers with a small opening and thick fleshy glands inside. Carpels smooth, twelve to fifteen. Male flowers more open and not thickened with four stamens. Flowering period May to November.

Fruit—*Drupe, black, egg-shaped, 12 mm long,* sessile, smooth, *seated on a fleshy receptacle* 3-8 mm broad. Differs from *W. austroqueenslandica* and *W. huegeliana* in being *quite hairless in all its parts.* Fruit ripe April to September.

Habitat—In lowland subtropical rainforest on basalt.

Distribution—Richmond River, N.S.W. to Rockhampton, Queensland. Recorded in N.S.W. from Alstonville, Roseberry S.F., Wiangaree S.F., Whian Whian S.F., Bangalow, Tumbulgum and Tweed Heads.

Timber and Uses—Light colour, close grained and figured. Too small to be of use.

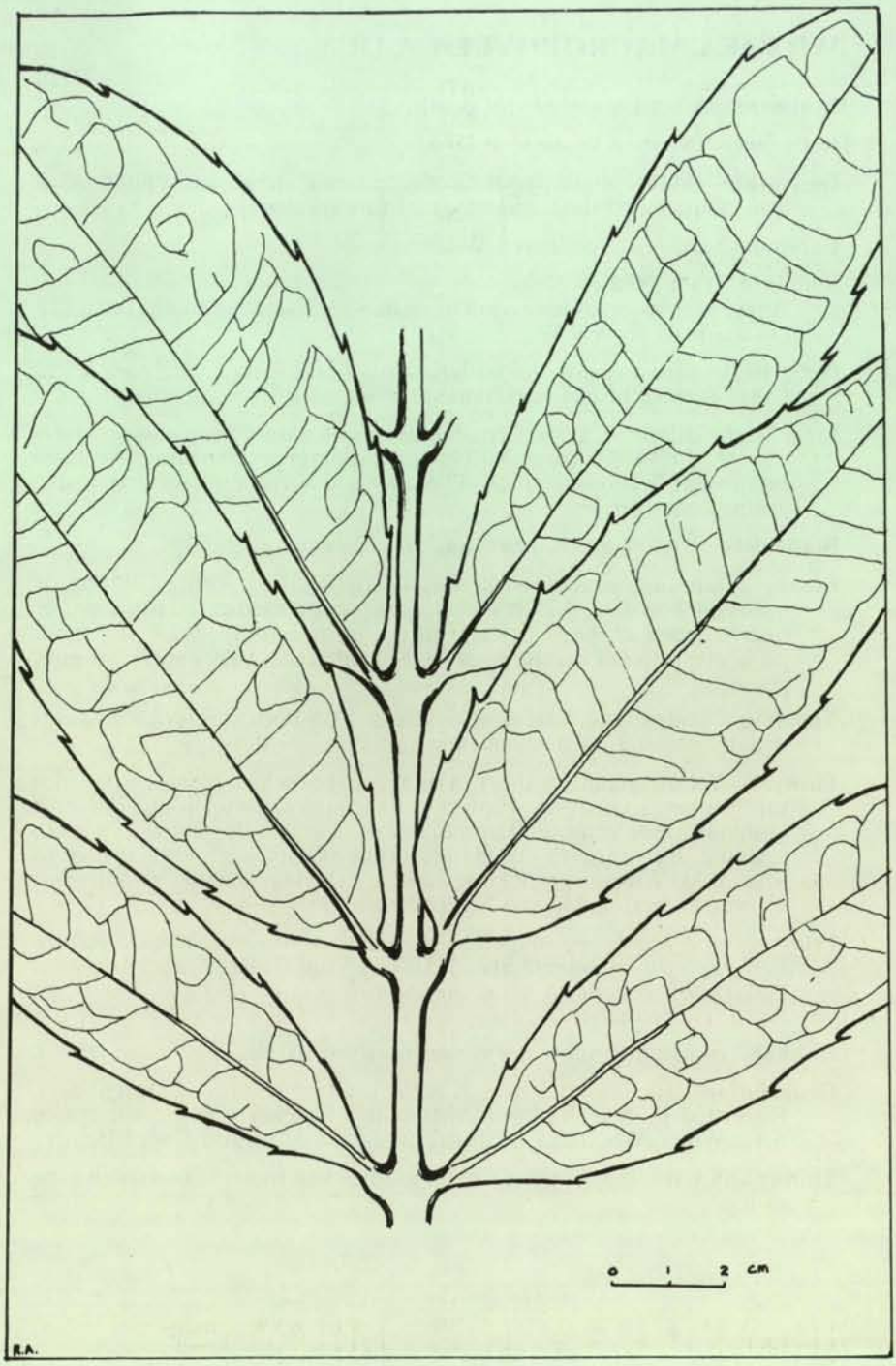

Plate No. 27

Wilkiea macrophylla **A.DC.**

APPENDIX

LIST OF LOCATIONS OF STATE FORESTS, FLORA RESERVES (INCLUDING FOREST PRESERVES), NATIONAL PARKS AND NATURE RESERVES

Forest	No.	Location
Acacia Ck and Koreelah S.F.	1	19 km NW of Urbenville
Bagawa S.F.	30	23 km NW of Coffs Harbour
Banda Banda F.R.	..	40 km WSW of Kempsey.
Barcoongere S.F.	826	35 km SE of Grafton.
Barrington Tops N.P.	..	35 km NW of Dungog.
Bellangry S.F.	524	27 km NW of Wauchope.
Bellinger River S.F.	651	13 km SSW of Dorrigo.
Bielsdown S.F.	490	4 km N of Dorrigo.
Big Fella Gum Tree F.R.	..	8 km SSW of Kendall.
Black Ck F.R.	..	15 km SW of Wauchope.
Boambee S.F.	611	6 km SW of Coffs Harbour.
Bodalla S.F.	606	8 km NW of Narooma.
Boonoo Boonoo S.F.	119	15 km NNW of Tenterfield.
Boundary Ck S.F.	627	40 km NNW of Dorrigo.
Boyne S.F.	832	8 km N of Bateman's Bay.
Bril Bril S.F.	158	24 km NW of Wauchope.
Broken Bago S.F.	184	3 km SW of Wauchope.
Bruxner Pk F.R.	..	6 km NW of Coffs Harbour.
Buckra Bendinni S.F.	471	27 km WNW of Macksville.
Bulga S.F.	285	37 km NW of Taree.
Bundagen F.R.	..	7 km S of Sawtell.
Cangi S.F.	354	48 km W of Grafton.
Carrai S.F.	909	52 km W of Kempsey.
Chapman's Plain F.R.	..	20 km NNW of Dorrigo.
Cherry Tree S.F.	168	30 km SW of Casino.
Chichester S.F.	292	53 km WNW of Bulahdelah.
Clouds Ck S.F.	111	24 km NNW of Dorrigo.
Comboyne S.F.	698	15 km WSW of Kendall.
Conglomerate S.F.	349	21 km NNW of Coffs Harbour.
Dingo S.F.	779	30 km NW of Taree.
Donaldson S.F.	121	16 km N of Urbenville.
Dorrigo N.P.	..	3 km SE of Dorrigo.
Doyles River S.F.	911	58 km W of Wauchope.
Edinburgh Castle S.F.	541	10 km E of Urbenville.
Ellis S.F.	831	29 km NW of Dorrigo.
Ewingar S.F.	845	42 km E of Tenterfield.
Forestland S.F.	529	15 km SW of Tenterfield.
Gibraltar Range S.F.	352	47 km NE of Glen Innes.
Girard S.F.	303	32 km NE of Tenterfield.
Gladstone S.F.	163	8 km SW of Bellingen.
Glenugie S.F. & F.R.	26	19 km SE of Grafton.
Goonimbar S.F.	344	7 km NNE of Nimbin.
Guy Fawkes N.P.	..	45 km NW of Dorrigo.
Hyland S.F.	659	31 km WNW of Dorrigo.
Ingalba S.F.	527	18 km SW of Macksville.
Kangaroo River S.F.	21	34 km NW of Coffs Harbour.
Killungoondie S.F.	849	13 km NE of Dorrigo.
Kiwarrak S.F.	298	5 km S of Taree.
Levers Plateau F.R.	..	35 km NNW of Kyogle.
Limpinwood N.R.	..	5 km NW of Tyalgum.
Lower Bucca S.F.	29	14 km NNW of Coffs Harbour.
Madman's Ck F.R.	..	10 km NW of Woolgoolga.
Mandle & Beaury S.F.	2	19 km SW of Urbenville.
Marengo S.F.	318	34 km NW of Dorrigo.
Massey's Ck S.F.	886	89 km WNW of Bulahdelah.
Mebbin S.F.	626	24 km NNE of Kyogle.
Minnamurra N.P.	..	15 km SW of Moss Vale.
Mistake S.F.	525	23 km W of Macksville.

Forest	No.	Location
Mobong Ck F.R.	..	16 km NNE of Dorrigo.
Mooball S.F.	342	8 km SE of Murwillumbah.
Moonpar S.F.	489	16 km NNW of Dorrigo.
Mt. Belmore S.F.	361	42 km SW of Casino.
Mt. Boss S.F.	910	48 km NW of Wauchope.
Mt. Lindesay S.F.	542	19 km NE of Urbenville.
Mt. Pikapene S.F.	170	39 km SW of Casino.
Mt. Warning N.P.	..	10 km SW of Murwillumbah.
Nambucca S.F.	543	10 km NNE Macksville.
Never Never S.F.	613	11 km E of Dorrigo.
Newry S.F.	487	19 km N of Macksville.
Norfolk Falls F.R.	..	25 km NE of Coolah.
Nulla Five-Day S.F.	601	48 km NW of Kempsey.
Nullum S.F.	356	16 km WSW of Mullumbimby.
Oakes S.F.	609	40 km NW of Macksville.
Olney S.F.	124	24 km NW of Wyong.
Orara East S.F.	536	10 km NW of Coffs Harbour.
Orara West S.F.	535	18 km W of Coffs Harbour.
Pine Brush S.F.	661	24 km NE of Grafton.
Pine Ck S.F.	537	16 km SSW of Coffs Harbour.
Rowley's Ck F.R.	..	32 km NW of Wingham.
Red Cedar F.R.	..	18 km NNW of Dorrigo.
Riamukka S.F.	992	25 km SSE of Walcha.
Richmond Range S.F.	610	35 km NW of Casino.
Roseberry S.F.	608	32 km NNW of Kyogle.
Roses Ck S.F.	829	25 km SW of Bellingen.
Royal N.P.	..	5 km SSW of Sutherland.
Sea Acres Reserve	..	Port Macquarie.
Shea's Nob S.F.	803	34 km NNW of Dorrigo.
Sherwood N.R.	..	20 km NW of Woolgoolga.
Stott's Island N.R.	..	12 km NE of Murwillumbah.
Strickland S.F.	289	64 km SSW of Newcastle.
Styx River S.F.	339	53 km E of Armidale.
Tooloom S.F.	20	19 km SW of Urbenville.
Toonumbar S.F.	343	23 km WNW of Kyogle.
Tuckers Nob	612	13 km SW of Coffs Harbour.
Unumgar S.F.	540	14 km NE of Urbenville.
Victoria Pk N.R.	..	15 km SE of Lismore.
Waihou F.R.	..	18 km WNW of Woolgoolga.
Warung S.F.	457	25 km NE of Coolah.
Washpool S.F.	355	72 km WNW of Grafton.
Way Way S.F.	470	10 km SE of Macksville.
Wedding Bells S.F.	360	19 km N of Coffs Harbour.
Whian Whian S.F.	173	16 km SW of Mullumbimby.
Wiangaree S.F.	358	24 km N of Kyogle.
Wild Cattle Ck S.F.	488	32 km W of Coffs Harbour.
Wilson River F.R.	..	37 km SW of Kempsey.
Woodburn S.F.	755	42 km NNE of Batemans Bay.
Woolgoolga Ck F.R.	..	5 km W of Woolgoolga.
Yarrahapinni S.F.	32	5 km SE of Macksville.

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