#

THE FOREST FLORA OF NEW SOUTH WALES.

BY

J. H. MAIDEN

GOVERNMENT BOTANIST

AND DIRECTOR OF THE BOTANIC GARDENS,

SYDNEY.

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[The names of Synonyms or Plants incidentally mentioned are in *italics*. The page containing the description is printed in heavier type where there is more than one page.]

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THE FOREST FLORA OF New South Wales.

J. H. MAIDEN.

VOL. IV. PART 1.

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PART XXXI OF THE COMPLETE WORK.

INDEX OF TREES DESCRIBED.

Volume I (Parts I–X).

THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the Botanic Gardens, Sydney.

PART XXXI.

Published by the Forest Department of New South Wales, under authority of The Honourable the Secretary for Lands.

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No. 111.

Owenia cepiodora, F.v.M.

The Onion Wood.

(Family MELIACEÆ.)

Botanical description.—Genus, *Owenia*, F.v.M., in Hooker's "Journal of Botany and Kew Gardens Miscellany," ix, 304 (1857); also see Part XIV, p. 89, of this work.

Botanical description.—Species, *O. cepiodora*, F.v.M., *Fragm.* XI, 81 (1880).

A tall tree with thick branchlets, the bark prominently cicatrized, neither glutinous nor with milky juice; the wood with a strong smell of onion.

Leaves crowded near the end of the branches, the petiole 1½ to 3 inches long, thickened at the base.

Leaflets pari-pinnate, mostly from 2½ to 5 inches long and ¾ to 1½ inches broad, entire, often acutely acuminate, occasionally somewhat obtuse, very rarely retuse, deep green above, pale green beneath, narrowed into a petiole 2 to 3 lines long.

Panicle 7 to 9 inches long, with spreading, often divaricate, branches, the pedicels about 1½ lines long.

Bracts minute, from semi-lanceolate to linear-subulate, solitary at the base of the pedicels.

Sepals 5, orbicular, persistent, about 1 line long, much imbricate, connate at the base.

Petals deciduous, 1½ to 2 lines long, oblong-lanceolate, narrowed at the base, white, the margins slightly imbricate.

Stamens 10, the tube free, about 1 line long, terminating in 10 very short truncate or bifid teeth

Anthers hardly ½ line long, almost terminal, oblong-linear, introrse, longitudinally dehiscent.

Disc very short.

Stigma globose or conical-ovate, reddish, twice as long as the style, which hardly attains ½ line in length, 2-lobed, the lobes cohering.

Ovarium 2-celled.

Drupe globular, often ⅔ inch in diameter, the pericarp red outside, pulpy and white inside, the putamen bony.

Seeds 2, rarely 1,* erect, ovate, basally attached, without arillus, the testa pale, with a yellow-brownish hilum.

Albumen none.

Embryo erect or a little oblique; cotyledons ovate; radicle very short, almost globular.

Richmond River, in forest valleys, collected by Fawcett.

---

* The description of the species is a free translation of Mueller's Latin description, except in one instance.

Bailey writes: "Seeds 2, rarely 1." Mueller seems to have seen only fruits with solitary seeds. He writes: "Semen erectum, ovatum, &c." Though he does not say the seed is solitary in the fruit, he writes of it in the singular. Bailey's alteration is evidently a correction based on more ample material, and my experience so far bears it out.

Botanical Name.—*Owenia*, already explained, Part XIV, p. 90; *cepiodora*, from two Latin words, *cepa* (caepa), an onion, and *odor*, a smell or odour.

Vernacular Name.—"Onion-Wood" or "Bog Onion." The timber smells like decayed onions, though often a newly-cut plank has a smell resembling water-melons.

I have referred to this gradation of "pleasant" and "unpleasant" odour in the same plant at Part XXVI, p. 100. The matter seems worthy of chemical investigation.

Aboriginal Name.—Called "Ingmunyon" by the aborigines, "Bog Onion Tree" by the white settlers (Mueller, in original description). The late Mr. Alfred Cadell once sent me specimens of this tree with a message that the aboriginal name was "Boggunyan."

I would suggest that neither "Ingmunyon" nor "Boggunyan" are true aboriginal names, but were used by the blacks in imitation of the settlers' names of "Onion" or "Bog Onion."

Timber.—This is a useful wood of the cedar class—the wood, in fact, being often sold as Bastard Cedar. The name (Onion Wood) is owing to the smell of the wood, which is fugitive, and therefore not offensive. Used for the same purposes as Cedar.

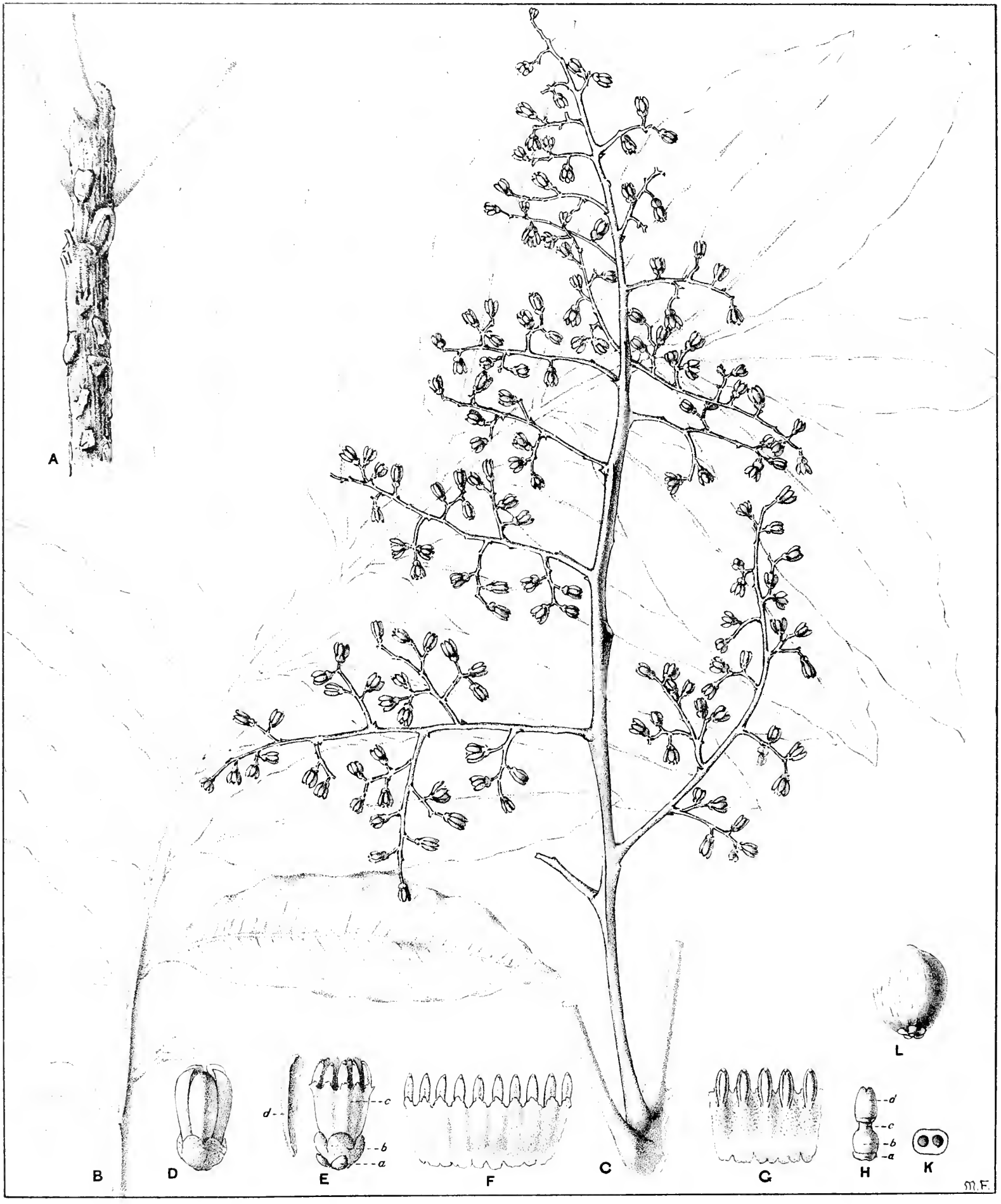
Exudations.—This tree exudes a small quantity of a gum, and there is also a garlic odour of the foliage resulting from a resinous exudation of the young leaves.

Size.—A medium-sized tree. Average height 100 feet, with a diameter of 18 inches (Forester Pope). Mr. W. Baeuerlen, then of Tintenbar, gives the height at 40 to 60 feet, with a stem-diameter of 1 foot.

Habitat.—This tree is confined, so far as is at present known, to the brushes of northern New South Wales and southern Queensland.

Very little in Clarence River District, but plentiful in the Richmond River District. Found scattered about in nearly all the brush forests of the Tweed, wherever the soil is inclined to be rich. (Forester Pope.) It grows plentifully in Forest Reserve 1,120 (Casino District).

What the southern limit of this tree is we do not know. It appears to become scarce south of the Clarence. It extends into Queensland, Mr. F. M. Bailey giving the locality simply as "southern scrubs."



ONION WOOD.

(*Owenia cepiodora*, F.v.M.)

EXPLANATION OF PLATE 115.

A. Portion of stem, showing leaf scars.

B. Leaf, shown in outline, one leaflet showing venation.

C. Panicle of flowers.

D. Young flower.

E. Flower, the petals (5) removed, showing—

- (*a*) Bracts.
- (*b*) Calyx.
- (*c*) Staminal tube, bearing 10 anthers.
- (*d*) Petal.

F. Staminal tube, opened out (outside).

G. Portion of staminal tube, opened out (inside).

H. Pistil—

- (*a*) Disc.
- (*b*) Ovary.
- (*c*) Style.
- (*d*) Stigma.

K. Transverse section of ovary.

L. Fruit.

No. 112.

Eucalyptus pilularis, Sm.

The Blackbutt.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus*. (See Part II, p. 33.)

Botanical description.—Species, *E. pilularis*, Sm. in *Trans. Linn. Soc.*, III, 284.

A moderate-sized or large tree, with a dark-coloured, rough, and somewhat furrowed persistent bark.

Leaves mostly lanceolate, falcate or nearly straight, acuminate, 3 to 6 inches long, rather thick and smooth, the veins rather oblique, but much less so and more numerous and parallel than in *E. obliqua* and *E. piperita*; they are also finer and often scarcely conspicuous or slightly impressed on the upper side.

Peduncles axillary or lateral, or the upper ones forming more or less of a terminal panicle, distinctly flattened in the typical form, bearing each about 6 to 12 flowers, the pedicels often thick and angular, but sometimes rather long and more slender.

Buds acuminate.

Calyx-tube about 2 lines long, and as much in diameter.

Operculum conical or acuminate, longer than the calyx-tube.

Stamens 2 to 3 lines long, all perfect, inflected in the bud; anthers reniform or broad, the cells diverging or divaricate, confluent at the apex.

Ovary flat-topped.

Fruit semi-globose or subglobose, truncate, 4 to 5 lines diameter, straight or slightly contracted at the orifice, the rim rather broad, flat or slightly convex or concave, the capsule somewhat sunk or nearly level, the valves usually horizontal. (B.Fl. iii, 208.)

Botanical Name.—*Eucalyptus*, already explained (see Part II, p. 34); *pilularis*, from the Latin *pilula*, a little ball or round knob, in allusion to the shape of the fruits.

Vernacular Names.—It is the tree which most usually goes under the name of "Blackbutt," and sometimes by way of distinction, for it attains enormous size, as will be seen presently, the "Great Blackbutt." It is a stately, shapely tree, and perhaps the best known of all the genus to Sydney residents, as it is so abundant. It belongs to the group of eucalypts called "half-barked," because its rough outer bark is confined to the trunk of the tree, the branches being smooth and white. From the latter circumstance it shares with some other species the

designation of "White-top." The outer bark of this tree is fibrous and closely matted, forming, if I may make the comparison, a sort of middle link between such fibrous-barked trees as the Stringybarks and such smooth ones as our White Gum. I do not know that the term "black," as applied to the butt, is particularly appropriate; the word "grey" would be better, though exception could be taken to this adjective also.

Aboriginal Names.—"Yarr-warrah" of the Illawarra blacks, according to the late Sir William Macarthur. Another New South Wales aboriginal name was "Benaroon." By the aborigines of South Queensland it was known as "Teheergun" and "Toi."

In a collection of specimens made by George Caley are two twigs which belong to this species, and which are labelled as follows by him, Tarundea being the aboriginal name:—(*a*) "Pilularis? Smaller Blackbutted Gum. Tarundea, Feb. 15, 1805." (*b*) "Great Blackbutted Gum with large capsules. Tarundea, Jan., 1808."

Leaves.—The oil has been described by Messrs. Baker and Smith in the "Research on Eucalypts" as follows:—

Whence collected for Oil.	Specific Gravity at 15° C.	Specific Rotation $[\alpha]_D$.	Saponification Number.	Solubility in Alcohol.	Constituents found.
Canterbury, Belmore, Currawang Creek.	0·885 to 0·903.	−4·8° + 12·3° but first fraction always lævo-rotatory.	5·9	7 vols., 80% to insoluble.	Phellandrene, pinene, sesquiterpene, alcohols.

Note the pale underside of the leaf.

Bark.—Has fibrous bark on the butt, while the branches are smooth, like those of a gum.

Timber.—Pale-coloured, more or less fissile, though sometimes quite interlocked in grain. It is a strong, durable, thoroughly safe, and well-tried timber. It is usually readily diagnosed by the presence of narrow, concentric gum-veins, but sometimes these gum-veins are nearly or wholly absent. As a rule they are too narrow to cause deterioration. Sometimes, particularly on the Northern Rivers, it is free from gum-veins, and then presents considerable similarity to Tallow-wood (*E. microcorys*), for which it is occasionally substituted. It occasionally, though rarely, shows pin-holes.

It is one of the best hardwoods we have for house and ship building. It is useful for bridge-planking, though inferior to Tallow-wood for that purpose. It has been tested for many years for blocks for wood-paving, with most satisfactory

results; in fact, it is one of the best timbers we have for the purpose, both as regards wear and durability. It takes tar well. After Ironbark I would place this timber second only to Tallow-wood, amongst our hardwoods, for general purposes. Of late years it has been used for railway sleepers, and it has been exported to Europe for sides and head-stocks for railway waggons as an experiment.

Exudation.—The Blackbutt furnishes a kino soluble in both water and alcohol, and forming a useful astringent remedy.

Size.—It is one of the largest of our eucalypts, and giant trees have been recorded over the greater portion of the area in which it abounds.

A tree at Bulli was measured by me in 1891, with the following results:—Girth at ground, measuring from buttress to buttress, 57 ft. 6 in.; the girth at 3 feet from the ground was 45 feet; and at 6 feet above the ground, 40 feet. The taper was then very gradual for about 90 feet (estimated), where the head is broken off. There are ten principal buttresses of an average diameter of over 2 feet, but they practically cease to flute the trunk at a height of 10 to 15 feet. This is, probably, the identical tree measured by the late Sir William Macarthur in 1861 at "Bullai, Illawarra, still in full vigour, and with no external symptoms of decay, 41 feet in circumference, with the bole of immense height." Mr. A. G. Hamilton speaks of "Bulli Blackbutt, 22 yards in circumference at ground, and at stump height would be not much less, as it does not taper much." One at Gosford was measured 156 feet high, and 23 feet in circumference at a height of 6 feet.

Habitat.—Extending into Queensland on the north, and to Twofold Bay, New South Wales, on the south, from the coast up the slopes and spurs of the Dividing Range to the Table-land, but apparently not found more than 100 miles from the coast, and scarcely crossing on to the western slope in any place.

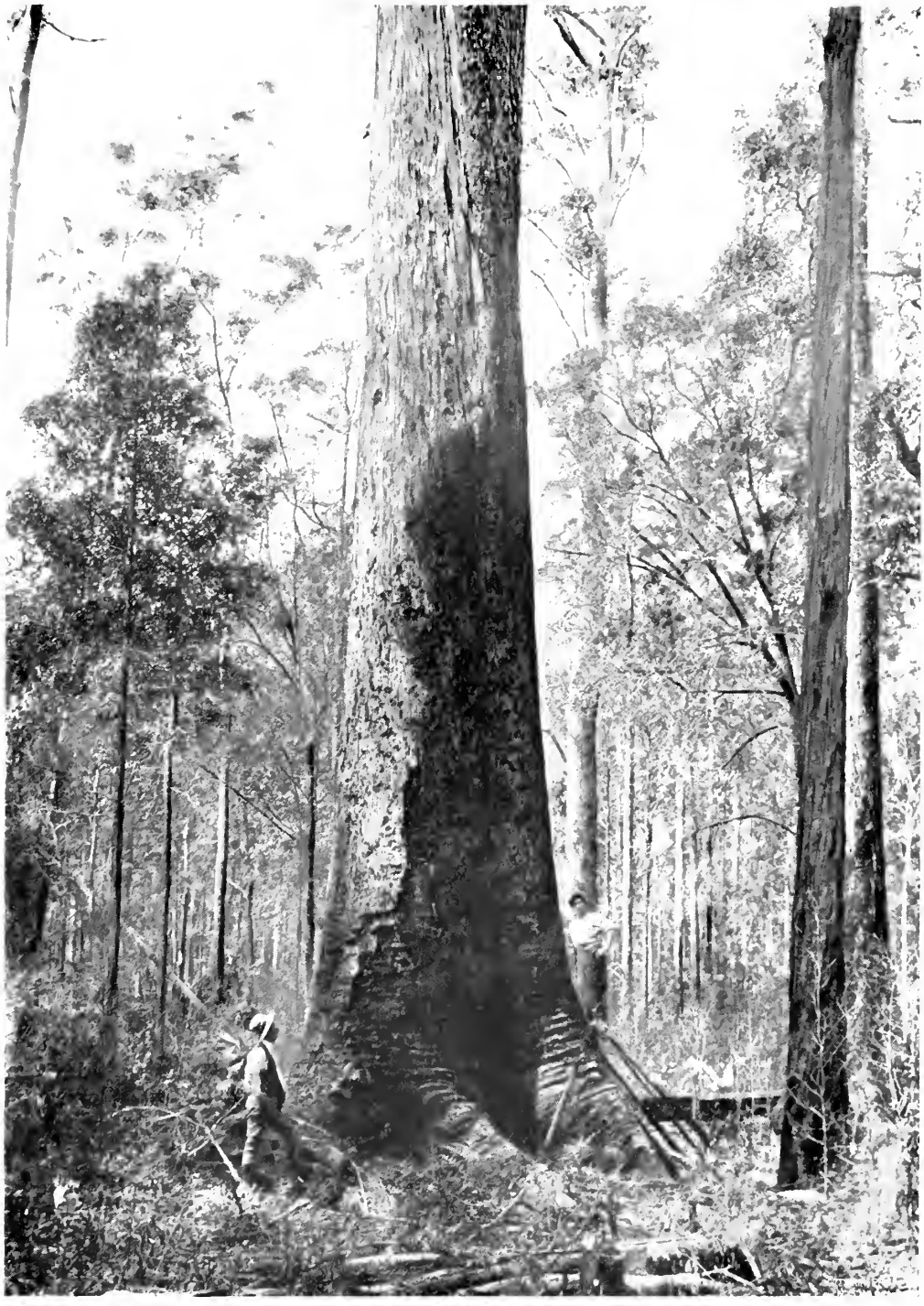
This species attains its greatest development in New South Wales. The type came from Port Jackson, and is the coastal form of the species, as a rule.

I have not seen it from Victoria, but should not be surprised to find it in north-eastern Gippsland.

Propagation.—It is well known that the Blackbutt reproduces itself more freely and more rapidly than most other hardwoods, so much so that when a large one is felled, a dense growth of seedlings, growing into straight saplings, is the usual consequence. It, however, reproduces itself most abundantly upon rich moist flats, which is the description of land in greatest demand for agricultural pursuits, so that it will, no doubt, be necessary in future to revoke portions of the most easily accessible and richest land in the blackbutt forests in the interests of selectors and for encouragement of agriculture. Wherever practicable, I would recommend the retention of Blackbutt forest reserves, even although the mature

Kerry & Co., photo.

BLACKBUTT, BULLI.



F. A. Kirton, photo.

BLACKBUTT, WYONG.

R. H. Cambage, photo.

BLACKBUTT *(Eucalyptus pilularis,* SM.), CONCORD PARK.

METHOD OF FALLING A GIANT BLACKBUTT.

EUCALYPTUS PILULARIS, SM.

(Typical form from Port Jackson.)

timber may have been removed therefrom, and also the proclamation of additional Blackbutt reserves in suitable localities not likely to be required for settlement, and, at the same time, the preservation and conservation of other useful species of hardwoods, which are not so abundant as Blackbutt.

EXPLANATION OF PLATE 116.

Typical form from Port Jackson.

1. Young shoot, portion of a seedling. Note the dentate margin, and tufts of hairs.
2. Flowering twig, the buds with pointed opercula.
3. The fruits are nearly globular (pilular).

Reproduced from Plate 1, Part I, of my "Critical Revision of the genus Eucalyptus."

PHOTOGRAPHIC ILLUSTRATIONS.

A Bulli Blackbutt. Height 280 feet, girth 59 feet, according to figures supplied by the photographer.—(Kerry, photo.)

Blackbutt, Wyong, N.S.W. Girth 32 feet, length of barrel 55 feet.—(F. A. Kirton, photo.)

Blackbutt, Concord Park, Sydney.—(R. H. Cambage, photo.)

Method of felling (falling) a giant Blackbutt, clear of the waste timber invariably found for the first 10 or 20 feet up from the ground.—(J. V. de Coque, Manager, Australian Export Timber Co., Sydney.)

No. 113.

Acacia Baileyana, F.v.M.

Cootamundra Wattle.

(Family LEGUMINOSÆ: MIMOSEÆ.)

Botanical description.—Genus, *Acacia*. (See Part XV, p. 103.)

Botanical description.—Species, *A. Baileyana*, F.v.M., *Trans. Roy. Soc. Vict.*, 1887 (1888), p. 168.

Arborescent; branchlets prominently angular, somewhat furrowed, glabrous or beset with short spreading hairlets.

Leaves bipinnate, almost sessile or on very short stalks, glabrous or the main-rhachis bearing hairlets when young, as well as the branchlets and flower-stalks somewhat whitish from ceraceous bloom.

Pinnules usually in three or four or sometimes in two pairs, oval or broad-elliptic in outline, almost sessile, a very conspicuous depressed glandule between each pair.

Leaflets in from four to twenty closely approximated pairs, sessile, rather short, linear, flat, blunt at the base, slightly acute at the apex, their carinular venule faint.

Rhacheole greenish-margined.

Headlets of flowers small, in elongated almost glabrous axillary and also paniculate terminal racemes.

Bracts minute, ciliolated, their upper portion suddenly roundish-dilated.

Calyx bluntly short-lobed, hardly half as long as the deeply five-cleft corolla.

Fruit straight, broadish, almost flatly compressed, smooth, rather elongated, at both ends blunt, along the anterior side dehiscent; pericarp cartilaginous-chartaceous.

Seeds oblique-pendent, ovate-elliptic, much compressed, black, with hardly any lustre, their areole on each side large; arillar appendage pale, cymbous-semi-orbicular, less than half as long as the seed; funicle comparatively short, slightly twisted.

A small tree of particularly graceful aspect; leaves crowded; well developed pinnules about 1 inch long; leaflets generally from $\frac{1}{16}$ to $\frac{1}{20}$ inch broad; headlets on very thin stalklets of double or triple their length, containing from 10 to 18 flowers; fruits mostly from 2 to 3 inches long and about half an inch broad, dull-brownish outside; seeds scarcely a quarter of an inch long.

This species seems always to have been passed as *A. polybotrya*; but it differs essentially from that species in glabrous leaves, with usually less numerous and always shorter pinnules, the form of which gives a very peculiar aspect to the plant; in smaller and particularly narrower leaflets, with hardly any intervening spaces between them; in highly developed glandules on the rachis; in glabrous, thinner, and often also longer stalks of the headlets of flowers, with still smaller basal bracts; in deeper-lobed corolla; in broader fruit not constricted between the seeds, further in probably larger arillar appendage, so far as can be judged from comparison of fruit of *A. polybotrya*, available here in a young state only. Stature, bark, wood, and odour of flowers of the two trees may also be quite different. The height of the tree, so far as known, seldom exceeds 15 feet; the bark is of a greyish or slaty colour, and smooth; the flowering time is about the earlier part of September.

The species is named in honour of Mr. F. M. Bailey, from whom flowering branchlets were received, taken at Brisbane from a tree in Bowen's Park, the origin of which could not with certainty be traced. Somewhat later, fruiting specimens were sent by the Rev. Dr. Woolls, who got them from Mr. H. D. Coker, of Brookfield, through Mr. John Dawson, of Humberstone; he found this rare species only near Cootamundra, on one of the sources of the Murrumbidgee, and near To-morrow, on a tributary of the Lachlan River, on stony ridges, up to an elevation of about 1,600 feet. It must, however, be rare, as no other material pertaining to this species occurred formerly in the Museum Collections of Australian Plants, formed by me here since 1847. Quite recently *A. Baileyana* has been found also near Wagga Wagga, by Messrs. Garland and Deane. (*Op. cit.*)

I wrote about this wattle in the newspapers shortly afterwards in these words:—

During the last year or two a wattle has sprung into sudden prominence. The florists' windows have been full of it; sprays of it sold readily at high prices, for its decorative properties were at once realised; seeds and plants of it were eagerly purchased; everybody now has it, and it is already one of the commonest of cultivated wattles about Sydney—I allude to the so-called Cootamundra Silver Wattle (*Acacia Baileyana*). As a matter of fact, it has been largely cultivated (chiefly in Burwood gardens) for years. A Burwood gentleman (Mr. John Dawson), noticing its ornamental character, brought seeds from Cootamundra, and distributed them amongst his friends. It was for years looked upon (in an indefinite sort of way), as a variety of a well-known wattle, till the Rev. Dr. Woolls brought the matter under the notice of Baron Mueller, who had just described it under the name it now bears. It is one of the most local of wattles, being naturally found only in a small part of New South Wales—about Cootamundra, Bethungra, Big Mimosa Run, in the Wagga District, and thereabout. But, comically enough, this exclusively New South Wales Wattle was named and described in a Victorian publication after a distinguished Queensland botanist—a sort of botanical federation, in fact.

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104); *Baileyana*, in honour of Frederick Manson Bailey, Government Botanist of Queensland.

Vernacular Name.—"Cootamundra Wattle," because of its best-known locality.

Bark.—The bark has been used for tanning, but I am not aware with what result.

Timber.—Pale-coloured and worthless except for fuel.

Size.—Mr. C. W. Darley informed me that near Bethungra he saw a magnificent specimen of this tree. The diameter of the trunk was 25½ inches, and the foliage had been nibbled off horizontally, so as to give the tree the general appearance of a gigantic mushroom. This flat portion of the "mushroom" (or greatest spread of the leaves) was no less than 38 feet in diameter.

Following are additional dimensions:—Trunk diameter 12 inches from the ground, 18 inches. Height to first branch, 7 ft. 4 in. Height of top of tree, 24 feet.

It was the admiration of the district, but some vandal killed it for the sake of a few pounds of bark.

Habitat.—Confined to New South Wales in the district of Coctamundra, Bethungra, &c. Found also on Big Mimosa Run, Wagga District, also Parish of Inglebah, County Bourke (Temora), and near Barmedman.

A small tree, glaucous, and very beautiful, hence largely cultivated for ornamental purposes.

EXPLANATION OF PLATE 117.

A. Flowering branch.

B. Flower-head.

C. Individual bud.

D. Bract found at the base of each bud.

E. Flower.

F. Flower, opened out, showing—

(*a*) Calyx.
(*b*) Corolla.
(*c*) Stamens.
(*d*) Pistil.

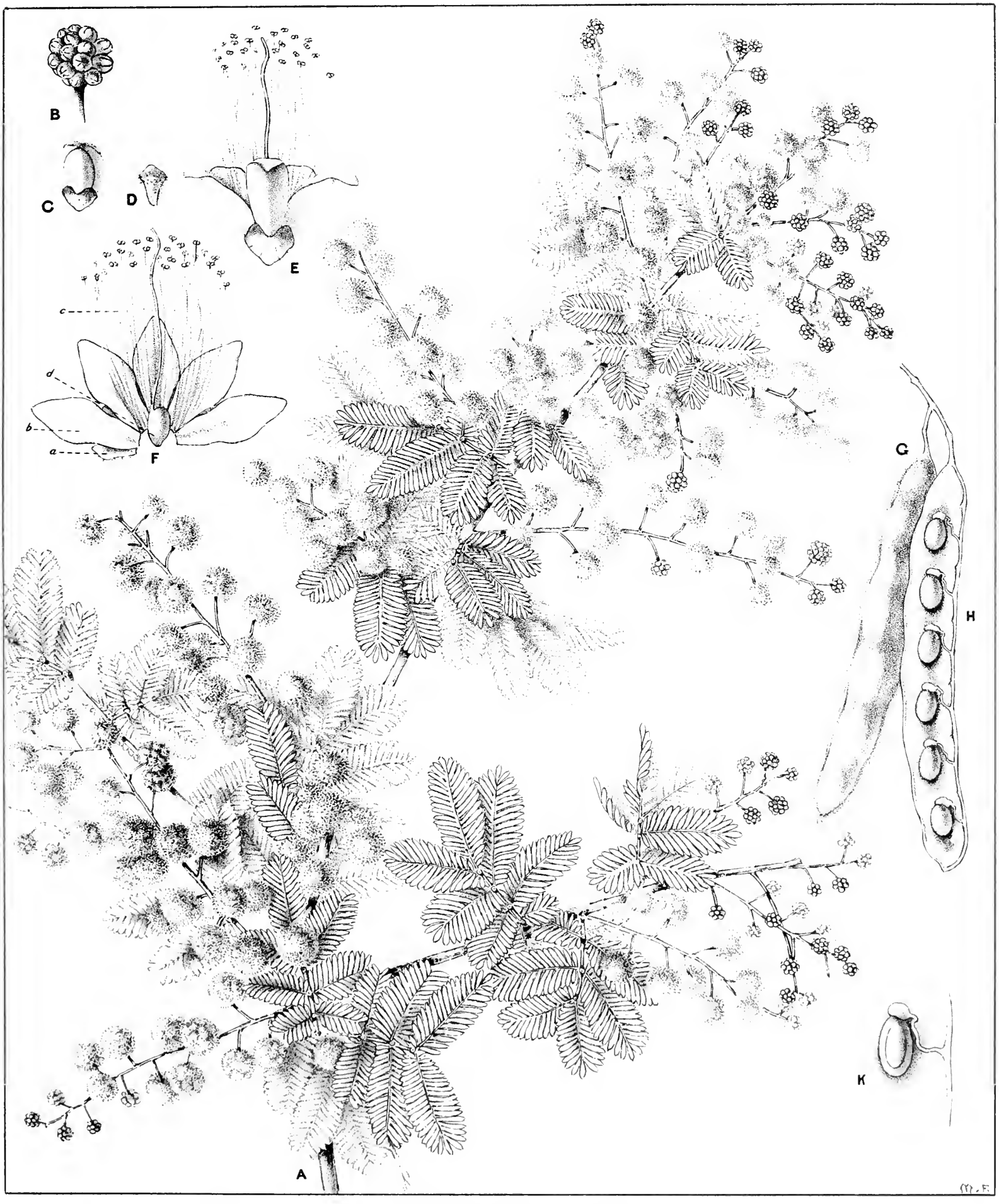
G. Pod.

H. One valve of pod, showing seeds.

K. Seed, showing the funicle.

ILLUSTRATION.

Clump of *Acacia Baileyana*, planted in poor sandy soil in the Centennial Park, Sydney, September, 1904. Photograph taken September, 1907.—(W. Forsyth, photo.)



COOTAMUNDRA WATTLE.

(*Acacia Baileyana*, F.v.M.)

W. Forsyth, photo.

ACACIA BAILEYANA, F.v.M., CENTENNIAL PARK.

No. 114.

Cryptocarya australis, Benth.

Grey Sassafras.

(Family LAURACEÆ.)

Botanical description.– Genus, *Cryptocarya.* (See Part III, p. 72.)

Botanical description.—Species, *C. australis*, Benth., in *Flora Australiensis*, v, 299 (1870).

A large shrub or small tree, quite glabrous in all its parts.

Leaves ovate elliptical or almost oblong, acuminate, contracted into a short petiole, coriaceous or thin, pale underneath but not at all white, prominently triplinerved, 2 to 4 inches long.

Panicles very loose, few-flowered, always much shorter than the leaves, and quite glabrous.

Pedicels rather long.

Perianth-tube turbinate, nearly 1 line long, the lobes at least as long, ovate and more spreading than in other species.

Stamens short, especially the 3 inner ones.

Ovary immersed in the tube.

Fruiting perianth obovoid, pear-shaped, nearly $\frac{3}{4}$ inch long, usually crowned by the remains of the perianth-limb.

Botanical Name.—*Cryptocarya,* already explained (see Part III, p. 73); *australis,* Latin, southern (Australian, in a limited sense).

Vernacular Names.—"Grey Sassafras" is one of the names by which this tree is known, and I do not think of a better. It has been called "Laurel" or "Moreton Bay Laurel."

Synonyms.—This is a plant of several synonyms, partly arising through a confusion of its habitat.

(1.) *Laurus Bowiei,* Hook.

". . . . it was through a mistake in our *Journal of Botany*, vol. iv, 118 (as explained in the *erratum*, same vol., p. 436), that another species (*Laurus Bowiei**) is described as inhabiting that region (Hooker had believed that the plant had come from the Cape.—J.H.M.), that species proving, on furthe investigation, to be a native of Moreton Bay, in Australia."

I have not been able to trace the reference to the *Journal of Botany* in the above quotation.

(2.) *Laurus australis,* A. Cunn. See the footnote quoted under (1).

* "*L. australis*, All. Cunn., which name it ought to retain" (W. J. Hooker, *Bot. Mag.* under t. 3931).

(3.) *Oreolaphne australis*, Walp. *Ann. Bot. Syst.*, i, 576. Placing the supposed Cape of Good Hope plant referred to under (1) under *Oreodaphne*, Nees ab. Esenbeck.

(4.) *Caryodaphne australis*, A. Braun, in Meissner (DC. *Prod.* xv, i, 77), where the synonymy is recapitulated.

Bark—

"The bark has a persistently bitter taste, due to the presence of an alkaloid which crystallises from its solution in stellate masses of acicular crystals. When administered to warm-blooded animals, the alkaloid produced difficulty of respiration, ending in asphyxial difficulty and death."—(Dr. T. L. Bancroft, in *Proc. Roy. Soc. Queensland*, iv, 1887.)

Fruit.—The fruiting perianths I have seen are more spherical than obovoid, and of a bright scarlet colour.

Timber.—Light, easily wrought, and useful when not exposed to the weather. Owing to its smell, insects do not like it. It is a timber of which but little is known, being cut up and mixed with other brush timbers.

Size.—Height up to 100 feet, and with a diameter of 1 or 2 feet.

Habitat.—This is a New South Wales and Queensland tree, found in brushes. Its range does not appear to have been extended since the publication of the "Flora Australiensis."

Its most southerly recorded limit is the Clarence River, New South Wales, and its most northerly, Rockingham Bay, Queensland.

EXPLANATION OF PLATE 118.

A. Flowering branch.

B. Bud.

C. Flower, opened out, showing—
- (*a*) Calyx (perianth segment).
- (*b*) Stamens, outer row.
- (*c*) ,, inner row.
- (*d*) Staminodia, outer row.
- (*e*) ,, inner row.
- (*f*) Stigma.

D. Anthers, back and front.

E. Staminode, outer row.

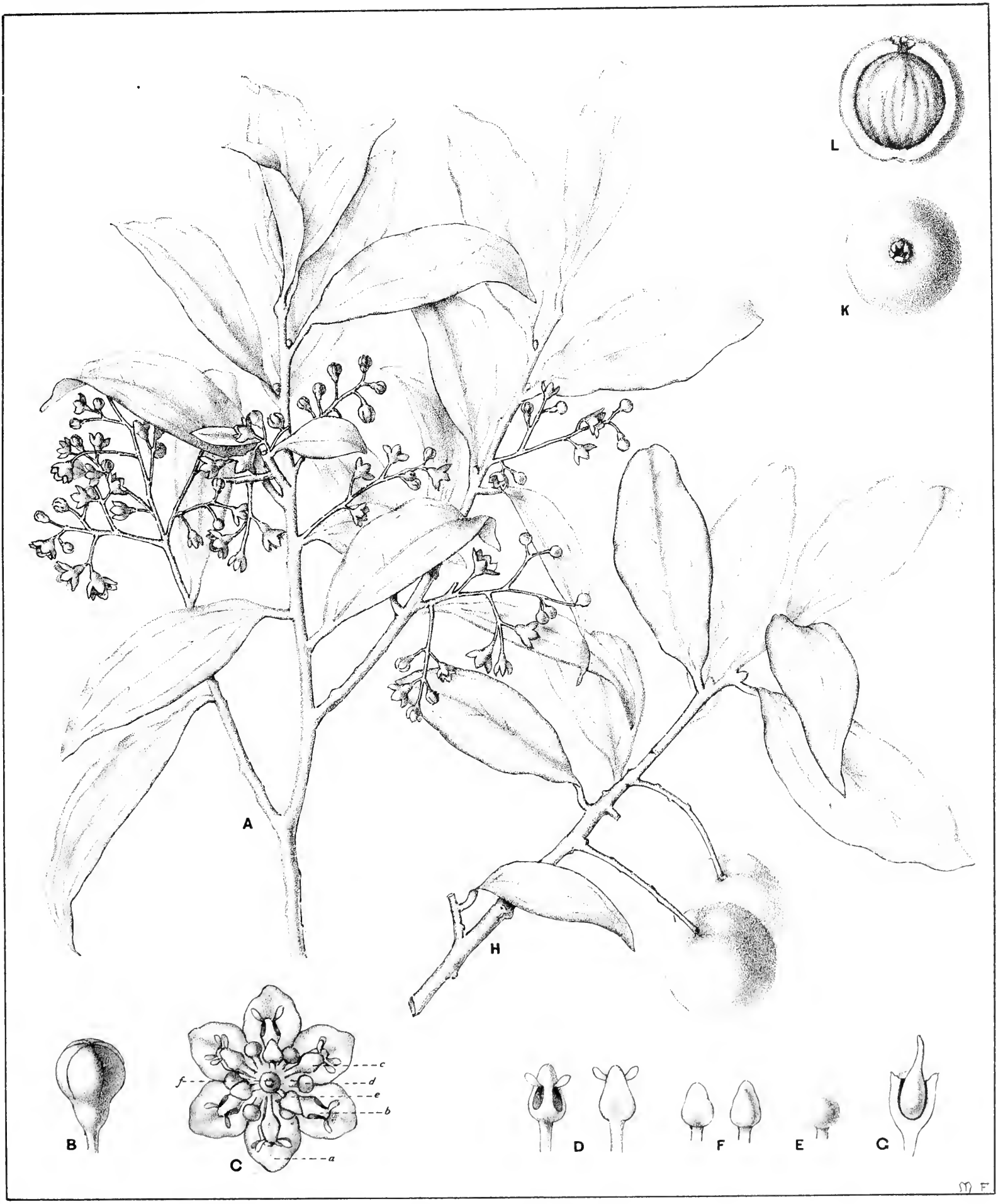
F. Staminodes, inner row.

G. Pistil.

H. Fruiting branch.

K. Fruit, showing persistent calyx.

L. Fruit opened, showing endocarp.



GREY SASSAFRAS.

(*Cryptocarya australis*, BENTH.)

R. H. Cambage, photo.

ABORIGINAL GRAVE-TREE, GILGANDRA.

No. 3.

No. 2.

TREES CARVED BY ABORIGINES *(C. J. McMaster, photo.*

No. 5.

No. 6.

No. 1.

No. 4.

TREES CARVED BY ABORIGINES *(C. J. McMaster, photo).*

TREES CARVED BY ABORIGINES.

I HAVE pleasure in presenting six photographs taken by Mr. C. J. McMaster (Chairman of the Western Lands Board) near Dubbo. He has kindly furnished the following information concerning them :—

Plates 2 and 3 represent the same tree from different aspects.

Plates 4, 5, and 6 are of the butt and part of the trunk of another tree a few yards away from above, and a mound close by is said to be an aboriginal grave.

The present owner takes great care of these trees, and he told me that the carvings were comparatively old fifty-two years ago.

I also submit a marked tree, Bull Oak (*Casuarina Luehmanni*), from Gilgandra, photographed by Mr. R. H. Cambage.

I asked Mr. R. Etheridge, Curator of the Australian Museum, a well-known authority on the subject, for a bibliography of these marked trees, which indicate aboriginal graves, and he referred me to a paper by himself in the "Records of the Australian Museum," ii, 51 (1893), with a plate (13).

This paper gives an account of certain carved trees and burying-places in the Parish of Burragorang, County of Camden. The carved trees were a She-Oak and a Gum, and the paper is embellished with three illustrations of the carvings.

The paper (p. 52) contains a valuable account of aboriginal carved trees, which I extract as follows, since it is very important to prominently draw attention to these matters before the trees are destroyed, and before those who can give information concerning them have passed away.

I am not acquainted with any systematic account of Australian carved trees; in fact, little seems to have been collectively written about them, and very few representations figured. Probably some of the earliest illustrations are those by Oxley, Sturt, and "W.R.G.," presumed to be, from the context of his writings, Mr. Surveyor W. R. Govett, of Govett's Leap fame. Oxley discovered a grave on the Lachlan, consisting of a semicircular mound, with two trees overlooking it, barked and carved in a simple manner.* These carvings consisted of herring-bone on the one tree, and well-marked curved although simple lines on the other. The explorer Sturt noticed an oblong grave beyond Taylor's Rivulet, Macquarie River, around which the trees were "fancifully carved on the inner side," one with a figure of a heart.† The anonymous author (W.R.G.) describes an occurrence of this kind at Mount Wayo, County Argyle, in the following words: "The trees all round the tomb were marked in various peculiar ways, some with zigzags and stripes, and pieces of bark otherwise cut."‡ A Mr. Macdonald states that the aborigines of the Page and Isis, tributaries of the Hunter River, carve serpentine lines on two trees to the north-west of each grave.§

The figures are either composed of right lines or curves, more commonly the former, but a few instances have been recorded of natural objects, such as the outline of an emu's foot, seen by Leichhardt

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* Journ. Two Expeds. Interior N. S. Wales, 1820, p. 139, plate.
† Two Expeds. Interior S. Austr., 1834, I, p. 14.
‡ Saturday Mag., 1836, ix, No. 279, p. 184.
§ Journ. Anthrop. Inst. Gt. Brit. and Ireland, 1878, vii, p. 256.

on a gum tree in the Gulf Country.* One thing is self-evident, such carvings possessed a dual if not a triple significance. We have already seen the employment of them to indicate an interment, presumably acting the part of a tombstone, for it is believed by some that the figures on a tree in each case correspond to those on the inner side of deceased's 'possum rug, the *mombarai*, or "drawing," which Fraser thinks was distinctive in each family, or a peculiar modification of the tribal *mombarai*.† So far as I can gather, such devices invariably indicated the last resting-place of a male. Mr. E. M. Curr states‡ that the Brecaba Tribe, at the head-waters of the Burdekin River, North Queensland, employed marked trees to commemorate a battle. He figures a tree from the banks of the Diamantina, barked and marked by a series of close, irregularly superimposed notches, like those made by a black when climbing a tree. These, however, can hardly be compared to carvings.

According to Mr. J. Henderson, Dr. John Fraser, Mr. A. W. Howitt, and Mr. Macdonald previously mentioned, Bora Grounds are also embellished with carved trees. The first-named describes§ the approach to one of these initiation places at Wellington as through "a long, straight, avenue of trees, extending for about a mile, and these were carved on each side with various devices . . . At the lower extremity of this, a narrow pathway turned off towards the left, and soon terminated in a circle." Mr. Henderson further remarks that the fact of the use of this place for Bora purposes was communicated to him by the then head-man of the tribe. Dr. Fraser says‖ that the Gringai Tribe, one of the northern N. S. Wales tribes, clear two circular enclosures, one within the other, for their Bora, and that the trees growing around the smaller circle are carved "with curious emblematical devices and figures," whilst Mr. Macdonald informs us that on the Bora ground of the Page and Isis River natives, as many as a hundred and twenty marked trees occur round about.¶ Confirmation is further afforded by Mr. W. O. Hodgkinson, who saw a Bora ground on the Macleay River with "trees minutely tatooed, and carved to such a considerable altitude that he could not help feeling astonished at the labour bestowed on the work."**

If, as previously stated, according to current report, the designs on the trees be the same as those on the 'possum rugs, the transfer of them to the trees surrounding a grave must have had some important and lasting meaning to the survivors. The figures on the rug may have indicated some degree of ownership,—a crest, coat of arms or monogram, as it were—and in such a case the reproduction on the trees surrounding a grave may be looked upon as an identification of the deceased. Henderson speaks of the tree carvings as symbols. "A symbol is afterwards carved upon the nearest tree, which seems to indicate the particular tribe to which the individual may have belonged."†† Or had they a deeper esoteric meaning, one only known to the learned men of the tribe? Smyth states‡‡ that the figures on the inner sides of the 'possum rugs "were the same as those on their weapons, namely, the herring-bone, chevron, and saltier." How easily these same devices can be traced, in a general way, both on the carved trees and some of the wooden weapons, is amply shown by many of the excellent figures given in Smyth's work. This painstaking author, in briefly dealing, too briefly in fact, with this interesting subject, says§§: "The natives of the Murray and the Darling, and those in other parts adjacent, carved on the trees near the tombs of deceased warriors *strange figures having meanings no doubt intelligible to all the tribes* in the vast area watered by these rivers." By the Kamilaroi‖‖ they were regarded as "memorials" of the dead.

It is much to be regretted that before the last remnant of this fast disappearing race has passed away, a translation, or at any rate an explanation of these matters, cannot be obtained.

I give a note on the references to Oxley and Sturt:—

Oxley.—"Two Expeditions into the Interior of New South Wales," 1820. Coloured plate at p. 138.

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* Journ. Overland Exped., Moreton Bay to Port Essington, 1847, p. 356.
† Journ. R. Soc. N. S. Wales for 1882 [1883], xvi, p. 201.
‡ The Australian Race, 1886, ii, p. 433.
§ Obs. Colonies of N. S. Wales and V. D. Land, 1832, p. 145, pl. 3.
Journ. R. Soc. N. S. Wales for 1882 [1883], xvi, p. 205.
¶ Journ. Anthrop. Inst. Gt. Brit. and Ireland, 1878, vii, p. 256.
** Smyth, Aborigines of Victoria, 1878, I, p. 292.
†† Obs. Colonies of N. S. Wales and V. D. Land, 1832, p. 149.
‡‡ Aborigines of Victoria, 1878, I, p. 288.
§§ Aborigines of Victoria, 1878, I, p. 286. The italics are mine.
‖‖ T. Honery, Journ. Anthrop. Inst. Gt. Brit. and Ireland, 1878, vii, p. 254.

This is a description of an aboriginal grave consisting of a hemispherical mound flanked by three concentric lower mounds (rows of seats).

. . . . "to the west and north of the grave were two cypress trees* distant between fifty and sixty feet; the sides towards the tomb were barked, and curious characters deeply cut upon them, in a manner which, considering the tools they possess, must have been a work of great labour and time."

Sturt.—"Two Expeditions into the Interior of Southern Australia." 1833, i, 14.

In 1828 Sturt passed down the banks of the Macquarie River, and at Buddah Lake he briefly describes a native grave and carved trees, which with his illustration "Burial place near the Budda," shows that what he saw was very similar to that observed by Oxley.

Addendum.—Mr. J. G. Saxton gives the following Victorian aboriginal names for trees:—

"Bolwarra"—Native laurel-tree.
"Bunn"—Native tea-tree.
"Boosey" or "Boosi"—Gum.
"Bael Bael"—Gum-trees.
"Barp"—Mother, white, or upland gum-tree of the Avoca natives.
"Bayup"—A kind of gum tree.
"Towong"—Marma-tree, a tall white gum.
"Warracknabeal"—Large gum-trees.
"Weeah"—Narrow-leaved Mallee.
"Warmur"—Young box-tree.

I shall be glad if my readers would assist me in arriving at the identity of these trees, whether they extend to New South Wales or not.

* Probably *Callitris robusta*.

A Critical Revision of the genus Eucalyptus.*

THIS work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets):—

Eucalyptus acmenioides, Schauer (IX).
,, *amygdalina*, Labillardière (VI).
,, *Andrewsi*, Maiden (VII).
,, *apiculata*, Baker and Smith (IX).
,, *calycogona*, Turczaninow (III).
,, *capitellata*, Smith (VIII).
,, *coriacea*, A. Cunn. (V).
,, *dives*, Schauer (VII).
,, *eugenioides*, Sieber (VIII).
,, *incrassata*, Labillardière (IV).
,, *Luehmanniana*, F.v.M. (IX).
,, *macrorrhyncha*, F.v.M. (VIII).
,, *microcorys*, F.v.M. (IX).
,, *Muelleriana*, Howitt (VIII).
,, *obliqua*, L'Héritier (II).
,, *piluluris*, Sm. (I).
,, *Planchoniana*, F.v.M. (IX).
,, *regnans*, F.v.M. (VII).
,, *stellulata*, Sieber (V).
,, *umbra*, R. T. Baker (IX).
,, *virgata*, Sieber (IX).
,, *vitellina*, Naudin (VII).
,, *vitrea*, R. T. Baker (VII).

* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, six shillings). Part IV will be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney: William Applegate Gullick, Government Printer.—1908.

Volume II (Parts XI–XX).

PART XI (ISSUED SEPTEMBER, 1904).

No. 39.—THE FOREST RED GUM (*Eucalyptus tereticornis*, Sm.).
No. 40.—THE BLACK APPLE (*Sideroxylon australe*, Benth. et Hook., f.)
No. 41.—THE SMOOTH-BARKED APPLE (*Angophora laneeolata*, Cav.).
No. 42.—*Scolopia Brownii*, F.v.M.

PART XII (ISSUED NOVEMBER, 1904).

No. 43.—THE BLOODWOOD (*Eucalyptus eorymbosa*, Sm.).
THE CYPRESS PINES OF NEW SOUTH WALES (*Genus Callitris*).—
No. 44.—*Callitris Macleayana*, F.v.M.
No. 45.—*Callitris verrucosa*, R.Br.
No. 46.—*Callitris robusta*, R.Br.
No. 47.—*Callitris columellaris*, F.v.M.
No. 48.—*Callitris Muelleri*, Benth. et Hook. f.
No. 49.—*Callitris propinqua*, R. Br.
No. 50.—*Callitris calcarata*, R.Br.
No. 51.—*Callitris eupressiformis*, Vent.

PART XIII (ISSUED NOVEMBER, 1904).

No. 52.—THE MUGGA; A RED IRONBARK (*Eucalyptus sideroxylon*, A. Cunn.).
No. 53.—THE NATIVE ELM (*Aphananthe philippinensis*, Planch.).
No. 54.—THE BELAH (*Casuarina lepidophloia*, F.v.M.).
No. 55.—THE WESTERN ROSEWOOD (*Heterodendron oleæfolium*, Desf.)

PART XIV (ISSUED FEBRUARY, 1905).

No. 56.—THE GRUIE OR COLANE (*Owenia acidula*, F.v.M.).
No. 57.—THE BLACK SALLY (*Eucalyptus stellulata*, Sieb.).
No. 58.—THE SWAMP OAK (*Casuarina glauca*, Sieb.).
No. 59.—A DECIDUOUS FIG (*Ficus Henneana*, Miquel).
(N.B.—The numbers of Part XIV are given erroneously in the text.)

PART XV (ISSUED MARCH, 1905).

No. 60.—THE BLACKWOOD (*Acacia melanoxylon*, R.Br.).
No. 61.—A WHITE OR CABBAGE GUM (*Eucalyptus eoriaeea*, A. Cunn.).
No. 62.—THE RIVER OAK (*Casuarina Cunninghamiana*, Miq.).
No. 63.—THE WESTERN WHITEWOOD (*Atalaya hemiglauca*, F.v.M.).

PART XVI (ISSUED JUNE, 1905).

No. 64.—THE WEEPING MYALL (*Aeacia pendula*, A. Cunn.).
No. 65.—A PEPPERMINT (*Eucalyptus amygdalina*, Labill.).
No. 66.—THE FOREST OAK (*Casuarina torulosa*, Ait.).
No. 67.—THE IVORY WOOD (*Siphonodon australe*, Benth.).

PART XVII (ISSUED OCTOBER, 1905).

No. 68.—THE DROOPING SHE-OAK (*Casuarina stricta*, Ait.).
No. 69.—THE RIVER WHITE GUM (*Eucalyptus numerosa*, Maiden).
No. 70.—THE NATIVE TEAK (*Flindersia australis*, R.Br.).
(*Two Plates.*)

PART XVIII (ISSUED NOVEMBER, 1905).

No. 71.—THE CUDGERIE (*Flindersia Schottiana*, F.v.M.).
(*Two Plates.*)
No. 72.—THE GIANT GUM TREE (*Eucalyptus regnans*, F.v.M.).
No. 73.—THE BLACK SHE-OAK (*Casuarina suberosa*, Otto et Dietr.).

PART XIX (ISSUED JANUARY, 1906).

No. 74.—THE YELLOW-WOOD (*Flindersia Oxleyana*, F.v.M.).
(*Two Plates.*)
No. 75.—THE BROAD-LEAVED PEPPERMINT (*Eucalyptus dives*, Schauer)
No. 76.—THE BULL OAK (*Casuarina Luehmanni*, R. T. Baker).

PART XX (ISSUED JULY, 1906).

Recapitulatory (Sixteen Plates).

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(*Two Plates.*)
No. 78.—The Blackbutt or Peppermint (of New England) (*Eucalyptus Andrewsi*, Maiden).
No. 79.—The Thready-barked Oak (*Casuarina inophloia*, F.v.M. and Bailey).

PART XXII (ISSUED FEBRUARY, 1907).

No. 80.—The Hill Flindersia (*Flindersia collina*, F. M. Bailey).
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No. 81.—The Broad-leaved Messmate (*Eucalyptus obliqua*, L'Hérit.).
No. 82.—The Cedar Wattle (*Acacia elata*, A. Cunn.).

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No. 88.—The Mountain Hickory (*Acacia penninervis*, Sieb.).
(*Two Plates.*)

PART XXV (ISSUED JUNE, 1907).

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No. 90.—A Virgate Eucalypt (*Eucalyptus virgata*, Sieb.).
No. 91.—The Two-veined Hickory (*Acacia binervata*, DC.).
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No. 98.—Red Stringybark (*Eucalyptus macrorrhyncha*, F.v.M.).
No. 99.—A Brush Ironbark (*Acacia aulacocarpa*, A. Cunn.).
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No. 104.—The Murrogun (*Cryptocarya mieroneura*, Meissn.).

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No. 106.—A White Stringybark (*Eucalyptus eugenioides*, Sieb.).
No. 107.—Baker's Wattle (*Acacia Bakeri*, Maiden).
No. 108.—The Stinking Cryptocarya (*Cryptocarya fœtida*, R. T. Baker).

PART XXX (ISSUED MARCH, 1908).

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THE FOREST FLORA OF New South Wales.

J. H. MAIDEN.

VOL. IV. PART 2.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

PART XXXII OF THE COMPLETE WORK.

INDEX OF TREES DESCRIBED.

Volume I (Parts I-X).

Volume II (Parts XI-XX).

THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the Botanic Gardens, Sydney.

PART XXXII.

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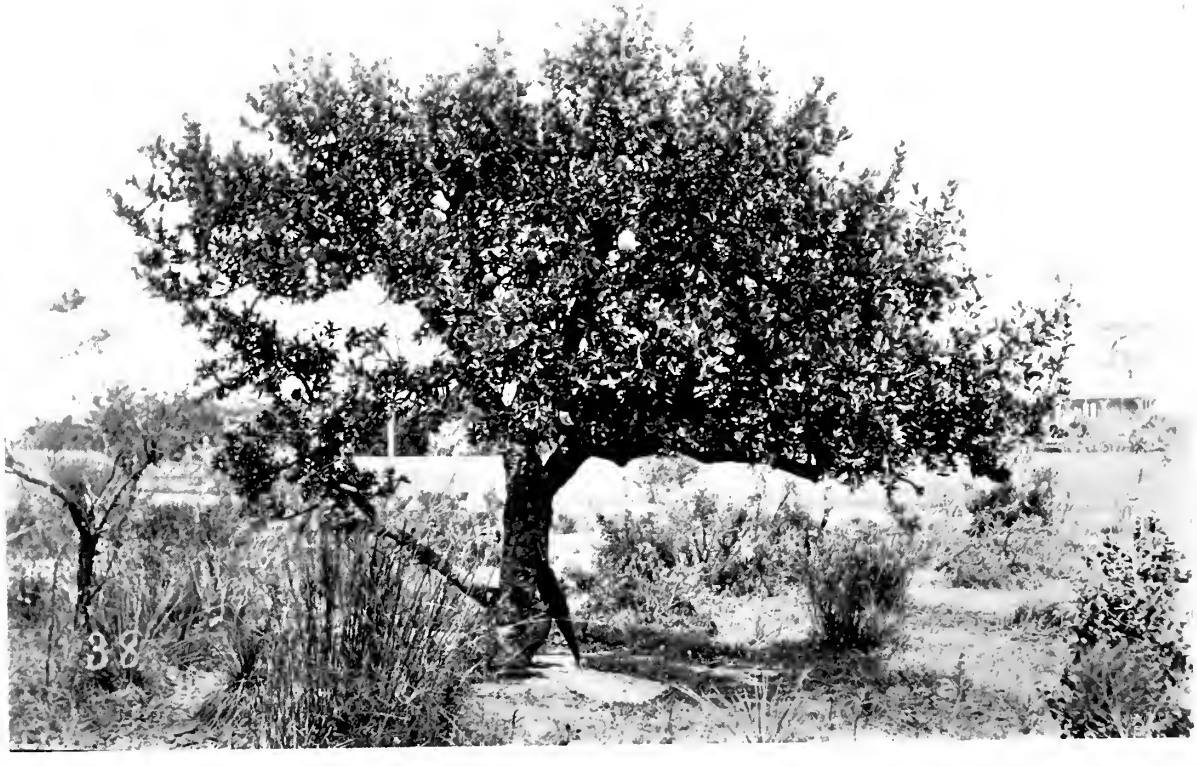
W. Forsyth, photo

CLUMP OF *Banksia serrata*, CENTENNIAL PARK.



W. Forsyth, photo.

RED HONEYSUCKLE (*Banksia serrata*, LINN. F.), MOSMAN.

No. 115.

Banksia serrata, L. f.

The Red Honeysuckle.

(Family PROTEACEÆ.)

Botanical description.—Genus, *Banksia.* (See Part VIII, p. 169.)

Botanical description.—Species, *B. serrata,* L. f. Suppl. 126.

A tree, the young shoots tomentose or villous, and sometimes densely so, with richly-coloured ferruginous very deciduous hairs.

Leaves, oblong-lanceolate, acute or truncate, regularly and deeply serrate, tapering into a petiole, 3 to 6 in. long, ½ to 1 in. wide, coriaceous, flat, hoary or rarely white underneath, with parallel transverse veins.

Spikes oblong-cylindrical, or rarely globular, 3 to 6 in. long, very thick.

Perianth shortly silky, the tube above 1 in. long, the laminæ narrow, acuminate, nearly 3 lines long, the silky hairs longer than those of the tube.

Style at length straight, with a cylindrical somewhat furrowed stigmatic end, about ½ line long, and thickened at the base.

Capsules very prominent, tomentose, thick and hard, obliquely rounded or ovate, above 1 in. broad. R.Br. in *Trans. Linn. Soc.* x, 209, *Prod.* 395; Sm. in *White, Voy.* 223, t. 18 to 20; Meissn. in DC. *Prod.* xiv, 461; F. Mueller, *Fragm.* vii, 56; Andr. *Bot. Rep.* t. 82. (B.Fl. v, 556.)

Mr. R. T. Baker (*Proc. Linn. Soc. N.S.W.*, 1896, p. 462), has described a variety *hirsuta* in the following words:—

Only one clump of this species seen, and that on one of the ranges at Kelgoola. The leaves are larger than those of Sydney specimens, and covered on both sides with long white hairs, which are also found on the branches. This species has never been recorded so far west before.

Botanical Name.—*Banksia*, already explained (see Part VIII, p. 170); *serrata*, from a Latin adjective meaning saw-like, in allusion to the notches on the margin of the leaves.

Vernacular Names.—"Honeysuckle" is so called because the spikes of flowers are often full of honey, which the aborigines used to consume either by passing them over their tongues, or by soaking in water, when a sweetish liquid would be obtained, which was drunk either before or after fermentation. The prefix "red" is in allusion to the intensely red colour of the wood, and to distinguish it from the White Honeysuckle (*B. integrifolia*).

The wood when freshly cut has much the appearance of beef, hence the name "Beefwood" which is occasionally given to it.

Aboriginal Names.—At one time called "Wattung-urree" by the aborigines of the Counties of Cumberland and Camden, New South Wales (Macarthur). Mr. Forester Mecham informs us that the blacks on the Bellinger used to call it "Belleimm."

Synonyms.—*B. conchifera*, Gærtn. *Fr.* 1, 221, t. 48; *B. mitis*, Knight, *Prot.* 112; *B. dentata*, Wendl. *Hort. Herrenh.*, t. 8; *B. media*, Hook. f., *Fl. Tasm.* 1, 329, not of R.Br. The plant figured by Cavanilles as *B. serrata* appears rather to be *B. æmula*; Baillon's figure, *Hist. Pl.* ii, 394, f. 230, is most probably taken from *B. attenuata* (Benth.). *Bundulata*, Lindl., is also a synonym, and not of *B. æmula*, in my opinion. See Part 33.

Bark.—Of tubercular appearance, the outer surface dark grey, but when fresh it has the appearance, when cut into, of juicy beef. In fact, the bark perhaps more deserves the epithet of "beef" than the wood. It contains from 10 to 20 per cent. of tannin, not sufficient to place it in the front rank of tan-barks, besides which its very dark colour would cause it to be objectionable to the tanner.

Timber.—A purplish, mahogany-coloured wood, of coarse, open grain, yet tough and beautifully-grained, like many others of the Proteaceæ. It is a good working timber, and is much used for boat knees and stems, being reputed to last as long as the Cedar. It is also used for window-frames. It is not liable to split with nailing. It is a good firewood. It is generally injured by being bored into by the larvæ of a beetle, which will be referred to presently.

Insect Enemies.—Mr. E. Meyrick (*Proc. Linn. Soc. N.S.W.* [2] vii, 544) describes a new species of *Tinea* (*T. phauloptera*); the larva of this small moth "mines a broad, gradually dilated gallery in the leaves of *Banksia serrata*, usually along the margin, in July; when full-fed, it cuts out an oval case from the leaf to pupate in, and lets itself down."

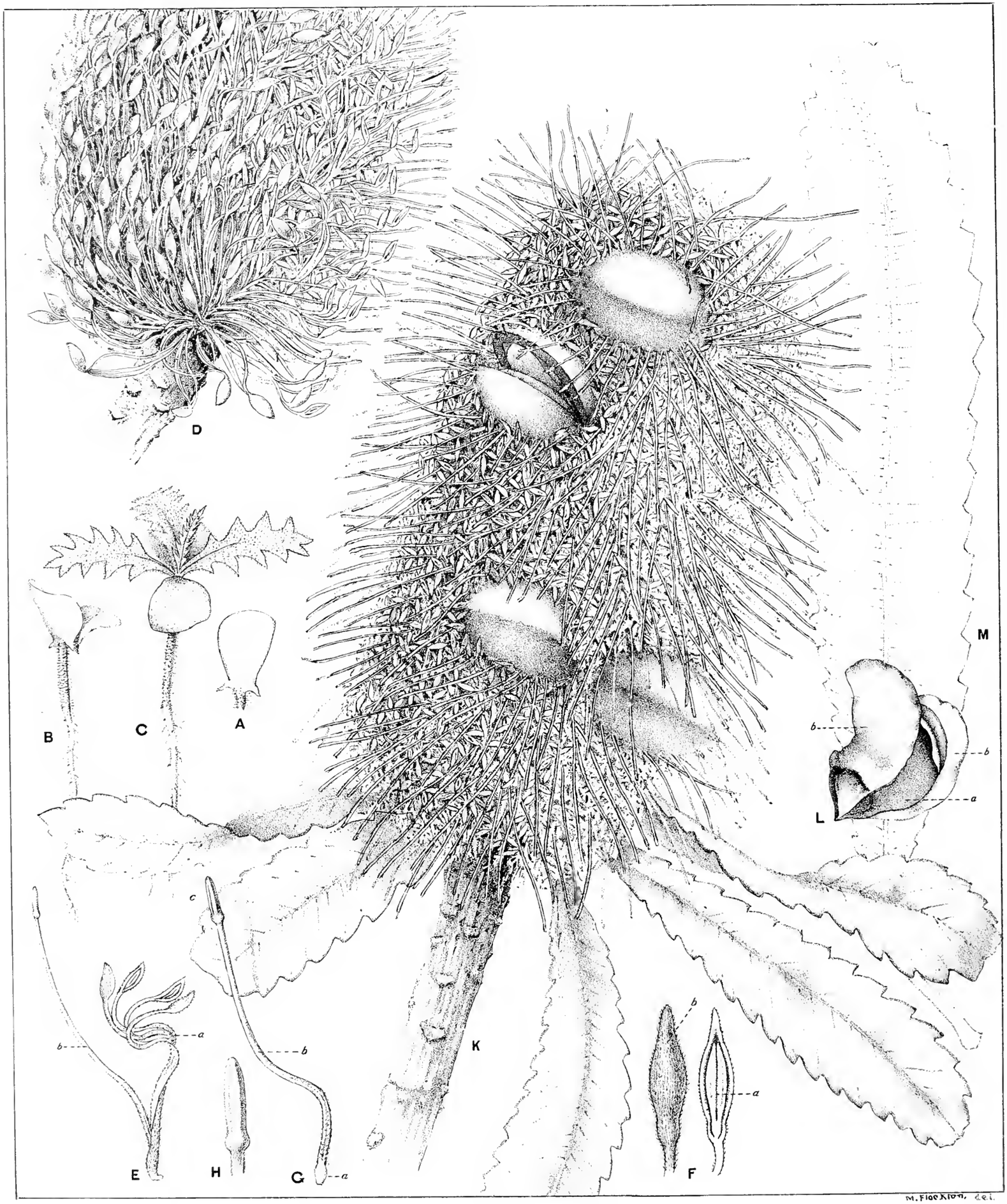
Mr. Froggatt informs us that a number of galls are also found on the foliage of this tree. They are chiefly small, are found upon the under side of the leaves, and are probably formed by small hymenoptera of the family Chalcididæ.

The most interesting insect as regards this plant is, however, the one referred to under "timber." It is a large Prionid longicorn beetle (*Macrotoma servilis*, Pascoe), and is very destructive to the trunks, often practically destroying the timber for economic purposes. See *Proc. Linn. Soc. N.S.W.* [2] viii, 28.

Exudations.—The Proteaceæ is one of the families which yields both gums and resins.

A dark red gum (? resin) has been observed on this species. See Maiden.*
"The Banksia wood, which produces large quantities of resin." . . . . . .
("Note on the Vegetation of W. Australia," by A. H. Robertson, M.D.) in *Prize Essays, Edinburgh Forestry Exh.*, 1884.

* "Gums and a resin, produced by Australian Proteaceæ." *Proc. Roy. Soc. S.A.*, 1889, p. 54.



THE RED HONEYSUCKLE.

(*Banksia serrata*, LINN., *f.*)

Size.—Usually a gnarled tree; it attains a height of up to 50 feet and a trunk diameter of 3 feet.

Habitat.—It usually occurs in poor, sandy land along the coast districts, and also in sterile, rocky soil, but never many miles from the coast. It occurs as far north as Port Macquarie, but its northernmost limit is as yet unascertained. Mr. R. T. Baker has found it as far west as the Rylstone District.

EXPLANATION OF PLATE 119.

A., B., C. Seedlings in different stages of growth.

D. Inflorescence (portion of cylindrical spike).

E. Flower—
- (*a*) Four-lobed corolla, with stamens.
- (*b*) Pistil.

F. Corolla lobes—
- (*a*) Showing stamen in the concave lamina.
- (*b*) Back view.

G. Pistil—
- (*a*) Ovary.
- (*b*) Style.
- (*c*) Stigma.

H. Stigma.

K. Fruiting spike, showing the prominent capsules, containing the winged seeds.

L. Fruit—
- (*a*) Plate, separating the two-winged seeds (b.b.).

M. Outline of leaf, giving the full size.

PHOTOGRAPHIC ILLUSTRATIONS.

Individual tree from Mosman, Sydney.—(W. Forsyth, photo.)
Clump of trees, Centennial Park, Sydney.—(W. Forsyth, photo.)

No. 116.

Eucalyptus acmenioides, Schauer.

The White Mahogany.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical description.—Species, *E. acmenioides*, Schauer in Walper's *Rep.* (Supplementum primum) ii, 924 (1843).

The species may be described in the following words :—

A medium-sized or large tree.

Bark.—Fibrous, not unlike Stringybark in smallish trees, but more like Tallow-wood bark (*E. microcorys*) in large trees. The branches are covered as well as the trunk.

Timber.—Pale-coloured, dense, and of high specific gravity.

Juvenile leaves.—The first leaves are opposite and not oblique, but symmetrical, broadly ovate, lanceolate, and with pale underside. As the plant grows older they become alternate and are acuminate.

Mature leaves.—In the mature leaves there is a tendency to crenulate margins, and some show a considerable resemblance in outline to that of a peach. The leaves are less oblique than in most Eucalypts, and the veins, unlike most *Renanthera*, are parallel, making a considerable angle with the midrib, and are thus very distinct from those of *E. eugenioides.* The axes are angular ; leaves pale underneath. The pale colour of the underside of the leaf is accentuated in drying, particularly if it has been collected damp, the upper surface often drying quite dark.

Umbels rather numerous.

Opercula of plump buds, hemispherical and pointed. *Anthers*, kidney-shaped.

Fruit.—Small, say, 2·5 cm. in diameter, tending to be spherical, or truncate-spherical, sometimes very slightly urceolate, rim thin, with rather long, filiform pedicels not gradually broadening into the base of the fruit.

Botanical Name.—*Eucalyptus*, already explained (see Part II, p. 34) ; *acmenioides*, from two words, *Acmena* and the Greek *oidos*, like. Our common Lilly Pilly, *Eugenia Smithii*, was once known as *Acmena*, and the leaves of *E. acmenioides* reminded Schauer of those of *Eugenia Smithii* (*Acmena*).

Vernacular Names.—" White Mahogany." This tree has a pale-coloured timber, which bears no resemblance either to the Mahogany of commeree or to the Red or Forest Mahogany of New South Wales. It gets its name because of its pale colour, and because the bark of the tree was thought to resemble that of the Red Mahogany. The name is in universal use in the State, and cannot now be disturbed.

It is stated to be known as "Stringybark" at Rockingham Bay, Queensland, while "Broad-leaved Box" (a bad name, and likely to lead to confusion) is also quoted for this species.

Aboriginal Names.—It used to be called "Jundera" by the aborigines of the Richmond River, New South Wales.

Synonyms.—*E. pilularis*, Sm. var. (?) *acmenioides*, Benth. in B.Fl. iii, 208. *E. triantha*, Link., and *E. carnea*, R. T. Baker. See Part IX of my "Critical Revision of the genus Eucalyptus," where the matter is fully discussed.

Timber.—To say that it resembles Tallow-wood a good deal, but that it is paler in colour, that it is not greasy, and harder than the better-known timber, will perhaps give a good idea of it. It is one of the most durable timbers in New South Wales. I know of posts of it in different parts of the State quite sound after the vicissitudes of more than half a century. Its chief drawback is some tendency to shell off. Users of it have even gone so far as to assure me that it is far more durable than Ironbark or Box. It is a tough, strong, useful timber. I believe it will be found an excellent timber for wood blocks, but I would discourage exportation of it at present except under close supervision, as I have known Stringybark substituted for it, perhaps through inadvertence. Its hardness is a drawback, and the trees are sometimes unsound; but it is so good a timber that I would invite our timber men to give more attention to it in future. It is one of those timbers which is not as well known as it should be, because it has been constantly confused with others. It is excellent for posts, piles, girders, &c., and is useful for general building purposes. It would be desirable to thoroughly test it for the decking of bridges.

Mr. R. T. Baker says that it promises well for golf club heads, being hard and close-grained, and not too heavy.

Is White Mahogany durable?

Doubt has been cast on the durability of White Mahogany. For example, Mr. J. V. de Coque has published the following statement:—

> This timber bears no resemblance in colour to the Red Mahogany, but is remarkably like the light coloured Tallow-wood; in fact, it takes an experienced eye to detect any difference in the two timbers. It is often substituted for Tallow-wood, and unfortunately is not equal to it in durability or value. Unlike Tallow-wood, it shrinks a good deal in seasoning, and is much more open in grain. For general purposes it should only rank as a third-class hardwood, and when called upon to stand exposure should be avoided.

The late Augustus Rudder (one of the best of New South Wales foresters) wrote:—

> In brushy places this tree attains to a considerable size up to 5 feet in diameter, but in the open it is usually smaller. It is one of our Stringybarks, and is fairly plentiful along the Northern Coast country. The wood of this tree is hard, and very close in the grain, but splits easily, and is very similar in appearance to that of Tallow-wood. The principal defects of this timber are a tendency to rings and pin holes. For lasting in the ground, as far as I know, it has no equal. I have seen fence posts of it quite sound after being in use for over fifty years.

When on a trip along the central North Coast districts some years ago, I published the note—

Occurs from about Booral to Gloucester, and then along the coast at least as far as Kempsey. Irregularly distributed with Stringybark (*E. eugenioides*, Sieb.) on the ridges. Not often cut in the saw-mills, because it is heavy and hard to saw, perhaps also because it is often faulty. It is very durable timber, and is used for posts and rails, and also for palings. It is very durable in the ground, lasting longer than Red Mahogany. Mr. Forester Macdonald told me of round posts in the ground near Kempsey quite sound after thirty years. It is stated to gum the saw.

The following letter was written to me by Mr. C. J. Cullen, of Kincumber, some years ago :—

There is on my land at Kincumber the remains of an old fence that I am credibly informed was erected fifty-five years ago (1892), and although most of it has succumbed to wear and tear and bush fires, many of the posts and rails remaining are still quite sound. I am not sure how many kinds of timber were used, but can identify some of the posts as "White Mahogany," a timber that, I believe, under favourable circumstances would last 100 years, in the ground or out of it. . . . . The tree has a rough bark of a yellowish-brown or ginger colour, and the wood is a pale yellow. It is excellent for any purpose in building except for sawn boards, as it chafes (*sic*) into concentric rings. It will do, however, for piles, girders, or sleepers, and will last double the time that Ironbark, Box, or Turpentine will.

In the Kincumber (Gosford) district White Mahogany is a well-known timber, and the balance of evidence available to me shows that it is durable. At the same time there is no doubt that we can have inferior White Mahogany, just as we can have inferior kinds of other timbers.

The Official Catalogue of the Queensland Forestry Museum, 1904, *says* :—

A large tree, with a fibrous persistent bark ; wood of a light brown colour, close grained, fairly hard, and very durable.

Used for all kinds of building purposes, and for fencing posts and rails.

Exudations.—The kino of this tree belongs to my Ruby Group. It is soluble both in alcohol and water.

A few years ago I published the statement, "This kino occurs in small quantity only, is of an amber colour when recently exuded, passing subsequently to red and black (Baneroft). I have never found enough for a full analysis, although I have searched for it for years" ; but shortly afterwards Mr. W. R. Stacey sent me specimens of the bark and wood with a considerable amount of kino. It is evidently of rather local occurrence.

Size.—It attains the dignity of a large tree, with a height of 100 feet, and a trunk diameter of 5 feet; but its usual size is much less.

Habitat.—It is confined to eastern New South Wales and Queensland. Its southernmost locality known to me is the Port Jackson District; its most northern is Rockhampton, Queensland, occurring in coastal districts and table-lands. Westerly I have it from Drake, near Tenterfield; but its range is worthy of further investigation.

F. A. Kirton, photo.

WHITE MAHOGANY (*Eucalyptus acmenioides*, SCHAUER), WYONG.

WHITE MAHOGANY.

(*Eucalyptus acmenioides*, SCHAUER.)

F. A. Kirton, photo.

TRUCKS LOADED WITH SLEEPERS, WYONG.

F. A. Kirton, photo.

SHOWING METHOD OF LOADING SLEEPERS, WYONG.

I do not doubt that a good deal of country reported to be Stringybark is really White Mahogany of one form or another. Both trees like the same situations—well-drained, sterile hills and mountain sides.

EXPLANATION OF PLATE 120.

A. } Sucker leaves.
B. }

C. Flowering branch.

D. Fruits (Gosford District).

E. Smaller fruits from Brisbane.

PHOTOGRAPHIC ILLUSTRATIONS.

Tree, Wyong, N.S.W., girth 17 feet, barrel 60 feet.—(F. A. Kirton, photo.)

Method of loadmg sleepers (ironbark, &c.), Wyong.—(F. A. Kirton, photo.)

Trucks loaded with sleepers, Wyong.—(F. A. Kirton, photo.)

No. 117.

Acacia Cambagei, R. T. Baker.

The Gidgee.

(Family LEGUMINOSÆ : MIMOSEÆ.)

Botanical description.—Genus, *Acacia.* (See Part XV, p. 103.)

Botanical description.—Species, *A. Cambagei*, R. T. Baker in *Proc. Linn. Soc. N.S.W.*, 1900, p. 661–2, with a plate (42).

A medium-sized tree, with pendulous* branchlets, the foliage of a pale or glaucous hue ; branchlet angular.

Phyllodia falcate, lanceolate, obtuse or slightly acuminate, up to 5 inches long, and from 5 to 9 lines broad, with numerous fine parallel veins, two or three more prominent than the rest : thin or membranous.

Peduncles about 3 lines long, slender, in axillary clusters of about 6, each bearing a globular head of about 12 flowers.

Sepals broad, spathulate, ciliate on the upper edge, free and less than half as long as the petals.

Petals glabrous.

Pod flat, straight, about 3 inches (lines in original) long and 4 lines broad, veined, valves thin, not contracted between the seeds.

Seeds ovate, longitudinal, or slightly oblique ; funicle short, filiform, not folded nor dilated.

It differs in herbarium material from "Yarran" (*A. homalophylla*), in its larger and glaucous phyllodes, and the distinct venation, and also in the shape of its pods, and in the shape of the funicle. The phyllodes are somewhat similar to those of *A. excelsa*, Benth., in venation and colour, as also in the timber and pod. In botanical sequence it is placed between that species and *A. harpophylla*, F.v.M.

It has been usual in the past to regard in herbaria this tree ("Gidgee") and "Yarran" as one and the same species, and in the botanical literature of the Acacias they are designated as *A. homalophylla*, A. Cunn. It would appear, however, in the field that the "Gidgee" and "Yarran" are never confounded by settlers, the two trees, as they remark, "being quite different."

Mr. R. H. Cambage, L.S., who has given recent attention to these particular trees, and who has repeatedly disputed their being specifically the same, has procured sufficient material and evidence to convince me that the two should be separated ; and I now propose the name of *A. Cambagei* for the wattle known over a large tract of the interior of New South Wales as "Gidgee."

Bentham's description of *A. homalophylla*, A. Cunn. (B Fl. ii, 383), and Mueller's figure (*Iconography of Acacias*) of that species undoubtedly refer to "Yarran," which I have myself collected in several parts of this colony. The two species can be easily separated in dried specimens, the phyllodes being quite dissimilar, as well as the pods, funicle, and timber.

In the field, "Gidgee" is separated from "Yarran" by the offensive odour of its phyllodia, which in wet weather is particularly disagreeable, and can be detected when one is miles away from the trees. (*Op. cit.*)

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* Not really pendulous. See the photograph.

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104); *Cambagei*, in honour of Richard Hind Cambage, Chief Mining Surveyor, New South Wales, an enthusiastic botanist.

Vernacular Names.—The aboriginal name "Gidgee" is in almost universal use. It is also called "Stinking Wattle."

The smell of the tree is abominable, and just before rain almost unbearable, and on this sign people frequently foretell the approach of rain. I have heard of instances in which men who were employed in cutting down a tree of this species just before rain became so sick as to be compelled to leave the tree.

Aboriginal Name.—"Gidgee." Of this word there are various spellings, such as "Gidgea," "Gidgi," "Gidgy," "Gidia," "Gidya." Originally spelt "Gidgea," which is nearer to the aboriginal pronunciation, but the universal pronunciation now is "Gidgee."

Leaves.—Its evil-smelling foliage, particularly on the approach of rain, has already been referred to. It is of little or no value to the stock-owner, except perhaps for camel-feed.

An analysis of the foliage by Mr. F. B. Guthrie will be found in the *Agricultural Gazette* for October, 1899, under the name of "Gidgea."

Water.	Ash.	Fibre.	Ether Extract (Oil, &c.).	Albuminoids.	Carbo-hydrates.	Nutrient Value.	Albuminoid ratio.	Tannin (Oak-bark).
41·03	8·73	22·59	2·08	7·31	18·26	20¼	1 : 3	2·0

There is another Queensland Gidgee (*Acacia Georginæ*, Bail.), also with a disagreeable odour. So far as I know, these are the only two Gidgees.

The chief distinction between the two species is in the pods and seeds.

A. Georginæ.	A. Cambagei.
Pods *falcate or curved in a circle*, flat, marked with branched veins, ¾ *inch broad.*	Pods flat, *straight*, veined, about 4 *lines broad.*
Seeds *transverse*, very flat, surrounded by a narrow wing-like border, funicle *thickened at the end, with one or two folds below.*	Seeds, *longitudinal*; funicle short, *filiform, not folded nor dilated.*
Small tree with a dense spreading head. Leaves shorter and proportionately broader than *A. Cambagei.*	Branches, pendulous. Leaves longer and proportionately narrower than in *A. Georginæ.*

Timber.—

Hard, close-grained, often interlocked, of a dark reddish or almost black colour. It is very durable, and Mr. R. H. Cambage records an instance of its having been used as fence-posts for over thirty years.—(R. T. Baker.)

It is much used for fencing posts, and lasts well; also a first-class firewood, being as good, if not better, than Mallee roots. The white ash is sometimes used for whitewash. It also makes good picture-frames and walking-sticks, especially if ringed.—(R. J. Dalton, Wanaaring.)

A small tree, with grey foliage and rather small narrow leaves. Wood dark-red colour, often ringed, and otherwise prettily marked; very hard and brittle, and rather difficult to work. Its chief uses are for cabinet and turnery work. Makes very handsome walking-sticks.—(*Cat. Queensland Forestry Museum*, 1904.)

In western New South Wales the wood is considered very durable, and is, therefore, used for the lining of wells, but then it is said to give the water a bad taste for several years. Perhaps this is owing to the presence of a saponin. It has been stated that the wood has a bad smell like the foliage, particularly when burned. but this is a mistake.

The beautiful parallel markings often seen in this wood, which then takes the name of "Ringed Gidgee" are caused by a uniform wavy grain. This form is very well known, and leads to its extensive use for small ornamental articles, particularly stockwhip handles and walking sticks. Mr. R. H. Cambage has some notes on Ringed Gidgee in *Proc. Linn. Soc. N.S.W.*, 1902, p. 563.

The following analysis and description of the ash of the "Gidgea Acacia (Stinking Wattle)" is by Mr. F. B. Guthrie, and will be found in the *Agricultural Gazette* for December, 1897, p. 868:—

Ash of Gidgea Acacia (Stinking Wattle).

A sample of the ash of this plant, forwarded by Mr. A. Andrews from the neighbourhood of the Pera Bore, was examined some time ago. As the composition of this ash is peculiar, and quite different from that of the ash of any other timbers I have examined, the analysis is appended herewith:—

Analysis of Ash of "Gidgea Acacia," grown at the Pera Bore.

Insoluble and sand	=	1·84
Carbonic acid (CO_2)	=	39·46
Silica, oxides of iron, and alumina	=	·63
Lime (CaO)	=	53·19
Magnesia (MgO)	=	1·61
Potash (K_2O)	=	·29
Soda (Na_2O)	=	·36
Phosphoric acid (P_2O_5)	=	·81
Chlorine (Cl)	=	·02
Sulphuric acid (SO_3)	=	·96
		99·17

Analysis of pure Ash, exclusive of sand, charcoal, and carbonic acid.

Silica, oxides of iron, and alumina	=	1·17
Lime (CaO)	=	90·71
Magnesia (MgO)	=	2·74
Potash (K_2O)	=	·60
Soda (Na_2O)	=	·72
Phosphoric acid (P_2O_5)	=	1·47
Chlorine (Cl)	=	·04
Sulphuric acid (SO_3)	=	1·72

Referring to the first of these tables, which represents the composition of the ash when burnt in the usual manner, it will be seen that it consists almost entirely of carbonate of lime, 53·19 per cent. lime being equivalent to 93 per cent. carbonate of lime. Mr. Andrews says it is largely used for polishing, and for whitewashing fireplaces, cleaning knives, spoons, and other things that knife polish is used for. As a matter of fact, it is very similar in composition to ordinary chalk or whitening, and Mr. Gorman tells me that one of the hands on the Pera Farm has done quite a finished piece of French polishing with it.

J. F. Bailey, photo.

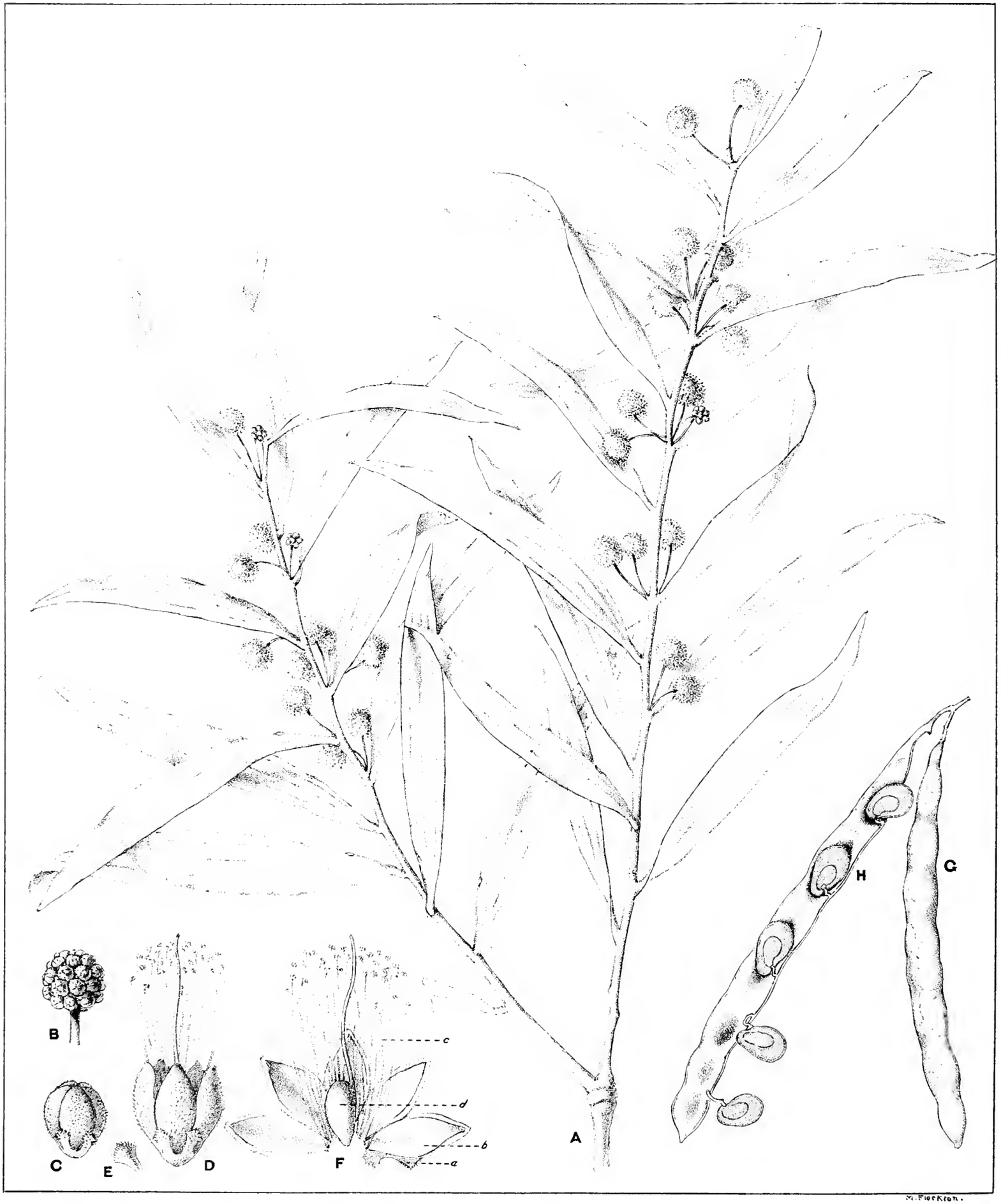
GIDGEE, WESTERN QUEENSLAND.

C. J. McMaster, photo.

GIDGEE (*Acacia Cambagei*, R. T. BAKER), NEAR BOURKE.

Kerry, photo.

GIDGEE TREES, DARLING DISTRICT.



"GIDGEE," OR "STINKING WATTLE."

(*Acacia Cambagei*, R. T. BAKER.)

Gidgea is a wood that burns completely to ash, both in the green and the dry state. Once alight it burns completely away, leaving a fine white ash.

The Gidgea country is in the calcareous land west of the Darling. Gidgea prefers sandy or loamy soil, where it grows very thickly; in fact, it takes possession of the land. Its average height is 25 to 30 feet. Its wood is excessively hard, making splendid posts and rails, which stand well, and are almost proof against the white ant.

The leaves of *Gidgea Acacia* contain a high percentage of albuminoid substances. The following is a partial analysis of a sample of the leaves:—

Water	= 35·26
Albuminoids (N. × 6·25)	= 17·43
Albuminoids calculated to dry substance	= 26·92

I have, however, never heard of stock touching it, on account of its offensive smell.

Size.—A small or medium sized tree.

Habitat.—The interior of Australia generally. For example: In New South Wales, Bourke and Brewarrina, and beyond the Darling River; Western Queensland; also the northern areas of South Australia.

EXPLANATION OF PLATE 121.

A. Flowering branch.

B. Flower-head.

C. Individual bud.

D. Flower.

E. Bract found at the base of each flower.

F. Flower, opened out, showing—
- (*a*) Calyx.
- (*b*) Corolla.
- (*c*) Stamens.
- (*d*) Pistil.

G. Pod.

H. One valve of a pod showing seeds.

PHOTOGRAPHIC ILLUSTRATIONS.

Gidgee trees, Darling District.—(Kerry, photo.)

Gidgee, Western Queensland.—(J. F. Bailey, photo.)

Gidgee, near Bourke.—(C. J. McMaster, photo.)

No. 118.

Cryptocarya patentinervis, F.v.M.

(Family LAURACEÆ.)

Botanical description.—Genus, *Cryptocarya*. (See Part III, p. 72.)

Botanical description.—Species, *C. patentinervis*, F.v.M. in DC. *Prod.* xv (i), 508.

A small tree, the branches and inflorescence ferruginous or hoary with a close tomentum.

Leaves ovate to oblong-lanceolate, acuminate, 2 to 4 in. long, glabrous above, softly or minutely pubescent and more or less glaucous underneath, the primary veins prominent, the reticulate veinlets also somewhat conspicuous.

Cymes sometimes solitary in the axils, more frequently several in short terminal thyrsoid panicles, the flowers not numerous, hoary-pubescent.

Perianth 1½ lines long, the tube turbinate, rather shorter than the lobes.

Glands of the inner stamens shortly stipitate.

Staminodia sessile, thick, acuminate.

Fruiting perianth ellipsoid-oblong, nearly ½ in. long, the pericarp rather more distinct from it than in most species. (B.Fl. v, 296.)

Botanical Name.—*Cryptocarya*, already explained (see Part III, p. 73); *patentinervis*, from two words *patens*, *patent*, spreading, or spread out, and *nervus*, a nerve, or, in botany, "a vein," hence with spreading venation.

Vernacular name.—I know of none in regular use. I have, in one instance, heard the name "Damson" applied to this tree, because of the appearance of the fruit, but it is not specially appropriate as regards this species of Cryptocarya.

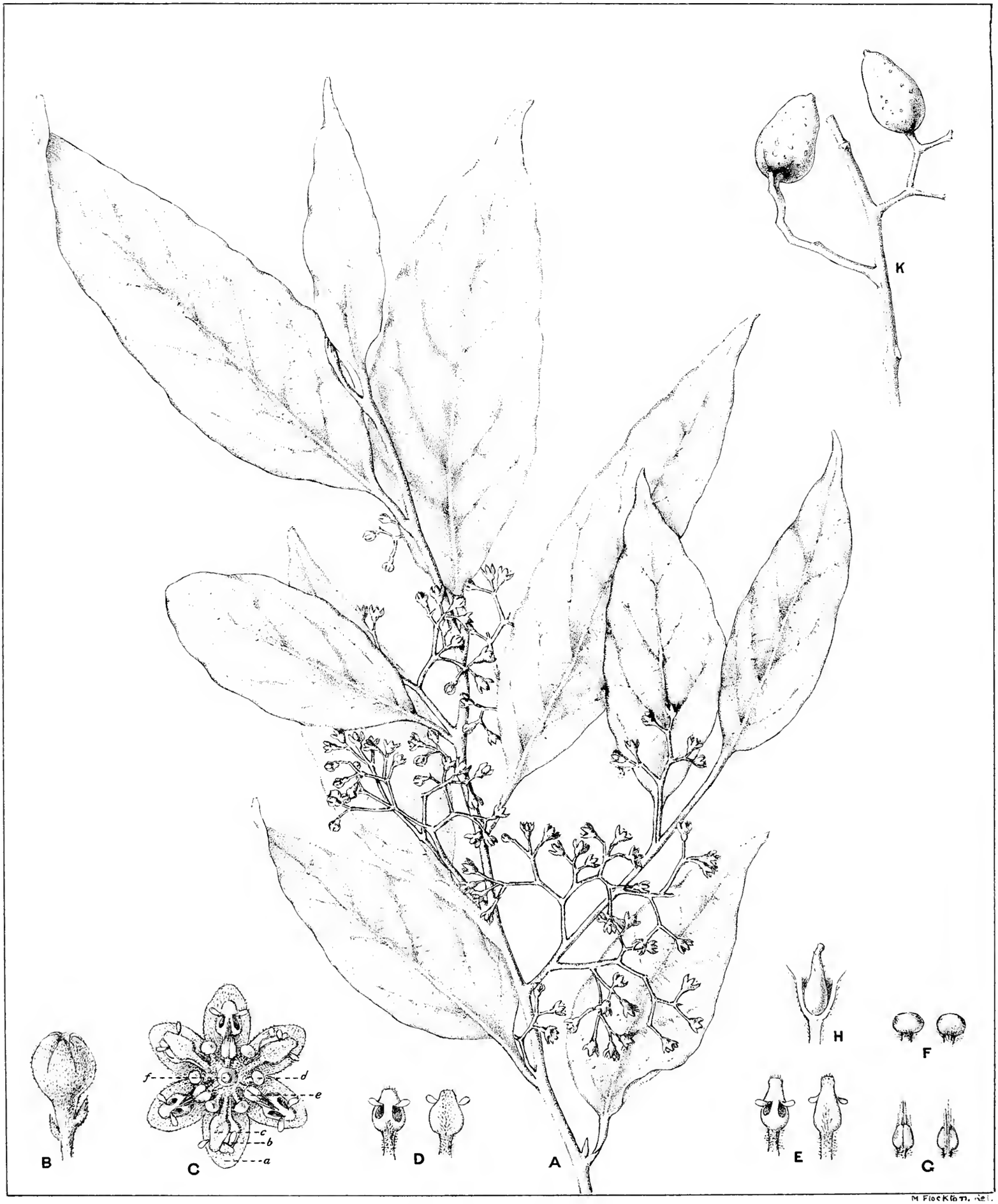
Aboriginal Name.—I know of none.

Synonym.—*C. rigida*, Meissn. in DC. *Prod.* xv (i), 508.

Timber.—A pale-coloured timber, whose uses do not appear to have been yet ascertained.

Size.—A small tree so far as known—under 50 feet in height, and up to about a foot in diameter.

Habitat.—It is found in brushes principally on the northern rivers of New South Wales, the Hastings River being its most southerly recorded locality so far. Thence it is found as far as the Queensland border, and the late Rev. B. Scortechini found it on the Queensland side, "towards the Tweed River."



CRYPTOCARYA PATENTINERVIS, F.v.M.

EXPLANATION OF PLATE 122.

A. Flowering branch.

B. Bud.

C. Flower, opened out, showing—

(*a*) Calyx (perianth segment).

(*b*) Stamens, outer row.

(*c*) ,, inner row.

(*d*) Staminodia, outer row.

(*e*) ,, inner row.

(*f*) Pistil.

D. Anthers, back and front, outer row.

E. ,, ,, inner row

F. Staminodia, outer row.

G. ,, inner row.

H. Pistil.

K. Fruits (immature).

A Critical Revision of the genus Eucalyptus.*

THIS work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets).

Eucalyptus acmenioides, Schauer (IX).
,, *amygdalina*, Labillardière (VI).
,, *Andrewsi*, Maiden (VII).
,, *apiculata*, Baker and Smith (IX)
,, *calycogona*, Turczaninow (III).
,, *capitellata*, Smith (VIII).
,, *coriacea*, A. Cunn. (V).
,, *dives*, Schauer (VII).
,, *eugenioides*, Sieber (VIII).
,, *incrassata*, Labillardière (IV).
,, *Luehmanniana*, F.v.M. (IX).
,, *macrorrhyncha*, F.v.M. (VIII)
,, *microcorys*, F.v.M. (IX).
,, *Muelleriana*, Howitt (VIII).
,, *obliqua*, L'Héritier (II).
,, *pilularis*, Sm. (I).
,, *Planchoniana*, F.v.M. (IX).
,, *regnans*, F.v.M. (VII).
,, *stellulata*, Sieber (V).
,, *umbra*, R. T. Baker (IX)
,, *virgata*, Sieber (IX).
,, *vitellina*, Naudin (VII).
,, *vitrea*, R. T. Baker (VII).

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* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, Six shillings). Part IV will be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney: William Applegate Gullick, Government Printer —1908.

Volume III (Parts XXI-XXX).

PART XXI. (Issued August, 1906.)

77.—The Crow's Ash or Bogum Bogum (*Flindersia Bennettiana*, F.v.M.). (*Two Plates.*)
78.—The Blackbutt or Peppermint (of New England) (*Eucalyptus Andrewsi*, Maiden).
79.—The Thready-barked Oak (*Casuarina inophloia*, F.v.M. and Bailey).

PART XXII. (Issued February, 1907.)

80.—The Hill Flindersia (*Flindersia collina*, F. M. Bailey). (*Two Plates.*)
81.—The Broad-leaved Messmate (*Eucalyptus obliqua*, L'Hérit.).
82.—The Cedar Wattle (*Acacia elata*, A. Cunn.).

PART XXIII. (Issued March, 1907.)

83.—The Rosewood (*Dysoxylon Fraseranum*, Benth.).
84.—The White-top Messmate (*Eucalyptus vitrea*, R. T. Baker).
85.—The Acacia decurrens Group of Wattles—Black, Green, and Silver Wattles (*Acacia decurrens*, Willd.). (*Two Plates.*)

PART XXIV. (Issued May, 1907.)

86.—The Bastard Pencil Cedar (*Dysoxylon rufum*, Benth.).
87.—Bastard Tallow-wood (*Eucalyptus Planchoniana*, F.v.M.).
88.—The Mountain Hickory (*Acacia penninervis*, Sieb.). (*Two Plates.*)

PART XXV. (Issued June, 1907.)

89.—The Rosewood (*Dysoxylon Fraseranum, Benth.*), also The Apple-tree of Lord Howe Island (*D. pachyphyllum*, Hemsl.).
90.—A Virgate Eucalypt (*Eucalyptus virgata*, Sieb.).
91.—The Two-veined Hickory (*Acacia binervata*, DC.).
92.—The White Cedar (*Melia Azedarach*, L., var. *australasica*, C. DC.).

PART XXVI. (Issued September, 1907.)

93.—The Hairy Dysoxylon (*Dysoxylon Becklerianum*, C.DC.).
94.—Luehmann's Gum (*Eucalyptus Luehmanniana*, F.v.M.).
95.—The Mulga (*Acacia anuera*, F.v.M.).
96.—The Red-wooded Cryptocarya (*Cryptocarya erythroxylon*, Maiden and Betche).

PART XXVII. (Issued October, 1907.)

97.—The Red Bean (*Dysoxylon Muelleri*, Benth.).
98.—Red Stringybark (*Eucalyptus macrorrhyncha*, F.v.M.).
99.—A Brush Ironbark (*Acacia aulacocarpa*, A. Cunn.).
100.—A Brown Beech (*Cryptocarya glaucescens*, R.Br.).

PART XXVIII. (Issued December, 1907.)

101.—A Bog Onion (*Amoora nitidula*, Benth.).
102.—The Brown Stringybark (*Eucalyptus capitellata*, Sm.).
103.—The Broad-leaved Wattle (*Acacia pycnantha*, Benth.).
104.—The Murrogun (*Cryptocarya micronecura*, Meissn.).

PART XXIX. (Issued January, 1908.)

105.—The Bastard Rosewood (*Synoum glandulosum*, A. de Jussieu).
106.—A White Stringybark (*Eucalyptus eugenioides*, Sieb.).
107.—Baker's Wattle (*Acacia Bakeri*, Maiden).
108.—The Stinking Cryptocarya (*Cryptocarya fœtida*, R. T. Baker).

PART XXX. (Issued March, 1908.)

Recapitulatory (*Seventeen Photographic Illustrations*).
109.—The Yellow Stringybark (*Eucalyptus Muelleriana*, Howitt).
110.—The Nealie (*Acacia rigens*, A. Cunn.).

Volume IV (Parts XXXI-XL).

PART XXXI. (Issued September, 1908.)

111.—The Onion Wood (*Owenia cepiodora*, F.v.M.).
112.—The Blackbutt (*Eucalyptus pilularis*, Sm.).
113.—Cootamundra Wattle (*Acacia Baileyana*, F.v.M.).
114.—Grey Sassafras (*Cryptocarya australis*, Benth.).

THE FOREST FLORA OF New South Wales.

J. H. MAIDEN.

VOL. IV. PART 3.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

PART XXXIII OF THE COMPLETE WORK.

INDEX OF TREES DESCRIBED.

Volume I (Parts I–X).

Volume II (Parts XI–XX).

THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the Botanic Gardens, Sydney.

PART XXXIII.

Published by the Forest Department of New South Wales, under authority of The Honourable the Secretary for Lands.

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16191—A

Govt. Printer, photo.

Banksia æmula, R. Br., LONG BAY.

Govt. Printer, photo.

Banksia serrata, LINN F., LONG BAY.

No. 119.

Banksia æmula, R.Br.

A Honeysuckle.

(Family PROTEACEÆ.)

Botanical description.—Genus, *Banksia*, Linn. f. (See Part VIII, p. 169.)

Botanical descript on.—Speeies, *B. æmula*, R.Br. in *Trans. Linn. Soc.*, x, 210; *Prod.* 395.

> A shrub (or small tree—J.H.M.) very closely allied to *B. serrata* and difficult to distinguish from it except by the stigmatic end of the style which is very much shorter and ovoid.
>
> The *flowers* are also said to be of a yellowish-green without the bluish-grey tinge of *B. serrata.*
>
> The *spikes* are usually not so thick, the foliage precisely the same.
>
> *Capsules* at least as large as in *B. serrata*, the tomentum easily wearing off. (B.Fl. v, 556.)

It is important to distinguish between *B. æmula* and *B. serrata.*

In originally deseribing the former speeies Brown says, " . . . stigmate eapitato exsuleo nitido apice (quadrangulo) styli duplo crassiore . . . "

If Plate 119, Part XXXII of this work, be referred to, the shape (Fig. H) of the stigmatie end or stigma of *B. serrata* will be observed. That of *B. æmula* (see Figure D of the present Plate) is quadrangular, eoarser and shorter, and the differenee between the two speeies ean thus be readily determined when flowers are available.

B. æmula is a tall shrub or small tree, low-spreading and flat-topped. It rarely shows a stem of any size.

B. serrata is roughly pyramidal in shape, a tree of medium size, and with a distinct stem.

B. æmula has the young foliage rusty brown; the mature leaves are paler on the under side, but not so dull as in *B. serrata.* It flowers in April–May in the Sydney distriet. The eolour of the unexpanded flowers is pale whitish-green (an opaque green).

B. serrata has the young foliage greyish-white; the mature leaves with a pale underside, which is dull, and sometimes has the midrib hairy. It flowers in February–Mareh in the Sydney district. The colour of the unexpanded flowers is blue-grey (dove grey). The flower-head is longer and perhaps more cylindrical.

(*a*) There is a figure in the *Botanical Register*, t. 688 (1823), of a flowering twig, without botanical details. This is the least satisfactory of the three drawings I quote, but I have no doubt as to its being *æmula*. The flower head is small, and the nodes between the leaves more elongated than usual.

(*b*) *B. undulata*, Lindl. *Bot. Reg.* 1316 (1830). The leaves appear to me to be those of *B. serrata*, as are also the stigmas.

In my copy the colouring of the flower-head is, however, rather yellow for that species, but I do not lay much stress on a hand-painted drawing, one of hundreds.

I am of opinion that it represents *B. serrata*. Bentham (B.Fl. v, 556) refers it to *B. æmula*.

(*c*) *B. æmula*, t. 2671, *Bot. Mag.* (1826). This is undoubtedly *æmula*; the size of the leaves and shape of serrations are excellent. The flowering head is coloured fairly in my copy (of course in these old works the colouring, being by hand, varies a little in different copies).

Botanical Name.—*Banksia*, already explained (see Part VIII, p. 170); *æmula*, a Latin adjective, "vieing with," an allusion to its very close affinity to *B. serrata*.

Vernacular Name.—Only called "Honeysuckle," as far as I am aware.

Aboriginal Names.—"Mintie" of the Stradbroke Island natives (Watkins), and "Wallum" of those of Wide Bay, Queensland (E. Palmer), quoted by Bailey.

Synonyms.—The synonymy of this plant is perplexing. First of all we have *B. æmula*, R.Br. *Trans. Linn. Soc.*, x, 209; also R.Br. *Prod.*, 395.

In the former work Brown quotes, as a doubtful synonym, *B. serratifolia*, Salisb. *Prod.* 51. He also doubtfully refers the *B. serrata* of White's *Voyage* 222, tab. tertia, to *B. æmula*.

In the latter work he adds another doubtful synonym, *B. serræfolia*, Knight et Salisb. *Prod.* 112.

Then we have *B. elatior*, R.Br. "In Novæ Hollandiæ orâ orientali; prope Sandy Cape; prope littora."—*Trans. Linn. Soc.*, x, 209.

[N.B.—The title-page of this work gives the date 1811. Yet, inasmuch as Brown quotes his own paper on Proteaceæ therein, in his *Prodromus Nova Hollandiæ* (1810 on the title-page), it is obvious that the paper in the *Linn. Trans.* is the older work.]

Meisner in DC. *Prod.*, xiv, 458, quotes *B. elatior* as a distinct species, and adds to Brown's locality, "Stradbroke, prope Moreton Bay (A. Cunn.)."

Bentham (B.Fl. v, 556), under *B. æmula* gives *B. serratifolia*, Salisb., *B. serræfolia*, Knight, *B. elatior*, R.Br., as synonyms, without any query marks, and adds *B. undulata*, Lindl. (I have shown that *B. undulata* is really referable to *B. serrata*).

Mueller in his *Census* suppresses *B. æmula*, and revives the name *B. serratifolia*, Salisb.

In this matter I prefer to follow Robert Brown, who says that *serratifolia* and *serræfolia* are doubtful.

Then we come to *B. elatior*.

According to strict priority, *B. elatior* is older than *B. æmula*, since it is No. 23 on Brown's list as against 25 for *B. æmula*, and the description of *B. elatior* is earlier on the page (*Trans. Linn. Soc.*, x, 209). But as I have not seen the specimens attributed to *B. elatior*, I will say no more.

Leaves.—Bentham says the foliage of *B. æmula* and *B. serrata* is precisely the same. I have tried to show a difference, *ante* p. 31.

Flowers.—I have already described the colour of the flowers, a matter of some importance in view of the readiness with which the species may be confused with *B. serrata.*

Fruits.—The colour of the fruit is that of a soft purplish-grey.

Timber.—Deep red, coarse-grained, prettily marked, shrinks unequally in drying; an excellent wood for the cabinetmaker.—(Bailey, *Cat. Queensland Woods, Col. and Ind. Exh.*, 1886).

Size.—A tall shrub or small tree, smaller than *B. serrata.*

Habitat.—The type came from near Port Jackson.

It appears to be confined to New South Wales and Queensland.

For Queensland, Bentham quotes Sandy Cape (*R. Brown*); Stradbroke Island, Moreton Bay (*A. Cunningham*); and it does not appear to have been collected in other Queensland localities since.

As regards New South Wales, Bentham quotes Port Jackson (*R. Brown*), *Sieber*, No. 2 ("our specimens at least"), and others; Hastings River (*Beckler*) (to which the Clarence River (*Beckler*) may be added on Mueller's authority); Twofold Bay (*L. Morton?*) (leaves only). Mr. W. R. Guilfoyle tells me he has seen it between Cudgen Brush (Tweed district) and the sea.

Bentham makes this a Victorian plant (Gippsland) on the authority of Mueller, but it is omitted from Mueller's "Key to the System of Victorian Plants" (1887–8).

If, however, there is no doubt that it was collected at Twofold Bay (an enormous gap exists between it and Port Jackson), then the Gippsland locality becomes probable.

Propagation.—After a bush fire the collector of native seeds goes over a patch of Banksia country and picks up the seeds of Banksias, the fire having singed the Banksia cones, and caused them to contract and drop out their seeds. This is Nature's way of protecting and then releasing the seeds.

This can be imitated at any time by taking ripe cones from the plants and cautiously putting them on a coal or wood fire. They should be watched and pulled off the fire directly the fruit valves open and expose the seeds.

EXPLANATION OF PLATE 123.

A. Inflorescence (portion of flowering spike).

B. Flower—

(*a*) Four-lobed corolla with stamens.

(*b*) Pistil.

C. Corolla lobes—

(*a*) Showing stamen in the concave laminæ.

(*b*) Back view.

D. Stigma.*

E. Fruiting spike, showing the prominent capsules, containing the winged seeds.

F. Ripe capsule opening.

G. Fruit—

(*a*) Plate separating the two winged seeds (*b b*).

All from the Port Jackson District.

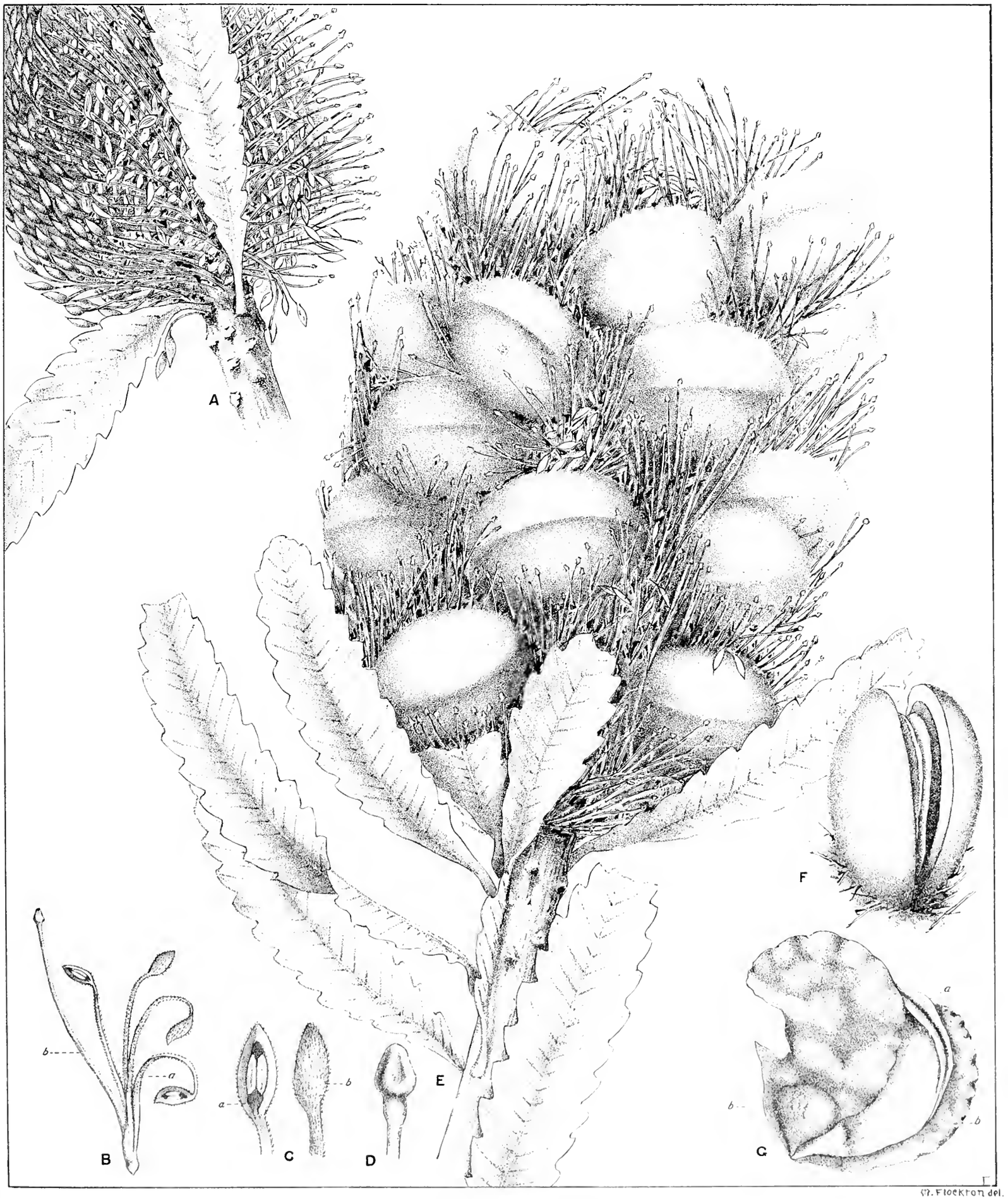
PHOTOGRAPHIC ILLUSTRATIONS.

Photograph of *B. æmula*.—(Government Printer.)

Photograph of *B. serrata*.—(Government Printer.)

Both were taken at Long Bay, Sydney, May, 1908, and contrast the two species growing within a few yards of each other. The photographs show rather small specimens of each kind.

* *Ante*, p. 31.



A HONEYSUCKLE.

(*Banksia œmula*, R.BR.)

No. 120.

Eucalyptus piperita, Sm.

The Sydney Peppermint.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical description.—Species, *E. piperita*, Sm. The species may be described as follows:—

Vernacular Names.—Peppermint is its usual name about Port Jackson and in some other districts. It goes by the name of "Messmate" in some other parts of the State. It has been called "Almond-leaved Stringybark," and sometimes "White Stringybark." Through confusion with *E. pilularis* (to which it is often not dissimilar in general appearance), it is sometimes known as "Blackbutt," but such names as Stringybark and Blackbutt, as applied to this species, should be discouraged.

Bark.—Sub-fibrous on the trunk, with smooth branches. In mountainous districts it is often decidedly a ribbony gum.

Timber.—Pale-coloured, with gum-veins; deficient in strength and durability, and only used in default of better timber.

Seedling leaves.—The seedlings are cordate at the base; stem clasping, blunt, or with a short, sharp apex. They are arranged decussately and horizontally; hardly glaucous; paler on the underside. Venation well marked. They have a strong peppermint perfume.

Mature leaves.—Very oblique, more or less falcate and acuminate. In the *Flora Australiensis* it is stated that the leaves are rarely above 1 inch long, but this appears to be a mere typographical error, as specimens with far longer leaves were examined by Bentham himself, and leaves even 5 or 6 inches long are common. The venation is oblique.

Flowers.—Renantherous. The bud has a pointed operculum, and is often curved, often nearly falcate when unripe. Sometimes the operculum is markedly pale-coloured; this is accentuated in dried specimens.

Fruit.—The fruits may be arranged under three forms, which pass into one another:—

(*a*) Urceolate.
(*b*) Egg-shaped.
(*c*) Nearly spherical, open-mouthed.

Botanical Name.—*Eucalyptus*, already explained (see Part II, p. 34); *piperita*, Latin, "peppered," from the noun *piper* (pepper). It has come to mean "like peppermint," *i.e.*, having an odour of peppermint; but I am unaware that the word *piperita* is classical Latin.

This is the species from which the first Eucalyptus oil was distilled by Mr. Denis Considen, Surgeon of the First Fleet. Mr. Considen used the oil for medicinal purposes, and sent some to England to Sir Joseph Banks.

Vernacular Names.—See above.

Aboriginal Names.—I know of none that can be applied, without any doubt, to this species.

Leaves.—In the *Historical Records of New South Wales*, Vol. I, Part 2, will be found a letter, dated 18th November, 1788, to Sir Joseph Banks, in which occurs the words :—

> We have a large peppermint tree which is equal, if not superior, to our English peppermint. I have sent you a specimen of it. If there is any merit in applying these and many other simples to the benefit of the poor wretches here, I certainly claim it, being the first who discovered and recommended them.

Under the name of *E. piperita*, an account of this tree is given in a *Journal of a Voyage to New South Wales*, by John White, Esq., Surgeon-General to the Settlement, published in 1790. He (or rather Dr. J. E. Smith) says of it (p. 227):—

> The name of peppermint tree has been given to this plant by Mr. White on account of the very great resemblance between the essential oil drawn from its leaves and that obtained from the Peppermint (*Mentha piperita*) which grows in England. This oil was found by Mr. White to be much more efficacious in removing all cholicky complaints than that of the English Peppermint, which he attributes to its being less pungent and more aromatic.

Mr. White sent a quart or more of the essential oil from this, or other Eucalyptus, to England. This was the commencement of what is now a flourishing industry.

Mr. White was Mr. Considen's official superior. The claim of being the first to prepare and utilise Eucalyptus oil is very distinctly made by Mr. Considen, and there seems no reason to doubt the justice of it. Mr. White probably acted officially in reporting the matter, and gave Dr. Smith any information which was available to him.

The oil has recently been prepared and investigated by Baker and Smith.* The leaves and twigs yielded on distillation 0·78 per cent. of oil. It has a light colour and a decided peppermint-like odour, which, however, becomes fainter even after several weeks. Specific gravity 0·909 at 17°; $[a]_D = -2·97°$. It boils between 170° and 272°. In the lower boiling fractions, phellandrene and cineol were found. From the fractions boiling at 266°–272° there separated a compound in well-formed crystals which was called eudesmol. Eudesmol boils at 270°–272°, and melts at 74°–75°. Eudesmol has been subjected to a more thorough study by Smith. It crystallises in white milky needles, melting at 79°–80°. Its analysis corresponds with the formula $C_{10}H_{16}O$, but contains neither an hydroxyl nor a ketone group. It yields a dinitro-compound melting at 90°, and a dibromide melting at 55°–56°.

Wilkinson† found for an oil distilled from *E. piperita* the specific gravity 0·913 and $[a]_D = +1·6°$.

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* *Journ. Roy. Soc. N.S.W.*, Vol. xxxi, 195; xxxiii, 86. See also their "Research on the Eucalypts"; also Bericht von Schimmel and Co., April, 1900, p. 24.

† *Proc. Roy. Soc. Vic.*, 1893, p. 198.

Fruits.—Note the urn-shaped fruits which are characteristic of the species.

Bark.—It has a thin, sub-fibrous bark which is readily remembered when once recognised, and the name "peppermint" as applied to other species of Eucalyptus in Australia, is now well known, and usually is applied to such trees as have a bark like the present species.

Timber.—It is pale-coloured and distinctly inferior, only used for local purposes, or as an "adulterant" of better timber. I believe that it is never used (willingly) in public works in New South Wales. Some years ago, the late Mr. Augustus Rudder, Forester, Myall River and Manning River districts, wrote as follows concerning it, and I think the estimate is quite just :—

Sometimes called White Stringybark. This timber often attains to large size. The wood is soft, and subject to gum-veins, and shrinks, and cracks a good deal in the seasoning, and is not lasting, and should be avoided in all public works. If properly seasoned, however, it may be used for flooring-boards and other purposes under cover where better timber is not to be had Is distributed on low-lying lands and mountain districts near the coast.

The only occasion in which timber of this species has been officially tested is stated below, and I only quote it because I understood at the time that Baron von Mueller was responsible for the naming of it.

"BLACKBUTT" (*E. piperita*) EXPERIMENTED UPON BY THE VICTORIAN TIMBER BOARD, 1884.

The samples tested were each 7 ft. in length by $1\frac{7}{8}$ in. square ; the distance between the bearings was 6 ft. ; and the weight was gradually applied in the centre until the sample broke.

Locality where Grown.	Approximate Date when the Timber was cut.	Dimensions of Trees.	Date of Testing.	Weight of each Samples in lbs.	Average Weight of Samples in lbs.	Average Weight per cubic foot in lbs.	Average Specific Gravity.	Breaking Weight of each Sample in cwts. qrs. lbs.	Average Breaking Weight of Samples in lbs.	Deflection at Point of Rupture in inches.	Average Deflection in inches.	Average Specific Strength.	Geological Formation where the Trees grew.	Elevation above Sea Level.
Ranges near Fernshaw, Victoria.	19/1/83	2 ft. 6 in. diameter	28/1/84 14/2/84 14/2/84	$11\frac{1}{2}$ $12\frac{1}{4}$ $11\frac{3}{4}$	11·83	69·22	1·109	4.3.0 4.2.2 5.1.17	547·6	$2\frac{1}{4}$ $2\frac{3}{4}$ 3	2·66	1,495	Felspar porphyry.	A few hundred feet.

Size.—It is not one of our largest trees, being usually a foot in stem diameter, with a height of 40 or 50 feet, but I have seen it with a stem diameter of 3 feet and a height of perhaps 80 feet.

Habitat.—This species is almost confined to New South Wales.

North and South Coast districts, as far north as the Myall Lakes, but the northern limit is uncertain. At Bullahdelah there are many large trees of this species, consequently it is not likely that this place represents its northern boundary.

I have not seen any indubitable *E. piperita* from Queensland. There are plants in the Melbourne Herbarium from the Macleay and Clarence Rivers, attributed to *E. piperita* ; but they have no fruits, and the determination should be confirmed.

It is found on the Dividing Range and its spurs, being especially plentiful on the Blue Mountains. It is found west, at least, as far as Mudgee.

The typical form is found, at least, as far south as Moruya; but trees which are considered to belong to this species occur, as already indicated, as far south as Gippsland, Victoria.

It occurs on poor rocky sandstone land generally; usually an indication of poor soil. It is very abundant in the Port Jackson district, and in the Counties of Cumberland and Camden, New South Wales, generally.

EXPLANATION OF PLATE 124.

A. Pair of juvenile leaves.

B. Another pair of juvenile leaves, from the same seedling. Note the differences in size and shape.

C. Flowering twig.

D. Buds. Note the curvature in the shape; and also the pointed opercula.

E. An anther (reniform or kidney-shaped).

F. Fruits, egg-shaped.

G. Fruits. These are from Wingello, N.S.W., and show an extreme form of the urn-shape common in this species.

PHOTOGRAPHIC ILLUSTRATIONS.

Photographs (two) of trees of *E. piperita*, which have been barked by cattle at Manly, near Sydney.—(R. H. Cambage, photo.)

For an account of this habit of cattle, see the *Agricultural Gazette of New South Wales*:—

October, 1903, p. 1002 (J. H. Maiden).

December, 1903, p. 1156 (J. O. Bulie and V. Jacob); p. 1235 (J. Box).

January, 1904, p. 28 (W. M. Fleming).

March, 1904, p. 246 (J. H. Crouch).

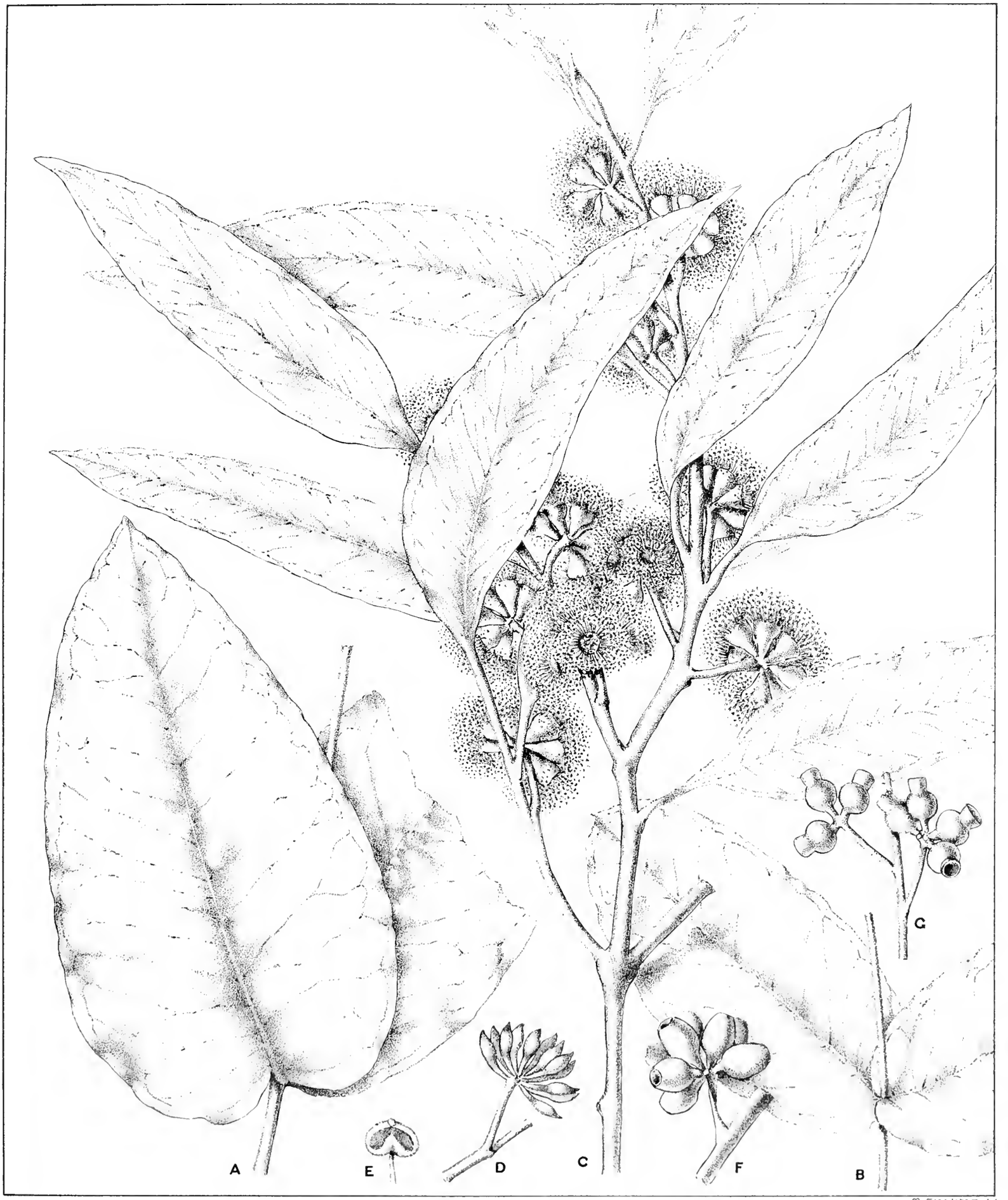
April, 1904, p. 331 (W. Hutchison).

February, 1905, p. 204 (R. H. Cambage).

Photograph of Blaxland's tree, near Katoomba (Kerry, photo.). The tree was *E. piperita*, but it is now dead.

Following is the original inscription:—

This
Wall and fence has been erected by the
Hon. J. S. Farnell, Esq., Minister for Lands,
to preserve this tree marked by
Blaxland,
Lawson,
Wentworth;
being the farthest distance reached
in their first attempt to cross the
Blue Mountains, in the month of May,
A.D. 1813.



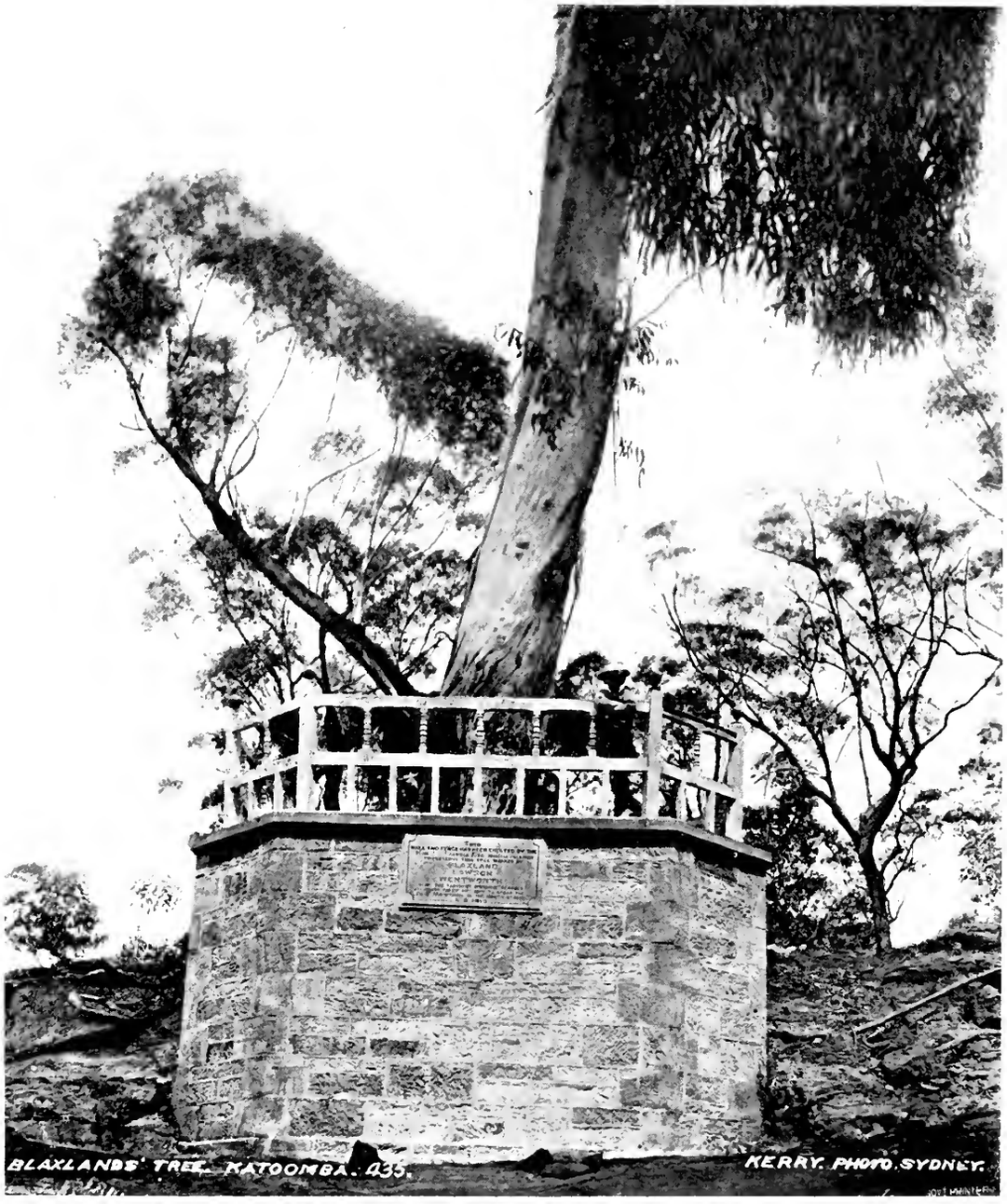
M. Flockton. del.

SYDNEY PEPPERMINT.

(*Eucalyptus piperita*, SM.)

R. H. Cambage, photo.

Eucalyptus piperita BARKED BY CATTLE AT MANLY.


BLAXLANDS' TREE. KATOOMBA. 435.
KERRY. PHOTO. SYDNEY.

No. 121.

Acacia excelsa, Benth.

Ironwood.

(Family LEGUMINOSÆ : MIMOSEÆ.)

Botanical description.—Genus, *Acacia.* (See Part XV, p. 103.)

Botanical description.—Species, *A. excelsa,* Benth. in. *Mitch. Trop. Austral.*, 225.

A large forest tree, branchlets slender, terete or nearly so, glabrous or rarely minutely pubescent.

Phyllodia.—Oblong-falcate, rather obtuse or mucronulate, narrowed at the base, 2 to 3 inches long, ½ to ¾ inch broad, thinly coriaceous, with 5 to 7 nerves, and smooth or faintly veined between them.

Peduncles.—Solitary, in pairs or clusters, sometimes not 2 lines, in other specimens nearly ½ inch long, bearing each a globular head of numerous (20 to 30) flowers, mostly 5-merous.

Sepals.—Distinct.

Petals.—Smooth.

Pod.—Straight, flat, about 3 lines broad, thinly coriaceous, the sutures narrow-edged or almost winged, not usually dehiscent but hardening over the seeds and readily breaking off between them.

Seeds.—Ovate, longitudinal ; funicle short and filiform, neither folded nor enlarged. (B.Fl. ii, 390.)

Mr. R. H. Cambage writes concerning this tree:—

Mature trees have a clean trunk and drooping foliage, but the young trees are covered with branches on the trunk. A curious feature of many interior trees is the protection afforded by spreading growth and numerous branches in young stages as compared with that of after years. Several species have this peculiarity, among others being *Acacia excelsa, Grevillea striata, Capparis Mitchelli,* and, perhaps most of all, *Flindersia maculosa,* F.v.M.—(*Proc. Linn. Soc. N.S.W.* (1900), 594.)

For a note on this protective character and photographs, see Part X, p. 212. See also Part XX, p. 201, and see Part XXX, p. 165.

The tree sprouts again after the stem is cut (Mueller).

Botanical Name.—*Acacia,* already explained (see Part XV, p. 104); *excelsa,* Latin, "tall," the tree being one of the largest of the wattles.

Vernacular Names.—Its widely employed name is "Ironwood," from the hardness of the wood, which is brittle and inclined to splinter.

W. Hill in the Catalogue of the specimens of woods (No. 117), sent from Queensland to the London Exhibition of 1862, calls this timber Rosewood.

Aboriginal Names.—"Doodlallie" of the aborigines of the Nyngan District, N.S.W. (E. F. Rogers). "Bunkerman" of those of the Cloncurry River, Queensland (E. Palmer).

Synonyms.—*A. pterocarpa*, F.v.M., in *Proc. Linn. Soc.*, iii, 134; *A. Daintreeana*, F.v.M.

Leaves.—

Stock will eat the leaves when hard pushed.—(C. J. McMaster, Western Lands Board.)

It is cut extensively for sheep on some runs when nothing better is available. The phyllodia are woody and astringent, my previous remarks about the effects of astringent vegetation upon ewes being most applicable to this tree. All that can be claimed for it is that it keeps stock alive.—(R. W. Peacock, Coolabah.)

An acknowledged fodder tree. An immense number of trees have been cut down for fodder in the past. The greatest known drought has never had the slightest ill-effect on the tree.—(E. F. Rogers, Forest Guard, Nyngan.)

Bark.—Mr. Ernest F. Rogers says the bark is a first-class tan.

I asked Mr. Rogers to send a quantity of bark for analysis, which he did through Mr. C. Marriott, District Forester, Dubbo. I submitted the specimens to Mr. R. T. Baker, Curator of the Technological Museum, together with two skins of "Flash Jack" that Mr Rogers had tanned with Ironwood bark. Following is Mr. Baker's reply:—

With reference to your letter of the 13th June, the sample of the bark of *Acacia excelsa* from Nyngan has been analysed with the following results:—

The sample was rugged and furrowed externally, more than half of the bark being of a corky substance. The average thickness of the whole bark was about half an inch, and the inner portion was somewhat fibrous. The extract from the corky layer was highly coloured, and poor in tannin. The tannins present in the bark are those of the wattles generally, and they act quickly on hide. Although only of moderate value as a wattle bark, yet it might be utilised for tanning in localities where better bark is not readily available.

Moisture	10·30 per cent.
Total extract	16·82 ,,
Tannins	11·21 ,,
Non-tannins	5·61 ,,

If calculated on an hydrous bark the amount of total extract would be 18·75 per cent.; tannins, 12·50 per cent., and non-tannins, 6·25 per cent.

I have submitted the two skins of "Flash Jack" (Kangaroo Rat, I presume), to Mr. Ludowici, who states that the tan is satisfactory, the colour being good—an opinion with which I am quite in accord as it much resembles that of the best English leather.

One advantage of using a bark like *Acacia excelsa*, is that it checks the tanner from producing a red-coloured leather—the result of an excess of tannin.

A Queensland correspondent informed me some years ago that a sample of this bark, analysed in London, yielded 16·09 per cent. of tannin.

Timber.—

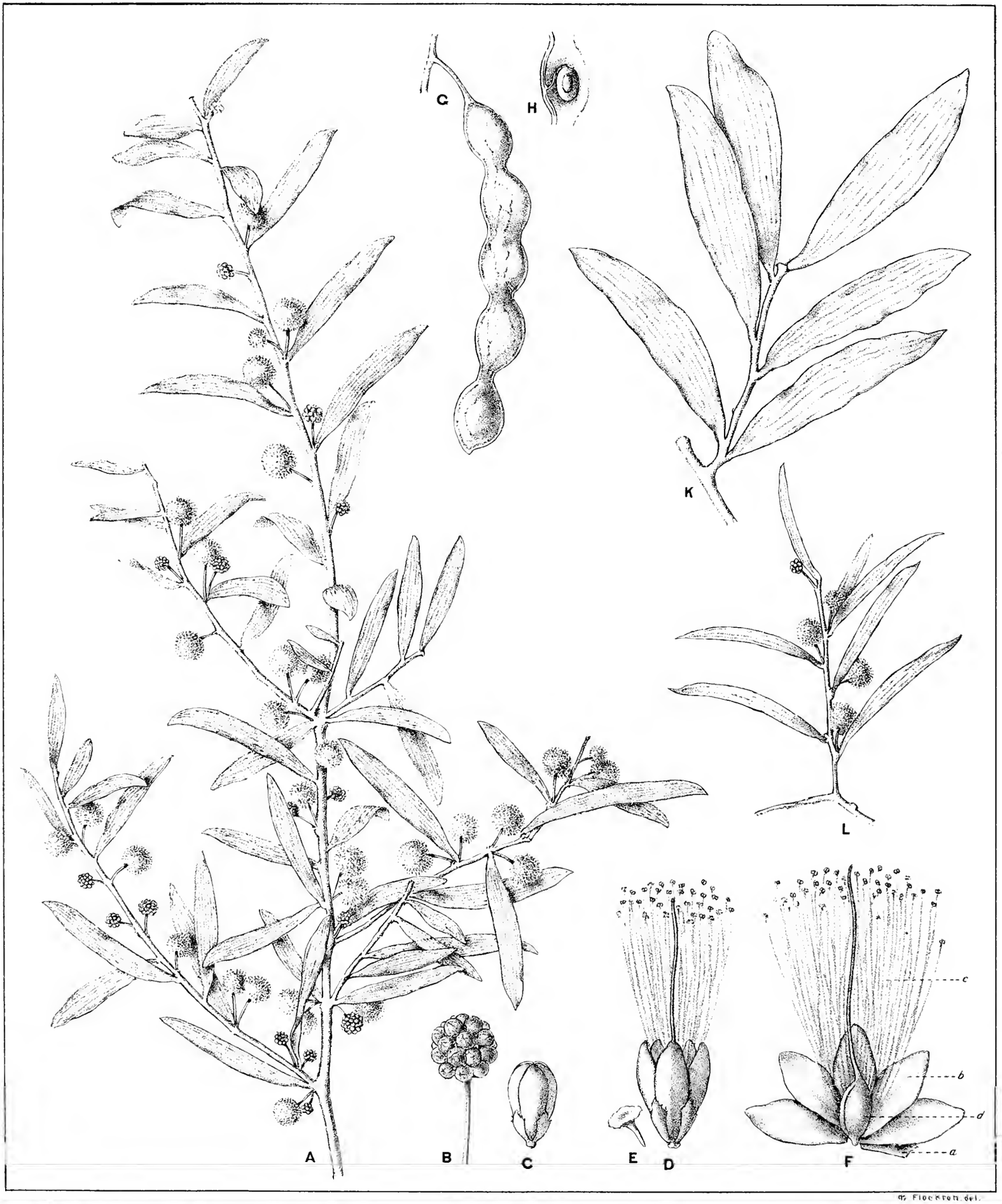
Hard, close-grained, interlocked, of a deep red or darkish colour, and possesses a beautiful figure, so that it is one of the most ornamental of our timbers.—(R. H. Cambage.)

It is very hard to chop, but is of no use for fencing-posts or outside work, as it has only a few years' life. It is a very good firewood, and splits well.—(R. J. Dalton, Wanaaring.)

Used for mining purposes where great strength is required; it resists the action of sulphur in copper mines. It gives out great heat when green.—(E. F. Rogers.)

The following refers to Queensland specimens:—

The wood is hard, close-grained, and very tough and elastic. It possesses great beauty for cabinet-work, and has the odour of violets.—(Hill.)



M. Flockton del.

IRONWOOD.

(*Acacia excelsa*, BENTH.)

Kerry, photo.

IRONWOOD TREE (*Acacia excelsa*, BENTH.), BARRINGUN, N.S.W.

C. J. McMaster, photo.

IRONWOOD, BREWARRINA.

R. W. Peacock, photo

IRONWOOD, COOLABAH

"A medium-sized tree with very hard rugged bark. Leaves slightly curved and drooping. Sapwood of a yellow colour, the rest dark brown; both very hard, tough, and close-grained. A pretty shade tree. Timber not often used, probably on account of its being so hard. It would no doubt be suitable for any purpose where strength and durability are required, or for turnery work."—(*Cat. Queensland Forestry Mus.*, 1904.)

Exudation.—Mueller quotes the late P. O'Shanesy, of Rockhampton, Queensland, in stating that the tree exudes a large quantity of clear gum.

Size.—

The largest and most conspicuous Acacia in the western plains of this State, attaining a height of 60–80 feet and a diameter of 3 feet.—(R. H. Cambage.)

30–50 feet at Coolabah.—(R. W. Peacock.)

Attains a height of 50 feet, girth 6 feet, bole 30 feet; of spreading habit.—(E. F. Rogers).

Habitat.—In the *Flora Australiensis* it is recorded from Queensland only, and the following localities are given. Near Lake Salvator, *Mitchell* (the type); Peak Downs (*Mueller*); Clarke River (*Daintree*).

It is confined to New South Wales and Queensland so far as we know at present, though I expect it will be found in South Australia.

Additional Queensland localities quoted by Mueller are:—Darling Downs (*Lau*); Comet River (*O'Shanesy*); also on the Flinders and Herbert Rivers (*Proc. Linn. Soc. N.S.W.*, 1890).

As far as I know, the tree occurs north to the Queensland border, south to Dandaloo, east to Trangie, and west to Louth, but it is very scarce east of the Bogan and south of Nyngan. It is more plentiful on West Bogan, increasing in quantity and size westward to south, with the exception of within a radius of 10 miles from Cobar, where it was cut down for firewood or mines.—(E. F. Rogers, of Nyngan.)

Thirty miles south of Nymagee, New South Wales, the most southern locality.—(R. H. Cambage.)

I have it from Warialda (W. McDonald), considerably to the east of the above localities, with the note that it is "eaten by stock."

EXPLANATION OF PLATE 125

A. Flowering twig (from Drysdale, Cobar).
B. Flower-head.
C. Individual bud.
D. Flower.
E. Bract, found at the base of each flower.
F. Flower, opened out, showing—
  (*a*) Calyx.
  (*b*) Corolla.
  (*c*) Stamens
  (*d*) Pistil.
G. Pod (from Tarcoon).
H. Seed.
K. Broad-leaved form (from Bingara to Warialda).
L. Narrow-leaved form (from Nymagee).

PHOTOGRAPHIC ILLUSTRATIONS.

"Ironwood," from Brewarrina. Grows 30 feet high.—(C. J. McMaster, photo.)
"Ironwood tree," Barringun, New South Wales.—(Kerry, photo.)
"Ironwood," Coolabah.—(R. W. Peacock, photo.)

No. 122.

Cryptocarya triplinervis, R.Br.

The Three-veined Cryptocarya.

(Family LAURACEÆ.)

Botanical description.—Genus, *Cryptocarya.* (See Part III, p. 72.)

Botanical description.—Species, *C. triplinervis,* R.Br., *Prod.* (1810.)

A tall tree.

Leaves ovate-elliptical or oblong-lanceolate, acuminate, glabrous above, more or less pubescent underneath, rarely above 4 inches long, triplinerved or more or less irregularly penniveined with 2 to 5 primary veins on each side of the midrib, sometimes very prominent underneath sometimes fine, the reticulations not very conspicuous.

Panicles, dense, short, and thyrsoid in the axils, or the upper ones much branched, forming a terminal panicle with numerous flowers, hoary-pubescent with appressed hairs or more frequently hirsute with spreading hairs.

Flowers nearly sessile.

Perianth-tube, cylindrical, about 1 line long, the segments narrow and nearly as long.

Stamens, nearly as long as the perianth, the glands stipitate, as near to the outer as to the inner stamens; staminodia rather narrow, acuminate.

Fruiting perianth ovoid, about ½ inch long. (B.Fl. v, 297.)

Botanical Name.—*Cryptocarya,* already explained (see Part III, p. 73); *triplinervis,* from the Latin adjective *triplex, icis,* triple; *nervus,* a nerve or sinew, in botany a vein. Hence three-veined, in allusion to the three prominent veins which spring from the base of the leaf.

Vernacular Name.—I know no vernacular name for this species in use on the mainland. "Blackbutt" is the name by which it is known on Lord Howe Island, but it must not be confused with the Blackbutt of New South Wales (*Eucalyptus pilularis*).

Synonym.—*Caryodaphne Browniana,* Nees, *Syst. Laurin,* 230; Meissner in DC. *Prod.* xv (1) 78. This species (?) *Browniana,* comes from "Tropical New Holland," and the variety (?) *ferruginea,* "sub-tropical east coast to Moreton Bay and Brisbane River."

Leaves.—Note the venation.

Bailey states that the leaves of this tree were, on one occasion, sent to him with the statement that they had caused the death of some pigs which had eaten them.

Bark.—In the bark of this species and also of *C. australis*, Dr. T. L. Bancroft detected an intensely bitter poisonous alkaloid. See also Part XXVI, p. 113, of this work.

Timber.—A grey colour, close in grain, and tough, but not of ascertained value. As has been already pointed out, we know but little of the value of the timbers of this genus. They are not ornamental and they do not appear to possess properties which mark them for special notice.

Size.—A tree of medium size although sometimes called "a large tree." It is, however, difficult to ascertain the average size of most brush trees.

The Lord Howe Island tree attains a diameter of 5 to 6 feet, and it is an exception to the general run of Lord Howe timbers, which are usually surface-rooters. "Blackbutt" is accounted to be the most difficult tree to stump (root out) in the island.

Habitat.—Following are the localities given in the *Flora Australiensis* :—

Queensland.—E. Coast (*R. Brown*); Edgecumbe and Rockingham Bays (*Dallachy*); Port Denison (*Fitzalan*); Rockhampton (*Dallachy, O'Shanesy*, and others); Cape River, Crocodile and Nerkool Creeks (*Bowman*); Archer's Creek (*Leichhardt*); Brisbane River, Moreton Bay (*Leichhardt, F. Mueller, W. Hill*, and others).

New South Wales.—Richmond and Clarence Rivers (*C. Moore, Beckler*).

To these localities it may be added that it is common enough on the Macpherson Range.

It also occurs on Lord Howe Island, but has never been recorded from Norfolk Island. Speaking of Lord Howe Island, Bentham (B.Fl. v, 298) says :—

> The specimen of Milne's from Lord Howe's Island, referred by Meissner to *Caryodaphne densiflora*, Blume, is in old leaf only, and cannot be determined with any certainty. It appears to be much more like some varieties of *Cryptocarya triplinervis* than any specimen of the Javanese *C. densiflora*.

There is no doubt that Bentham's surmise that *C. triplinervis* is found on the island is correct. The plant I collected on the island myself, and it seems identical with *C. triplinervis*.

EXPLANATION OF PLATE 126.

A. Flowering branch (J. Dallachy, Rockingham Bay, Queensland).

B. Bud.

C. Flower, opened out, showing—

- (*a*) Calyx (perianth segment).
- (*b*) Stamens, outer row.
- (*c*) ,, inner row.
- (*d*) Staminodia, outer row.
- (*e*) ,, inner row.
- (*f*) Pistil.

D. Anthers.

E. Staminodia, outer row.

F. ,, inner row.

G. Pistil.

H. Branch with young fruit (Eastern Australia, Robert Brown 1802–5).

K. Fruit.

SUPPLEMENTARY ILLUSTRATIONS (HARDWOODS, NOT CRYPTOCARYA).

Spare chaining log on to lorry, Wyong.—(F. A. Kirton, photo.)

Getting props, Wyong.—(F. A. Kirton, photo.)

THE THREE-VEINED CRYPTOCARYA.

(*Cryptocarya triplinervis*, R.BR.)

F. A. Kirton, photo.

SPARE CHAINING LOG ON TO LORRY, WYONG.

F. A. Kirton, photo.

GETTING PROPS, WYONG.

A Critical Revision of the genus Eucalyptus.*

THIS work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets) :—

Eucalyptus acmenioides, Schauer (IX).
" *amygdalina*, Labillardière (VI).
" *Andrewsi*, Maiden (VII).
" *apiculata*, Baker and Smith (IX).
" *Behriana*, F.v.M. (X).
" *Boormani*, Deane and Maiden (X).
" *calycogona*, Turczaninow (III).
" *capitellata*, Smith (VIII).
" *Consideniana*, Maiden (X).
" *coriacea*, A. Cunn. (V).
" *dives*, Schauer (VII).
" *eugenioides*, Sieber (VIII).
" *hæmastoma*, Sm. (X).
" *incrassata*, Labillardière (IV).
" *Luehmanniana*, F.v.M. (IX).
" *macrorrhyncha*, F.v.M. (VIII).
" *microcorys*, F.v.M. (IX).
" *Muelleriana*, Howitt (VIII).
" *obliqua*, L'Héritier (II)
" *pilularis*, Sm. (I).
" *piperita*, Sm. (X).
" *Planchoniana*, F.v.M. (IX).
" *populifolia*, Hook. (X),
" *regnans*, F.v.M. (VII).
" *siderophloia*, Benth. (X).
" *Sieberiana*, F.v.M. (X).
" *stellulata*, Sieber (V).
" *umbra*, R. T. Baker (IX).
" *virgata*, Sieber (IX).
" *vitellina*, Naudin (VII).
" *vitrea*, R. T. Baker (VII).

* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, six shillings). Part IV will be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney : William Applegate Gullick, Government Printer.—1908.

Volume III (Parts XXI–XXX).

PART XXI. (Issued August, 1906.)

77.—The Crow's Ash or Boogum Boogum (*Flindersia Bennettiana*, F.v.M.). (*Two Plates.*)
78.—The Blackbutt or Peppermint (of New England) (*Eucalyptus Andrewsi*, Maiden).
79.—The Thready-barked Oak (*Casuarina inophloia*, F.v.M. and Bailey).

PART XXII. (Issued February, 1907.)

80.—The Hill Flindersia (*Flindersia collina*, F. M. Bailey). (*Two Plates.*)
81.—The Broad-leaved Messmate (*Eucalyptus obliqua*, L'Hérit.).
82.—The Cedar Wattle (*Acacia elata*, A. Cunn.).

PART XXIII. (Issued March, 1907.)

83.—The Rosewood (*Dysoxylon Fraseranum*, Benth.).
84.—The White-top Messmate (*Eucalyptus vitrea*, R. T. Baker).
85.—The Acacia decurrens Group of Wattles—Black, Green, and Silver Wattles (*Acacia decurrens*, Willd.). (*Two Plates.*)

PART XXIV. (Issued May, 1907.)

86.—The Bastard Pencil Cedar (*Dysoxylon rufum*, Benth.).
87.—Bastard Tallow-wood (*Eucalyptus Planchoniana*, F.v.M.).
88.—The Mountain Hickory (*Acacia penninervis*, Sieb.). (*Two Plates.*)

PART XXV. (Issued June, 1907.)

89.—The Rosewood (*Dysoxylon Fraseranum, Benth.*), also The Apple-tree of Lord Howe Island (*D. pachyphyllum*, Hemsl.).
90.—A Virgate Eucalypt (*Eucalyptus virgata*, Sieb.).
91.—The Two-veined Hickory (*Acacia binervata*, DC.).
92.—The White Cedar (*Melia Azedarach*, L., var. *australasica*, C. DC.).

PART XXVI. (Issued September, 1907.)

93.—The Hairy Dysoxylon (*Dysoxylon Becklerianum*, C.DC.).
94.—Luehmann's Gum (*Eucalyptus Luehmanniana*, F.v.M.).
95.—The Mulga (*Acacia aneura*, F.v.M.).
96.—The Red-wooded Cryptocarya (*Cryptocarya erythroxylon*, Maiden and Betche).

PART XXVII. (Issued October, 1907.)

97.—The Red Bean (*Dysoxylon Muelleri*, Benth.).
98.—Red Stringybark (*Eucalyptus macrorrhyncha*, F.v.M.).
99.—A Brush Ironbark (*Acacia aulacocarpa*, A. Cunn.).
100.—A Brown Beech (*Cryptocarya glaucescens*, R.Br.).

PART XXVIII. (Issued December, 1907.)

101.—A Bog Onion (*Amoora nitidula*, Benth.).
102.—The Brown Stringybark (*Eucalyptus capitellata*, Sm.).
103.—The Broad-leaved Wattle (*Acacia pycnantha*, Benth.).
104.—The Murrogun (*Cryptocarya microneura*, Meissn.).

PART XXIX. (Issued January, 1908.)

105.—The Bastard Rosewood (*Synoum glandulosum*, A. de Jussieu).
106.—A White Stringybark (*Eucalyptus eugenioides*, Sieb.).
107.—Baker's Wattle (*Acacia Bakeri*, Maiden).
108.—The Stinking Cryptocarya (*Cryptocarya fœtida*, R. T. Baker).

PART XXX. (Issued March, 1908.)

Recapitulatory (Seventeen Photographic Illustrations).
109.—The Yellow Stringybark (*Eucalyptus Muelleriana*, Howitt)
110.—The Nealie (*Acacia rigens*, A. Cunn.).

Volume IV (Parts XXXI–XL).

PART XXXI. (Issued September, 1908.)

111.—The Onion Wood (*Owenia cepiodora*, F.v.M.).
112.—The Blackbutt (*Eucalyptus pilularis*, Sm.).
113.—Cootamundra Wattle (*Acacia Baileyana*, F.v.M.).
114.—Grey Sassafras (*Cryptocarya australis*, Benth.).

PART XXXII. (Issued November, 1908.)

115.—The Red Honeysuckle (*Banksia serrata*, L. f.).
116.—The White Mahogany (*Eucalyptus acmenioides*, Schauer).
117.—The Gidgee (*Acacia Cambagei*, R. T. Baker).
118.—*Cryptocarya patentinervis*, F.v.M.

THE FOREST FLORA OF New South Wales.

J. H. MAIDEN.

VOL. IV. PART 4.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

PART XXXIV OF THE COMPLETE WORK.

INDEX OF TREES DESCRIBED.

Volume I (Parts I-X).

Volume II (Parts XI-XX).

THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the Botanic Gardens, Sydney.

PART XXXIV.

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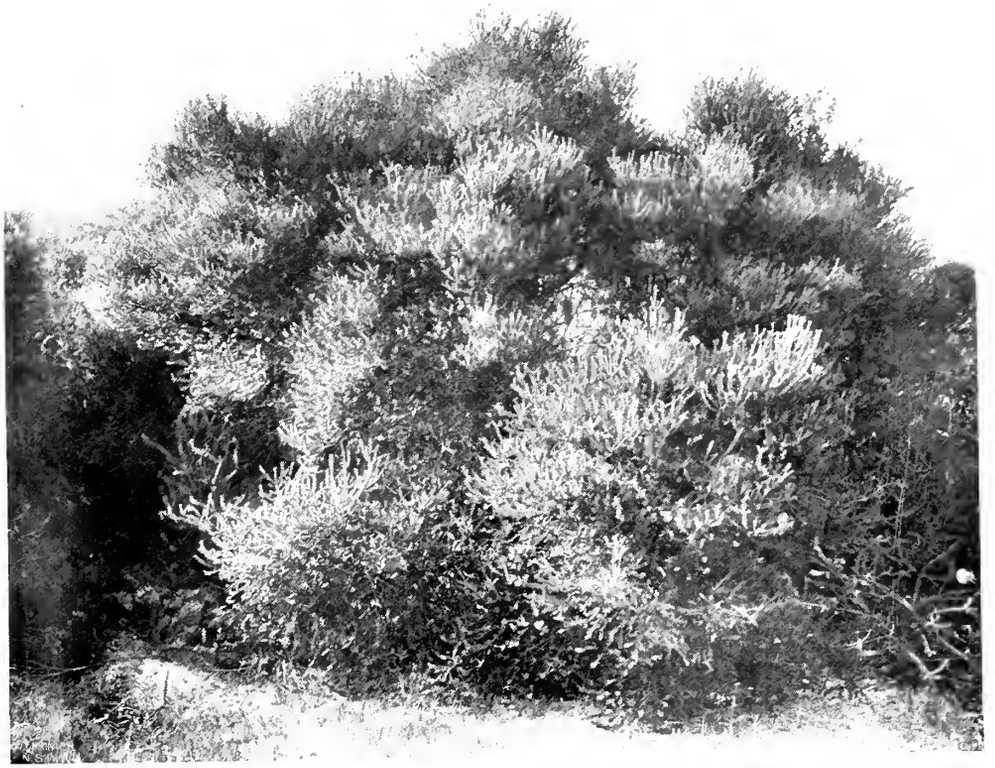
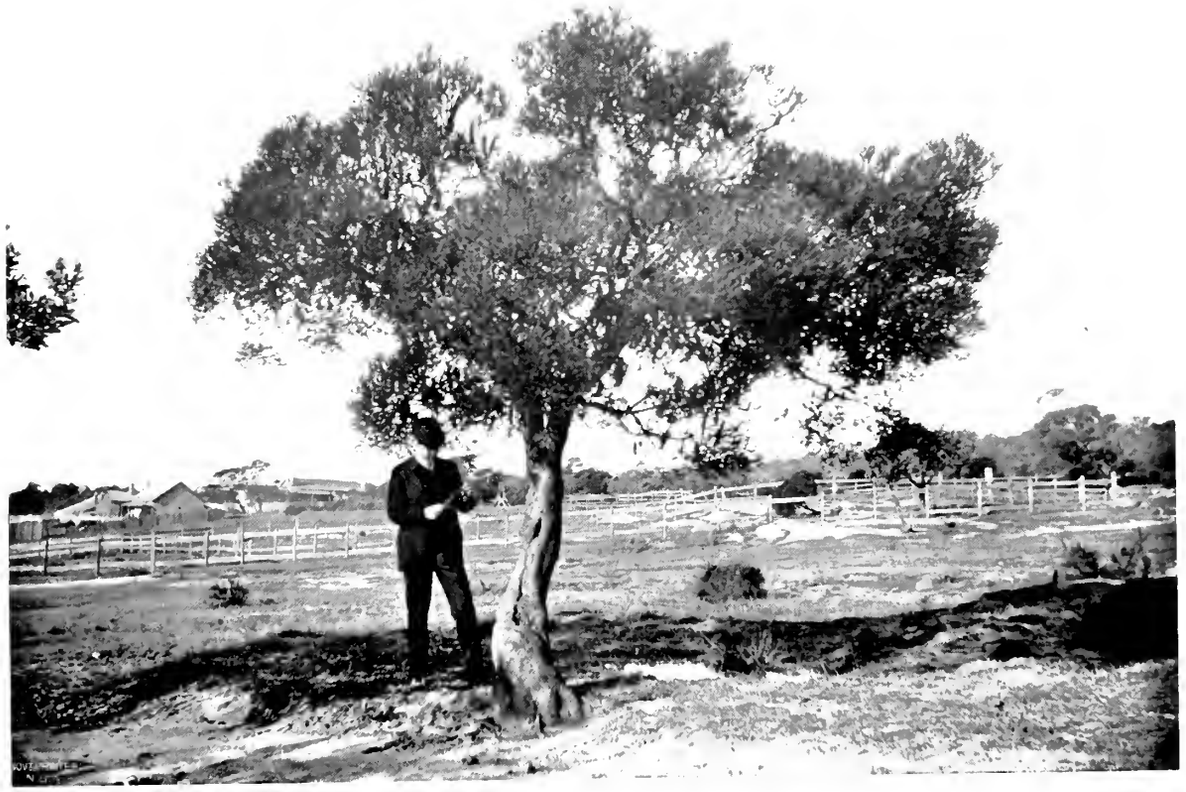


Govt. Printer, photo.

(a) *Banksia ericifolia*, L.F., LONG BAY.

W. Forsyth, photo.

(b) *Banksia ericifolia*, CENTENNIAL PARK.



R. H. Cambage, photo.

(*e*) *Banksia ericifolia*, MOSMAN.

No. 123.

Banksia ericifolia, L.f.

The Heath-leaved Honeysuckle.

(Family PROTEACEÆ.)

Botanical description.—Genus, *Banksia*. (See Part VIII, p. 169.)

Botanical description.—Species, *B. ericifolia*, Linn. f. Suppl. 127 (1781).

A tall shrub or small tree of 12 to 14 feet, glabrous except the inflorescence.

Leaves crowded, narrow-linear, truncate or notched at the end and sometimes with an intermediate point, otherwise entire with closely revolute margins, rarely exceeding ½ inch.

Spikes cylindrical, 6 to 10 inches long.

Bracts with broad shortly acuminate silky-pubescent tips.

Perianth yellow, silky, the tube about ¾ inch long, the limb ovoid.

Style about 1 inch long, hooked, with a very short thick stigmatic end.

Fruiting cones long and cylindrical.

Capsules scarcely protruding, villous but often becoming glabrous, the flat top ¾ to 1 inch broad and 4 or 5 lines thick. (B.Fl. v, 547.)

"White's Voyage, tab. ad. p. 225, fig. 1, 'strobilus,'" is this species, according to Robert Brown.

Botanical Name.—*Banksia*, already explained (see Part VIII, p. 170); *ericifolia*, from two Latin words signifying "heath-leaved."

At the time at which it was described the heaths (*Erica*) were being abundantly forwarded to Europe from Cape Colony, attracting the special attention of botanists and horticulturists; hence a large number of new plants with narrow-linear leaves were named *ericifolia*.

Vernacular Names.—It is somewhat singular that so prominent and beautiful a tree has received no common name, yet I believe such to be the case.

Timber.—The trunk is usually so small that its timber is worthless from an economic standpoint.

Size.—Up to 20 feet. This is one of the most beautiful of the Banksias, forming a round-topped small tree, with the branches concealing the trunk almost entirely, and forming a very ball of a tree, a mass of foliage. I have frequently cultivated the plant, and have encouraged others to do so, always, I believe, with satisfaction. If people would only set themselves to cultivate the native vegetation, they would be surprised at the beautiful and varied forms which would come under their cognizance.

Habitat.—Confined to coastal New South Wales and southern Queensland.

The type came from near Port Jackson; Beckler collected it on the Hastings River (*B. Fl.* v, 547).

Byron Bay (A. H. Hammond) is the most northern locality recorded for New South Wales, the Hastings River being hitherto the most northerly record for this State. It is, however, admitted by F. M. Bailey in his "Queensland Flora," with the note: "Recorded for Queensland by Mueller without locality." (Maiden and Betche.)

Going south, it is common enough near Jervis Bay, and I have it from Conjola, near Milton (W. Heron). Its most southerly locality is a matter for inquiry.

Propagation.—It was early cultivated in England. The figure of the plant depicted in the *Botanical Magazine*, t. 738, was made from a plant flowering at Vauxhall, London, in 1802.

EXPLANATION OF PLATE 127.

A. Inflorescence (flowering spike).

B. Young flower.

C. Flower—
  (*a*) Four-lobed corolla with stamens.
  (*b*) Pistil.

D. Corolla lobes—
  (*a*) Showing stamen in the concave laminæ.
  (*b*) Back view.

E. Stigma.

F Fruiting spike, showing the prominent capsules containing the winged seeds.

G. Fruits—
  (*a*) Plate separating the two winged seeds (*bb*).

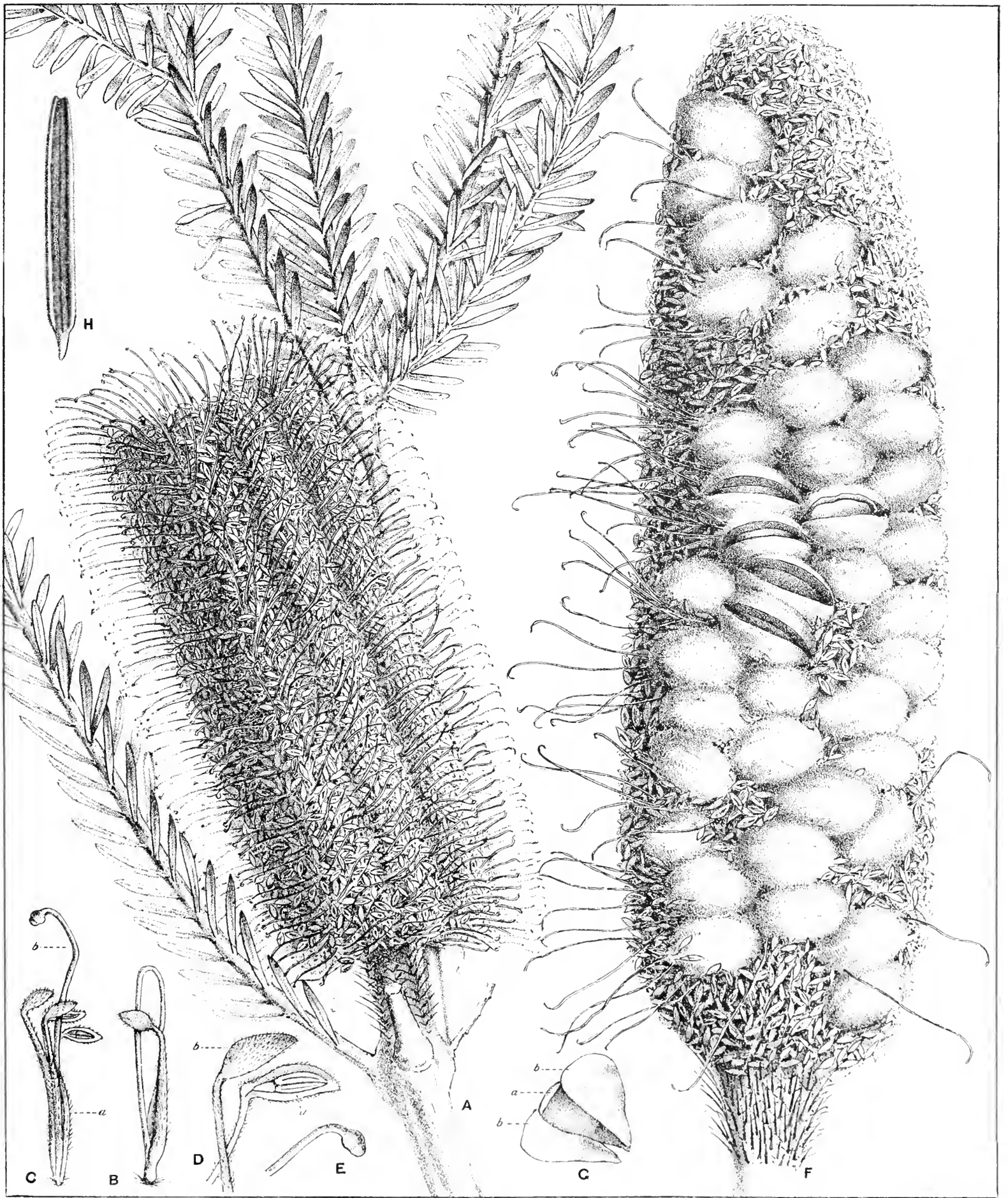
H. Leaf greatly enlarged, showing the recurved edge.

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) Long Bay, Sydney.—(Government Printer, photo.)

(*b*) Centennial Park, Sydney.—(W. Forsyth, photo.)

(*c*) Mosman, Port Jackson (R. H. Cambage, photo.). Showing trunk



M. Flockton del

HEATH-LEAVED HONEYSUCKLE.

(*Banksia ericifolia*, LINN., *f.*)

No. 124.

Eucalyptus Sieberiana, F.v.M.

Yowut or Mountain Ash.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical description.—Species, *E. Sieberiana*, F.v.M. in "Eucalyptographia" (1879).

It may be described in the following words :—

Juvenile leaves.—The seedling leaves are vertically arranged ; of the same colour on both sides ; glaucous, and larger than those of *E. piperita.* The venation is rather acute with the midrib. Both seedling and sucker leaves are glaucous, dull-coloured on drying, and have the veins more spreading than is the case in the mature foliage.

Mature leaves.—The leaves, which are falcate, lanceolate, and about 5 inches long by 1 inch wide, are often smooth, shining and coriaceous. The venation is spreading.

Buds clavate.

Operculum.—Hemispherical or slightly umbonate. Pale-coloured opercula are often observed in the Blue Mountains. Double opercula sometimes occur in this species.

Inflorescence.—Frequently ocellate ; this is sometimes a useful guide in distinguishing this from allied species.

Fruits.—Pear-shaped, usually a little oblique, the rim sometimes slightly concave, particularly when ripe. Edge of rim frequently sharp. Sometimes the plane of the rim is not at right angles to the axis of the fruit. Shining. The rim usually well defined, and often dark as in *E. hæmastoma.*

Botanical Name.—*Eucalyptus,* already explained (see Part II, p. 34) ; *Sieberiana,* in honour of Franz Wilhelm Sieber, of Prague, Bohemia, a botanical collector, who spent seven months in New South Wales in 1823, making collections, which were sold in numbered sets, bearing the labels "Flor. Nov. Holl." and "Pl. Exs." (exoticæ). He collected Eucalypts amongst other plants.

Vernacular Names.—"Mountain Ash" is its usual name. It attains its greatest luxuriance in mountain districts, and its timber is thought to resemble ash. Sometimes called "Black Ash," but this name should be reserved for *E. stellulata.* In Tasmania and in Victoria it is sometimes called "Gum-top" or "Gum-top Stringybark" (in allusion to the smoothness of the tops of the branches), and "White-top Ironbark" in Tasmania, where there are no true Ironbarks. It has been also called "Blackbutt," but that name should be reserved for *E. pilularis.* It has been called "Messmate" or "Stringybark" at the Dromedary, N.S.W., but the use of such names for this species is to be deprecated.

Dr. Howitt said it was also known as "Silver-top" and "Bastard Ironbark."

Aboriginal Names.—"Yowut" of the Gippsland aborigines, according to Howitt, and this will serve as a distinguishing name.

Synonyms.—In "Eucalyptographia," under *E. Sieberiana*, F.v.M., Mueller gives *E. virgata*, Sieb., as a synonym. It is not proper to state it so. Mueller thought, when describing it, he was suppressing the "misleading" name *virgata* for it. The explanation is that *E. virgata*, Sieber, was for many years confused by Bentham, by Mueller, and other botanists with the tree Mueller, in spite of himself, properly separated from *virgata* under the name *Sieberiana*. I have explained the situation under *E. virgata*, at p. 275, Part IX, of my "Critical Revision of the genus Eucalyptus," and need not repeat myself here.

I know no true synonym of *E. Sieberiana*, F.v.M.

Bark.—In young trees the bark often somewhat resembles "Stringybark" when viewed from a little distance. Hence the tree has been sometimes called Stringybark, with a qualifying adjective. In older trees the bark becomes denser, darker coloured, more furrowed and rugged in character. The casual observer might be excused if he took the tree for an "Ironbark," but a closer examination would show the bark to be neither dense nor tough enough. The small branches are smooth.

The smooth bark of saplings appears always to be glaucous.

Mr. W. Baeuerlen, many years ago, sent me the following note from Braidwood in regard to this tree, referrred to by him as "White Ironbark":—

Sawyers here tell me that, after gently burning this bark, they use the black remainder as an ink or marking to strike their lines in squaring timber. For this purpose they simply mix the black substance, left after charring, with a small quantity of water, so as to obtain a thick syrupy substance, through which they draw their marking line; when striking the line, this substance gives a clean, well-defined line without burr or wings; in striking, the substance does not "fly" off the line, as they say is the case when they use the bark of the Red Ironbark, or any of the other Gums.

The bark of the Red Ironbark (*sideroxylon*), they say, leaves a more gritty or harsh substance after charring, which does not answer their purpose.

Timber.—Pale-coloured and fissile; very suitable for inside work, but not durable when not protected from the weather. It seems to be a favourite food of white ants. It is also often pipy, and for these two reasons it is disliked by timber-getters.

Following are the earliest notes I can get of this timber:—

No. 85, *Cat. N.S.W. Exhibits*, Paris, 1855; 31, London Exhibition, 1862. "Mountain Ash" (Illawarra). "Willow or White Top" (Berrima). Height, 50–120 feet. Diameter, 24–48 inches. Much valued for rough purposes in districts where the better sorts of timber are not produced. This species usually occupies rough, rocky sites, and seems to form a link between the division of Ironbarks and that of the Gums.

With very dark-coloured, rugged outer bark on the trunk, and smooth white bark on the branches. Timber very hard, tough, and durable, much prized for poles and shafts of drays. (Macarthur.)

R. H. Cambage, photo.

(a) MOUNTAIN ASH (*Eucalyptus Sieberiana*, F.v.M.), MOSMAN.

R. H. Cambage, photo.

(*b*) MOUNTAIN ASH, MOSMAN.

Used for waggon-rails, shafts, poles, and other work connected with carriage-building. (F. R. Marriott, Mudgee.)

Used by wheelwrights for spokes and naves of wheels. (*General Report, Sydney Exh.*, 1879.)

Mr. Allen Ransome tested samples of this timber sent from New South Wales to the Colonial and Indian Exhibition. From the specimen submitted spokes were turned, casks made, and boards planed. "In all cases it proved an easy wood to work."

Further inquiry should be made in regard to the durability of this timber, in view of the somewhat contradictory nature of the following statements.

The trunk is sawn into good timber, and it is also used for posts and rails. It is, amongst other purposes, recommended for shafts. It is hard and, when seasoned, difficult to cut, but burns well, even when fresh. (Mueller.)

The wood is of superior quality, light, tough, and elastic; is used for swingle-trees of buggies, ploughs, &c., but will not endure under ground. (Howitt.)

. . . . the rough-barked variety (*E. Sieberiana*) is not a durable timber. (A. W. Howitt.)

Mountain Ash (*E. Sieberiana*). This timber, though suitable for wheelwright work, being tough and clear in grain, will not stand exposure to the weather in our bridges; it opens badly and should not be used. (J. V. de Coque, reporting on Upper Murray timbers.)

The following is evidence as to the durability underground of the timber.

The timber used in the Long Tunnel Mine (a damp mine), Walhalla, Gippsland, consists chiefly of *E. Sieberiana*, *E. capitellata*, *E. obliqua*, *E. amygdalina*, and *E. viminalis*. The first of these, *E. Sieberiana*, is by far the best; it lasts many years. (Tisdall, *Proc. R.S. Victoria*, 1887, p. 43.)

Ironbark (Tasmania). This timber grows principally on the north-east coast of Tasmania, and is equal in quality to the Ironbark* found on the Australian continent, and does not grow so tall or so large as the Gum, but has a small heart, and is very durable in or out of the ground. It makes splendid piles or medium-sized timber. The principal place for shipment would be from George's Bay, this being the most central place for it. (John Bradley.)

It is used in Tasmania for sleepers, amongst other uses.

Mr. R. A. Crawford, Moona Plains, Walcha, N.S.W., wrote to me in 1896:—

Eucalyptus Sieberiana.—The best all-round timber in this district; of course it varies according to locality. I have seen the timber on the ranges on the west side of the creek last more than twice the time of timber from the other, same species and split the same season. I know an old building roofed with shingles of this wood, still in use; it was built early in the fifties. It is, of course, getting leaky, but at 35 years old or more the roof was quite sound; the slabs might yet go into a new building; rafters also sound. The fence of a paddock erected about 1855 or '56 being badly damaged by fire last winter was taken down, and most of the rails were again used with fresh posts. This and *capitellata* both very lasting woods; best we have for posts except *corymbosa*.

Habitat.—Tasmania, Victoria, and New South Wales. It occurs in the Snowy Mountains (near the Victorian border) up to an elevation of 4-5,000 feet, and thence northward along the ranges, west at least as far as Mudgee. On the Snowy Mountains it is interesting to observe that *E. Sieberiana* is always found on slopes with a southern aspect.

The species loves high, rocky, stony mountain ranges on poor barren ground, and never takes to grassy localities.

---

* This is undoubtedly exaggerated.

In his "Second Census" Mueller records this species from South Australia, but, under *E. vitrea*, Part VI, p. 167, of my "Critical Revision of the genus Eucalyptus," I have shown that this is founded on a misapprehension. *E. Sieberiana* should be struck out of the flora of that State until additional evidence is forthcoming.

"Mountain Ash (*E. Sieberiana*) grows on most of the mountain slopes east of Mudgee. It is not very plentiful. Trees up to 4 feet in girth (?) and about 70 feet high." (F. R. Marriott.)

EXPLANATION OF PLATE 128.

A. Juvenile leaves.

B. Flowering twig.

C. Flower buds.

D. Back and front views of anthers.

E. Fruits.

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) and (*b*). Two trees at Mosman, Port Jackson.—(R. H. Cambage, photo.)

In (*a*) we have two trees; the large tree shows the characteristic furrowed bark.

In (*b*) we have an enlargement of the small tree pictured in (*a*). In (*b*) it shows the characteristic smooth branches.

M Flockton del

MOUNTAIN ASH.

(*Eucalyptus Sieberiana*, F.v.M.)

No. 125.

Acacia harpophylla, F.v.M.

The Brigalow.

(Family LEGUMINOSÆ: MIMOSEÆ.)

Botanical description.—Genus, *Acacia*. (See Part XV, p. 103.)

Botanical description.—Species, *A. harpophylla*, F.v.M., in Bentham's "Flora Australiensis" ii, 389 (1864).

Probably a tree, glabrous or the young shoots minutely hoary; branchlets slightly angular.

Phyllodia falcate-lanceolate, mostly 6 to 8 inches long, narrowed but obtuse at the end, much narrowed at the base, coriaceous, pale or glaucous, with several not very prominent nerves, and scarcely veined between them.

Peduncles slender, $\frac{1}{2}$ to $\frac{3}{4}$ inch long, clustered or rarely in a very short raceme, bearing each a small globular head of about 12 to 15, mostly 5-merous, flowers.

Sepals spathulate, not half as long as the corolla, free or slightly connected below the middle.

Petals smooth, free.

Pod unknown. (B.Fl. ii, 389.)

The fruits, unknown to Bentham, but later on seen by Mueller and figured in his "Iconography of Australian Acacias" though not described by him, are referred to under "Fruits."

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104); *harpophylla*, from two Greek words *(h)arpe*, a scimitar, and *phu(y)llon*, leaf, in allusion to the curved, scimitar-shaped leaves.

Vernacular Name.—The common "Brigalow," so called because it forms the scrubs of that name; the meaning of the word is unknown.

It is a thoroughly well recognised vernacular name, but because I imagine it is of aboriginal origin, a note will be found under "Aboriginal Names."

Aboriginal Names.—The common "Brigalow." The word was spelt "Brigaloe" by Gould, and "Bricklow" by Leichhardt. The latter stated he could not ascertain the meaning of the name. "Orkor" of some aborigines. (W. Hill in *Cat. Queensland Timbers*, No. 141, London International Exhibition, 1862.) Hill gave the botanical name as *A. excelsa*, but it is obvious, from his description, that this is a slip of the pen for *A. harpophylla*. The mistake is, however, of some importance since it is repeated in the "Treasury of Botany" and other works.

Leaves.—The scimitar-shaped leaves (phyllodes) of this species, with their blue-grey, silvery sheen, present an appearance which is characteristic, and which, once seen, is never forgotten.

The tree grows in almost impenetrable forests with open glades, in which are some of the most beautiful landscape effects I have ever seen. For the greater part of the year the foliage has a brilliant aluminium sheen, which, added to the very symmetrical form of growth of the clumps and fringes of the forest, gives a very fine effect. (C. J. McMaster, Chairman, Western Lands Board.)

Brigalow, the national scrub of Queensland, as it may be called, for it is found there more largely than in any of the other Colonies, can scarcely be called a fodder plant, for it is only eaten by stock under pressure of hunger, nor will it of itself sustain life, although it may prolong it. It grows all over the north of Queensland, both on the coastal and inland waters, and extends west beyond the boundary of the Colony until it is supplanted by the mulga. It is generally, but not always, accompanied by a low undergrowth of edible and fattening plants and shrubs, including saltbush. Brigalow, like pine, evinces a great facility for spreading and extending its area on the country being stocked. The reason for this is hard to determine. Apparently there is no more encouragement for it to grow after the settlement of the country than before. The eating down of the grass and consequent lessened fierceness of the bush fires can have nothing to do with it, as brigalow, unlike pine, cannot be destroyed by fire. (*Sydney Mail*, 1890.)

Brigalow is rung with a wide ring as it suckers from the roots. (Forester Bishop Lyne, Narrabri.)

For a popular account of this too plentiful wattle, see a paper by the late Rev. J. E. Tenison-Woods, in *Proc. Linn. Soc. N.S.W.*, VII, 570.

Fruits.—

Ripe pods recently sent by Mr. J. Gregson from Warrah, Willow Tree, enable us to complete the description of this species in the *Flora Australiensis*. Pods rather thick but flattened, with thickened margins, about 2 lines broad, and usually $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, often curved and somewhat restricted between the seeds. Seeds comparatively large, brown, not shining, placed longitudinally; funicle very small for the genus, only slightly folded. (Maiden and Betche in *Proc. Linn. Soc. N.S.W.*, XXIV, 643, 1899.)

The following memorandum of the Chairman of the Western Lands Board will show that it is not surprising that the fruits were not earlier described.

I have had a little experience in collecting and germinating Brigalow seed in the Moree District. I am under the impression that the tree matures seeds only at long intervals, and the pods appear to hang until heavy rains fall, when they burst, and the soft seed falling germinates immediately. I have tried in a primitive way to germinate the dry seeds, but without success, but the seeds collected and planted in the condition first above-mentioned grew freely, and the young plants have attained the height of fully 3 inches in as many days after planting the seed. Once the seed becomes settled it seems to grow slowly. I may mention that I was on the look out for Brigalow seeds for about ten years before I finally secured some, and, in reply to questions, I was informed by people who had lived many years in the Brigalow country that they had never seen any seeds on the trees. This, of course, may have been due to want of careful observation. (C. J. McMaster.)

The pods drop off as soon as they are ripe, which was in November (1906). They resemble snake beans in their green state, and when they ripen they open, drop the seed out, and then fall off the tree. (J. F. Turner, Ellerslie, Enngonia, February, 1907.)

Bark.—This tree yields a considerable amount of tan-bark of inferior quality. A Queensland correspondent informs me that a sample analysed in London gave 11·59 per cent. of tannic acid.

R. W. Peacock, photo.

BRIGALOW (*Acacia harpophylla*, F.v.M.), COOLABAH

C. J. McMaster, photo.

BRIGALOW WEILMORINGLE.

Baron von Mueller exhibited at the Intercolonial Exhibition of Melbourne, 1866, cotton and woollen fabrics dyed with the bark of this tree. Various tints of reddish-brown were obtained. I simply record the fact; I think the bark has no commercial importance.

Timber.—Brown, hard, heavy, and elastic; used by the natives for spears, boomerangs, and clubs. The wood splits freely, and is used for fancy turnery. Saplings used as stakes in vineyards have lasted twenty years or more. It is used for rough building purposes.

A fairly large tree, with rough bark, somewhat resembling that of Ironbark. Leaves curved and tapering, having a silvery hue. Wood dark-brown, and also of a grey colour, fragrant, close-grained, and bends well.

Chief uses are for turnery and cabinet work. The grey variety, which is very tough, is used for spokes of wheels and whipple-trees. Both might be used for inside work in buildings. (*Cat. Q. Forestry Mus.*, 1904.)

The timber is very heavy and dense, resembling Myall (*Acacia pendula*; see Part XVI), but without the pronounced scent peculiar to that timber. It is different also from the Myall in being not so brittle, and it is the favourite material used for stockwhip handles in the Moree District. I am satisfied that the timber possesses very considerable commercial value, which is restricted, however, by the fact that the trunk of the matured tree would average, say, 15 feet long and 8 inches diameter at each end.

The aborigines used it almost exclusively in that district in the construction of their fighting and hunting implements. (C. J. McMaster.)

Exudation.—An astringent gum of this species is described by Lauterer.*

Size.—Usually it attains a height of 20 or 30 feet in New South Wales, and 10 feet more in Queensland, but exceptionally a greater size.

Habitat.—The type came from Rockhampton. Native of Central Queensland, and New South Wales. It is very gregarious and abundant, as has been already indicated. Someone has called it the "national scrub" of Queensland. It forms very large scrubs on inland downs country, and in some parts not far from the coast, such as the Fassifern District. In the Narrabri District, New South Wales, it is very abundant, and it extends more or less abundantly as far as the Darling and beyond. It extends as far south as Coolabah and Marsden (the most southerly locality recorded).

New South Wales localities not previously specifically enumerated are Tarcoon, Bourke District, Nyngan, Dubbo, plains near Baradine, Warrah, Willow-tree, Scone, Moree, Warialda.

Notes.—(*a*) The only places for Brigalow in the Coolabah District, that side of the Bogan are:—Tubba, West Bogan, Willeroon, and Mt. Pleasant.

* "Gums and resins exuded by Queensland plants chemically and technologically described." From pages 35 to 80 of F. M. Bailey's Botany Bulletin No. 13 (April, 1896), "Contributions to the Queensland Flora."

There is plenty on the other side of the Bogan between the Marra and Macquarie. There is a station there called "The Brigalow."

(*b*) The trees attain a height of 20 to 30 feet, according to Mr. Cambage, and cover about 5 acres, $3\frac{1}{2}$ miles west of Marsden.

(*c*) Half a mile from Scone, on the Gundy Road, there are thirteen trees 30–40 feet in height, and up to 2 feet through. Fine healthy trees now, but no seedlings, as sheep eat them down. It is likely that when these trees die the species will be exterminated in the district.

(*d*) Mr. C. J. McMaster says: "There are immense forests of matured Brigalow extending from about 20 or 30 miles north of Moree far into Queensland."

EXPLANATION OF PLATE 129.

A. Flowering branch. Natural size.

B. Flower-head.

C. Young flower.

D. Bract.

E. Flower, opened out, showing—
- (*a*) Calyx.
- (*b*) Corolla.
- (*c*) Stamens.
- (*d*) Pistil.

F. Pod (natural size) opened, showing seeds inside.

G. Seed.

The fruits from Ellerslie ; the remainder of specimens from Pilliga.

PHOTOGRAPHIC ILLUSTRATIONS.

Brigalow, Coolabah.—(R. W. Peacock, photo.)

Brigalow, Weilmoringle, Brewarrina district, 3 views.—(C. J. McMaster, photo.)

Following are particulars :—

Topmost picture, a remarkably fine single specimen about 30 feet high.

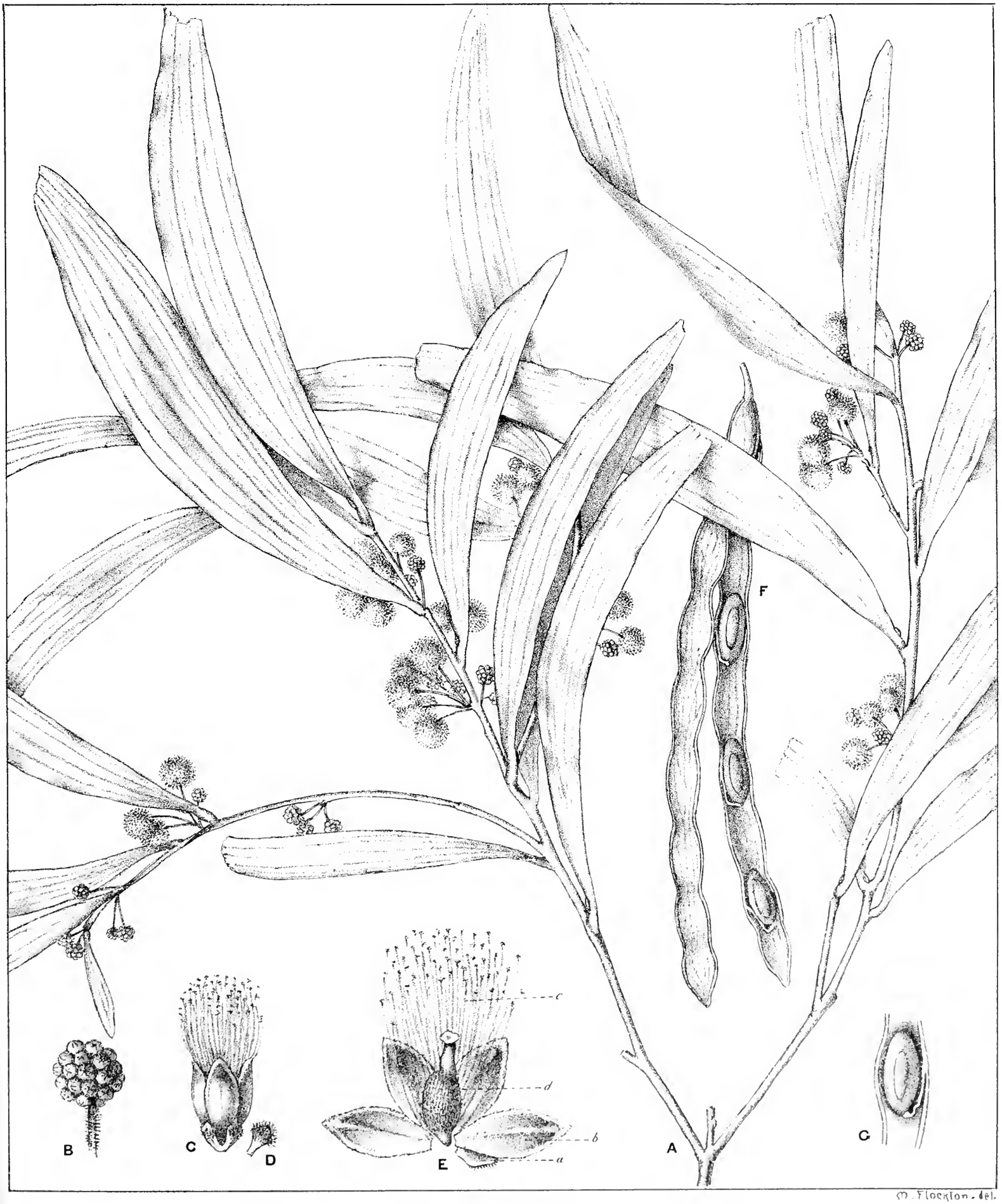
The tree to the right is an "Ironwood" (*Acacia excelsa* ; see Part xxxiii).

Centre picture, a fine clump of Brigalows.

Bottom picture, Brigalow trees at Weilmoringle Bore.

The water in the middle distance is artesian well water which has escaped from the distributing drains.

In the immediate foreground are some bullrushes growing in the bore drains.



M. Flockton - del.

BRIGALOW.

(*Acacia harpophylla*, F.v.M.)

No. 126.

Cryptocarya Meissneri, F.v.M.

(Family LAURACEÆ.)

Botanical description.—Genus, *Cryptocarya*. (See Part III, p. 72.)

Botanical description.—Species, *C. Meissneri*, F.v.M., *Fragm.* v, 170 (1866).

This is the description quoted by Bentham (*B.Fl.* v, 298) and by Mueller himself (*Second Census*).

The words are simply "*Cryptocarya Meissneri* (*C. hypoglauca* var. *attenuata*, Meissn. in Cand. Prodr. xv, 508) obvenit ad flumina Hastings—et McLeay-River. Haec planta nervis venisque subtilioribus insignita est, quam ulla ordinis alia hic reperienda."

Later on it was described by Bentham in the following way:—

A small or large tree, quite glabrous in every part.

Leaves elliptical or oblong-lanceolate, obtusely acuminate, contracted into a short petiole, mostly about 2 inches and rarely above 3 inches long, rather thick, penniveined but the veins irregular, and even the primary ones not very prominent.

Panicles short, axillary and terminal, the flowers not numerous, and quite glabrous outside.

Perianth-tube narrow, at first turbinate, ovoid and contracted at the top when fully out and $\frac{3}{4}$ line long, the lobes nearly as long, minutely hairy inside.

Stamens much shorter than the perianth, the glands sessile, but as near to the outer as to the inner stamens.

Ovary immersed in the perianth-tube.

Fruit not seen. (B.Fl. v, 298.)

Botanical Name.—*Cryptocarya*, already explained (see Part III, p. 73); *Meissneri*, after Karl Friedrich Meissner, who monographed the Lauraceæ in De Candolle's *Prodromus* xv (1), and collaborated with him in other botanical work.

Vernacular Name.—I know of none—except that of "Leather-jacket," which it shares with so many other trees as to rob it of any definiteness.

Synonym.—*C. hypoglauca*, Meissn. var. *attenuata*, Meissner in DC. Prod. xv (1), 508. The type came from the Hastings River.

Timber.—White, close-grained, and tough; probably a useful wood, and said to make good staves. We know but very little about it, and correspondence on the subject is invited.

Size.—A tree of medium size, say up to 50 feet in height, with a trunk diameter of 2 or 3 feet. I have seen it of the above size on the Dorrigo.

Few collectors, however, give dimensions on their labels; exceptions are:—Murwillumbah, 20–30 feet (W. Baeuerlen). Small tree of 20 feet, Yarras, Upper Hastings (C. Moore).

Habitat.—Native of New South Wales and Queensland, its most southern recorded locality being the Hastings River, N.S.W., and its most northern the Logan River, in southern Queensland, where it was found by the late Rev. B. Seortechini.

The *Flora Australiensis* gives its localities as the Hastings, Macleay, and Bellinger Rivers (C. Moore and Beckler). It was common on the Dorrigo.

EXPLANATION OF PLATE 130.

A. Flowering branch.
B. Bud.
C. Flower, opened out, showing—
  (*a*) Calyx (perianth segment).
  (*b*) Stamens, outer row.
  (*c*) „ inner row.
  (*d*) Staminodia, outer row.*
  (*e*) „ inner row.
  (*f*) Pistil.
D. Anthers, back and front.
E. Staminode, outer row.
F. „ inner row.
G. Pistil.
H. Young fruits (Clarence River). I have no ripe fruits.

All the specimens except H from Port Macquarie, Hastings River, N.S.W.

K. Fruits of *Dysoxylon Muelleri*, Benth., sent by Mr. W. H. Tomkins from Alstonville.

The figure supplements that of Plate 101, Part XXVII of the present work.

APPENDIX No. 1.

As the present Part concludes the New South Wales *Cryptocaryas*, I ask my readers to help me to trace the following:—

(*a*) *Cryptocarya sp.*

No. 106, *Cat. N.S.W. Exhib.*, Paris, 1855; No. 117 *Cat. N.S.W. Exhib.*, London, 1862. Height 50–80 feet. Diameter 12–30 inches.

A handsome brush tree, the wood more beautiful than most of the Lauraceæ. (Macarthur.)

---

* Bentham uses the term "stipitate glands," but according to Engler, the andrœcium of the *Cryptocarya* flower has four rows, viz., two rows of stamens and two rows of staminodia, and this view appears to be more natural. The distinction is important. "Stipitate glands" would not belong to the andrœcium at all, but to the disc, a totally different organ.

M. Flockton . del.

CRYPTOCARYA MEISSNERI, F.v.M.

(*Except K, which is Dysoxylon Muelleri,* BENTH. *See Plate* 101.)

F. A. Kirton, photo.

1. BRUSH ON THE DORRIGO CUTTING.

F. A. Kirton, photo.

2. ON THE DORRIGO CUTTING.

F. A. Kirton, photo.

3. ON THE DORRIGO CUTTING.

F. A. Kirton, photo.

4. DORRIGO SCRUB.

F. A. Kirton, photo.

5. SCENE ON THE BELLINGER RIVER.

F. A. Kirton, photo.

6. ON THE UPPER BELLINGER, DORRIGO TABLE-LAND IN BACKGROUND.

(*b*) *Cryptocarya speciosa.*

"The wood of this timber is highly prized for decking ships in Australia, owing to its resistance of the exposure to sun and wet; but the colour is bad, and it appears inferior to our Norway plank." (Jurors' Reports on New South Wales timbers, London International Exhibition, 1862.)

APPENDIX No. 2.

Dysoxylon Muelleri, Benth., "Red Bean" (Meliaceæ).

In response to my request for ripe fruits of this tree made at page 116, Part XXVII, of this work, Messrs. W. H. Tomkins, of Alstonville, Richmond River, and Mr. J. Cameron, Forest Guard, Murwillumbah, Tweed River, have very kindly furnished specimens from which the drawing (K, Plate 130) has been prepared.

SUPPLEMENTARY PHOTOGRAPHIC ILLUSTRATIONS.

The forest country of the Dorrigo District:—

1 and 2. Brush on the Dorrigo Cutting; note the rich brush foliage, waterfall, and rock masses.
3. Still on the Dorrigo Cutting, but getting near the top; flatter land, rich brush.
4. Dorrigo Scrub. Glimpse of the dense walls of brush vegetation.
5. Scene on the Bellinger River.
6. On the Upper Bellinger. Dorrigo table-land in the background. The dead trees in the foreground are Blue Gum (*Eucalyptus saligna*). Brush trees everywhere.

} F. A. Kirton (photo).

My readers are invited to read my two articles on "The Dorrigo Forest Reserve" in the *Agricultural Gazette* for 1894.

Part i. "A general account of the country and how to get there." (April.)

Part ii. "A list of the plants collected, with descriptive notes of those of economic or botanical interest." (September.)

The Dorrigo, and its approach from the Bellinger River, are noted localities for brush timbers.

A Critical Revision of the genus Eucalyptus.*

THIS work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets) :—

Eucalyptus acmenioides, Schauer (IX).
" *amygdalina*, Labillardière (VI).
" *Andrewsi*, Maiden (VII).
" *apiculata*, Baker and Smith (IX).
" *Behriana*, F.v.M. (X).
" *Boormani*, Deane and Maiden (X).
" *calycogona*, Turczaninow (III).
" *capitellata*, Smith (VIII).
" *Consideniana*, Maiden (X).
" *coriacea*, A. Cunn. (V).
" *dives*, Schauer (VII).
" *eugenioides*, Sieber (VIII).
" *hæmastoma*, Sm. (X).
" *incrassata*, Labillardière (IV).
" *Luehmanniana*, F.v.M. (IX).
" *macrorrhyncha*, F.v.M. (VIII).
" *microcorys*, F.v.M. (IX).
" *Muelleriana*, Howitt (VIII).
" *obliqua*, L'Héritier (II).
" *pilularis*, Sm. (I).
" *piperita*, Sm. (X).
" *Planchoniana*, F.v.M. (IX).
" *populifolia*, Hook. (X).
" *regnans*, F.v.M. (VII).
" *siderophloia*, Benth. (X).
" *Sieberiana*, F.v.M. (X).
" *stellulata*, Sieber (V).
" *umbra*, R. T. Baker (IX).
" *virgata*, Sieber (IX).
" *vitellina*, Naudin (VII).
" *vitrea*, R. T. Baker (VII).

---

* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, six shillings). Part IV will be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney : William Applegate Gullick, Government Printer.—1908.

Volume III (Parts XXI-XXX).

PART XXI. (Issued August, 1906.)

77.—The Crow's Ash or Bogum Bogum (*Flindersia Bennettiana*, F.v.M.). (*Two Plates.*)
78.—The Blackbutt or Peppermint (of New England) (*Eucalyptus Andrewsi*, Maiden).
79.—The Thready-barked Oak (*Casuarina inophloia*, F.v.M. and Bailey).

PART XXII. (Issued February, 1907.)

80.—The Hill Flindersia (*Flindersia collina*, F. M. Bailey). (*Two Plates.*)
81.—The Broad-leaved Messmate (*Eucalyptus obliqua*, L'Hérit.).
82.—The Cedar Wattle (*Acacia elata*, A. Cunn.).

PART XXIII. (Issued March, 1907.)

83.—The Rosewood (*Dysoxylon Fraseranum*, Benth.).
84.—The White-top Messmate (*Eucalyptus vitrea*, R. T. Baker).
85.—The Acacia decurrens Group of Wattles—Black, Green, and Silver Wattles (*Acacia decurrens*, Willd.). (*Two Plates.*)

PART XXIV. (Issued May, 1907.)

86.—The Bastard Pencil Cedar (*Dysoxylon rufum*, Benth.).
87.—Bastard Tallow-wood (*Eucalyptus Planchoniana*, F.v.M.).
88.—The Mountain Hickory (*Acacia penninervis*, Sieb.). (*Two Plates.*)

PART XXV. (Issued June, 1907.)

89.—The Rosewood (*Dysoxylon Fraseranum, Benth.*), also The Apple-tree of Lord Howe Island (*D. pachyphyllum*, Hemsl.).
90.—A Virgate Eucalypt (*Eucalyptus virgata*, Sieb.).
91.—The Two-veined Hickory (*Acacia binervata*, DC.).
92.—The White Cedar (*Melia Azedarach*, L., var. *australasica*, C. DC.).

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94.—Luehmann's Gum (*Eucalyptus Luehmanniana*, F.v.M.).
95.—The Mulga (*Acacia aneura*, F.v.M.).
96.—The Red-wooded Cryptocarya (*Cryptocarya erythroxylon*, Maiden and Betche).

PART XXVII. (Issued October, 1907.)

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98.—Red Stringybark (*Eucalyptus macrorrhyncha*, F.v.M.).
99.—A Brush Ironbark (*Acacia aulacocarpa*, A. Cunn.).
100.—A Brown Beech (*Cryptocarya glaucescens*, R.Br.).

PART XXVIII. (Issued December, 1907.)

101.—A Bog Onion (*Amoora nitidula*, Benth.).
102.—The Brown Stringybark (*Eucalyptus capitellata*, Sm.).
103.—The Broad-leaved Wattle (*Acacia pycnantha*, Benth.).
104.—The Murrogun (*Cryptocarya microneura*, Meissn.).

PART XXIX. (Issued January, 1908.)

105.—The Bastard Rosewood (*Synoum glandulosum*, A. de Jussieu).
106.—A White Stringybark (*Eucalyptus eugenioides*, Sieb.).
107.—Baker's Wattle (*Acacia Bakeri*, Maiden).
108.—The Stinking Cryptocarya (*Cryptocarya fœtida*, R. T. Baker).

PART XXX. (Issued March, 1908.)

Recapitulatory (*Seventeen Photographic Illustrations*).
109.—The Yellow Stringybark (*Eucalyptus Muelleriana*, Howitt).
110.—The Nealie (*Acacia rigens*, A. Cunn.).

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PART XXXI. (Issued September, 1908.)

111.—The Onion Wood (*Owenia cepiodora*, F.v.M.).
112.—The Blackbutt (*Eucalyptus pilularis*, Sm.).
113.—Cootamundra Wattle (*Acacia Baileyana*, F.v.M.).
114.—Grey Sassafras (*Cryptocarya australis*, Benth.).

PART XXXII. (Issued November, 1908.)

115.—The Red Honeysuckle (*Banksia serrata*, L. f.).
116.—The White Mahogany (*Eucalyptus acmenioides*, Schauer).
117.—The Gidgee (*Acacia Cambagei*, R. T. Baker).
118.—*Cryptocarya patentinervis*, F.v.M.

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119.—A Honeysuckle (*Banksia æmula*, R.Br.).
120.—The Sydney Peppermint (*Eucalyptus piperita*, Sm.).
121.—Ironwood (*Acacia excelsa*, Benth.).
122.—The Three-veined Cryptocarya (*Cryptocarya triplinervis*, R.Br.).

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THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the Botanic Gardens, Sydney.

PART XXXV.

Published by the Forest Department of New South Wales, under authority of The Honourable the Secretary for Lands.

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* 24020—A

Kerry, photo.

ROAD THROUGH PINE FOREST, TABULAM-CASINO ROAD.

Kerry, photo.

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No. 127.

Araucaria Cunninghamii, Ait.

Richmond River or Hoop Pine.

(Family CONIFERÆ.)

Botanical description.—Genus, *Araucaria*, A. L. de Jussieu, Genera Plantarum, 413 (1789).

Flowers dicecious or rarely monœcious, the amenta terminal.

Male amenta cylindrical ; stamens numerous, spirally imbricated, contracted at the base, with an ovate or lanceolate incurved scale-like apex ; anther cells 6 to 20, in 2 rows.

Females with a single reflexed ovule within each scale.

Fruit-cones large, ovoid or globular, the scales very numerous, closely imbricate, the margins usually attenuated into wings at the base, the apex thickened and woody, with a raised transverse line often produced into a lanceolate or pungent point.

Seeds flattened, obovoid-oblong, not winged, adnate to the scale at the base, free at the apex.

Embryo, with 2 cotyledons, sometimes deeply divided so as to appear to be 4.
Trees often very lofty, the branches almost verticillate.

Leaves in close spires, flat or on sterile branches vertically compressed, short and rigidly acicular or lanceolate and longer, pungent pointed or rarely obtuse, with a prominent midrib.

Fruit-cones in some species attaining a very large size. (B.Fl. vi, 242.)

Botanical description.—Species, *A. Cunninghamii*, Ait., in Sweet, *Hort. Brit.*, 475.

A tree with a pyramidal or somewhat flattened head, attaining in some situations 150 to 200 feet, in others remaining much smaller.

Leaves crowded in dense spires, rigidly acicular and very acute, those of the barren branches often spreading, straight, vertically compressed, with the dorsal rib decurrent and $\frac{1}{4}$ to $\frac{1}{2}$ inch long, those of the flowering branches from a broad adnate base triquetrous or lanceolate, incurved and rather shorter.

Male amenta sessile, cylindrical, very dense, 2 to 3 inches long and 3 to 4 lines diameter, the scale-like apex of the stamens ovate-rhomboidal and acute.

Fruit-cones ovoid, about 3 inches long and 2 inches diameter, the scales (including their marginal wings) broadly cuneate, the broad hard apex terminating in a lanceolate spreading or recurved rigid point—Parlat. in DC. *Prod.* xvi, ii, 372. (B.Fl. vi, 243.)

Botanical Name.—*Araucaria*, from *Araucanos*, the name of one of these Pines (*A. imbricata*) in Chili; *Cunninghamii*, after Allan Cunningham, who held the appointment of King's Botanist in Australia, and whose services to Australian botany and geographical exploration are alike immortal. An obelisk to his memory is to be seen in the Sydney Botanic Gardens, of which he was at one time Superintendent.

Vernacular Names.—It is almost universally known in the Sydney market as "Colonial Pine," so we cannot disturb the name now. Another name is "Moreton Bay Pine," because large quantities used to be shipped from southern Queensland (or Moreton Bay, as the settlement was called). In northern New South Wales the timber often goes under the name of "White Pine" or "Richmond River Pine." For the origin of the term "Hoop Pine," often applied to it, see **Bark** (below).

It must not be confused with the "She" or "Brown" Pine (*Podocarpus*) (see Part IV of this work), nor with the various Cypress Pines (*Callitris*) so well known for their ornamental character, fragrant odour, and power of resistance to white ant (see Part XII of this work).

Aboriginal Names.—"Coorong" of those of the Richmond River, according to the late Mr. Charles Moore, who stated that it bore the same aboriginal name as the Cypress Pine (*Callitris columellaris*); "Cumbertu" by those of the Brisbane district; and "Coonam" by those about Wide Bay (Queensland).

Leaves.—The leaves are prickly and small, say a quarter to half an inch long. They are crowded in dense spires.

Flowers.—The flowers are usually diœcious—that is to say, having the males and females on distinct plants. The male amenta (catkins) are stalkless, cylindrical, very dense, from 2 to 3 inches long, and from 3 to 4 lines in diameter. What a catkin of this particular tree is like may be seen from the drawing. It will be observed that they form the thickened, club-shaped ends of the twigs. A catkin, in botany, is a form of spike in which the flowers are incomplete (to use a botanical expression), wanting either stamens or pistil—of course, the latter in the present instance.

Fruit.—This is a cone, and it is somewhat egg-shaped (ovoid), about 3 inches long and 2 inches in diameter, containing numerous, closely overlapping scales. This swollen egg-shaped portion reminds one of a fuller's teazle, and contains the seeds (very much smaller than Bunya Bunya seed, *Araucaria Bidwilli*); this, of course, represents the female portion of the plant. The seeds are flattened and contained in the scale. The appearance of the cone and scale can be readily made out from the drawing.

Bark.—The bark is brown to black, not thick, and has circular horizontal markings. It peels off horizontally in tough, fibrous flakes. Owing, in some measure, to the resin it contains, and also to its tough nature, it does not readily decay on exposure. The timber itself is peculiarly liable to decay under such circumstances, and so it happens when a tree is felled in the forest and chopped into lengths, if allowed to remain, all the wood disappears, leaving the bark as a "hoop" or natural pipe, reminding one of a pipe for water supply. Hence the name "Hoop Pine" often given to this tree.

Timber.—This is so well known to people in the coastal districts of the State that it would almost seem unnecessary to describe its appearance. It is our principal cheap softwood, taking the place of the Deal of Europe for packing-cases and other rough purposes. It is strong and durable when dry, and lasts well for such purposes as punt-bottoms when kept constantly wet, but it will not stand being kept alternately wet and dry. I have been told that the lining of the roof of the cathedral at Armidale, fixed nearly sixty years ago, is as sound as the day it was put in. It is extensively used for flooring and lining boards, and for the various purposes to which softwoods are usually put. It is apt to get of a dirty colour with age.

Most planks of Colonial Pine show more or less of what may be compared to a bird's-eye maple figure; in fact, the presence of these markings is a ready diagnostic test of the timber, as a rule. In selected planks they are very numerous, and bring this wood into the category of ornamental timbers. Selected Colonial Pine of this character looks really well when made up into bedroom furniture, linen presses, &c. A piece of Colonial Pine was thus described in the report of the London International Exhibition of 1862:—"A noble specimen, which is remarkable for the peculiar figure set up, by a series of remote, small, pea-shaped, pale, clouded knots, arranged in quincunx order, somewhat like drops of rain in general effect, and not easily described."

It does not seem to be generally known how excellent a material for carving this wood is. It is, of course, somewhat brittle, but when seasoned this is reduced to a minimum. I had in my keeping a large carved bracket of Acanthus leaves in Colonial Pine, and it showed no trace of warping.

Colonial Pine used at one time to be in great request for spars for ships, as it was readily obtainable in lengths from 80 to 100 feet, but it is rather brittle for this purpose.

Mr. S. H. Barraclough, B.C.E., has kindly made for me the following abstract of Professor Warren's experimental results with this timber:—

The following strengths and coefficients are, in each case, the average of the results obtained from testing six or more specimens:—

The weight per cubic foot is 38 lb., while the shrinkage and loss of weight for approximately 1,100 days are 5·6 per cent. and 31·6 per cent. respectively.

When tested transversely the modulus of rupture was found to be 9,136 lb. per square inch, and the modulus of elasticity 1,915,800 lb. per square inch.

The breaking strength per square inch in tension was 15,095 lb., and the shearing strength 1,376 lb.

The compression strength varies with the ratio of length of test piece to the dimensions of its cross section, as exhibited in the accompanying table:—

Ratio—*l*, length; *d*, side of square ...	4 : 1	8 : 1	16 : 1
Breaking load	4,875	5,511	5,337
Modulus of elasticity	954,147	1,312,800	...

Mr. Robert Kaleski, Mountain Top, Dorrigo, writes :—

Timber light yellow, very free, light, and easily worked. Durable if protected from the weather. When advanced in age generally attacked by the borer. Sometimes used for shingles, rails and palings ; life for these is about eight years, some much more durable than others. Stains very much if welted in the log.

Grows only in clay soils, seeming to prefer heavy white clay. Never grows in rich land ; generally found in large patches, though occasionally an odd tree or two may be found isolated.

Drawings of microscopic sections of the following woods, *Araucaria Cunninghamii, excelsa,* and *Bidwilli* will be found, by Dr. Fl. Tassi, in *Bull. Lab. orto botanico di Siena* (viii, Fasc. 1–4, p. 46).

Pine for Butter-boxes.—I wrote, many years ago :—

There is one use, and an increasingly important one, to which Colonial Pine may be put, and I ask our Richmond and Clarence River millers to take it to heart. I allude to butter-boxes. An enormous quantity is required every year for New South Wales butter, and yet this Colony, with all its pine forests, fails to supply timber to case its own butter. I believe the wood to be a suitable one for the purpose, but some of our northern saw-millers hardly realise that they are allowing a good trade to slip away. Colonial Pine is very light when well seasoned, and it may be cheaply coated with a thin layer of paraffin, if necessary.

In 1894 the manager of the Fresh Food and Ice Company, Sydney, wrote to me :—

So far the best kind of wood for use in the manufacture of boxes for packing butter has been the New Zealand Kauri Pine, this on account of its fine texture and non-absorption of the butter, not liable to taint or discolour, and lightness of weight.

In the same year the following statement was communicated to the Sydney Press :—

Locally-made Butter-boxes.—The increasing benefits that the Colony will receive from the rapid extension of the butter industry are daily becoming more apparent. Already the railways and steamship companies have turned the industry to profit, and increased employment has been given in consequence. It has now been proved, however, that yet another industry will be fostered which hitherto has been overlooked, and this is the extensive manufacture of butter-boxes from colonial timber. While travelling on the Northern rivers, Mr. Pateson, manager of the Fresh Food and Ice Company, happened to notice the large quantities of timber there which was practically going to waste. Being struck with the suitability of some of the local woods for the manufacture of butter-boxes, he questioned Mr. James Darragh, who has sawmills on the Richmond, on the subject. His replies proved very satisfactory, and samples were asked for. The result has been that this morning the Fresh Food and Ice Company, in conjunction with the South Coast and West Camden Co-operative Company, have agreed to purchase 10,000 cases, and have given a promise that they will take 50,000 should the first quantity prove as satisfactory as anticipated.

The boxes are said to be superior to the imported article, being at the same time considerably cheaper ; while the boxes used this season cost about 1s. 3d. each, the contract price which these companies have entered into is only 1s. Several different varieties of wood have been submitted, among which are She-Beech, Pine, and Sycamore. The whole of these three are very good, but the first-named is preferred. These boxes can be easily made to conform to the weight stipulated in the shipping companies' proposed agreement recently published, it being estimated that they will average from 10 lb. to 12 lb. weight each. There is said to be an abundance of timber, so another important branch of the butter industry promises to spring up.

There is an excellent article on the subject in the *Agricultural Gazette* for March, 1902, which I print *in extenso.*

Fears, that are by no means groundless, have been expressed that, under the enormously increasing demands from all parts of Australasia, the supplies of New Zealand White Pine (Kahikihea), most generally used for butter-boxes, may be within a comparatively short period exhausted. This matter, to anyone unacquainted with the actual timber resources of our Northern River brushes, would appear to be of

extremely serious concern; but happily there still exist in the Richmond and Tweed River districts timbers that are apparently equally suitable for the purpose, and in quantities sufficient to meet the requirements of even so rapidly expanding an industry as dairying for many years to come. The Dairy Expert, Mr. M. A. O'Callaghan, some time ago, when the question of suitable timbers for butter-boxes was rather prominently under public review, reported having carefully examined boxes of local production in the Richmond River district. He was favourably impressed with the timber—so-called Richmond River Pine—that came under his observation, and found that when properly seasoned such wood had practically neither taste nor smell. Mr. T. T. Ewing, M.H.R., also took an active interest in the matter, and in due course arrangements were made for analysis and systematic investigation of the timber used on the Richmond River for butter-boxes.

Mr. W. E. Oxenford, of the Railway Sawmills, Crabbe's Creek, Richmond River, was good enough to forward a box and samples of timber. In a letter accompanying the specimens he said: "I have been using Pine (local) timber for some years for making butter-boxes. I have supplied the Tweed River Creamery Butter Co. (Ltd.) with boxes of this timber for the past three years, during which time I have never had the slightest complaint. Mr. McIlraith, the manager, assures me the timber supplied does not taint the butter in the slightest degree. The boxes supplied to them are known as 'local' boxes—ends $\frac{3}{4}$ inch thick; sides, tops, and bottoms, $\frac{1}{2}$ inch thick—but Mr. McIlraith tells me he has been using this size all along for export as well, and has never had any complaint from the shippers. The only fault (if it can be called a fault) is the boxes made from our local Pine are a little heavier than boxes of the same size made from New Zealand 'Kahikihea' or White Pine.

"I also supplied the North Coast Fresh Food and Cold Storage Co-operative Co. (Ltd.), Byron Bay, for about twelve months with boxes known as 'Export Boxes,'—ends, $\frac{3}{4}$ inch; sides, tops, and bottoms, $\frac{3}{4}$ inch in thickness. The Company discontinued the use of these boxes owing to their being slightly heavier than New Zealand Pine of same thicknesses, otherwise, they had no complaint to make.

"I am still supplying this Company with a small box to hold 28 lb. butter, and used for the trade locally. These are made out of second-class material—that is, knotty pieces and timber that is a little rough where the planing machine has not touched.

"In the earlier days of butter factories, the Richmond River Pine received a bad name for having a very nasty smell, and from giving a taint to the butter. This is to be accounted for from the fact that timber that did that was cut in Sydney saw-mills, where logs on arrival were dumped into the water, and may have lain for weeks before being cut up. Naturally such logs became impregnated with the filth that is to be seen and smelt around some of the Harbour mills, and hence the verdict went forth that Richmond River Pine was unsuitable for butter-boxes. The logs I cut are never in the water. They come straight from the scrub into the mill, where they are broken down into boards, which are then stacked with fillets between each board, and allowed to season about four months. They are then passed through the planing-machines, dressed both sides and edges, are then cross-cut into suitable lengths, loaded into railway trucks, and forwarded to the factory.

"I am sure that our Pine is as suitable as the New Zealand wood. It is a far stronger timber; boxes can be used for local trade three or four times, as washing with hot water or steam does not discolour this timber. The same cannot be said of New Zealand Pine. Our $\frac{1}{2}$ inch material stands the voyage to Europe, whereas $\frac{1}{2}$ inch New Zealand Pine would have a tendency to split (they use $\frac{3}{4}$ inch stuff for the purpose). The weight of a box made from our pine, $\frac{1}{2}$ inch thick, would not be as heavy as $\frac{3}{4}$ inch New Zealand Pine. The fact that one factory is continually using $\frac{1}{2}$ inch boxes for export proves that other factories can do the same in place of using $\frac{3}{4}$ inch material."

Mr. Oxenford adds that in his district there is enough Pine to supply hundreds of factories for many years to come.

The specimens of Richmond River Pine forwarded were submitted to analysis by the Chemist, Mr. F. B. Guthrie, in conjunction with samples of New Zealand Pine for comparative purposes.

Mr. Guthrie furnishes the following details of analysis: —

	Richmond River Pine.		New Zealand Pine.	
Moisture at 100° C.	.....	3·52	.....	11·26
Aqueous Extract	2·81	.....	2·22	
Alcoholic Extract	1·15	.....	·69	
Total Extract	3·96		2·91	
Total Oxidisable matter in aqueous extract, calculated as Tannic acid ...	·85		·39	
Weight of butter-box ($13\frac{1}{2}$ x 13 x 12) ...	9 lb. 15 oz.		8 lb. 12 oz.	

"Butter was allowed to stand in contact with the two butter-boxes, and a third portion of same butter retained in a porcelain basin for six days. The butter in the two boxes did not appear to have any decidedly different flavour to that kept in the basin.

"There is a larger proportion of extract in the Richmond River Pine, and more tannin than in the New Zealand wood largely used for making butter-boxes. The extractive matter does not, however, appear to impart any taint, or to affect the butter in any way. The principal objection appears to be in the weight of the local wood. Perhaps the boxes may be made of thinner wood. The sample of local wood is much drier and has been more seasoned."

In August, 1905, the Minister for Agriculture, of Queensland, received a report from Mr. Thomson, Government Dairy Expert, on the allegations made in the Southern States that Queensland Pine (the same as our Richmond River or Hoop Pine) when used as boxes, tainted the butter. The report contains the following conclusions:—1. The charges against Queensland Pine for butter-boxes have been disproved by practical and scientific examination, and the results show that the Pine is admirably adapted for the export butter trade. 2. The practical tests carried out at the Queensland Meat Export Works, Pinkenba, were of great severity, and any weakness in the Pine would have been conveyed to the butter before the expiry of the investigation. 3. A searching examination of the export butter, conducted by the grading inspectors of the Department of Agriculture, has not revealed the slightest suspicion that the wood contains injurious properties. 4. The best results in the experiments were obtained from wood treated with paraffine wax and single parchment.

In December of the same year the *Sydney Morning Herald* had the following statement:—

The controversy concerning the merits of Queensland Pine for butter-boxes still continues, and no practical progress has been made towards a settlement of the question. The authorities in Queensland declare that the Pine is eminently suitable, and that it does not impart any taint to the butter. On the other hand, factory managers and directors in New South Wales have stated that a taint in butter put up in this timber is common, while some butter men who buy in the Sydney market unhesitatingly reject butter which is so packed. It is, however, pretty well known that butter packed in Queensland Pine often opens without any taint, and some people in the trade are beginning to believe that the real cause of the trouble is that the Pine on low-lying ground taints the article, while that on higher levels does not do any injury. A test was recently instituted by the chief Dairy Expert, and yesterday two boxes of butter were examined at the Government Cold Storage Depôt in Pyrmont. These boxes were taken from the same churning at a Hunter River factory, one being of Queensland and the other of New Zealand timber. The butter was placed in cold storage for a time, and was taken out two days before the examination, so that it might be in about the same condition in which butter usually appears on the grocer's counter. Yesterday the boxes were brought out with the outsides covered so that the wood could not be recognised. Mr. O'Callaghan and an expert in the trade then made a very careful examination, driving the trier down several times beside the wood and withdrawing samples. The butter was then turned out of the boxes, and again examined very carefully. Each of the experts detected a slight woody flavour in one box, but it could not be described as a taint, and was not sufficient to affect the sale of the butter. The box turned out to be that made of Queensland Pine, but the experts were satisfied that if both butters were offered for sale there would not be a hair's difference in the price. So far as it goes the test proved that butter put up and kept under ordinary conditions in Queensland Pine was not depreciated in value; but whether this result can be safely taken as a guide to what would happen if large quantities were packed in this wood is problematical.

The "White Pine," or "Kahikihea," of New Zealand, largely used for butter packing, is known to botanists as *Podocarpus dacrydioides*, A. Richard.

The latest information I have on the subject is as follows:—

We do not know of any butter factories in New South Wales that are using local or Queensland timbers in butter-boxes.

The same trouble of years ago exists to day,—that is, boxes from our Pine impart a strong woody or unpleasant flavour to the butter packed in them. The same remarks apply to New Zealand White Pine that has not been properly seasoned, and in this respect we have had a great deal of trouble lately.—(The Manager, N.S.W. Fresh Food and Ice Co., Ltd, Sydney, in letter to me dated 23rd September, 1908.)

Pine Knots.—When a Pine-tree decays in the forest, it often gives indication that a tree once existed by the presence of a number of club-shaped pieces of wood 1 to 2 feet long, tapering at one end, and more or less hollow, and having the appearance of a fracture at the other. These are what are known as "pine knots," and are the bases of the branches, which penetrate a considerable distance into the trunk. No doubt they owe their durability to the large percentage of resin they contain. In the Richmond River district carters collect them wherever possible, and sell them for firewood, as they fetch 2s. per load more than teak (*Flindersia australis*), which is considered the best fuel timber of the district. It is a pity, however, to put pine knots to such a vulgar use, as the wood is of a most ornamental character. In cross-section it is very ornamental, and in longitudinal section strikingly so. It is dark coloured, of various shades of brown, and usually shows a most beautiful figure. It is an ideal substance for small articles of turnery, such as pencil and needle cases, rulers, &c., and small objects, such as flat-rulers, may be suitably made from it. A drawback to pine-knot wood is its brittleness. I think that if pine-knots were better known (and very few people even in this State seem to have heard of them), an increased demand would spring up for them, and they might form the basis of a minor industry, much in the same way that small articles are made of bog-oak, in Ireland. The substance turns just like bone, and comes quite polished from the tool.

An allied species, *A. excelsa* ("Norfolk Island Pine"), sometimes has knots of enormous size. Mr. Holtzapfel (*Turning and Mechanical Manipulation*, i, 37) had portions of one which attained the enormous size of about 4 feet long, and 4 to 6 inches diameter. "In substance it is very compact and solid, of a semi-transparent hazel-brown, and it may be cut almost as well as ivory, and with the same tools, either into screws, or with eccentric or drilled work, etc.; it is an exceedingly appropriate material for ornamental turning."

Exudation.—This Pine plentifully exudes a gum-resin which, when fresh, is of the consistency and colour of cream. It takes a considerable time to harden, remaining sticky for a long time. It becomes more yellowish on keeping. A convenient way to collect a quantity would be to follow the timber-getters a few days after they have cut down these trees, as, for the greater part of the year, gum-resin may be found exuding at the cut ends. The economic applications of this resin are very limited at present. I have heard of an alcholic solution having been used in

medicine, but its chief interest is purely scientific. Besides a pure resin, the exudation contains several per cent. of Arabin (gum), and *Araucaria* is the only coniferous genus in which Arabin has hitherto been found in any quantity.

In my paper* I announced that the exudation of this species was a gum-resin. I also stated, "The only previous instance I can find of arabin being found in a coniferous resin is by Dulk (Morel, [3] ix, 714), who found 0·1 per cent. in White Dammar (*Dammara orientalis*, Lamb.).

In 1893 I received from a Queensland correspondent an extract from "Procès-Verbaux" of the "Actes de la Société Scientifique du Chili, Sesion jeneral del 4 de abril de 1892, Tome ii, 1 ère livraison, 1892." The extract was in Spanish, and not understanding that language I applied to the Consul-General for Chili in Sydney (Captain W. H. Eldred), who through ill-health was unable to furnish me with the translation until 2nd June, 1894. I then ascertained that Prof. E. Heckel, of Marseilles, had announced the discovery of a gum in the exudation of the Australian *Araucaria Bidwilli* and in that of the Chilian *A. imbricata*.

I then wrote to Prof. Heckel under date 19th June, 1894, asking for further particulars, and he very kindly sent me a copy of his paper,† published 20th August, 1891, on *A. Bidwilli*, and which paper showed that arabin was present to the extent of nearly 70 per cent. in the exudation of that species, and to a less extent in the exudations of *A. Cunninghamii* and *A. Cookii*.

Further correspondence elicited the fact, that MM. Heckel and Schlagdenhauffen had in August, 1887,‡ announced the discovery of arabin in the exudation of *Araucaria*. The matter stands thus, that Dulk, in 1878, made the original discovery, while Heckel and Schlagdenhauffen in 1887, and Maiden in 1889, made similar observations independently.

Mr. W. Bäuerlen, botanical collector, wrote to me as follows concerning the collection of the resin (gum-resin) of *Araucaria Cunninghamii* on the Richmond River.

The resin of this Pine exudes plentifully, and when fresh it is much of the consistency and colour of cream, sometimes rather thinner. It seems that it takes a considerable time to harden, when it becomes somewhat clear and yellow-looking.

I am told that the Pine has another resin, the existence of which is not generally known, and the resin has to be looked for *under the bark*, where it collects in hard, dark lumps, which in appearance are certainly quite different from the usual resin, though both substances may after all be the same. Mr. James Black, of Bexhill, told me about the occurrence of this resin and showed me two pieces, one of which, on asking for it, he presented to me; strange to say, several people of whom I made inquiries respecting it, knew nothing of this hard, dark resin. I shall of course follow the matter up and endeavour to find the resin in its natural state.

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* "Notes on the Resins of two Queensland species of *Araucaria*," *Proc. Roy. Soc. Qd.*, vii, Part i, 1889, *A. Bidwilli* and *A. Cunninghamii*.

† "Sur le Bunya-Bunya (*Araucaria Bidwilli*, Hook.), son utilité et son acclimatation en Algérie et dans nos colonies Francaises." *Revue des Sciences Nat.* appliquées, No. 16, 20th Aug., 1891.

‡ "Sur la secretion des *Araucaria*." Note présentée par M. A. Chatin. *Comptes Rendus* (Botanique), Tome 105, Juillet-Dec. 1887, p. 359.

I was told that the resin (yellow) of the White Pine is used medicinally in kidney complaints, and is found very effective in stricture and retention of urine. A gentleman says he finds it gives great relief in very aggravated cases, when three or four doses are usually sufficient. He dissolves the resin in alcohol, and gives from 20 to 30 drops in water as a dose.

Coming to other species we have :—

Araucaria Bidwilli, Hook., "Bunya Bunya."

For an examination of the resin of this plant, see Maiden.* I there stated that the exudation of this Pine would probably be found similar to that of *A. Cunninghamii* if collected under similar conditions.

The gum resins of *Araucarias* are also dealt with by Lauterer,† who gives analyses of the exudations of *A. Bidwilli* and *A. Cunninghamii*. See also a special paper by Lauterer on *A. Bidwilli*.‡

Araucaria Cookii, R.Br.

Dr. Schuchardt, of Görlitz, informed me that he had found sugar in the resin of *Araucaria Cookii* from New Caledonia (Lr. of 11/2/90).

Araucaria Rulei, F.v.M.

Prof. E. Heckel has recently published a research on the gum-resin of this New Caledonian species.§

Araucaria brasiliana, A. Rich.

"The resin of *Araucaria brasiliana* exudes from the old trees, especially if the bark has been damaged by beetles, and hardens rapidly in the air. Dull white or dark brown irregular pieces, varying in size from that of a bean to that of a walnut, and elongated drops. Has a faint lustre, and a smooth waxy fracture. Smells balsamic, somewhat turpentine-like, and tastes resinous, biting and aromatic; sticks to the teeth. Heated on platinum foil it carbonises without melting completely, evolving an odour of incense. In a flame it takes fire and burns, leaving five per cent. of ash. The resin dissolves to the extent of about two-thirds in water and one-third in alcohol; ether and chloroform take up only traces of volatile oil, gum, and vegetable albumen, uncrystallizable sugar, and four different resins. From the mixture of resins, freed from volatile oil and substances soluble in water, cold alcohol takes up alpha, beta, and gamma resins, leaving araucaric acid undissolved. The gamma resin is precipitated from the alcoholic solution by acetate of copper, and the beta resin from the filtrate by alcoholic neutral acetate of lead, whilst the alpha resin remains in solution." Further particulars of these bodies are given. (*Gmelin*, xviii, 19.)

The analysis of the resin of the Chilian species should now be brought up to date, but is of special interest in view of the interest attaching to those from Australian *Araucarias*.

Size.—Up to 150 feet high and a diameter of 4 or 5 feet on the Richmond River, where it attains its greatest development. It is much smaller on the Clarence and Bellinger.

"Spars for ships may be obtained in any quantity from 80 to 100 feet in length; in some instances the tree attains a height of at least 150, and from 4 to 5 feet in diameter."—(C. Moore, in London Exh., 1862, Report.)

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* "Notes on the Resins of two Queensland species of *Araucaria*." *Proc. Roy. Soc. Qd.*, vii, Part i, 1889, *A. Bidwilli* and *A. Cunninghamii*.

† "Gums and Resins exuded by Queensland plants, chemically and technologically described." From pages 35 to 80 of F. M. Bailey's Botany Bulletin No. xiii (April, 1896), "Contributions to the Queensland Flora."

‡ "On the Resin of *Araucaria Bidwilli*." *Proc. R. S. Qd.*, xi, 12.

§ Sur l'*Araucaria Rulei*, F.v.M., de la Nouvelle Calédonie; sur la composition et l'utilisation de sa gomme résine." *Rev. des Cult. Coloniales*, 20th May, 1901, p. 289.

Habitat.—The following localities are quoted in the "Flora Australiensis":—

Queensland.—Port Bowen (*R. Brown*); Brisbane River, Moreton Bay, extending 80 miles inland, and northward to latitude 14 degrees (*A. Cunningham, Leichhardt*); Rockhampton (Herb. *F. Mueller*): Burdekin River (*Fitzalan*), known as the "Moreton Bay Pine."

New South Wales. Hastings and Clarence Rivers (Beckler).

It occurs from the high country north of the Hastings River, along the ranges which skirt the coast, and also in brush land on the Clarence, Richmond, &c., and so on into Queensland. The Glenfernie Forest Reserve, between Grafton and Armidale, contains the most southern mill which cuts up this timber.

Colonial Pine is no exception to the very general rule that the timber obtained from high lands is far superior to that obtained from the low-lying lands of the coast. As regards the range of this tree, the Hon. W. Pettigrew, M.L.C., formerly a timber-merchant, says:—

This useful tree grows in scrubs over a large extent of country. It grows up to Cardwell, in Queensland, in the 18th degree of latitude. It grows in a great variety of soils—some on sand, as at Tin-can Bay: on the Brisbane slate, as at the upper part of the North and South Pine Rivers, Ithaca Creek, and Enoggera Creek; on the older Devonian slate, as at Moggill Creek; and on basalt covering coal-shale, as at the Rosewood Scrub to the west of Ipswich. When this Pine grows on anything like level ground, farmers know they can grow maize, sugar-cane, &c., and, therefore, many pine-scrubs are cleared for cultivation, to the injury of the country from the timber-merchant's point of view.

The Catalogue of the Queensland Forestry Museum (1904) says:—

Abundant in many of our coastal scrubs from the Macpherson Range in the south to Gladstone; also in the Ipswich, Toowoomba, Warwick, Nanango, Mackay, and Bowen districts.

Mr. R. Kaleski, speaking of the Dorrigo, where he once resided, says:—

The main belt of Pine starts S.W. on Meinard's Plain, near top of the mountain, and thence runs with a few breaks to the N.E. to Paddy's Plain towards Grafton. Drawing weight dry is 500 feet to the ton. Unlike the rest of the scrub timbers, which have no tap-root and whose roots feed within a couple of inches of the top, with a spread as big as their heads, the Pine sends down a deep tap-root, and also its other roots go down like hardwoods.

It has been found to occur in New Guinea, at an elevation of 10,000 feet.

Propagation.—From seed, which, however, soon loses its germinating power, and in order that it may travel long distances safely, it is safest to either sow it in Wardian cases, or to pack it in charcoal. It is cultivated for ornamental purposes, and Mr. Walter Hill thus enthusiastically speaks of it:—"This majestic tree is, without exception, the most ornamental and useful tree in Queensland. Its beautiful regular pyramidical form, and the sombre green of its awl-shaped foliage, command general admiration."

It is, indeed, in my view, handsomer than the Norfolk Island Pine (*A. excelsa*), which is much more cultivated, but it does not appear to be so hardy under cultivation as that species.

See p. 903 of my article on Conifers in the *Agricultural Gazette of N.S.W.*, quoted below.

Allies.—The genus *Araucaria* comprises about ten species, and they occur not only in Australia, but also in the Pacific Islands (including New Caledonia), the Malay Archipelago, and South America. The Colonial Pine and the Bunya Bunya (*A. Bidwilli*), whose large seeds at one time afforded such rich sustenance to the blacks, are peculiar to Australia. Then we have the Norfolk Island Pine (*A. excelsa*), whose leaves resemble those of the Colonial Pine to a remarkable extent. This tree, when quite young, is employed in Eastern Australia as a "Christmas tree" in substitution of the Conifer largely used for the purpose in Europe. Another well-known *Araucaria* is *A. imbricata*, from Chili, which is hardy in Britain. It is an exceedingly handsome tree, with pungent leaves, closely set together, hence known to small boys, who treat it with respect, as "Monkey Puzzle."

I have given an account of *Araucarias*, indigenous and exotic, in the *Agricultural Gazette of N.S.W.*, for December, 1907, p. 903. Since that was published I have come across an unpublished memorandum by my predecessor, Mr. Charles Moore, in regard to New Caledonian *Araucarias*, which may be read in conjunction with the *Gazette* article referred to.

The genus *Araucaria* is represented in New Caledonia by two well-defined species, namely, *A. Cookii* and *A. Rulei*. Of these there are at least four varieties, which may prove to rank as species, but as no fruits of these have been obtainable by me, no definitions can be given. The first *Araucaria, Cookii*, is generally found near the coast, extending from the extreme south northwards to about the middle of the island. On the hills adjoining inland, *A. Rulei* and the varieties previously referred to are to be found in more or less abundance, but principally on the eastern side. The genus *Dammara* grows in similar situations as the *Araucarias*. Towards the extreme south there is one species, *Dammara ovata*, Moore, which attains a height from 100 to 200 feet. About Yangan another very distinct species, discovered and named after myself, *Dammara Moorei*, Lindley, is found. In a more southerly direction another species, allied to *Moorei*, has been observed. This I have named *Dammara spinulosa*. Between these and *D. ovata* there are two others found on the higher grounds inland, which are at present regarded as varieties. But another distinct species, dwarf in character, inhabits very high ground, and this I have named *D. pumila*, as it seldom attains a height from 6 to 8 feet.

Araucaria as a European fossil.—In "Nature," 1st July, 1880, Vol. xxi, 199, J. Starkie Gardner has a very interesting "Chapter in the history of the Coniferæ," being some observations which have occurred to him in working out the Eocene coniferæ, and which were somewhat outside the scope of his Palæontographical Society's Memoir.

His remarks on the genus and on *A. Cunninghamii* and *A. Bidwilli* have special interest for us. He finds *A. Cunninghamii* at Bournemouth, England (in a fossil state, of course), to be very clearly defined, and draws some interesting conclusions therefrom.

Then we have

The type *Araucaria* is known to us in its entire cones and cone-scales from Jurassic strata, and care is requisite in dealing with it when we have unbroken cones only before us, that it may not be confounded with stems of Cycadeæ. The foliage, which varies much, as we know, in recent forms, can only be certainly determined when it is found in actual connection with the cones. (Solms-Laubach, "Fossil Botany," Clarendon Press, Oxford, p. 57.)

This author points out that "the English *Araucarias* described by Gardner are founded on leafy branches only."

Whether our Richmond River or Hoop Pine shall be found to occur fossil in Europe may be held over for further investigation; meantime one can only say that some *Araucarias*, particularly the New Caledonian series, vary so much under cultivation that it becomes a matter of the greatest difficulty, and perhaps impossibility, to separate them except with the amplest botanical material. With the material available to palæontologists the difficulty is, of course, enormously increased.

EXPLANATION OF PLATE 131.

A. Twig, young growth.

B. Twig bearing staminiferous flowers (male amenta or catkins).

C, D. Stamens, with 4 or 5 anther-cells.

(N.B.—A stamen can only have one anther; the anther has in Phanerogamæ generally 2 cells, but in Coniferæ from few to numerous cells.)

E. Unfertilized fruiting cone.

F, G. Vertical sections of two different unfertilized fruiting cones.

H. Young fertilized or female cone.

K. Mature cone.

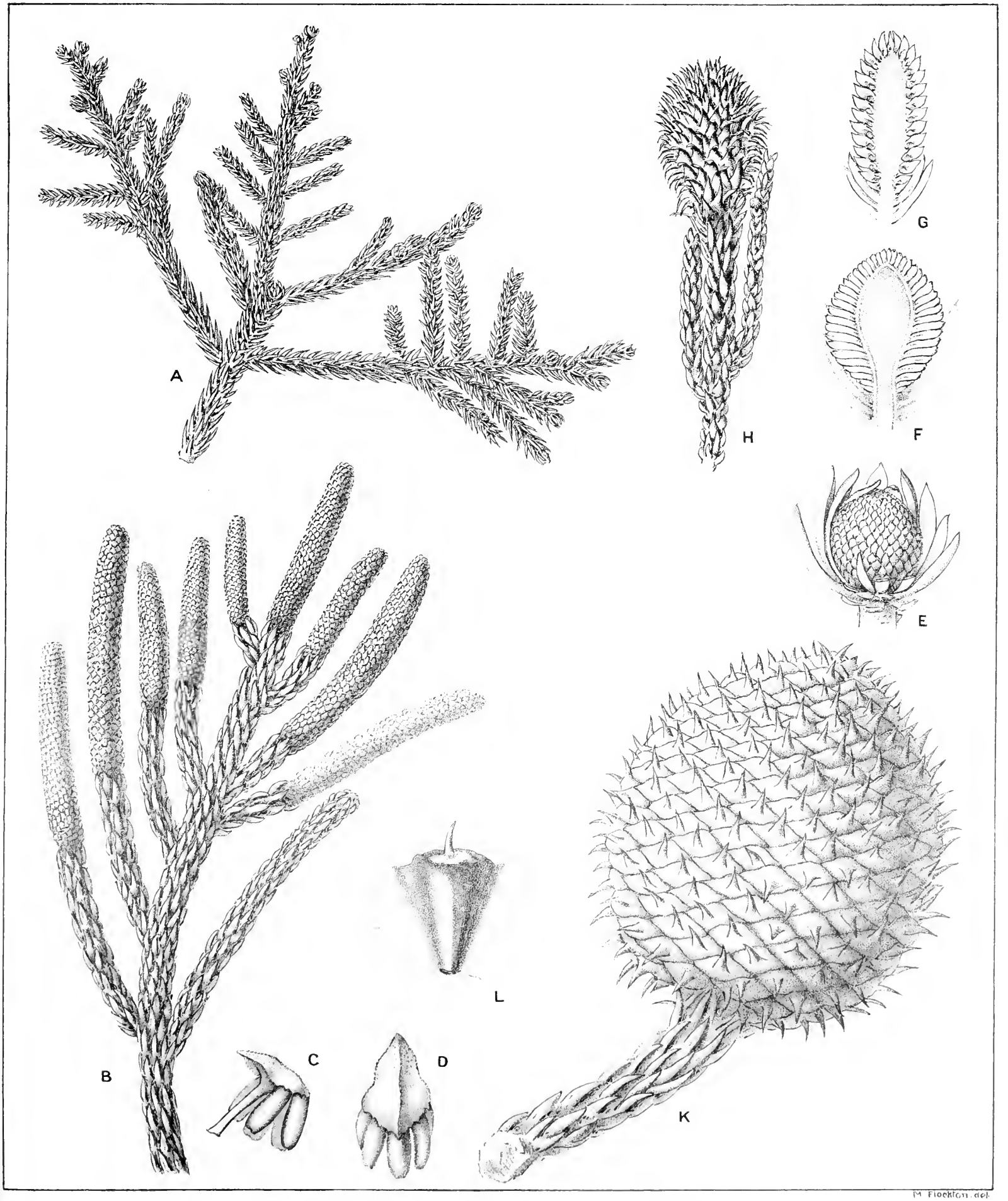
L. Seed, adnate to the scale.

PHOTOGRAPHIC ILLUSTRATIONS.

a, *b*. Road through Pine forest, Tabulam-Casino Road.—(Kerry, photo.) Two views.

c. Pine logs, Acacia Creek, Macpherson Range.—(Bell and Mauch, photo.) Presented by Mr. William Dunn.

d, *e*. Back and front views of branchlet showing fasciation in Norfolk Island Pine (*Araucaria excelsa*) planted at Thompson's Farm, Lord Howe Island. Collected by W. S. Campbell.—(Government Printer, photo.)



M. Flockton, del.

RICHMOND RIVER OR HOOP PINE.

(Araucaria Cunninghamii, AIT.)

Bell and Mauch, photo.

HOOP PINE LOGS, ACACIA CREEK, MACPHERSON RANGE.

Govt. Printer.

FASCIATION IN TWIG OF NORFOLK ISLAND PINE *(Araucaria excelsa).*

Govt. Printer.

FASCIATION IN TWIG OF NORFOLK ISLAND PINE *(Araucaria excelsa).*

No. 128.

Eucalyptus Baileyana, F.v.M.

Black Stringybark.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical description.—Species, *E. Baileyana*, F.v.M., *Fragm.* xi, 37 (Nov., 1878), in Latin, and re-described in English and figured in the "Eucalyptographia."

Mueller, however, mixed up two trees under the one name. For example, in his "Eucalyptographia" figure, the lower part of the twig, bearing the fruits, is the true *E. Baileyana*; the rest of the figure, leaves, buds and flowers, and of the details (again excluding the fruits and seeds) belong to a Stringybark nearest to *E. eugenioides*, Sieb. The figure, therefore, is a composite one, the twig of *E. eugenioides* having been prolonged, and the fruits of *E. Baileyana* having been fitted on to it. In other words, no such plant exists as is figured.

I therefore re-describe the species in the following words, and I trust that the additional notes, given under the usual headings, may make it quite clear:—

Bark.—The bark is hard, thick, rather interlocked, and contains much kino. It is not a typical Stringybark, that is to say, its bark is not soft and fibrous.

Timber.—Of a light grey colour when fresh, interlocked in grain, very tough, inferior in quality to that of the other Stringybarks (J. L. Boorman).

Juvenile leaves.—Nearly ovate, not cordate at the base, tapering slightly at the apex to a blunt point or rounded. Common dimensions are 1½ inches broad and 3 inches long. The margin somewhat undulate, the intramarginal vein a considerable distance from the edge. The under surface nearly white, densely besprinkled with stellate hairs, as also the rhachises. The upper surface bright green, in prominent contrast to the lower surface. This surface is very sparingly besprinkled with stellate hairs, or they may be entirely absent.

Mature leaves.—Lanceolate, symmetrical or falcate, gradually tapering to fine, though not rigid points. Five inches long, with a width in its broadest part of about ¾ of an inch, are common dimensions. The marginal vein close to the margin or forming a thickening of the same; the lateral veins numerous and fine, parallel and forming an angle of about 45 degrees with the midrib. Upper surface shiny, under surface paler and dull.

Flowers.—Umbels vary in number, but usually 5 to 7, the common flattened peduncle of about an inch; the flattened pedicels from ¼ to ½ an inch. Anthers small, versatile, with parallel cells and long narrow openings, with a relatively large gland at the back.

Buds.—Pear shaped, the calyx irregularly toothed; the operculum nearly hemispherical, or with an umbo.

Fruits.—Rather large, globular-urn-shaped, 3-celled; margin of the orifice thinly compressed; valves deltoid, slightly exserted or hardly extending beyond the orifice; seeds without any appendage. (*Mueller.*) The largest fruits seen by me are about ⅝ of an inch wide, and the same deep.

Affinities.—The botanical position of *E. Baileyana* is very interesting. Mueller ("Eucalyptographia") states that "*E. Baileyana* exhibits great resemblance to *E. eugenioides*, both in leaves and flowers, although the fruits are so very decidedly different, and resemble those of *E. dichromophloia*." The supposed resemblance to (or, rather, confusion with) *E. eugenioides* I have already explained; and, as to the shape of the fruits, they are scarcely closer to *E. dichromophloia* than to *E. trachyphloia*. *E. Baileyana* may, however, be included under Bentham's sub-series, "Eudesmieæ," which is defined as "Leaves, including the petiolate ones, mostly opposite or nearly so. Peduncles usually 3-flowered, calyx with 4 minute teeth, more or less conspicuous below the globular hemispherical or flattened operculum. Stamens sometimes in 4 clusters."

E. eudesmioides and *E. odontocarpa* have frequently non-opposite leaves; so has *E. Baileyana*. *E. Baileyana* has the curved, or toothed, calyx of the sub-series, and agrees in anthers. In some of the flowers (though not in all) we have the filaments distinctly collected into bundles. It would come under Robert Brown's discarded genus *Eudesmia*.

The mature leaves of *E. Baileyana* are not dissimilar, while the shape and vestiture of the juvenile leaves of *E. Baileyana* are similar to those of some members at least of the sub-series.

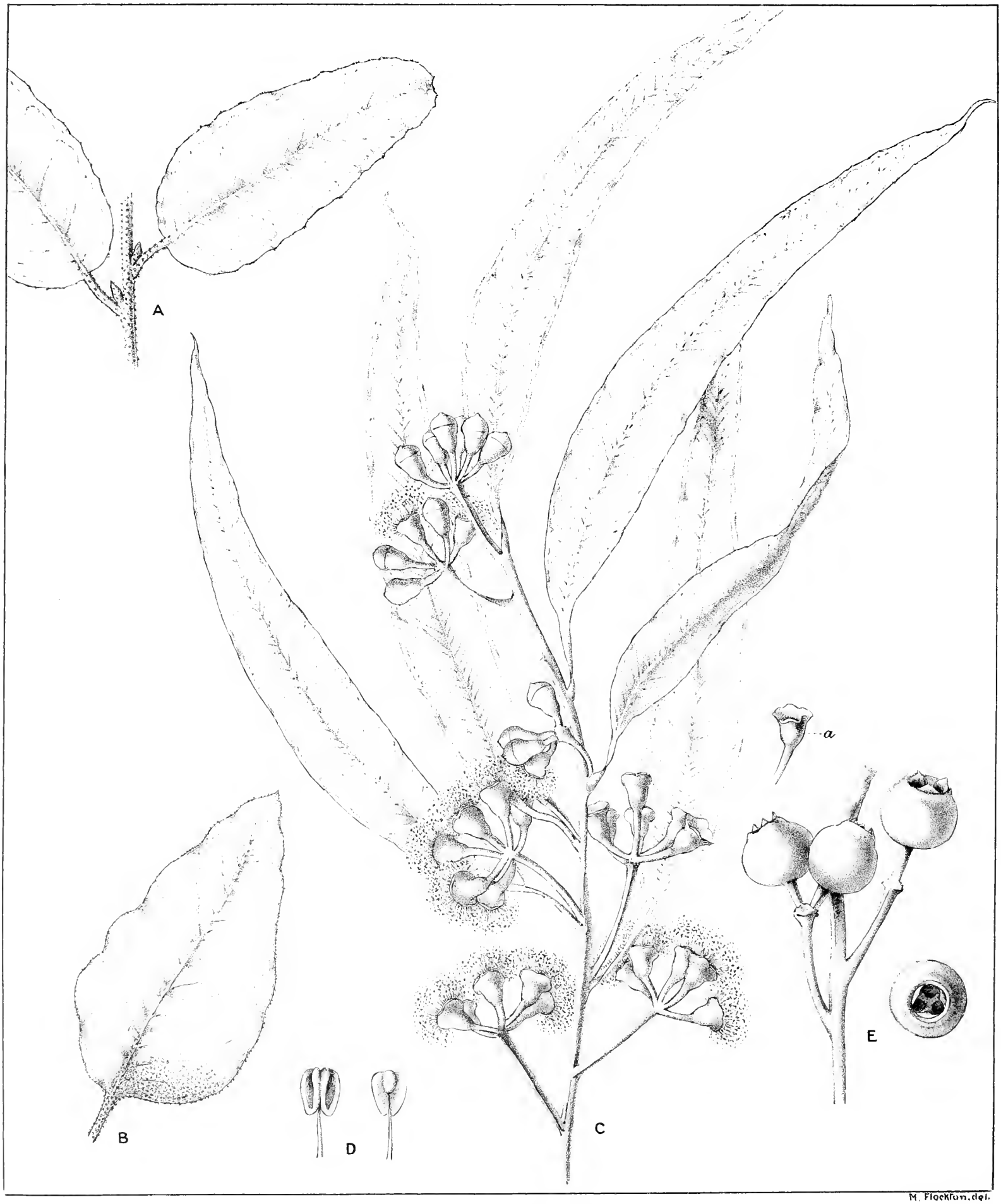
Its closest affinity appears to be with the North Queensland *E. tetradonta* and the Western Australian *E. odontocarpa*. The finding of a New South Wales member of the Eudesmieæ is very interesting.

Botanical Name.—*Eucalyptus*, already explained (see Part II, p. 34); *Baileyana*, in honour of Frederick Manson Bailey, Government Botanist of Queensland.

Vernacular Names.—"Bastard Ironbark" of the Clarence (according to the late Forester Augustus Rudder). The same gentleman sent it from the Richmond River many years ago under the name "Black Stringybark." "Rough Stringybark" is the common name at Eight-mile Plains, Brisbane (its type locality).

Leaves.—Mueller describes the leaves as "of equal green on both sides." This may be exceptionally the case, but specimens before me from the type locality have the under side of the leaves very markedly paler than on the upper surface. Mueller was probably describing the leaves of the local *E. eugenioides*.

The fresh leaves yield ·900 per cent. of essential oil of ·890 specific gravity, and having an acid reaction. (Staiger.) It is described as having a turpentine odour. "Strongly resinified; sp. gr. 0·940; boils between 160 and 185 degrees. This oil, and those of *E. microcorys* and *E. maculata*, var. *citriodora*, are very similar to one another. They possess a magnificent melissa like odour. It is thought they will prove to possess extraordinary practical value. Chemically, the three oils are quite characteristic. Neither of them contains a terpene, but they consist of a ketone ($C_{10}H_3O$), smelling like melissa, and a body that is probably an alcohol ($C_{10}H_{18}O$?), which possesses a beautiful odour resembling that of geranium." (Messrs. Schimmel & Co., *Pharm. Journ.* [3], xviii, 907).



M. Flockton del.

BLACK STRINGYBARK.

(*Eucalyptus Baileyana*, F.v.M.)

In view of the confusion which has arisen in regard to *E. Baileyana*, it would be desirable to re-distil leaves from absolutely authentic material.

Timber.—I have already stated what I know of the timber, but it is not much. Further details concerning it are desirable.

Habitat.—Eight-mile Plains, near Brisbane, is the type locality whence Bailey obtained the specimens described by Mueller in the "Eucalyptographia." It also occurs in New South Wales, *e.g.*, between Lawrence and Casino (W. Forsyth). Coming further south, and indeed this is the most southerly locality recorded, the late Mr. Augustus Rudder wrote to me:—

I do not remember having mentioned to you my meeting with the tree *E. Baileyana* (Bastard Ironbark) on the Clarence. I found it on some low sandy country about 20 miles south of Grafton. The trees I saw were from about 20 inches to 3 feet in diameter, and of medium height—25 to 40 feet to first branch. Bark dark, fibrous, and transversely interlocked, and very hard and tough. Trees mostly hollow or ringy. Capsules urn-shaped, about $\frac{1}{2}$ inch in diameter, rough or corrugated leaves alternate, about 5 inches long, $\frac{3}{4}$ inch broad, falcate, midrib prominent, underside sort of rusty red.

EXPLANATION OF PLATE 132.

A. Juvenile leaves. Note the stellate hairs.

B. Juvenile leaf, showing some of the stellate hairs which cover the under surface (A and B from Eight-mile Plains, Brisbane. Coll. J. L. Boorman.)

C. Flowering twig—

(*a*) Calyx, showing the sinuate margin of blunt teeth.

D. Anthers, front and back view.

E. Fruits. (C and E from Eight mile Plains, Brisbane. Coll. A. Williams.)

No. 129.

Acacia homalophylla, A. Cunn.

The Yarran.

(Family LEGUMINOSÆ : MIMOSEÆ.)

Botanical description.—Genus, *Acacia.* (See Part XV, p. 103.)

Botanical description.—Species, *A. homalophylla*, A. Cunn. : Benth. in Hooker's *London Journal of Botany*, i, 365 (1842).

The first account of this Wattle I can find is in Cunningham's MS. Journal (when with Oxley's expedition), under date 3rd May, 1817. He says :—

Acacia omalophylla : Leaves lanceolate, flat, smooth ; flowers axillary in racemes ; a tree 25 feet high (W. of Bathurst). Leaves have a solitary gland on the interior margin.

In describing the species, *op. cit.*, under the name of *A. omalophylla*, Bentham, referring to the gland, says : "The phyllodia have at the base a tubercle in the place of a gland." In his description in B.Fl. ii, 382, he ignores both tubercle and gland.

If one's attention is drawn to it, it is very distinct in some of the phyllodia of a specimen from Coonamble; in others it is much less distinct, but one can trace it in nearly all phyllodia. I looked over many of the specimens in the Herbarium, and found the gland more or less distinct in an authentic specimen of *A. homalophylla.*

I think Bentham should not have omitted it in the "Flora Australiensis." In the drawing it is shown in some of the phyllodes of twig B.

Bentham described the plant in B.Fl. ii, 383, as follows :—

A small tree, glabrous or the foliage minutely hoary or pale; branchlets at first slightly angular.

Phyllodia lanceolate-falcate, narrow-oblong or linear, obtuse with a small oblique point, narrowed at the base, 1 to 3 inches long, 1 to 4 lines broad, thick, very finely striate with parallel nerves only to be seen under a lens.

Peduncles in pairs or clustered on a very short common peduncle, bearing dense globular heads of numerous flowers, mostly 5-merous.

Sepals cuneate or spathulate, free or slightly connate, more than half as long as the corolla.

Petals smooth, free.

Pod linear, usually glaucous, slightly curved, 2 to 3 lines broad, longitudinally veined; valves coriaceous, convex over the seeds, contracted between them.

Seeds oval-oblong, longitudinal ; funicle short, much folded and dilated almost from the base into a short oblique aril.

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104); *homalophylla* from two Greek words, *omales* (*omalos*), even, level, referring to the smoothness, and perhaps also to the general uniformity of the phyllodes in this species; *phullon* (*phyllon*), a leaf (phyllode).

Vernacular Names.—This is the common "Yarran." I do not know the origin of the name, which is well established and distinctive. Some trees have a curly inlocked grain in their wood, and hence are known as "Curly Yarran." Concerning these Mr. Forester Kidston, of the Lachlan district, wrote twelve years ago:—

I never could discover any external difference between "Curly Yarran" and "Yarran," except a wave in the bark showing the curls in the wood. I only know one patch of "Curly Yarran" in my beat. There are, however, several kinds of Yarran. 1st, Yarran; 2nd, Mowar, and another out near Mossgiel, which sheep eat. The two former are no good to sheep. This season there are neither flowers nor fruits on most of the shrubs.

I could not get specimens although I asked for them. *Acacia Oswaldi* is often called "Yarran," with some qualifying adjective. It will be dealt with in due course.

What is "Narran?"

Narran is an edible scrub somewhat resembling Brigalow, but is more desirable as fodder. It grows mostly in the interior and far west of New South Wales, and in one small patch in the north of Queensland. It had been known for some time that Narran grew somewhere up north, as blacks had been found with spears made of it, but it had not been seen by the whites. In 1881, when taking cattle out to stock some new country in the Northern Territory, I came across a large belt of it on the very head of a branch of the Nicholson River, almost on the dividing watershed. From the appearance of the scrub it was a popular resort of the natives for the purpose of making their weapons, the whole belt having been picked over, and the ground was strewn with shavings and chips. Narran is not found in Western Australia.

The above paragraph occurs in the *Sydney Mail* for 1890. I have vainly tried to trace the name.

Then the well-known explorer, Mr. Ernest Favenc, wrote an article in the *Sydney Morning Herald* of the 25th August, 1906, in which the following passage occurs:—

The next scrub we find mentioned as a hindrance to travel is between the Lachlan and Murrumbidgee, where the "thick Eucalyptus scrub" turned Oxley back in disappointment and disgust. Oxley afterwards met with clumps of Myall scrub, when north of the Macquarie, of which he at first speaks rather disparagingly, although now considered one of our most useful trees, as well as one of graceful and ornamental appearance. Other trees of the same species, the Narran, &c., seldom grow so dense or close as to be impenetrable to a rider, although requiring great care to steer a safe course through, and being eminently adapted to fostering the growth of wild cattle, and the development of that human centaur, the Australian scrub-rider.

Seeing the old name Narran once more, I wrote to Mr. Favenc and he kindly replied:—

Re Narran. It may be only a locally-used name, but when I was droving about twenty-five years ago it was commonly used on the Bogan, and right across to the Warrego. I had been all my life in Queensland before then, and took it for a kind of Brigalow until corrected.

I wrote to Mr. Hunt, of Burdenda, Dandaloo, at Mr. Favenc's suggestion, and that gentleman kindly sent me a twig of Yarran.

Later on, under date 28th December, 1906, a letter from me in the *Sydney Morning Herald* contained the following passage :—

On August 25 last Mr. Favenc had an interesting article on "Scrub" in the *Herald*, in which the following passage occurs:—"Other trees of the same species (genus), the Narran, &c., seldom grow so dense or close as to be impenetrable to a rider." He had been referring to Myall, so that Narran is a Wattle. I wrote to Mr. Favenc, and, following up clues that he gave, wrote to certain people, and they sent me twigs of Yarran (*Acacia homalophylla*). I also wrote to a Queensland friend, but without result.

Now, I have occasionally, though very rarely, heard the name Narran used both in New South Wales and Queensland, but my efforts to trace this Wattle have never met with success. I venture to ask your readers if they can send me a 6-inch twig of Narran, otherwise I must begin a second twenty years' search after this botanical "will o' the wisp."

To this letter a number of replies were received, amongst others the following two :—

There is no such timber as Narran in this Colony or Queensland. Beyond a river of that name the word Narran is almost unknown. We have Brigalow Creek, Gum Flats, Myall Hollows, Mulga Scrubs, and so on, but never, as an out-and-out bushman, traversing the bowels of New South Wales and Queensland, have I even heard of Narran. False names, through faulty pronunciation, may deceive an ordinary layman, but never a bushman. Hence Narran is undoubtedly meant for Yarran. There are many bushes (scrub) for which I admit even the bushman has no name. But nothing growing approaching a *tree* in the strict sense of the term has been left unchristened.—(James Frederick.)

Referring to the paragraph "What is Narran?" It must be Yarran that is meant, but in some parts the blacks may call it Narran. I have never heard it so called anywhere.

I am a native of the Colony, and until the last twenty years was in the country—boy and man—over forty years.—(James Stainway.)

As to the geographical name Narran we have the following :—

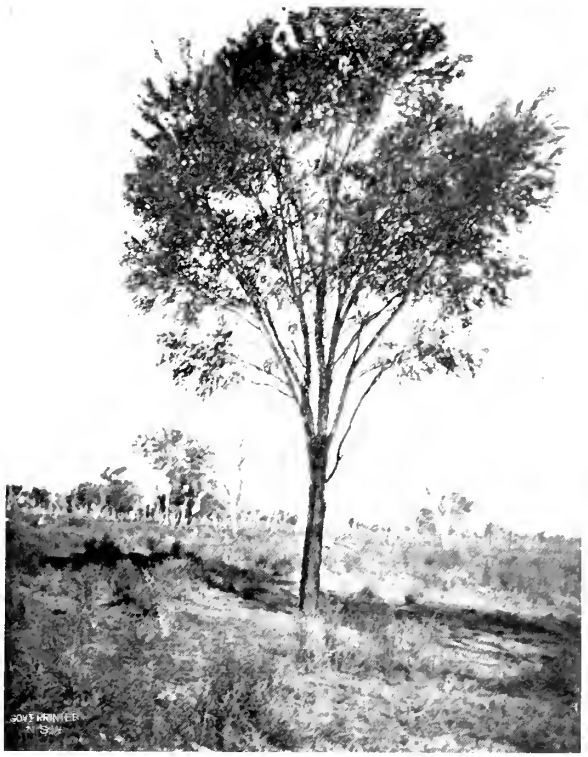
Narran, a large swamp and river of New South Wales. It was discovered by Sir T. L. Mitchell in 1846. Narran Swamp is situated 26 miles beyond the River Darling; the Narran River terminates in this extensive swamp; it joins the river Balonne in long. 148° 25′ E., and lat. 28° 35′ 38″ S. Along the banks of this river the grass is of the very best description, growing on plains or in open forests; very available in every respect for cattle stations.—("A Geographical Dictionary; or Gazetteer of the Australian Colonies," by W. H. Wells, Sydney, 1848.)

If we turn to chapter 3 of Mitchell's "Tropical Australia," we find abundant references to the Narran Swamp and River.

It was evidently a native name, not given by Mitchell, but adopted from the name the stockmen gave him. I cannot connect it with our Yarran.

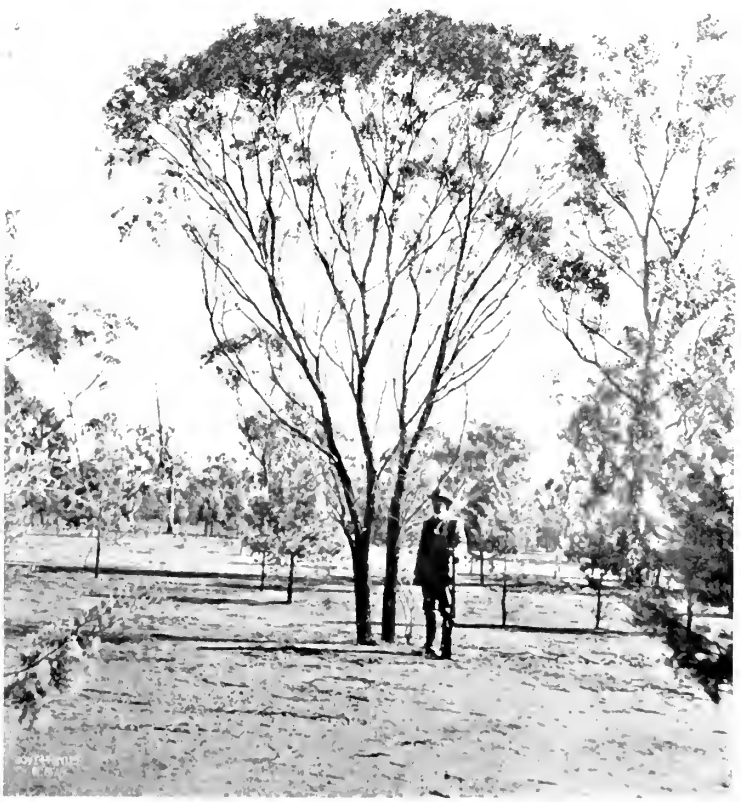
It seems to me that we must write "Narran" the scrub as a variant of the word "Yarran," and it may be now buried decently. If, however, any further evidence be forthcoming, it can be disinterred at any time.

Aboriginal Name.—"Wong-arrah" is an aboriginal name at Cloncurry, Northern Queensland, according to Mr. E. Palmer; but in regard to all names attributed to the Yarran, care should be taken that the Herbarium specimens do not refer to the Gidgee (*Acacia Cambagei*) (see Part XXXII), these two species being often confused with dried specimens only.



C. J. McMaster, photo.

"YARRAN," NEAR COONAMBLE.



R. W. Peacock, photo.

"YARRAN" (*Acacia homalophylla*, A CUNN.) COOLABAH.

R. H. Cambage, photo.

CLUMP OF YARRAN, TRUNDLE.

Leaves.—There is considerable difference in the width of young and mature phyllodes in this species. Note should be made of the glands, to which prominent attention has already been drawn. Cattle eat the foliage.

Fruit.—This is one of the Wattles of which the blacks used to eat the seeds.

Bark.—A specimen of this bark gave the following result:—Tannic acid, 9·06 per cent., and extract 21·51 per cent. (*Proc. R.S. N.S.W.*, 1887, p. 189.)

It was from an old tree, full of flakes, and could be pulled to pieces with the fingers. A dry-country bark, but hardly a fair specimen of that.

Timber.—One of the best firewoods of the west. Timber hard, and of a violet odour. This dark-brown wood is much sought after for turners' work on account of its solidity and fragrance. It is well adapted to cabinet-making purposes, and stock-whip handles and fancy articles, such as rulers and napkin rings, are often made from it. Allan Cunningham says the natives of New South Wales formerly employed it for spears. Referring to the blacks of Northern Queensland,—

> The wood is made into boomerangs, and is the favourite wood for spears. Some spears are found 12 and 14 feet long, in one straight piece, not thicker than a man's finger, being very tough and free in the grain.—(E. Palmer.) The specific gravity is given as 1·124.—(*Report Victorian Exhibition*, 1861.)

Exudations.—E. Palmer says the gum is gathered and eaten from this tree on the Cloncurry, Queensland. It is also used for adhesive purposes in New South Wales.

Size.—As a rule it is a small or medium-sized tree, often gnarled. Speaking of the Lachlan district, Mr. Forester Kidston stated:—"Yarran cannot be called 'timber,' as not over one in 5,000 could be got 6 feet long, 6 inches in diameter, and straight." At the same time the Yarran, in some districts, exhibits a better trunk than that.

Habitat.—The type came from the Lachlan River as Bentham states (*Lond. Journ. Bot.* i, 366). Oxley does not refer to this tree in his "Journals," under date 3rd May, 1817, but his expedition on that date would be at a point about lat. 33° 30′ S. and long. 148° E., say somewhere about Forbes.

In the "Flora Australiensis" it is recorded from:—

New South Wales.—Abundant on the barren heaths of the interior, from the Lachlan to the Barrier Range; one of the spear-woods of the natives.—Victorian Expedition and others (*A. Cunningham*).

Victoria.—Salt-bush flats on the Murray, yielding the hard, dark and fragrant "Myall wood" (*F. Mueller*).

South Australia.—Spencer's Gulf (*Wilhelmi*). A single specimen in leaf only and therefore doubtful.

It is a dry-country species, and we have it in the National Herbarium, Sydney, from the following localities :—

Wanganella, near Hay; Ivanhoe, *vid* Hay; Wyalong; "A spreading tree 20–25 feet, stems 6–12 inches diameter, plentiful all over the Lachlan district," Murrumbidgee; Darling to Warrego, Cobar Road, Dunlop, Louth, Bourke, Coolabah, Nyngan, Tomingley to Peak Hill, Dandaloo, Minore, Coonamble, Bylong, Belltrees, near Scone, Warialda, Narrabri West.

There is a large clump of Yarran at Belltrees (the most easterly locality recorded), perhaps a thousand trees of all sizes, up to fine umbrageous specimens (growing alone) of 30–40 feet and 1–2 feet trunk diameter. Abundance of seedlings growing where stock are excluded.

Also from Queensland (Neerkool Creek) and Victoria, without locality.

EXPLANATION OF PLATE 133

A. Young foliage (note its comparatively great width).

B. Flowering branch. Note the gland at the base of some of the phyllodes.

C. Flower-head.

D. Individual bud and bract.

E. Flower.

F. Flower opened out, showing—

(*a*) Calyx.
(*b*) Corolla.
(*c*) Stamens.
(*d*) Pistil.

G. Pods. These smaller constricted pods are from Gunbar (W. Baeuerlen).

H. This broader pod is the normal form.

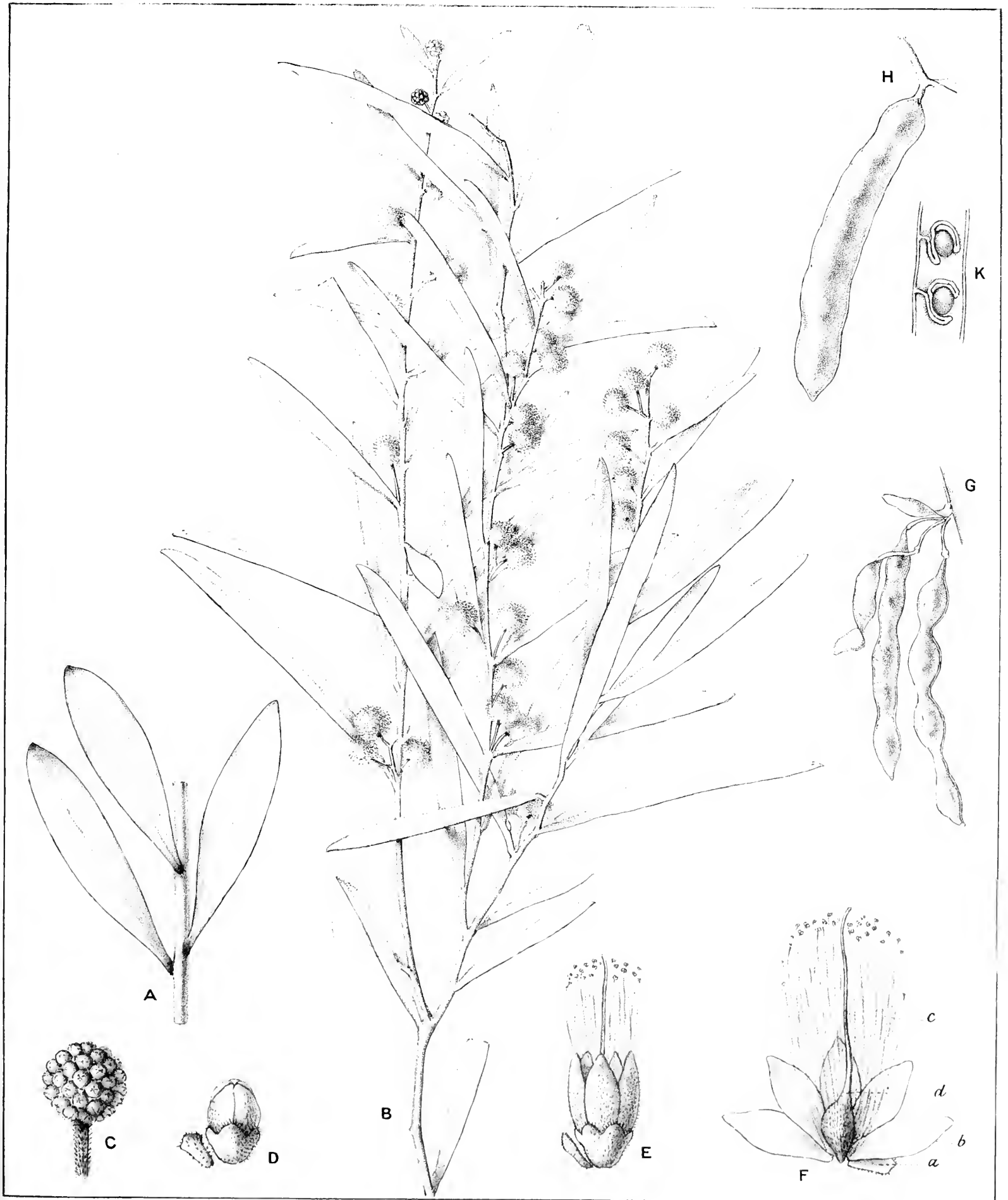
K. Seeds. Natural size.

PHOTOGRAPHIC ILLUSTRATIONS.

a. "Yarran," Nebea, near Coonamble, about 25 feet.—(C. J. McMaster, photo.)

b. "Yarran," Coolabah.—(R. W. Peacock, photo.)

c. Clump of "Yarran," Trundle.—(R. H. Cambage, photo.)



M. Flockton. del.

YARRAN.

(*Acacia homalophylla*, A. CUNN.)

No. 130.

Endiandra Sieberi, Nees.

A Cork Wood or Till.

(Family LAURACEÆ.)

Botanical description.—Genus, *Endiandra*, R.Br., *Prod.* 402 (1810).

Flowers hermaphrodite.

Perianth-segments 6, equal or nearly so.

Stamens of the outer series reduced to a thick prominent ring below the perianth-segments or entirely wanting, of the inner series 3, with extrorse or semi-extrorse anthers, alternating sometimes with 3 small staminodia which are often deficient; glands either 6 at the base of the perfect stamens but free from them or none.

Ovary not immersed.

Berry free, resting on the wholly or partially persistent but not at all or scarcely enlarged perianth.—Trees.

Leaves alternate.

Flowers in axillary panicles, sometimes almost reduced to single cymes.

Fruits oblong or globular. (B.Fl. v, 300.)

Botanical description—Species, *E. Sieberi*, Nees, Syst. Laurin., 194.

A shrub or tree, glabrous except a minute pubescence scarcely perceptible on the inflorescence.

Leaves ovate-lanceolate or oblong, obtuse or obtusely acuminate, 2 to 3 inches long, contracted into a short petiole, rather thin, green on both sides, with the smaller reticulations as prominent as the rather numerous and fine primary veins.

Panicles thyrsoid, shorter than the leaves.

Perianth-tube very small, the limb very open.

Stamens of the outer series entirely deficient, 3 of the inner series perfect with a gland on each side at the base, the intervening staminodia very small or obsolete.

Young fruit globular, resting on the apex of the peduncle, the whole perianth deciduous.

Ripe fruit not seen. * (B.Fl. v, 301.)

Botanical Name.—*Endiandra*, from two Greek words, *Endon*, within, and (*aner*) *andros*, a man (in botany stamen), in allusion to the fact that in this genus the inner row of anthers are the fertile ones; *Sieberi*, in honour of Franz Wilhelm Sieber, of Prague, Bohemia, who extensively collected in New South Wales between the years 1819 and 1823, and who sold sets of his specimens in Europe.

Vernacular Name.—Universally known as "Corkwood," owing to the rugged, corky bark. As there are other Corkwoods, I have, by way of distinction, conjoined the aboriginal name "Till" with it in this case.

---

* Since described. See under "Fruits."

Aboriginal Name.—"Till" of those of Stradbroke Island, near Brisbane (G. Watkins).

Fruit.—The fruit is a favourite food of wood-pigeons, which assimilate the thin fleshy covering of the seed, rejecting the latter. When ripe the fruit is of a lustrous, rich indigo blue or purple colour, and grows to the size of a large pigeon's egg. It is obovoid-oblong, $\frac{3}{4}$ to 1 inch long, but occasionally is distinctly pear-shaped, as shown in the figure. (K on Plate.)

Bark.—The bark is pale-brown and cork like, the inner bark is of a bright orange yellow. When fresh it is soft and juicy, and is used for colouring boat-sails of a reddish colour.

In November, 1904, the following correspondence took place in the *Sydney Daily Telegraph* in regard to this Cork:—

A correspondent wrote:—"Few people are aware that we have in our bush lands in the County of Cumberland a considerable quantity of indigenous Cork trees. Many years ago I drew public attention to these particularly handsome trees, and now the subject has again been forced under my notice in coming across a scandalous destruction of a grove of this particular tree, some of which were giants, rivalling in size the Eucalyptus, and excelling in point of beauty and magnificence of foliage. These trees have been wilfully despoiled of their bark for the purpose of selling in the city by way of adornment for private gardens, so I am informed.

"Our indigenous trees grow luxuriantly, and in the larger growths great thickness at times are come across in the bark of these trees. That being the case, it is evident that our climate is a natural habitat for the Cork tree. Lately there have been imported into this State large size sheets of cork, made up of refuse cork. The process, I believe, is a simple one, and as the product of cork from our indigenous trees is equal in quality to that of the imported, there possibly might be an opening in this direction in place of simply destroying the trees by bark denudation, as is now done, and committing a gross act of vandalism in so doing. In Spain, Portugal, France, Algeria, and Tunis the Cork tree of commerce flourishes, but from recent reports the industry is gradually falling off by reason of destruction for purposes other than the cork commodity of the tree."

I then wrote:—

I shall be glad if your correspondent will give further particulars of the indigenous Cork trees whose bark "is equal in quality to the imported." Perhaps he might see fit to send you a flowering or fruiting twig. The name "Cork tree" is with us used to denote three or four different kinds of tree. It seems a pity to kill a handsome tree for a bit of bark, but unfortunately the timber of many of our trees has yet no recognised commercial value, and that a tree is handsome does not weigh with a man who seeks its destruction.

The correspondent in complying with my request, stated:—

The bark sent is the true bark separated from the skin and is, as you will see on examination, true cork. The tree from which these specimens were obtained was a young one, and only about 6 inches through in the stem. A larger size tree would of course yield a proportionately larger and thicker bark or cork product.

The cork bark from these trees, if reduced to dust, cannot be distinguished from the powdered dust of the very best imported material. Possibly, under cultivation, these handsome and picturesque trees could be brought to a state of perfection, so as to yield profitable results so far as the commercial product, cork, is concerned. In certain localities they are fairly plentiful, and where the hand of man or bush fires have not reached them, they form quite striking objects of interest in the vegetable kingdom of our State. The wood in times gone by, some fifty years ago, was much in use by the early colonists, and one of the uses it was put to was that of a material for wood engraving.

I then wrote :—

The specimens supplied by your correspondent are those of one of our native corkwoods. This one is known to botanists as *Endiandra Sieberi*, and it belongs to the Laurel family (*Lauraceæ*). It is a small or medium-sized tree, chiefly confined to this State, though it is found as far north as Moreton Bay in Queensland. The most southerly recorded locality is Shellharbour, though I quite expect that it occurs closer to the Victorian border. It frequents sandy lands, rich in humus, at no very great distance from the sea. Wood pigeons swallow the fruits, although there is but very little succulent matter on them; the timber has but little value. The tree is, as your correspondent states, a handsome one, and it is an oversight that people do not cultivate it more, since the number of ornamental trees we have under cultivation which flourish in sandy land near the coast is not many. When the bark is soft and juicy, it is used for colouring boat-sails of a reddish colour. But the chief value of the tree, as your correspondent states, lies in the mature bark, which is a fair substitute for the virgin cork of the cork oak of commerce. I have known it to be used by entomologists for pinning out insects, but it is brittle and far inferior to commercial cork, and bottle-corks could not be cut from it. There is, however, always limited sale for it amongst seedsmen and others, who sell it for covering window boxes and for other horticultural purposes.

Timber.—When fresh it is a white, somewhat fissile timber, with little or no grain. I suppose it would be a useful timber for box-making.

It is another of our many timbers whose uses are not yet ascertained, and I do hope that not only will these uses soon be ascertained, but that the rapidly diminishing numbers of these trees will soon be clearly indicated.

Size.—A small tree in the Sydney district, and at no great distance either north or south. It becomes a tree of 60–70 feet and 20 inches in diameter at Forster (A. Rudder). In the Macpherson Range Messrs. Dunn and Boorman report: Very tall, straight trees of 80–100 feet high, having a girth measurement of 6–8 feet.

Habitat.—Following are the localities recorded in the *Flora Australiensis*:—

New South Wales.—Port Jackson to the Blue Mountains. (*Sieber*, n. 275, and many others); sandy soil near the sea-coast (*Leichhardt*); Richmond River (*C. Moore*).

Following are some localities represented in the National Herbarium, Sydney:—

Shellharbour (E. Cheel, October, 1899) the most southern locality recorded; Stanwell Park (J. H. Camfield); not on sandy sea-coast, but on top of Bulgo, Hawkesbury Sandstone, say 300 feet above sea-level, between Otford and Stanwell Park (R. H. Cambage and J.H.M.); 8 to 10 feet at La Perouse, Botany Bay (R. H. Cambage); Beach near Kincumber (R. H. Cambage and J.H.M.); Wyong (J. L. Boorman); Port Stephens (Miss Connelly); Coast sands rich in humus. Forster (A. Rudder); Macleay River (W. Macdonald); Richmond River (E. Betche); Bungawalbin (W. Bauerlen); Acacia Creek, Macpherson Range (W. Dunn).

EXPLANATION OF PLATE 134

A. Flowering branch.

B. Young flower.

C. Expanded flower, showing—

(*a*) Calyx-lobes (perianth segments)
(*b*) Glands.
(*c*) Stamens with extrorse anthers.
(*d*) Staminodia.
(*e*) Pistil.

D. Expanded flower, another view, showing—

(*a*) Calyx-lobes.
(*b*) Glands.
(*c*) Stamens.
(*d*) Staminodia.
(*e*) Pistil.

E. Part of flower, showing—

(*a*) Glands at the base of the stamens (*b*).
(*c*) Staminodia.
(*d*) Pistil.

F. Stamen, front view, showing the anthers opening in valves, the basal glands and the staminodia.

G. Stamen glands and staminodia—back view.

H and K. Fruits of different shapes.

L. Seed.

PHOTOGRAPHIC ILLUSTRATIONS.

(Of Eucalyptus, not of *Endiandra Sieberi*.)

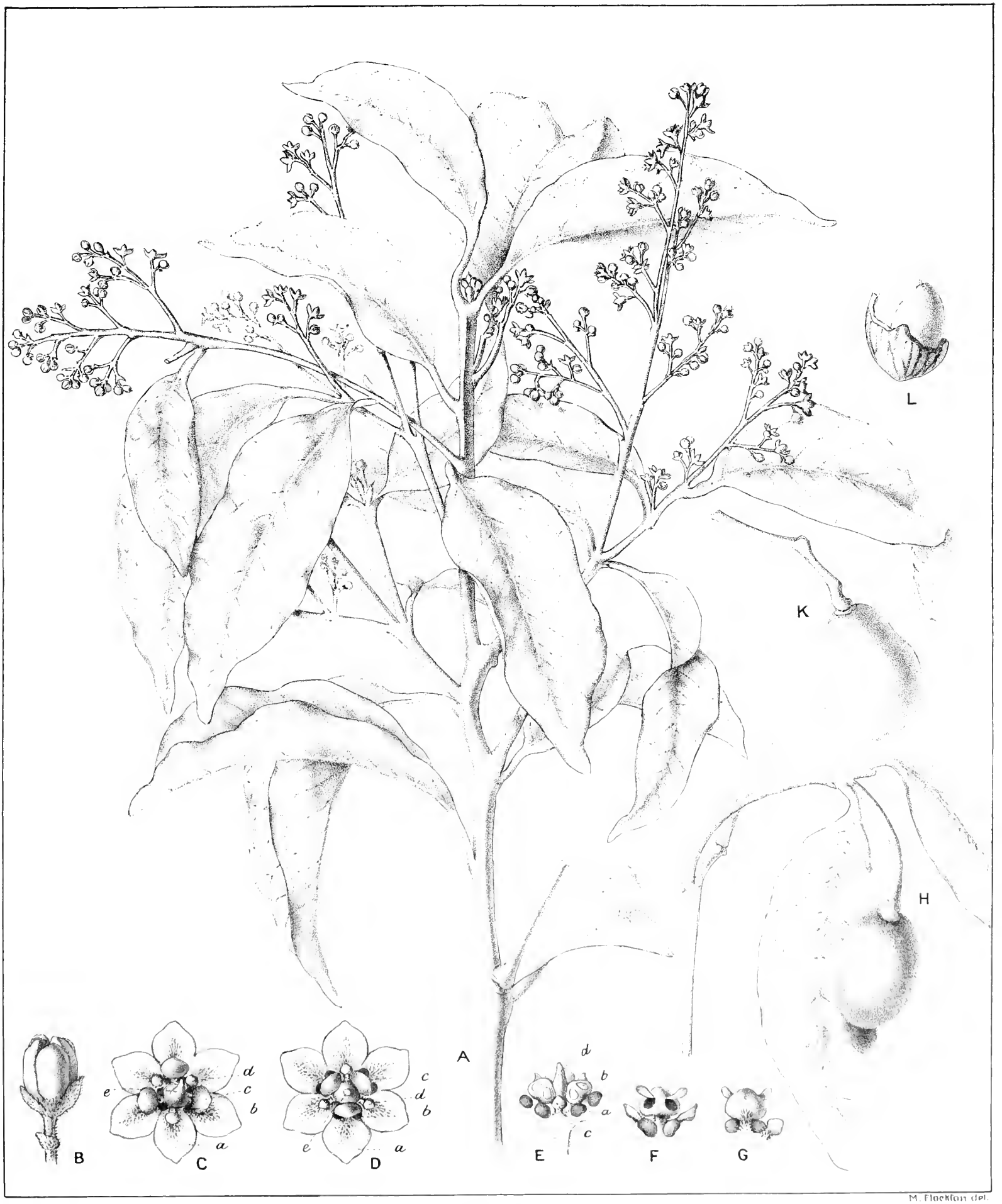
Produeing hand-hewn sleepers, Northern Rivers, New South Wales.

Inexpensive but effective method of log-bridge building for tramway construetion, Northern Rivers, New South Wales.

Specimen of economic log-bridge building over river on tramway, Manning River forest.

Sleeper squaring in forest.

(All from the Australian Timber Export Co., Sydney, J. V. de Coque, Manager.)



M. Flockton del.

CORK-WOOD.

(*Endiandra Sieberi*, NEES.)

PRODUCING HAND-HEWN SLEEPERS, NORTHERN RIVERS, N.S.W.

INEXPENSIVE BUT EFFECTIVE METHOD OF LOG BRIDGE BUILDING FOR TRAMWAY CONSTRUCTION, NORTHERN RIVERS, N.S.W.

SPECIMEN OF ECONOMIC LOG BRIDGE BUILDING OVER RIVER ON TRAMWAY, MANNING RIVER FOREST.

SLEEPER SQUARING IN FOREST.

A Critical Revision of the genus Eucalyptus.*

THIS work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets) :—

Eucalyptus acmenioides, Schauer (IX).
" *amygdalina*, Labillardière (VI).
" *Andrewsi*, Maiden (VII).
" *apiculata*, Baker and Smith (IX).
" *Behriana*, F.v.M. (X).
" *Boormani*, Deane and Maiden (X).
" *calycogona*, Turczaninow (III).
" *capitellata*, Smith (VIII).
" *Considèniana*, Maiden (X).
" *coriacea*, A. Cunn. (V).
" *dives*, Schauer (VII).
" *eugenioides*, Sieber (VIII).
" *hæmastoma*, Sm. (X).
" *incrassata*, Labillardière (IV).
" *Luehmanniana*, F.v.M. (IX).
" *macrorrhyncha*, F.v.M. (VIII).
" *microcorys*, F.v.M. (IX).
" *Muelleriana*, Howitt (VIII).
" *obliqua*, L'Héritier (II).
" *pilularis*, Sm. (I).
" *piperita*, Sm. (X).
" *Planchoniana*, F.v.M. (IX).
" *populifolia*, Hook. (X).
" *regnans*, F.v.M. (VII).
" *siderophloia*, Benth. (X).
" *Sieberiana*, F.v.M. (X).
" *stellulata*, Sieber (V).
" *umbra*, R. T. Baker (IX).
" *virgata*, Sieber (IX).
" *vitellina*, Naudin (VII).
" *vitrea*, R. T. Baker (VII).

* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, six shillings). Part IV will be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney: William Applegate Gullick, Government Printer.—1903.

THE FOREST FLORA OF New South Wales.

J. H. MAIDEN.

VOL. IV. PART 6.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

PART XXXVI OF THE COMPLETE WORK.

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THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the Botanic Gardens, Sydney.

PART XXXVI.

Published by the Forest Department of New South Wales, under authority of The Honourable the Secretary for Lands.

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1909.

PRICE, 1/- per Part, or 10/- per dozen Parts, payable in advance.

* 30611—A

No. 131.

Banksia marginata, Cav.

"Honeysuckle" or "Warrock."

(Family PROTEACEÆ.)

Botanical description.—Genus, *Banksia*. (See Part VIII, p. 169.)

Botanical description.—Species, *B. marginata*, Cav., *Anal. Hist. Nat.*, i, 227, t. 13, Ic. vi. 29, t. 544 (1800).

Usually a bushy shrub of 10 to 15 feet, growing out sometimes into a tree of considerable size, or sometimes low and straggling or depressed, the branches tomentose or villous.

Leaves of the flowering branches very shortly petiolate, oblong-lanceolate or broadly linear, obtuse or retuse, usually entire, with recurved margins, 1 to 2 inches long, in some flowerless branches or even on some flowering specimens some or all rather larger and more or less serrate, with short rigid or prickly teeth, all very white underneath, minutely reticulate, without any or with very few of the transverse veins of *B. integrifolia*.

Spikes oblong cylindrical, 2 or 3 or rarely near 4 inches long, or in the dwarf varieties sometimes nearly globular and small.

Bracts tomentose at the end.

Perianths silky, 7 to 8 lines long.

Style straightening after the perianth-laminæ have separated, and usually very spreading or reflexed, with a small slender stigmatic end.

Fruiting cone oblong-cylindrical; capsules prominent above the closely packed bracts, flat, not thick, rounded, ½ inch broad, at first pubescent, but the hairs wearing off.

It appears from R. Brown's labels that he had originally referred all his southern specimens to *B. marginata*, and the characters upon which he afterwards thought he could distinguish four southern species failed so completely when applied to the large number of specimens we now possess that I have felt obliged to return to his original views. As a whole the species differs from *B. integrifolia*, generally in the smaller leaves and flowers and in the leaves reticulate only without transverse veins. In some specimens, however, some of the leaves show a few of these veins; especially when toothed there is often one entering into each tooth. (B. Fl. v, 553.)

Botanical Name.—*Banksia*, already explained (see Part VIII, p. 170); *marginata*, Latin, margined, in reference to the well-defined margins of the leaves.

Vernacular Names.—"Honeysuckle" is the name commonly applied to this and other species of *Banksia*.

The natives used also to compound liquors—perhaps after a slight fermentation to some extent intoxicating—from various flowers, from honey, from gums, and from a kind of manna. The liquor was usually prepared in the large wooden bowls (*tarnucks*) which were to be seen at every encampment. In the flowers of a dwarf species of Banksia (*B. ornata*) there is a good deal of honey, and this was got out of the flowers by immersing them in water. The water thus sweetened was greedily swallowed by the natives. The drink was named *beal* by the natives of the west of Victoria, and was much esteemed.—(*Aborigines of Victoria*, R. Brough Smyth, i, 210).

Sir Thomas Mitchell (*Three Expeditions*, ii, 288), speaking of an "Ironbark," near Port Phillip (Melbourne), says :—

The flowers are gathered, and by steeping them all night in water the natives made a sweet beverage called "bool." (Evidently the same name as that in the preceding paragraph).

Other melliferous plants are and were used for the same purpose. Proteaceous plants are, as a rule, rich in honey.

The name "Honeysuckle" was applied to this genus by the early settlers from the fact that the flowers, when in full bloom, contain, in a greater or lesser quantity, a sweet, honey-like liquid, which is secreted in considerable quantities, especially after a dewy night, and is eagerly sucked out by the aborigines.

It is so abundant in *B. ericifolia* and *B. collina* that when in flower the ground underneath large cultivated plants is in a complete state of puddle; bees and wasps become intoxicated, and many lose their lives in it.—(Smith : *Dictionary of Useful Plants.*)

This may possibly be true of a particular Banksia, cultivated under exceptional conditions. I have, however, never heard of such a case. It certainly does not apply, except in a very modified degree, to the case of any *Banksia* I have noticed, and since I observed the above statement I have taken the trouble to look at hundreds of individuals of various species with the view to testing its accuracy. I also many years ago requested Mr. Baeuerlen (a collector for the Technological Museum) to make similar observations, and he writes :—

I have never heard from anyone having observed the liquid exuding so abundantly as mentioned by Smith. I have found the flowers pretty rich in the honey-like liquid, and when travelling over dry, waterless areas; I have sometimes sucked the liquid from the flowers to quench my thirst, but always endeavour not to do so, as it invariably gives me a headache, and a feeling of nausea afterwards.

Drummond (*Hooker's Journal of Botany*, ii) states that the natives of the Swan River district lived for five or six weeks principally upon the honey which they suck from the flowers of a species of *Banksia* (near *grandis*).

Aboriginal Name.—"Woreck" of the aborigines of the Lake Hindmarsh Station (Victoria), quoted by Brough Smyth. Mr. J. G. Saxton gives "Warrock" as the aboriginal name in Victoria for this tree, evidently the same as the preceding, and I have adopted it, as a supplementary name to "Honeysuckle," to designate this particular species.

Synonyms.—This species has many synonyms, mainly because of the variability in shape of its leaves. *B. microstachya*, Cav. *Anal. Hist. Nat.* i, 224, *Ic.* vi, 28, t. 541 (specimens with serrate leaves); *B. marginata*, *Lodd. Bot. Cab.*, t., 61, and *B. oblongifolia*, *Lodd. Bot. Cab.*, t. 241, not of others (both with serrate leaves); *B.*

australis, R. Br. in. *Trans. Linn. Soc.*, x, 206; *Prod.* 393; Meissn. in *DC. Prod.* xiv, 456; Hook. f., *Fl. Tasm.* i, 329; *Bot. Reg.* t. 787; *B. depressa* (type from Southern Tasmania), *B. patula* (type from South Coastal Australia and Flinders Land) and *B. insularis* (type from islands of Bass Straits and Tasmania, near the coast), R.Br. in. *Trans. Linn. Soc.* x, 205, 206, *Prod.* 393; Meissn, l.c. 456; *B. Gunnii*, Meissn. l.c.

B. præmorsa, Dum. Cours. *B. ferrea*, Vent and *B. hypoleuca*, Hoffmsg., are names of garden plants which have been referred by Meissner and others to this species. *B. marcescens*, Bonpl. Jard. Malm. 116, t. 48, appears to me to represent the toothed-leaved state of *B. marginata*, and not of the true *B. marcescens* Br. (*B.Fl.* v, 554).

Leaves.—They are very variable. Hooker, speaking of Tasmanian plants, makes the following remarks in regard to their truly protean forms :—

The characters in the foliage, whence specific diagnoses have been drawn, may all be found on one individual and at one period of growth, though there is always a marked difference between young and old plants, the former always bearing larger coarsely-toothed leaves, and the older generally having more entire and sometimes narrow-linear leaves. The branches are most tomentose, and often densely so in young plants. *Leaves* patent or erect, 1–3 inches long, narrow-lanceolate or narrow-obovate, cuneate, usually truncate and retuse at the apex, with the nerve produced into a short mucro; margins recurved; upper surface smooth, shining, under snow-white, reticulated, with a stout reddish costa. (*Flora of Tasmania*, i, 329.)

J. G. O. Tepper has a short paper, read (17/4/'84) before the Linnean Society, on a "Note on a remarkable variation in *Banksia marginata*, Cav." *Proc.* (1883–86, p. 57). It consists of a description of a variegated form of leaf in this species (with figure) from Mt. Lofty Range, near Adelaide.

Timber.—It seems to attain its largest size in the other States, but in the cold southern parts of New South Wales it becomes a tree of medium size, and its timber is used to a limited extent.

This wood is not of much utilitarian importance. It is remarkably porous, soft, spongy, and light. When full of sap and newly cut, it is not unlike uncooked beef in the centre, and towards the surface of a reddish-white colour, hence it has the appearance of well-grown beef, with a quantity of fat on the outside. In the process of drying it twists and warps to a great extent, but when thoroughly seasoned it admits of a fine polish, and has a very pleasing appearance. It is used for cabinet purposes and indoor ornamental work. (J. E. Brown.) A cubic foot of the wood, when dry, weighs 38lb.—equivalent to a specific gravity of ·598. (In the *Report of the Victorian Exhibition*, 1861, the specific gravity is given as ·610.)

Yield of charcoal	29·5	per cent.
Crude wood vinegar	40·062	,,
Tar	6·562	,,

A ton of dry wood gave a maximum yield of 14¼lb. of pearl-ash, or 6½lb. of pure potash.—(Mueller.)

Size.—As a rule a small tree, with a dense, shapely head. At Boro, near Braidwood, it is a tree with a stem diameter of a foot, and a height of 30 feet, which is as large as I have any record of in New South Wales. It is sometimes a mere shrub.

Habitat.—The following localities are given in the *Flora Australiensis*:—

New South Wales.—Port Jackson (R. Brown, Sieber. n. 8, and others); Berrima and Mudgee (Woolls).

Victoria.—Port Phillip (R. Brown); Wangaratta and Dandenong (F. Mueller); Melbourne (Adamson); Glenelg River (Robertson).

Tasmania.—Port Dalrymple, Derwent River, and King's Island (R. Brown). Abundant throughout the Island, ascending to over 3,000 feet (J. D. Hooker).

South Australia.—Port Lincoln (R. Brown); Boston Point (Wilhelmi); near Adelaide (Whittaker, Blandowski); Mount Barker and Cook's Creek (Neumann); Kangaroo Island (Waterhouse).

As regards New South Wales, it is pretty widely diffused, as the following localities in the National Herbarium, Sydney, indicate. Speaking generally, it is found on the cold western and southern table-lands :—

Port Jackson and neighbourhood, *e.g.*, Rose Bay, Maroubra Bay, and the National Park.

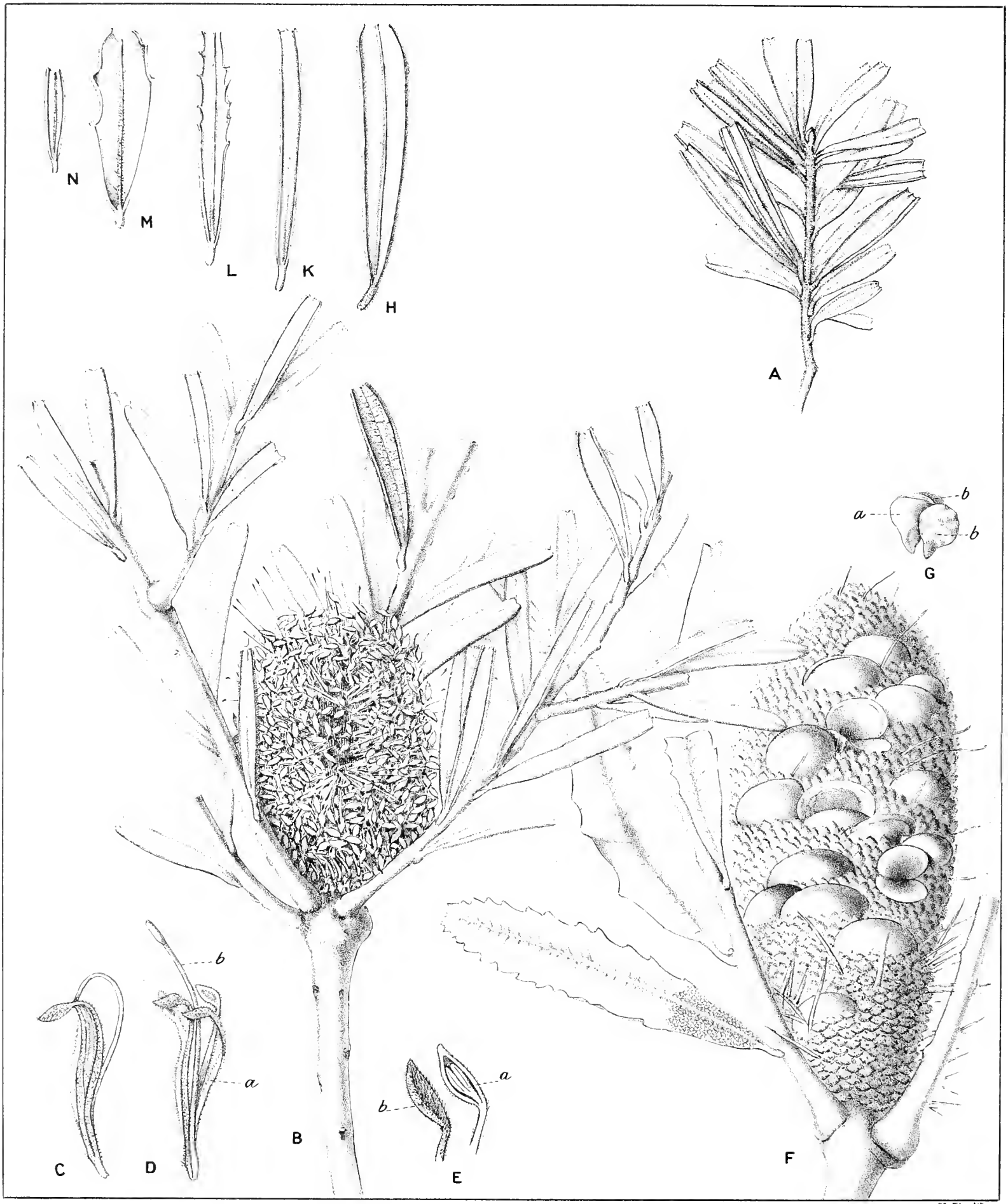
In the south we have it from Deniliquin; only a few on the sandhills of the Murray River (O. Wilshire, District Forester); Adaminaby to Cooma (E. Betche); tree of 15 feet, with a flowering spike as narrow as *B. paludosa*; Wyangle, Tumut (R. H. Cambage); Barber's Creek (H. J. Rumsey): Berrima (J.H.M.).

Going west we have it from the highest parts of the Blue Mountains, *e.g.*, Blackheath; shrubs of 3-4 feet (J.H.M.); Mt. Victoria (J.H.M.); Clarence Siding (J. L. Boorman); Mt. Wilson (J.H.M.); Jenolan Caves (J.H.M.); thence west to the Bathurst district (R. H. Cambage and J.H.M.).

It occurs also at Byron Bay (J. L. Boorman). This is on the coast, and approaching the Queensland border, in which State further search will probably find it.

Propagation.—It is a beautiful tree, very symmetrical, and in cold localities with fair soil it is sufficiently large to afford good shelter to cattle and horses. It is so common on many places as to be despised, but I would suggest to landowners to take care to preserve picked specimens. New South Wales has many beautiful trees—I suppose as beautiful as in any part of the world—but if they be native they are rarely the objects of solicitude.

Beautiful New South Wales would be even more beautiful if our people would but have more thought for the native trees. It would not cost much, as a very general rule—a little protection here, the pruning of a branch there, some little act performed at odd moments which might, in most cases, be looked upon as recreation.



M. Flockton.

HONEYSUCKLE OR WARROCK.

(*Banksia marginata*, CAV.)

EXPLANATION OF PLATE 135.

A. Juvenile plant.

B. Branch with flowering spike.

C. Unopened flower.

D. Opened flower showing—

(*a*) Four-lobed corolla with stamens.
(*b*) Pistil.

E. Corolla lobes—

(*a*) With stamen (sessile anther) on the concave laminæ.
(*b*) Back view.

F. Fruiting spike, showing the prominent capsules, containing the winged seeds.

G. Seeds—

(*a*) Plate separating the winged seeds (*bb*).

LEAVES SHOWING VARIATION.

H. Broad leaf, entire margin, from the sandhills, Murray River (O. Wilshire, District Forester, Deniliquin, New South Wales).

K. Narrow leaf, Mt. Victoria, New South Wales (J.H.M.).

L. Narrow leaf with dentate margin, Mt. Wilson, New South Wales (J.H.M.).

M. }
N. } Two mature leaves from the same twig, Rose Bay, Sydney (J. H. Camfield).

No. 132.

Eucalyptus Consideniana, Maiden.

The Yertchuk.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical description.—Species, *E. Consideniana,* Maiden, in *Proc. Linn. Soc., N.S.W.,* xxix, 475 (1904).

Juvenile leaves narrow-lanceolate, petiolate, soon becoming alternate. A common size is a length of 3 inches with a width of $\frac{1}{2}$ inch. I have them, however, both shorter and broader. They are narrower than those of *E. Sieberiana,* F.v.M., or *E. piperita,* Sm. Of a rather strong peppermint odour, and often of a silvery appearance. The young branchlets and seedling stems angular.

Mature leaves commonly oblique and falcate, broadly lanceolate. I have them up to 9 inches in length and nearly 2 inches in greatest width; they are rather thick in texture. Colour equally green on both sides, dull or shiny, blue-green or a bright sap-green. Veins strongly marked, spreading from the base, the intramarginal vein at a considerable distance from the edge, often looped (brachydodromous). "Leaves hang straight down" (Cambage).

Buds usually clavate and sometimes with pointed opercula.

Flowers.—Anthers reniform.

Fruits usually pyriform in shape, often nearly conical, rather more than $\frac{1}{4}$ inch in diameter. The valves often well sunk below the rim, but the points of the valves occasionally protruding. Sometimes the rim is slightly domed and the valves rather more exserted. The rim broad, smooth, well-defined, and usually red in colour.

A medium-sized tree with grey tough bark to the tips of the branches, said bark being of that sub-fibrous character well known in Australia as "peppermint," very like that of *E. piperita,* but very different from that of *E. Sieberiana.*

These two species are mentioned because *E. Consideniana* seems to possess characters intermediate between them; indeed, I have suggested that it may be a natural hybrid, these being the parents.

In his "Eucalypts of Gippsland," *Trans. Roy. Soc. Vict.* ii, 82, 84, 85, Dr. (then Mr.) A. W. Howitt speaks of a broad-leaved form of *E. amygdalina* known to the aborigines as "Katakatak" or "Yertchuk." This is his *E. amygdalina* (d). He also mentions a broad-leaved *amygdalina* (b) which is *E. dives,* Schauer, (*E. amygdalina,* Labill., var. *latifolia,* Deane and Maiden). As regards the "Yertchuk" variety (d), I have received excellent specimens from Dr. Howitt, and refer them to *E. Consideniana.*

Dr. Howitt (*loc. cit.*) speaks as follows about the "Yertchuk":—

It rarely grows more than 100 feet in height, but is generally a rather small tree, often stunted. The bark classes it with the stringy barks, for it is fibrous and persistent up to the smaller branches, somewhat resembling that of *E. obliqua*, but thinner, more fissile, and lighter in colour. For roofing purposes the bark is worthless, and the timber of no value for splitting or sawing, having the soft, veiny character of some types of *amygdalina*.

Botanical Name.—*Eucalyptus*, already explained (see Part II, p. 34); *Consideniana*,—in describing this species, I stated: "I name this species in honour of First-Assistant Surgeon D. (Denis) Considen, one of the founders of Australia. In reviewing the 'Historical Records of New South Wales' (Vol. i, Part 2) in the *Sydney Morning Herald* of 23rd July, 1892, I drew attention to the fact that Considen's letter, dated 18th Nov., 1788, to Sir Joseph Banks, is perhaps the most interesting one in the collection to the student of economic botany. From the following passage it would appear that Considen was the founder of the Eucalyptus oil industry: 'We have a large peppermint tree which is equal, if not superior, to our English peppermint. I have sent you a specimen of it. If there is any merit in applying these and many other simples to the benefit of the poor wretches here, I certainly claim it, being the first who discovered and recommended them.' At this time a bottle of Eucalyptus oil was sent to Sir Joseph Banks by Governor Phillip. I further wrote in the review: 'I think some effort should be made to rescue the name of the first user of Australian plants from oblivion. I trust that at least a species will be named after the pioneer before many months are over.'

"I regret that the matter slipped my memory on more than one occasion, but I now dedicate to his memory a species very closely allied to that from which he distilled the first Australian Eucalyptus oil."

Vernacular Name.—Mr. R. H. Cambage, who prominently brought this tree under my notice, gives the local names as "Peppermint" or "White Mahogany"; Mr. Boorman as "Messmate."

Aboriginal Names.—Dr. Howitt says that the aborigines call those Gippsland trees which I have referred to this species "Yertchuk" or "Katakatak." I do not know any distinctive name employed in New South Wales for the tree, and therefore propose the name "Yertchuk" for it.

Bark.—Very much like that of *E. piperita*, the "Sydney Peppermint," as already stated.

Timber.—Wood pale-coloured, with kino rings, remarkably like that of the common Sydney Peppermint (*E. piperita, Sm.*). "Soft and ringy, not nearly so good as 'Mountain Ash,' *E. Sieberiana*" (Boorman). None of the timber that I have seen of this species appears to be of much economic value. In the Gosford district it was used for rails.

Size.—Of medium size. I do not call to mind having seen a tree higher than 50 or 60 feet, and with a stem diameter greater than 2 feet.

Habitat.—In coastal and coast-range districts of New South Wales, and Gippsland, Victoria, extending in the former State, as far as is known at present, from the Clyde River in the south across the country to near Goulburn, thence *viâ* Burragorang to the Blue Mountains (Wolgan) and the Penang Mountain, near Gosford. Doubtless the species will be found in localities intermediate between the Clyde River and Gippsland.

Speaking of its Gippsland localities, Howitt says :—

It grows most freely upon the poor sandy and clay lands of the littoral tracts, but I have also observed it in the mountains—for instance, where poor sandy tracts occur—as well as on the quartz grits and conglomerates at Wild-horse Creek, Wentworth River, on the upper Silurian sediments, between Toongabbie and Walhalla, the Silurian sediment in the Tambo Valley Road, the upper Devonian formations of the Insolvent Track, the Devonian porphyries at Gelantipy, and the Silurian formations at Delegate River.

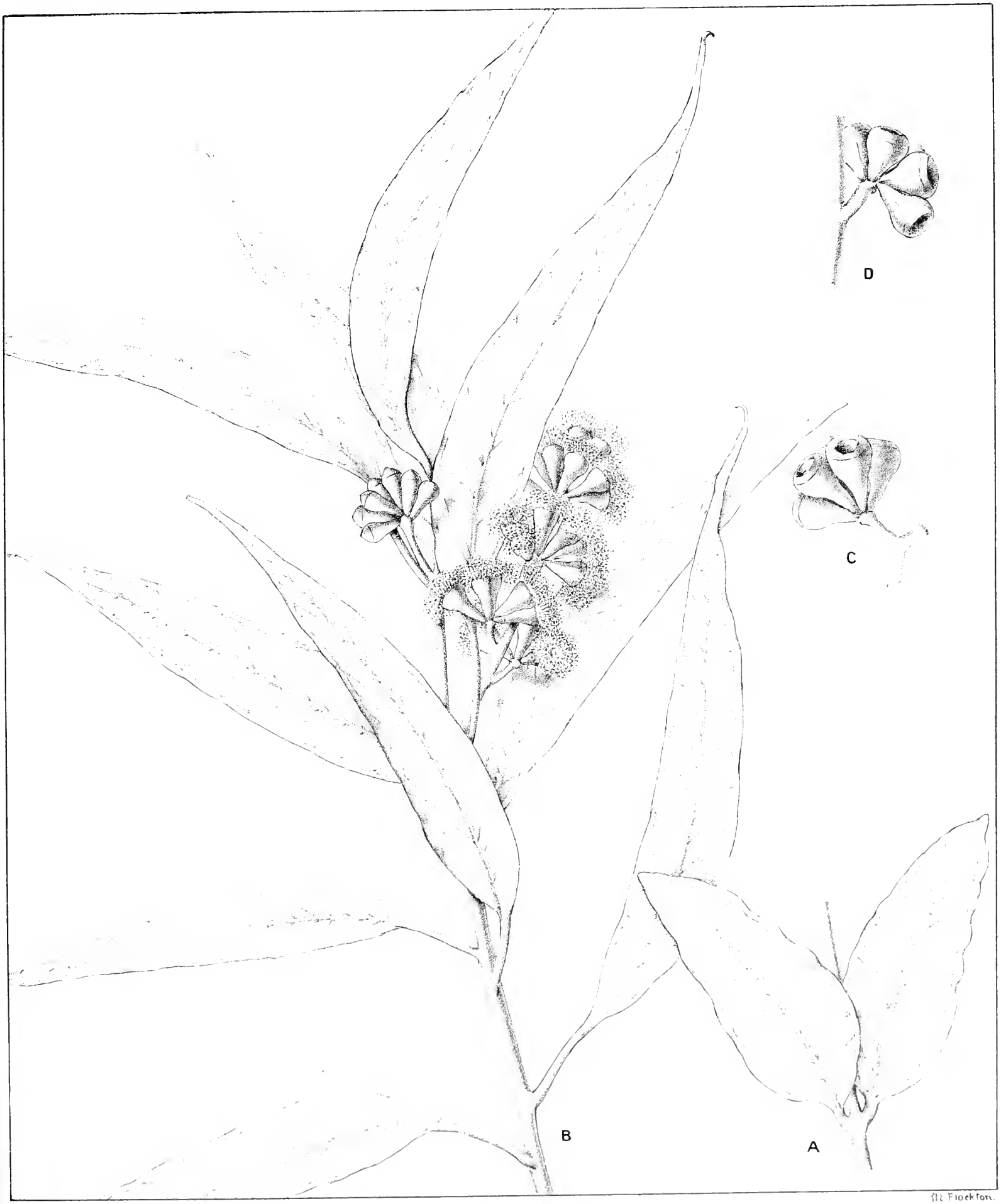
EXPLANATION OF PLATE 136.

A. Sucker leaves from Pigeon House, Milton, New South Wales.—(R. H. Cambage.)

B. Flowering twig from between Blaxland and Valley Heights, Blue Mountains.—(J. H. Maiden and R. H. Cambage.)

C. Fruits from Wingello, New South Wales.—(J. L. Boorman.)

D. Fruit from top of Barrengarry Mountain, New South Wales.—(J.H.M. and R. H. Cambage.)



M. Flockton.

THE YERTCHUK.

(*Eucalyptus Consideniana*, MAIDEN.)

No. 133.

Acacia Cunninghamii, Hook.

The "Bastard Myall" or "Kurracabah."

(Family LEGUMINOSÆ : MIMOSEÆ.)

Botanical description.—Genus, *Acacia.* (See Part XV, p. 103.)

Botanical description.—Species, *A. Cunninghamii,* Hook., t. 165 (1837).

Hooker originally described it in the following words :—

Branches acutely three-angled, phyllode (as broad as a hand, excluding the thumb (*sic*), broadly lanceolate falcate, attenuate at the base and apex, with parallel veins, scurfy, with a single gland near the base, the flowering spikes elongated and vermiform, sessile in the axils, and shorter than the phyllodes, flowers pentamerous. (Translation).

A tree, 10–15 feet high, with very large falcated *phyllodia,* clothed, more especially in the young state and on the young branches, with a mealy substance which in older plants is deciduous. The *spikes* are generally two together in the axils of the leaves, sessile, flexuose. Between the parallel nerves are lesser oblique and often anastomosing ones.

Bentham then described it as follows :—

A shrub or small tree of 10 to 20 feet; glabrous or hoary-pubescent; branchlets acutely three-angled.

Phyllodia falcate-oblong or lanceolate, narrowed at both ends, mostly 5 to 6 inches long and 1 to 1½ inches broad, or larger on barren shoots, with numerous parallel veins, 3 to 5 more prominent than the others, and 1 or 2 confluent with the lower margin near the very oblique base.

Spikes 1½ to 3 inches long.

Flowers mostly 5-merous; often distinct or distant.

Calyx short, truncate or sinuate-toothed, usually glabrous.

Petals smooth.

Pod long, linear, very flexuose or twisted, 1 to 2 lines broad; valves coriaceous, convex.

Seeds longitudinal, but not seen ripe. (B. Fl. II, 407.)

Bentham (*loc. cit.*) describes a var. *longispicata* :—"Branches stout, and still more angular. Phyllodia 6–8 inches long, 1–2 inches broad."

Specimens from Mount Dangar, Murrumbo, the Upper Hunter, and some of those from the Evans River, are all coarser and more angular than the type, but the spikes are barely even 3 inches long.

It seems to me an inconvenient variety, the attempted maintenance of which will only lead to confusion.

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104); *Cunninghamii*, in honour of Allan Cunningham, King's Botanist, who arrived in Sydney in the year 1816, and who was the Superintendent of the Botanic Gardens, Sydney (1837–1839). He was an admirable botanist and a distinguished explorer, one of his feats being the discovery of the Darling Downs, Queensland.

Vernacular Name.—It is sometimes known as "Bastard Myall," and less frequently as "Black Wattle."

Aboriginal Names.—At Narrabri, New South Wales, it bears the name of "Kurracabah." I am not certain whether the name is exclusively held by this species. It is also called by the name "Motherumbah" (of which "Motherumbung" is a variant), but I have received at least two other wattles under that name. "Kowarkull" is a Queensland aboriginal name (Stradbroke Island, Watkins), and "Tehilgar" is the Bundaberg (Queensland) name, according to Keys, quoted by Bailey.

Leaves.—Mr. W. T. Seaward, of Miranee, Gundy, writes (in August, 1902, during the severe Upper Hunter drought) that specimens of this wattle, which grows on the spurs of the Lagoon Mountain, Page River, had been handed to him by a teamster, who was trying to keep his bullocks alive by lopping. The bullocks were leaving the kurrajong and eating these twigs in preference.

I have not seen an analysis of the foliage, but believe that its nutritive value cannot be very great.

Fruit.—The green pods of this plant are rich in saponin. (T. L. Bancroft, *Proc. R. S. Qd.*, viii, 1890).

Dr. Lauterer (*ib.* xii, 103) draws further attention to saponin in this plant. He found 3 per cent. of saponin in the unripe pods, and gives an instance of supposed sandy blight in a woodcutter, which he traced to the eyes having been rubbed by the hands on which was some juice of the pods of this species. His paper, "Occurrence of Saponin in Australian Acacias and Albizzias" should be referred to.

Bark.—A specimen of this bark received from Dr. T. L. Bancroft, of Brisbane, and obtained from Deception Bay, gave 12·32 per cent. of tannic acid and 26·95 per cent. of extract. It is known locally as "Black Wattle." It is from a tree 30 feet in height and 1 foot in diameter, stripped in May, analysed in July. Dr. Bancroft says: "This is the only tanning wattle which grows near Brisbane in any great abundance."

The inner bark consists largely of fibre, while the outer is furrowed and scaly, of a dark brown colour; the thickness of the bark analysed averaged $\frac{1}{2}$ inch under the outer scaly portion. The colour is dark-reddish brown, and altogether it looks a poor tan-bark. As a rule this tree carries a heavyish bark.

H. M. R. Rapp, photo.

Acacia Cunninghamii, Hook., WARIALDA.

Following is an analysis of another Queensland sample of this bark :— Tannin, 9·13 per cent.; extract, 16·15 per cent. (*Queensland Comm., Col. and Indian Exh.*, 1886.)

Timber.—Wood close-grained, and takes a good polish. It is dark-coloured and heavy, and a useful wood for cabinet purposes. It reminds one very much of Red Cedar, but it is heavier. It is very homogeneous. A slab of this wood in the Technological Museum, which had been seasoned over twenty-five years (having been exhibited at the London Exhibition of 1862), had a weight which corresponds to 46 lb. 12 oz. per cubic foot.

Under No. LXVI (*Cat. N.S.W. Northern Timbers, London Exh.*, 1862) the late Mr. Charles Moore has the entry :—

> *Acacia Cunninghamii.*—Bastard Myall; brushes and open forests, Clarence. This tree, which is very abundant in the locality referred to, occasionally attains a considerable size—from 60 to 80 feet in height, and from 18 inches to 2 feet in diameter; timber dark; prettily grained; seldom used.

Exudations.—Dr. T. L. Bancroft states that, in Queensland, gum of this species makes a good adhesive mucilage; it is, however, dark in colour. Lauterer* gives an analysis.

Size.—None of the trees I have seen have exceeded 25 or 30 feet in height, with a trunk diameter of 9 inches or 12 inches, but the size of the trees referred to by Mr. Charles Moore (already quoted) is much greater.

Some specific sizes will be found under "Habitat."

Habitat.—This is a widely diffused species, but its range requires much more investigation yet. It is common in Queensland and New South Wales, and Prof. Baldwin Spencer collected it at Hanson's Well in Central Australia.

The type came from "Forest ground, near Brisbane River" (Allan Cunningham).

According to Britten's "Illustrations of Banks' and Solander's plants," those botanists collected it at Bustard Bay, Queensland, and it is figured at t. 87. In the National Herbarium, Sydney, we have it from Rockhampton, Herberton, and other localities. Its range in Queensland is very extensive, both coastally and further west.

In New South Wales the following localities of specimens in the National Herbarium, Sydney, will give a good idea of its range in this State :—Myrtle Creek, Richmond River; Woodburn, Richmond River, Evans River, 30-40 feet, Lawrence to Casino, Hastings River; 6-10 feet, Warialda and Bingara; "Kurracabah" or "Motherumba," Narrabri; "Lady's Finger Wattle" (in allusion to the specially

* "Gums and Resins exuded by Queensland Plants Chemically and Technologically Described." From pages 35 to 80 of F. M. Bailey's "Botany Bulletin," No. 13 (April 1896), "Contributions to the Queensland Flora."

fine spikes of flowers); "Lignum vitæ," 10-20 feet high, 6-8 inches diameter; leaves pendulous. Near foot-hills, Mount Dangar, Gungal; Quirindi; Owen's Gap, Scone; Warrumbungles; Mudgee district; Goulburn River; Denman; Page River; Sackville Reach, Hawkesbury River.

EXPLANATION OF PLATE 137.

A. Phyllode, young growth. (Brisbane, J.H.M.)

B. Flowering twig.

C. Flower bud.

D. Flower.

E. Flower, opened out, showing—

(*a*) Calyx.
(*b*) Corolla.
(*c*) Stamens.
(*d*) Pistil.

F. Pod.

G. Seed.

PHOTOGRAPHIC ILLUSTRATION.

Acacia Cunninghamii, Warialda.—(H. M. R. Rupp photo.)

M Flockton

BASTARD MYALL OR KURRACABAH.

(*Acacia Cunninghamii*, HOOK.)

No. 134.

Endiandra globosa, Maiden and Betche.

The Ball Fruit.

(Family LAURACEÆ.)

Botanical description.—Genus, *Endiandra.* (See Part XXXV, p. 79.)

Botanical description.—Species, *E. globosa,* Maiden and Betche, in *Proc. Linn. Soc., N.S.W.,* XXIV, 149 (1899).

A tall straight-stemmed tree, glabrous in all its parts, except minute hairs on the inflorescence.

Leaves ovate elliptical, acuminate but obtuse, 5 to 5½ inches long and 2 to nearly 3 inches broad, finely reticulate and equally green on both sides, narrowed into a short petiole.

Panicles in the few specimens seen much less than half as long as the leaves.

Calyx- (*or perianth-*) *tube* small, the limb very open, consisting generally of six broad segments.

Stamens: three fertile ones alternating with three short, thick rudimentary ones, and a large scale-like gland on each side of the fertile stamens.

Ripe fruits perfectly globular, two inches in diameter, resting on a short, thick pedicel, with a thin pericarp and a hard woody endocarp.

Near Murwillumbah, Tweed River, New South Wales (Dr. J. A. Goldsmid, December, 1898).

The large fruits, of the shape and size of a small billiard-ball, are frequently picked up in the dense brush forests of the Richmond and Tweed Rivers, and have been known to us for many years, but on account of the large size of the tree and the difficulty of collecting in dense brushes, we have not hitherto been able to procure correctly matched flowering specimens till we succeeded in interesting Dr. Goldsmid, a resident of Murwillumbah, in the subject.

In affinity it is nearest to *E. Sieberi,* Nees, from which it is scarcely distinguished in the flowers; but its habit, foliage and fruit are so different that we cannot consider it a variety of that species.* (*Op. cit.*)

Botanical Name.—*Endiandra,* already explained (see Part XXXV, p. 79); *globosa,* Latin, round, referring to the shape of the fruit.

Vernacular Name.—Perhaps I may be permitted to invent the name "Ball Fruit" for this tree, which has no name, vernacular or aboriginal, so far as I am aware.

Similarity to certain Cryptocaryas.—The leaves of *Cryptocarya Bancrofti,* Bail., are so similar to those of *Endiandra globosa* that I cannot tell the difference.

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* Since this paper was in type we have been favoured by Mr. R. T. Baker with good flowering specimens collected by W. Baeuerlen, near Murwillumbah, in October, 1892. It is described as a "Tree of 25 feet" on the label.—23 vi, 99.

The nut is also very similar to that of *C. Palmerstoni*, Bail., (the similarity between the leaves is less strong) but the flowers of neither species of *Cryptocarya* have been described.

The nut of *C. Palmerstoni* is described as enclosed in a large fluted red and yellow exocarp. Thus the similarity of leaf and nut between *C. Palmerstoni* and *Endiandra globosa* is merely accidental.

I have seen fruits of *Endiandra globosa* only in a dried state, picked up from below the tree, or unripe on the tree, but there is no sign of a fluted exocarp.

The fruit of *Cryptocarya australis* has a distinctly fluted red exocarp, faintly seen in the hard kernel, so this may be a character of *Cryptocarya*, and Bailey has probably correctly referred his plant to the genus *Cryptocarya* in spite of the absence of flowers.

Timber.—We know nothing of this timber, which is another of the brush timbers of which we are compelled to state our absolute ignorance.

Size.—It is a tall tree, but I have not been able to obtain measurements, even approximate ones.

Habitat.—So far it has only been recorded from brush forests at Murwillumbah on the Tweed River, New South Wales (the type locality), but it has doubtless a wider range in this State, and it is hardly possible that it does not extend to Queensland.

EXPLANATION OF PLATE 138.

A. Flowering branch showing—
   (*a*) Venation of leaf.

B. Flower-bud.

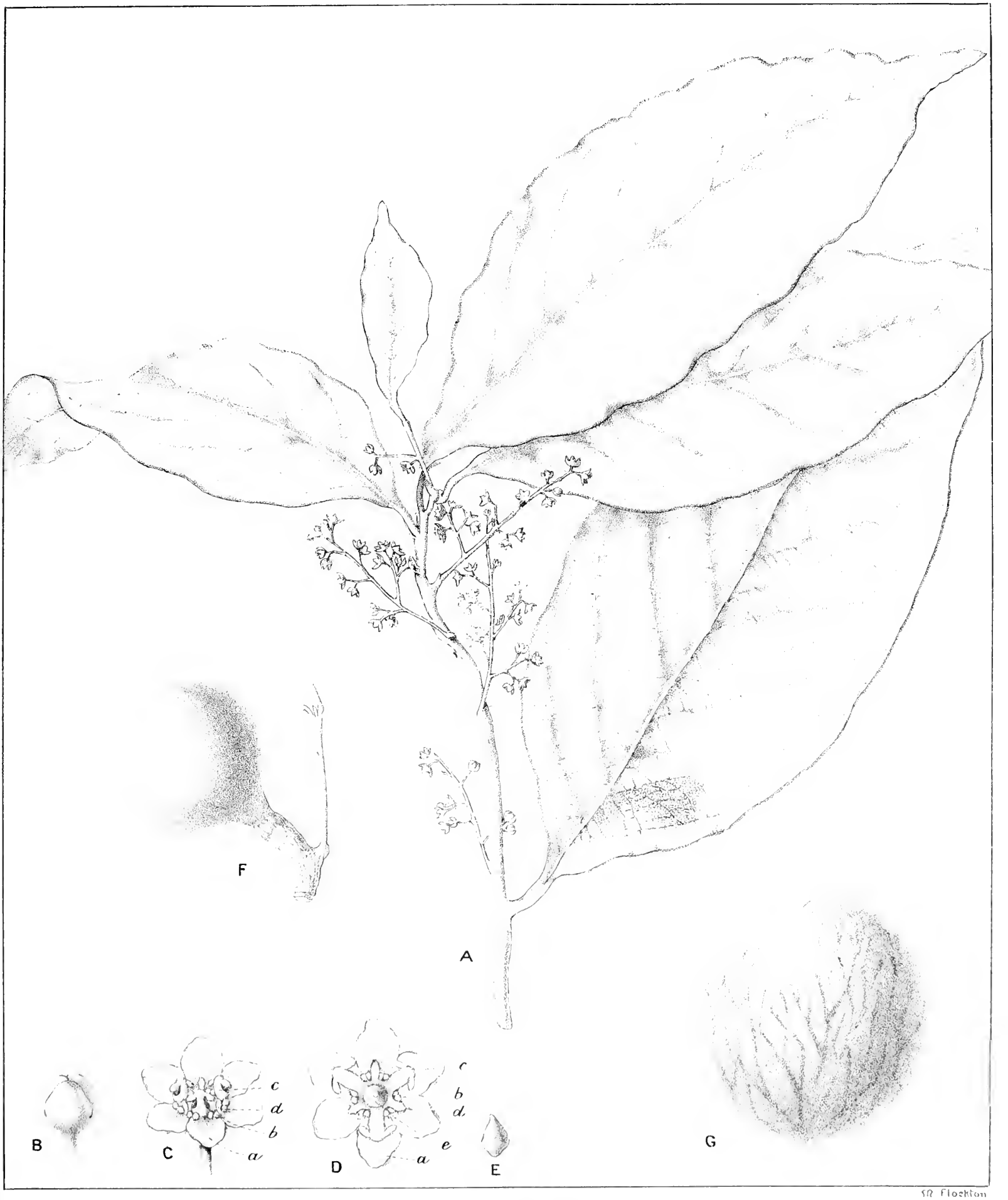
C. Flower, enlarged, showing—
   (*a*) Calyx-lobes (perianth segments).
   (*b*) Glands.
   (*c*) Stamens with extrorse anthers.
   (*d*) Staminodia.

D. Flower, enlarged (viewed from above), showing—
   (*a*) Calyx-lobes (perianth segments).
   (*b*) Glands at the bases of the stamens.
   (*c*) Stamens (extrorse anthers).
   (*d*) Staminodia.
   (*e*) Pistil.

E. Pistil.

F. Young fruit, from Tweed River, Murwillumbah (Dr. Goldsmid).

G. Mature fruit, the pericarp having perished, from the Tweed River (M. Darley).



S.R. Flockton

THE BALL-FRUIT.

(*Endiandra globosa*, MAIDEN AND BETCHE.)

Early Instructions to Report on Australian Timber.

Following is a portion of the Colonial Office instructions issued to Lieut. P. P. King on his starting on survey work in Australian waters in 1818. They are the first official instructions in regard to the economic vegetable products of Australia known to me. Governor Phillip's instructions (at all events his first instructions, signed by the King) contain no reference to timber :—

"The vegetables, and particularly those that are applicable to any useful purposes, whether in medicine, dyeing, carpentry, &c., any scented or ornamental woods adapted for cabinet work and household furniture, and more particularly such woods as may appear to be useful in shipbuilding, hardwood for tree nails, block sheaves, &c., of all which it would be desirable to procure small specimens labelled and numbered, so that any easy reference to them may be made in the journal, to ascertain the quantities in which they are found, the facility or otherwise of floating them down to a convenient place for shipment, &c." *(Narrative of a Survey, &c.* Introduction, xxxii.) These instructions were copied almost *litteratim*, and given by Governor Macquarie to Surveyor-General Oxley. See *Journal of Two Expeditions into the Interior of N.S.W.* (Oxley, p. 360.)

SUPPLEMENTARY PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) Spurs from the Comboyne, Manning River district.

(*b*) A view from Comboyne Tableland over Manning River Valley.

(*c*) Track up the Comboyne from Taree. Photo. taken about 200 feet from top.

(*d*) Lyndon's Crossing, Upper Lansdowne, Manning River.

(*e*) Inspecting and Passing Timber, Upper Lansdowne.

(*f*) Punts Loading Logs, Upper Lansdowne River.

The above six photographs depict aspects of northern New South Wales brush forests.

(*g*) In the Riverina Country, New South Wales; Loading White Pine Logs (*Callitris robusta*).

(*h*) Sleeper-getters at work, Wyong. Blue-gum Log (*Eucalyptus saligna*).

(*i*) Sleepers at a Wharf, Sydney, for India.

(All F. A. Kirton, photo.)

A Critical Revision of the genus Eucalyptus.*

THIS work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets).

Eucalyptus acmenioides, Schauer (IX).
" *amygdalina*, Labillardière (VI).
" *Andrewsi*, Maiden (VII).
" *apiculata*, Baker and Smith (IX)
" *Behriana*, F.v.M. (X).
" *Boormani*, Deane and Maiden (X).
" *calycogona*, Turczaninow (III).
" *capitellata*, Smith (VIII).
" *Consideniana*, Maiden (X).
" *coriacea*, A. Cunn. (V).
" *dives*, Schauer (VII).
" *eugenioides*, Sieber (VIII).
" *hæmastoma*, Sm. (X).
" *incrassata*, Labillardière (IV).
" *Luehmanniana*, F.v.M. (IX).
" *macrorrhyncha*, F.v.M. (VIII)
" *microcorys*, F.v.M. (IX).
" *Muelleriana*, Howitt (VIII).
" *obliqua*, L'Héritier (II).
" *pilularis*, Sm. (I).
" *piperita*, Sm. (X).
" *Planchoniana*, F.v.M. (IX).
" *populifolia*, Hook. (X).
" *regnans*, F.v.M. (VII).
" *siderophloia*, Benth. (X).
" *Sieberiana*, F.v.M. (X).
" *stellulata*, Sieber (V).
" *umbra*, R. T. Baker (IX)
" *virgata*, Sieber (IX).
" *vitellina*, Naudin (VII).
" *vitrea*, R. T. Baker (VII).

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* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, Six shillings). Part IV will be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney: William Applegate Gullick, Government Printer —1909.

FOREST COUNTRY, SPURS FROM THE COMBOYNE, MANNING RIVER DISTRICT.

F. A. Kirton, photo.

FOREST COUNTRY, LOOKING FROM COMBOYNE TABLE-LAND OVER MANNING RIVER VALLEY.

BRUSH FOREST, UPPER LANSDOWNE RIVER, NEAR THE MANNING.

F. A. Kirton, photo.

FOREST COUNTRY, UPPER LANSDOWNE RIVER.

INSPECTING LOGS, UPPER LANSDOWNE RIVER.

F. A. Kirton, photo.

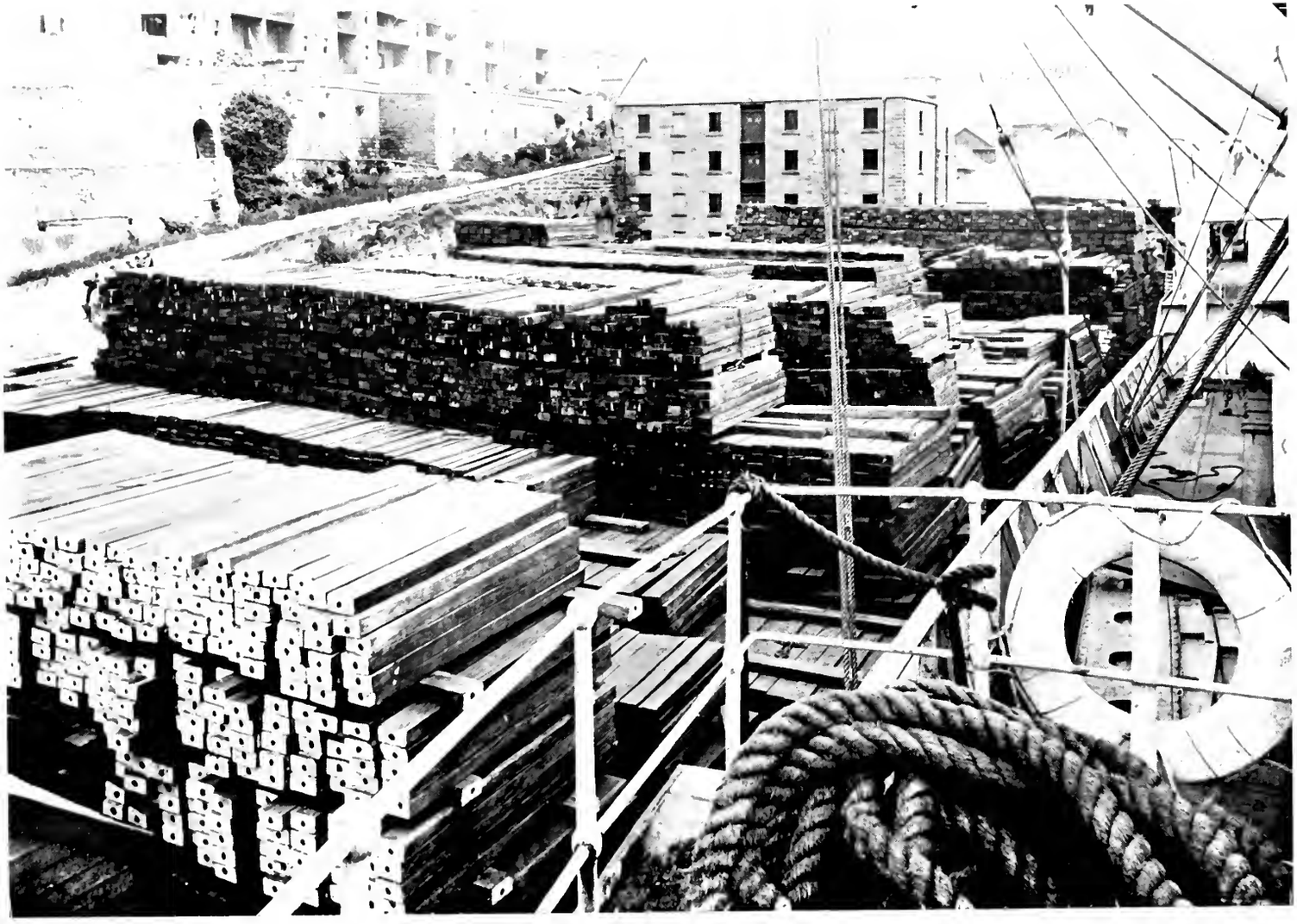
PUNTS LOADING LOGS, UPPER LANSDOWNE RIVER.

F. A. Kirton, photo.

HAULING PINE LOGS *(Callitris robusta)*, RIVERINA, N.S.W. (SEE PART XII)

F. A. Kirton, photo.

SLEEPER-GETTERS AT WORK WYONG. THE LOG IS BLUE GUM *(Eucalyptus saligna)*. (SEE PART IV.)



F. A. Kirton, photo.

NEW SOUTH WALES SLEEPERS FOR THE INDIAN MARKET AT A SYDNEY WHARF.

Volume III (Parts XXI-XXX).

PART XXI. (Issued August, 1906.)

77.—The Crow's Ash or Bogum Bogum (*Flindersia Bennettiana*, F.v.M.). (*Two Plates.*)
78.—The Blackbutt or Peppermint (of New England) (*Eucalyptus Andrewsi*, Maiden).
79.—The Thready-barked Oak (*Casuarina inophloia*, F.v.M. and Bailey).

PART XXII. (Issued February, 1907.)

80.—The Hill Flindersia (*Flindersia collina*, F. M. Bailey). (*Two Plates.*)
81.—The Broad-leaved Messmate (*Eucalyptus obliqua*, L'Hérit.).
82.—The Cedar Wattle (*Acacia elata*, A. Cunn.).

PART XXIII. (Issued March, 1907.)

83.—The Rosewood (*Dysoxylon Fraseranum*, Benth.).
84.—The White-top Messmate (*Eucalyptus vitrea*, R. T. Baker).
85.—The Acacia decurrens Group of Wattles—Black, Green, and Silver Wattles (*Acacia decurrens*, Willd.). (*Two Plates.*)

PART XXIV. (Issued May, 1907.)

86.—The Bastard Pencil Cedar (*Dysoxylon rufum*, Benth.).
87.—Bastard Tallow-wood (*Eucalyptus Planchoniana*, F.v.M.).
88.—The Mountain Hickory (*Acacia penninervis*, Sieb.). (*Two Plates.*)

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89.—The Rosewood (*Dysoxylon Fraseranum, Benth.*), also The Apple-tree of Lord Howe Island (*D. pachyphyllum*, Hemsl.).
90.—A Virgate Eucalypt (*Eucalyptus virgata*, Sieb.).
91.—The Two-veined Hickory (*Acacia binervata*, DC.).
92.—The White Cedar (*Melia Azedarach*, L., var. *australasica*, C. DC.).

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93.—The Hairy Dysoxylon (*Dysoxylon Becklerianum*, C.DC.).
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95.—The Mulga (*Acacia aneura*, F.v.M.).
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PART XXVII. (Issued October, 1907.)

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98.—Red Stringybark (*Eucalyptus macrorrhyncha*, F.v.M.).
99.—A Brush Ironbark (*Acacia aulacocarpa*, A. Cunn.).
100.—A Brown Beech (*Cryptocarya glaucescens*, R.Br.).

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102.—The Brown Stringybark (*Eucalyptus capitellata*, Sm.).
103.—The Broad-leaved Wattle (*Acacia pycnantha*, Benth.).
104.—The Murrogun (*Cryptocarya microneura*, Meissn.).

PART XXIX. (Issued January, 1908.)

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110.—The Nealie (*Acacia rigens*, A. Cunn.).

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130.—A Cork Wood or Till (*Endiandra Sieberi*, Nees.).

THE FOREST FLORA OF New South Wales.

J. H. MAIDEN.

VOL. IV. PART 7.

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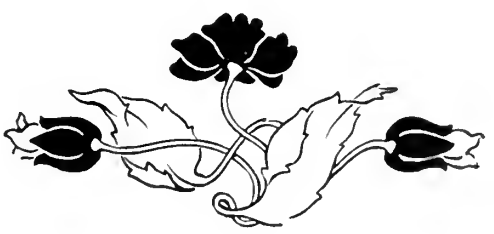

PART XXXVII OF THE COMPLETE WORK.

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PART XX. (Issued July, 1906.)

THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H MAIDEN,

Government Botanist of New South Wales and Director of the Botanic Gardens, Sydney.

PART XXXVII.

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No. 135.

Banksia latifolia, R.Br. (*B. robur*, Cav.),

"The Broad-leaved Honeysuckle."

(Family PROTEACEÆ.)

Botanical description.—Genus, *Banksia*. (See Part VIII, p. 169.)

Botanical description.—Species, *B. latifolia*, R.Br., in *Trans. Linn. Soc.*, x, 208, *Prod.* 394.

A low but stout shrub, the branches densely tomentose.

Leaves.—Shortly petiolate, obovate-oblong, often truncate, irregularly serrate with short usually prickly teeth, contracted at the base, 4 to 8 inches long, 1½ to 3 inches broad, flat, minutely tomentose but not white underneath, with prominent transverse veins and reticulations.

Spikes.—Oblong-cylindrical, 3 to 5 inches long.

Perianth.—Slender, about 1 inch long; the tube shortly silky-pubescent; the limb glabrous, narrow, acute, scarcely 2 lines long.

Style.—Becoming straight and spreading as in *Eubanksia*, with a very small stigmatic end.

Fruiting cones.—Large and thick; capsules villous, not thick, protruding, about 6 or 7 lines diameter. (B.Fl. v, 555.)

The typical form of *B. latifolia* is one of the easiest of all Banksias to determine, but there is a smaller-leaved form in regard to which some caution is necessary. It is referred to in the following description:—

Banksia latifolia, R.Br., was originally described in *Trans, Linn. Soc.*, x, 208. In *Prod.* 394 are Brown's own words, as follows:—"Foliis obovato-oblongis spinuloso-serratis basi acutis: subtus costatis reticulatis cinereo-tomentosis, perianthii unguibus sericeis; laminis glabris, caule fruticoso." Nothing is here said in regard to the size, variation in outline, &c., of the leaves.

In the figure in *Bot. Mag.*, t. 2406, and in Bentham's description (B.Fl. v., 555), and all others we have observed, the plant is figured or described as with leaves "obovate-oblong, often truncate, irregularly serrate with short usually prickly teeth, contracted at the base, 4 to 8 inches long, 1½ to 3 inches broad."

We desire to invite attention to the fact that the species is more variable than it is usually supposed to be, some forms, not specifically different, having been confused (quite reasonably) with *B. integrifolia* and even *B. marginata*. The confusion between *B. paludosa* and this variety will also be alluded to. We think that the great amount of variation in forms indubitably included under *B. latifolia* should be indicated in a name, and suggest the name var. *minor* for its small-leaved forms. At the same time, we have every gradation between the variety and the normal form.

We would point out that var. *minor* never grows in swamps, just as typical *latifolia* never grows on dry ridges, where its var. *minor* abounds. It may, therefore, be that the difference of environment may be largely responsible for the differences between the normal species and its variety.

The variety *minor* is usually between 3 and 4 feet in height, and less frequently it is up to 6 or 7 feet, but exceptionally up to 12 feet in height.

As regards the leaves of the variety, we have them as small as 2 inches long by half an inch broad (and incidentally it may be mentioned that the leaves of *B. latifolia* are up to 10 inches and more long). The small-leaved forms are, as a rule, more entire (sometimes they are as entire as *B. integrifolia* usually is, and this assists in the confusion of this species with the variety now under discussion). Another character, also not an absolutely constant one, but often a useful guide, is that the under surface of the midrib of *B. latifolia* var. *minor* is very often clothed with a dense covering of reddish-brown hairs.

The fruits and seed, together with the sucker-growth, prove that our variety is entirely distinct from *B. integrifolia*.

To a less extent the same is true in regard to *B. marginata*. Its dissepiments and seeds are distinctly different from those of *B. latifolia* var. *minor*, not to mention other differences. At the same time, the two plants have to our knowledge been frequently confused.

The sucker-growth of var. *minor* is also quite distinct from both that of *B. integrifolia* and *B. marginata*, as is also the young growth.

We have seen a specimen (absolutely matching one of our specimens of var. *minor*) in Allan Cunningham's handwriting, in the Melbourne Herbarium, labelled *Banksia paludosa*, R.Br. It is not the true *B. paludosa*, but not unlike it in general appearance, particularly in the long cylindrical spike, as figured in *Bot. Reg.* t. 697, under *B. paludosa*. (Maiden and Camfield, in *Proc. Linn. Soc. N.S.W.*, xxiii, 265, 1898.)

Botanical Name.—*Banksia*, in honour of Sir Joseph Banks; *latifolia*, from two Latin words, *latus*, broad; *folium*, a leaf.

Govt. Printer, photo.

Banksia latifolia, R.Br. LONG BAY

Govt. Printer, photo.

Banksia latifolia, R.Br., VAR. *minor*. LONG BAY.

A copy of the table of contents of the work is herewith :—

Vernacular Names.—" Broad-leaved Honeysuckle " and " Dwarf Honeysuckle " are names that have been applied to it.

Aboriginal Name.—" Bumbar " of those of Stradbroke Island, near Brisbane (G. Watkins).

Synonym.—Shall the name be *Banksia robur*, Cav., or *Banksia latifolia*, R.Br. ?

It was originally described as *B. robur* in *Cav. Anal. de Nat. Hist.*, i, 226, and figured in the same author's *Ic.*, vi, 29, t. 543, where it is described as a tree in confusion with *B. serrata*.

In *Trans. Linn. Soc.*, x, 208 (1809), Robert Brown proposes the name *latifolia* for the species, and says :—

> I am compelled to change the name of this species of Cavanilles, since it never grows into a tree, but is always a small shrub.

Brown goes further into the matter at p. 394 of his *Prodromus*, and points out that in Cavanilles' work it is stated that it is a tree 30 feet high, but the error is really that of D. Nee, whose statements as to the height of the plant and the texture and usefulness of the wood really refer to *B. serrata*.

In *Bot. Mag.*, t 2406 (1823), in spite of a knowledge of the above facts, the name *B. latifolia* is retained; and this is the case also in Meissner's revision of the genus in De Candolle's *Prodromus*, xiv, 460 (1856).

Bentham, in the *Flora Australiensis*, also keeps the name *latifolia*.

Mueller in his *Census of Australian Plants* revives the name *B. robur*, Cav., and I think rightly, because Brown's reasons for altering the name would not be considered adequate nowadays. Although I would like to follow him in adhering to the name *robur*, modern botanists favour the fifty years' rule, *i.e.*, names are not to be revived which have not been in use for the previous fifty years.

Leaves.—The leaves of this species are the coarsest of those of all the Honeysuckles.

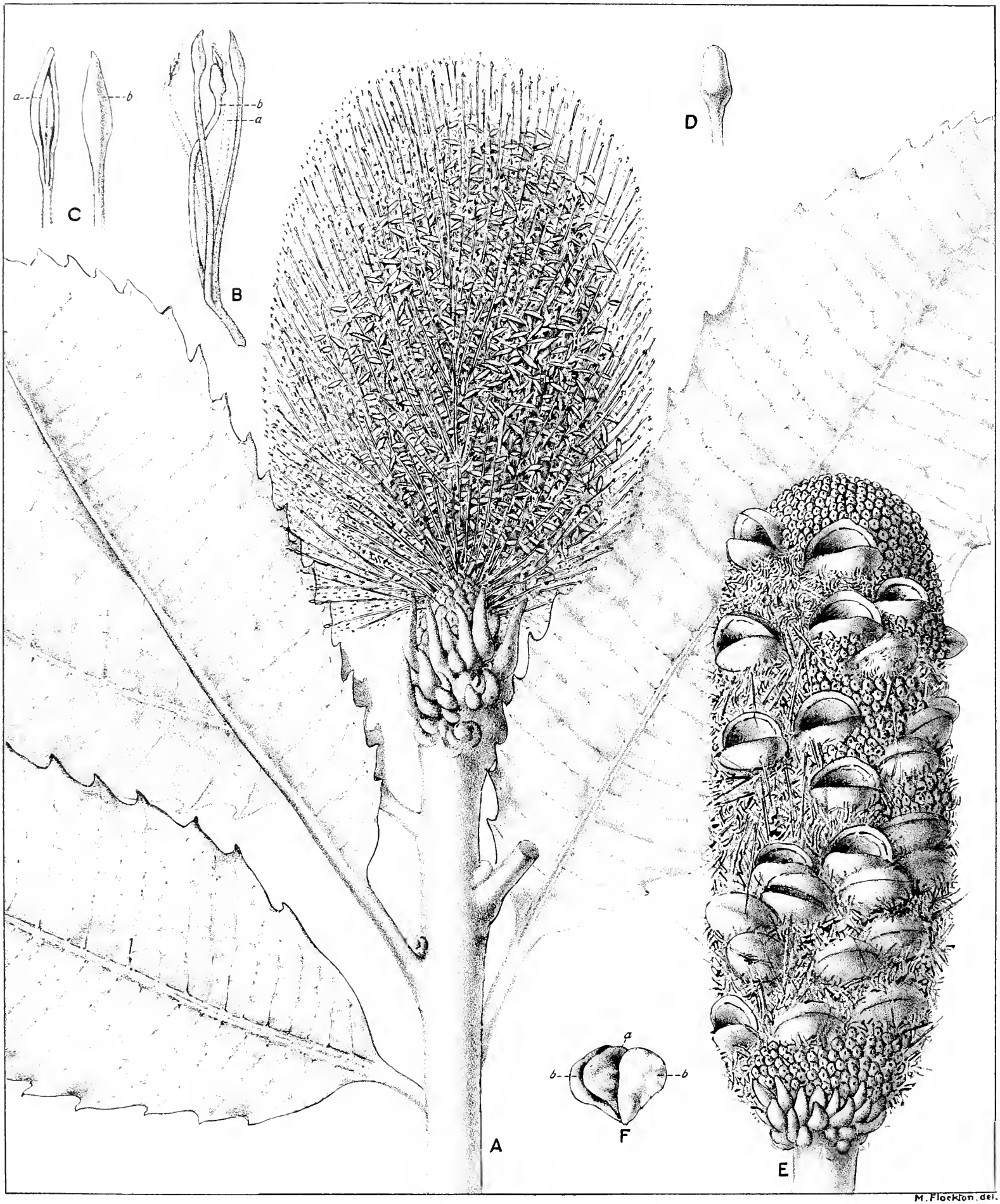
Timber.—This plant is too small to yield timber, but it is desirable to include it in this series in order to make the list of Honeysuckles complete, and especially because, on herbarium specimens only, this has been confused with a timber-yielding species (*B. serrata*).

Size.—I have not seen this species more than 5 or 6 feet high, but the variety *minor* (a reference only to the leaves, of course) may be twice as large.

Habitat.—The typical form extends from the Sydney district to the Brisbane district. Specific localities known to me are the Port Jackson and National Park districts, and Tuggerah Lakes—more northerly.

The variety *minor* occurs from Buddawang Mountain, Braidwood, N.S.W. (J. L. Boorman), in the south (this is the most southerly locality known to me), to the Richmond River (Chatsworth Island to South Woodburn, J.H.M.). It is very common near the sea coast in the Sydney district; and Appin in the south and Tuggerah in the north are specific localities.

In the *Flora Australiensis* it is recorded from the Hastings River, New South Wales, and Moreton Bay, Queensland. I have not seen them from those localities, and I would like to know if they are normal, or var. *minor*.



BROAD-LEAVED HONEYSUCKLE.

(*Banksia latifolia*, R.BR.)

EXPLANATION OF PLATE 139.

A. Inflorescence (flowering spike).

B. Flower—
   (*a*) Four-lobed corolla with stamens.
   (*b*) Pistil.

C. Corolla-lobes—
   (*a*) Showing stamen in concave laminæ.
   (*b*) Back view.

D. Stigma.

E. Fruiting spike, showing the prominent capsules containing the winged seeds.

F. Seeds with dissepiment—
   (*a*) Plate (dissepiment) separating the two winged seeds (*bb*).

PHOTOGRAPHIC ILLUSTRATIONS.

Plant of *Banksia latifolia*, typical form, Long Bay, near Sydney.—(Government Printer, photo.)

Plant of *Banksia latifolia*, var. *minor*, Long Bay, near Sydney.—(Government Printer, photo.)

No. 136.

Eucalyptus hæmastoma, Sm.

White or Scribbly Gum.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical description.—Species, *E. hæmastoma*, Sm. in *Trans. Linn. Soc.*, iii, 286 (1797).

Leaves usually oblique or falcate, lanceolate, about 4 to 6 inches long, thickly coriaceous, the veins very oblique, not close, and often anastomosing as in *E. obliqua*, the lower ones sometimes broader and more reticulate.

Peduncles more or less angular or compressed, axillary, lateral, or a few in a short terminal oblong panicle, each with about 4 to 8 flowers.

Buds clavate.

Calyx short and broad, scarcely two lines diameter, shortly tapering into a rather long thick, or rather slender pedicel.

Operculum very short, hemispherical, obtuse.

Stamens 2 to 3 lines long, inflected, the outer ones longer and anantherous, anthers of the perfect ones small, the cells opening in short, oblong, divergent at length, confluent slits.

Fruit globular-truncate, or pear-shaped, 3 to 4 lines diameter, the rim broad, flat, or nearly so, usually deeply coloured; the capsule slightly depressed, the valves often protruding when open, but very soon falling away. (B.Fl. iii, 212.)

Following are some additional notes:—

Introductory.—The species is found in two principal varieties—a coarse form (the type as figured), and a slender one; the latter with small flowers and fruits, and known as variety *micrantha* in consequence.

Bark.—Smooth, with a few ribbony flakes near the butt.

Timber.—Red, and of an inferior character, though a fairly lasting timber for posts in the districts in which it grows. Although the timber when cut splits in all directions, when it is used for posts it closes up, and has a fair durability. In other words, this White Gum is by no means as worthless a timber as some would have us suppose.

It is a good burning wood, being considered by some people to throw out as good a heat as ironbark. It is deficient in tensile strength, being brittle.

Sucker-leaves broadly lanceolate, somewhat similar in shape to the adult leaves, only larger; 4 to 6 inches long by $1\frac{1}{4}$ inches broad are measurements of some from the Sydney district.

Peduncles.—Angular and flattened.

Calyx-tube.—Much longer than the operculum, and insensibly tapering into the pedicel.

Operculum.—Pointed when young, becoming more hemispherical as maturity is approached. Often the buds may be described as clavate.

R. H. Cambage, photo.

Eucalyptus hæmastoma, Sm. CABARITA.

W. Forsyth, photo.

Eucalyptus hæmastoma, Sm., var. *micrantha*. COONABARABRAN.

Fruits.—Not so flat-topped as *micrantha*. *Rim never depressed.* Speaking generally, the shape of the fruits reminds one of a pear. The rim is more or less domed, and usually brownish or red (hence the specific name). I do not agree that, speaking at all generally, "the capsule is slightly depressed," as stated at B.Fl. iii, 212. Pedicels not so thin, being more tapering than is the case with var. *micrantha*. Sometimes the fruits are hardly pear-shaped, but this is unusual. We have some nearly hemispherical, but much larger than those of var. *micrantha*. At the same time there are fruits which undoubtedly show transition between *E. hæmastoma* and its variety *micrantha*.

Range.—The typical species apparently does not extend much beyond the Hawkesbury sandstone, and is most abundant not far from Port Jackson, the Hawkesbury, and George's River, and the ridges and broken country in the vicinity. While the range is not very precisely defined at present, that of the variety *micrantha* is undoubtedly very much more extensive.

E. hæmastoma var. micrantha.

Introductory.—In many respects resembling *E. hæmastoma*, but the flowers are much smaller, and the tree is never rough on the lowest part of the trunk, but always smooth right to the ground.

It is one of the most uniform of our Eucalypts, whether occurring on the coastal sandy flats or on the mountain ranges.

Vernacular Names.—"White Gum" is a very common name. It, however, in one or other of the many districts in which it occurs, usually goes under some name referring to the softness or brittleness of its timber, *e.g.*, "Cabbage Gum," "Snappy Gum," "Brittle Gum," "Brittle Jack."

Bark.—Smooth, right to the ground. The colour of the bark is usually white; but sometimes, particularly in localities comparatively remote from the sea, the bark is at certain seasons of the year yellowish. Away from the sea, also, the bark appears to have a greater tendency to peel off in patches, giving it more or less a spotted appearance.

Timber.—Soft, red. An excellent timber for fencing posts, and in some districts, especially the Southern Table-land, preferred for this purpose.

Sucker leaves (very young).—Nearly ovate, then nearly oblong (rounded at both ends), and with crenulate margins. As growth proceeds, they become attenuate at both ends and somewhat falcate.

Young foliage.—Blue-green, a little glaucous, and with purple-brown twigs. Alternate, ovate-lanceolate, very acuminate, a little oblique, up to 6 inches long and 2½ broad. The intramarginal vein much removed from the edge. From this stage, the foliage gradually develops into the mature stage.

Mature leaves.—These vary somewhat, which is not a matter for surprise, considering the extensive range of the tree. They are often thick and glossy. Those from Bargo Brush are of this character, and 5½ inches long and 1 to 1½ broad. Those from Queanbeyan are narrow-lanceolate. Some in the Sydney district are quite small; usually not exceeding 3 by ½ inch. The foliage of many trees in the Mudgee district is quite sparse. In the Macleay and Hastings districts the trees frequently have broadish, lanceolate leaves up to 7 inches by 1½. Sometimes the leaves are hooked at the ends, a character more general in Eucalypts than was at one time supposed.

But there is no doubt that the leaves of this form pass insensibly into those of the normal species. Specimens from the Blue Mountains (*e.g.*, Mount Victoria) of var. *micrantha* show this transition very clearly.

Peduncles.—Some specimens show a radiate inflorescence, and a very large number of flowers and yellow buds (*e.g.*, Grenfell).

Operculum.—Nearly hemispherical, or with a small umbo; less pointed than in the typical form.

Fruits.—The fruits are usually as flat-topped (they are but rarely slightly domed) as in any species of *Eucalyptus*, and, therefore, are not satisfactorily represented in the figure of *E. hæmastoma* in the *Eucalyptographia*. The fruits are small, nearly hemispherical, rarely tapered below, have thin pedicels, and are usually numerous. Some from Queanbeyan are $\frac{3}{16}$ of an inch in diameter. Those from Grenfell, Bargo, &c., have flat tops and sharp rims. Some from the Mudgee district and South Coast afford instances of slight doming of the fruit. Occasionally they are depressed hemispherical, almost tazza-shaped. They are often pale coloured, and with markedly red mouths.

I have fruits from Mount Wilson which, though quite small, taper like those of normal *hæmastoma*, and are in some respects connecting links.

Size.—Usually 30 to 40 feet in height, with a trunk diameter of 2 or 3 feet.

Range.—This is much the most widely distributed form of the species. Besides New South Wales, it is also found in Queensland, and in our own State it extends from north to south, and from the coast across the table-land to at least as far west as Tumut, Bumberry, Mudgee, and the head of the Castlereagh River. I should be glad if my readers would inform me if they know of the occurrence of this White or Cabbage Gum west of the irregular line joining the points mentioned.

Botanical Name.—*Eucalyptus*, already explained (see Part II, p. 34); *hæmastoma*, from two Greek words, *aima*, *aimatos*, blood; *stoma*, the mouth, referring to the rim of the fruit, which is of a blood-red colour. The original description of the tree contains the words :—

Fruit globose, cut off at the summit, its orifice surrounded by a broad deep-red border.

Vernacular Name.—"White Gum" is the commonest and most appropriate name for this species. It shares, however, with var. *micrantha* some of the names noted when referring to the latter.

As regards the type, the leaves, flowers, and fruits are alike larger, and the leaves thicker, but, as a rule, the tree itself does not attain the magnitude of its variety.

Aboriginal Names.—George Caley, who collected for Sir Joseph Banks in New South Wales from 1800–1810, gives the names "Tarinny" and "Wongnary," as in use in the County of Cumberland. (See my paper on the subject in the *Agricultural Gazette* for October, 1903, p. 990.)

Leaves.—The oil has been described by Messrs. Baker and Smith in the "Research on Eucalypts" as follows :—

Whence collected for Oil.	Specific Gravity at 15° C.	Specific Rotation $[\alpha]_D$.	Saponification Number.	Solubility in Alcohol.	Constituents found.
Barber's Creek and Gosford.	0·9195	− 32·77° (first fraction).	5·1	Insoluble.	Phellandrene, eucalyptol, sesquiterpene.

Fruits.—See p. 104.

Bark.—See p. 104. One of the smoothest barked of the Gums. A Gum is a smooth-barked Eucalypt.

Timber.—The variety *micrantha* is much more widely diffused than the typical form, and practically all the reports on the timber refer to that of the variety. (See p. 104.)

Valuable for posts and rails: the timber is durable, and not easily destroyed by bush fires, as it will not burn well.—Morrisset (A. Murphy).

Mr. Forester G. R. Brown, of Port Macquarie, informs me that this is an excellent burning wood, and throws out as good a heat as Ironbark. He has used it for years, and prefers it. If this be confirmed as regards the fuel value of White Gum in various parts of the country, we have an important use for this timber, whose uses are very limited at present.

Mr. Sydney Verge, of Kempsey, calls it "Cabbage Gum," and says that although this timber, when cut, splits in all directions, yet, when it is used for posts, it closes up and has a fair durability—even, he hopes, equal to Blackbutt.

It is not a timber of any interest to the architect.

The name "Spotted Gum" referred to in the accompanying table is only used in Queensland for *E. hæmastoma*. The common Spotted Gum of New South Wales and Queensland is *E. maculata*.

"SPOTTED GUM" (*E. hæmastoma*), EXPERIMENTED UPON BY THE VICTORIAN TIMBER BOARD, 1884.

The samples tested were each 7 feet in length by $1\frac{7}{8}$ inches square; the distance between the bearings was 6 feet; and the weight was gradually applied in the centre until the sample broke.

Locality Where Grown.	Approximate Date when the Timber was cut.	Date of Testing.	Weight of each Sample in lb.	Average Weight of Samples in lb.	Average Weight per Cubic Foot in lb.	Average Specific Gravity.	Breaking Weight of each Sample in cwts. qrs lb.	Average Breaking Weight of Samples in lb.	Deflection at Point of Rupture in inches.	Average Deflection in inches.	Average Specific Strength.
Queensland.	Seasoned at least twelve months.	28/1/84 31/1/84 4/2/84	12 $11\frac{3}{4}$ $11\frac{1}{2}$	11·75	68·75	1·101	8.0.4 6 3.24 7.1.8	833·3	3 $2\frac{3}{4}$ 3	2·91	2,275

Size.—This is a medium-sized tree, good specimens attaining a height of, say, 50 feet, and a stem diameter of 2 or 3 feet. As a rule it is rather crooked and branchy, so that it is worthless for milling purposes apart from any considerations of brittleness, kino-veins, or general utility.

Habitat.—The habitats of the species and its variety are dealt with at pp. 105 and 106.

For further details as to the habitat, and other particulars as to this species, see my "Critical Revision of the genus Eucalyptus," Part X.

EXPLANATION OF PLATE 140.

Typical form.

A. Sucker leaf from Middle Harbour, Port Jackson (J. H. Camfield).

B. Flowering and fruiting twigs from The Spit, near Manly, Port Jackson (J.H.M.)

Variety *micrantha*.

C. Sucker leaf from Blackheath (J.H.M.).

D. Buds, east side of Spit, Middle Harbour (J. H. Camfield).

E. Fruits from Queanbeyan, N.S.W. (H. Deane).

PHOTOGRAPHIC ILLUSTRATIONS.

"White Gum," *Eucalyptus hæmastoma* var. *micrantha*, Coonabarabran, N.S.W.—(W. Forsyth, photo.)

E. hæmastoma, Cabarita, Port Jackson.—(R. H. Cambage, photo.)

M. Flockton, del.

WHITE OR SCRIBBLY GUM.

(*Eucalyptus hæmastoma*, SM.)

No. 137.

Acacia doratoxylon, A. Cunn.

The Currawang.

(Family LEGUMINOSÆ: MIMOSEÆ.)

Botanical description.—Genus, *Acacia.* (See Part XV, p. 103.)

Botanical description.—Species, *A. doratoxylon*, A. Cunn., in Barron Field's *New South Wales*, 345, where it is described in the following words:—

55. *Acacia doratoxylon.*—Foliis lanceolato-linearibus falcatis striatis basi attenuatis, spicis cylindraceis axillaribus geminatis subsessilibus.

The spear-wood of certain tribes of natives in the interior. A tree twenty feet high. Observed first during Mr. Oxley's expedition in 1817. Pine ridges on the Macquarie River.

See also—

A. doratoxylon, A. Cunn, in Field, *N. S. Wales*, 345. A tall shrub or small tree, glabrous, with an ashy hue; branchlets at first acutely angular, but soon terete.

Phyllodia.—Elongated, slightly falcate, shortly acuminate, and often with oblique or recurved points, 4 to 8 inches long, 2, 3, or rarely 4 lines broad, narrowed towards the base, rather thick, with numerous fine parallel nerves, the central one more prominent.

Spikes.—Shortly pedunculate, solitary or clustered, rarely 1 inch long, rather dense.

Flowers.—Mostly 5-merous.

Calyx.—Sinuate-toothed, not half as long as the corolla.

Petals.—With slightly prominent midribs.

Pod.—Unknown. (B.Fl. ii, 403.) The pods have since been discovered and are clearly depicted on the Plate.

Following is an interesting variety:—

Var. *ovata* (Maiden and Betche, *Proc. Linn. Soc. N.S.W.*, 1905, p. 362). Found at Stanthorpe, Southern Q. (J. L. Boorman); Howell, N.S.W. (J.H.M. and J. L. Boorman).

A low, spreading shrub, not exceeding 2 feet in height, with densely intricate branches. Flowers in short ovate heads, often almost globular, rarely in short but distinctly cylindrical spikes. Seeds shorter than in the typical *A. doratoxylon*, and with a more compact arillus. All other characters are those of the type.

This well-marked variety seems to be confined to the granite rocks capping the tops of many hills in the northern New England district. It grows in dense masses along the fissures of the rocks, forming in many places almost the only vegetation of the bare rocks.

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104); *doratoxylon*, from two Greek words, *doru*, *doratos*, the wood or shaft of a spear, and hence the spear itself.

I have already quoted Cunningham's description of the plant as "Spear Wood." Following is an account of the tree from Allan Cunningham's MS. journal. Oxley's expedition was, on the date mentioned, about half way between the modern Cowra and Forbes:—

29/4/17.—*Acacia doratoxylon.*—On this elevation I discovered a new species of *Acacia* forming an arbuscula 25 ft. high, the leaves are linear-lanceolate, and the flowers are in axillary spikes, which are cylindrical and in pairs; it is much allied to *A. longifolia*, except in the shape of the foliage and their grey colour. From the circumstance of this tree being the wood of which the natives in the western country make their spears, which I have proved, and of which I shall state more particulars hereafter, I have called it *A. doratoxylon*. It is scarcely in a flowering state.

Vernacular Name.—It was formerly called "Spear Wood," since it was one of the trees used by the blacks for that purpose, but I think the name has now dropped out of use.

Aboriginal Name.—"Currawang" of the aborigines, which has now become its common name. Sometimes spelt "Currawong." There are other spellings.

According to Major Mitchell, it was the "Bimbel" of the Lachlan natives,—evidently the same name as that applied to *Eucalyptus populifolia*.

Leaves.—Mr. F. B. Guthrie has a note in the *Agricultural Gazette*, October, 1899, in regard to the comparative fodder value of the leaves (phyllodes). His figures are:—

Water.	Ash.	Fibre.	Ether Extract (oil, &c.).	Albuminoids.	Carbo-hydrates.	Nutrient Value.	Albuminoid Ratio.	Tannin (Oak bark).
13·45	2·93	30·61	1·96	12·87	38·18	55½	1 : 3½	1·9

The leaves are eaten by stock.

Speaking of Currawang, Mr. R. W. Peacock states:—

I am now entering upon what I consider second-rate fodder plants, giving precedence to those above described.

This tree I am placing at the head of this class. It is cut extensively for both cattle and sheep, its long phyllodia or leaves providing a fair amount of fodder. It belongs to that large family of Acacias of which the Mulga is pre-eminent. It is of a woody nature, and its feeding value is thereby comparatively diminished It grows to the height of about 30 feet, and its yellow catkins, when in flower, present a most attractive appearance.

Mr. Peacock is more particularly referring to the fodder plants of the West Bogan.

C. J. McMaster, photo.

CURRAWANG (*Acaci doratoxylon* A. CUNN.). COOLABAH.

Timber.—Hard and close-grained, tough, heavy, and durable; used for gates, buggy poles, furniture, &c., and by the aborigines for boomerangs, spears, and waddies. It is dark brown, with a small yellow sap-wood. Mr. G. S. Home tells me that this is one of the most useful timber trees in the Lachlan district of New South Wales. It is useful for turnery work.

In the *Report, Victorian Exhibition*, 1861, the specific gravity of the wood is given at 1·215.

Miss M. A. Clements, of Condobolin, informed me that the Currawang grows in single, small straight stems, as a scrub, on stony hills, but on low ground it attains the dignity of a tree. She measured one 3 feet in circumference.

Habitat.—It is found in the drier parts of most of the States, generally on stony ridges.

The *Flora Australiensis* records it from the Lachlan and Macquarie Rivers in New South Wales (the type locality); in Queensland from the Upper Maranoa and Brisbane River; in Victoria from the Ovens River. Neither Bailey nor Mueller appear to have given additional localities from Queensland and Victoria. It also occurs in northern South Australia, *e.g.*, MacDonnell Range, Camp 25 (W. H. Tietkens), and in Western Australia, *e.g.*, Broome, West Kimberley (W. V. Fitzgerald).

As regards New South Wales, following are most of the localities from the National Herbarium, Sydney :—

Paupong, 20–30 miles south-west of Dalgety. Near the Victorian border. (R. Bornsteen, through R. H. Cambage.) "Upright tree 20–30 feet; diameter 12–18 inches. Found chiefly on dry stony ridges on Bedooba and other stations. Common in Lachlan district" (J. Duff); "Small slender tree, 15–20 feet, only found on stony hills. Wood remarkably hard, and smells sweet when fresh. Much used by blacks for manufacture of weapons. Stock will *not* eat the leaves." Ivanhoe, *viâ* Hay (K. H. Bennett); Wagga Wagga (J.H.M.); Wyalong (A. Osborne and J. E. Carne); Wooyeo, Lake Cudgellico (G. S. Home); Euabalong (R. H. Cambage); Shuttleton, near Cobar (P. E. Lewis); "Bastard Yarran," Mount Boppy (T. McNamara); Mount McDonald (J.H.M. and J. L. Boorman); Bumberry, near Molong (J.H.M.); near Cudal (W. F. Blakeley); Dubbo to Tomingley (J.H.M.); very narrow-leaved form, Peak Hill and Harvey Range (J. L. Boorman); Coolabah (C. J. McMaster and J. L. Boorman); Nyngan, "edible for stock—on porphyry ridges" (E. F. Rogers); Gungal, near Merriwa, large, pendulous, ugly-shaped trees, scantily distributed on the ridges (J. L. Boorman); Wybong Creek, Denman (A. Rudder); Bylong Creek (R. T. Baker); Goonoo to Mudgee (J. L. Boorman), a prostrate form connecting with var. *ovata*; Narrabri, with narrow phyllodes (J. L. Boorman).

EXPLANATION OF PLATE 141.

A. Flowering twig.

B. An individual bud.

C. Flower.

D. Flower, opened out, showing—

(*a*) Calyx.

(*b*) Corolla.

(*c*) Stamens.

(*d*) Pistil.

E. Pod, showing seeds: from Gungal.

F. Seed magnified.

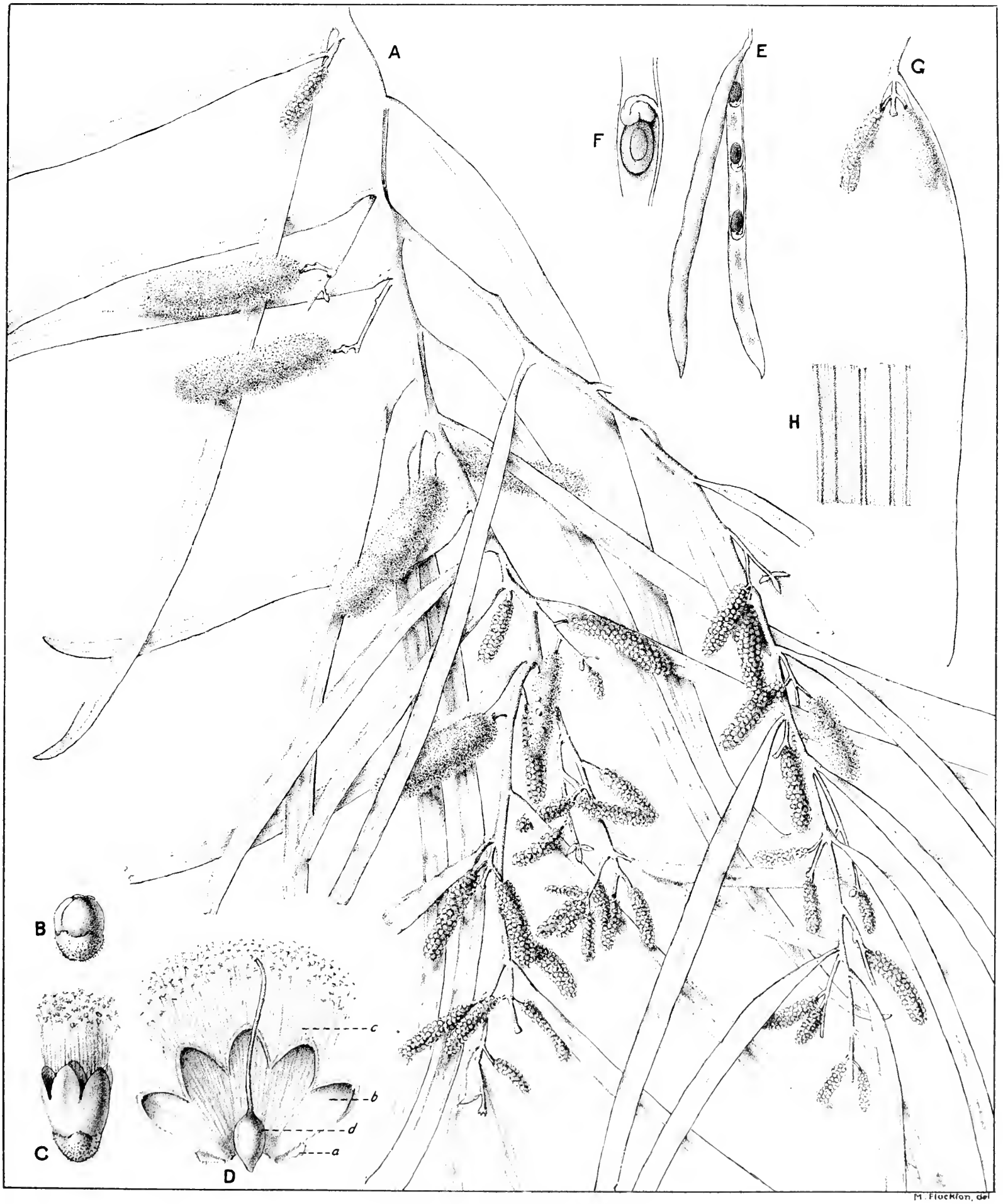
G. Phyllode, very narrow form; from Jack's Creek, near Narrabri.

H. Portion of phyllode, magnified to show venation.

All the specimens, except E and G, drawn from Lachlan River specimens, *i.e.*, from a locality very near that of the type.

PHOTOGRAPHIC ILLUSTRATION.

"Currawang" at Coolabah, N.S.W., 20 feet high.—(C. J. McMaster, photo.)



CURRAWANG.

(*Acacia doratoxylon*, A. CUNN.)

No. 138.

Endiandra Muelleri, Meissn.

(Family LAURACEÆ.)

Botanical description.—Genus, *Endiandra.* (See Part XXXV, p. 79.)

Botanical description.—Species, *E. Muelleri*, Meissn. in *DC. Prod.* xv, i, 509 (1864).

A moderate-sized tree, glabrous except a minute ferruginous tomentum on the inflorescence and sometimes on the young shoots.

Leaves ovate elliptical or broadly oblong, acuminate, cuneate at the base, green on both sides, the primary veins more prominent, and the reticulations less so than in *E. Sieberi*, mostly 3 to 5 inches long.

Panicles axillary, loose, much shorter than the leaves.

Pedicels longer than the flowers.

Perianth-tube thick and fleshy, broadly turbinate, 1½ lines diameter, the lobes small and connivent.

Stamens 3, with broad flattened glands; staminodia of the outer series deficient, of the inner series small or obsolete.

Fruit not seen.

The species is near *E. virens*, but with broader, less reticulate leaves, and the flowers twice as large. The glands in the flower of this and some other species described sometimes as staminodia appear to me to be precisely the same as the glands of the inner stamens of so many other Laurineæ. (B.Fl. v, 302.).

Botanical Name.—*Endiandra*, already explained (see Part XXXV, p. 79); *Muelleri*, after the late Baron von Mueller.

Vernacular Name.—I know of none. So far as I know, the tree is not known to anybody but botanists.

Timber.—The fact that I know nothing about the timber of this species reminds me to say that, as regards the dendrology of Australian forests, the "harvest truly is plenteous, but the labourers are few." In not one of the States of the Australian Commonwealth have we a proper forest survey—stock-sheets of the contents of the national forests—and yet we talk glibly enough of their wealth and variety.

A Forest Survey Wanted for New South Wales.

Following are some extracts from my address as President of the Royal Society of New South Wales on 5th May, 1897, touching upon the subject in the preceding paragraph. Since then I have emphasised the matter over and over again.

Special Uses of Australian Timbers.—This is a field in regard to which practical men may benefit themselves and the community at the same time. Many of our native woods have been recommended for specific uses. Can those recommendations be endorsed? The great majority of our native timbers have been put to no other use than as fuel. It is in the highest degree improbable that our timbers, so varied in texture, colour, and properties, are unsuitable for many purposes. If not, what are those special purposes? The uses of wood are infinite; and this inquiry, while not of a high scientific character, is certainly work of great importance.

. . . . . .

A Plea for a Botanical Survey.—The desirability of a botanical survey for the Colony is so obvious that I require only to touch upon a few points which suggest themselves, because of our special circumstances and environments. In the first place, we are frequently asked where this or that plant, or a supply of its product, may be obtained in quantity, and sometimes we can only indicate the locality in general terms. The establishment of a botanical survey need not involve the expenditure of a large sum of money, but rather the organisation and control of existing agencies which may subserve the grand object in view. I feel sure that in country districts there are hundreds—nay, even thousands—of private citizens, and officials such as engineers, surveyors, mining, land and forest officers, school-teachers, post-masters, and many others, who would give voluntary aid to the furtherance of a botanical survey. Many would, in their spare moments, gladly supply information and collect specimens, if they knew what would be acceptable. But while the work must be largely voluntary, it need be none the less systematic. I have conducted an informal botanical survey on my own account for many years, but my correspondents, although many, do not represent the whole of the Colony, and their work has been necessarily of a fitful and unorganised character.

In time to come, we shall not only have geological and mining surveyors, but also agricultural and forestry surveyors. I use the word "surveyor" (as regards agriculture, forestry, &c.), not so much in the sense it bears as applied to a land-surveyor, for a man may be able to furnish valuable information suitable for a botanical and agricultural survey, and yet be incapable of using a theodolite. To summarise, I would use the term "botanical survey" as correlative to geological survey, and it would include observations applicable to (*a*) Pure Botany, (*b*) Agriculture, (*c*) Forestry, (*d*) Horticulture.

. . . . . .

Then follow some notes particularly applicable to Forestry.

Forestry.—We have much to learn in regard to the geographical distribution of even our principal forest trees; much more, then, is there scope for inquiry in regard to the distribution of those of less frequent occurrence. The matter is of importance from a utilitarian point of view, because of the fact that, be a timber ever so desirable, it cannot be utilised commercially unless a continuous supply be available, and to obtain supplies we must know the localities of its occurrence not merely in general terms. The value of a botanical survey would be most immediately felt in regard to our forests. We could by the aid of it take stock, as it were, of our possessions, of our standing timber, and prepare a scheme for scientific conservation. A general statement to an outsider as to the vastness of our timber supplies is at once met by the plain questions,—Where are each of your timber-trees found? of what size are they? and in what abundance?

Measurements of Trees.—One of the matters to which attention would be given by a botanical survey would be that of ascertaining the heights and trunk-diameters of various kinds of trees, different observations being made in regard to the same species in different districts. In this way a ready index would be obtained as to the climates and soils in which various species flourish best. Notes would also be taken of the sizes of abnormally large trees. These are, of course, becoming rapidly fewer ever since the advent of the white man. If the identity of individual trees be noted, either by marks on or near the trees themselves in the forest, or on the maps, it would be easy to prepare records of the rates of growth of our Australian trees—a matter of considerable economic importance and of some scientific interest, but in regard to which we possess very few data at present.

Rate of Growth of Forest Trees.—This is a forestry matter which might well engage the attention of a botanical survey. We have a few scattered notes on the growth of indigenous trees,* but no inquiry of this nature, on a large scale, has, to my knowledge, been yet attempted. The ascertainment of the rate of growth of exotic trees in various districts is also of great practical importance, and the data are often more readily available than is the case with indigenous trees, as, since as a rule they have been planted by man, approximate dates of planting are often ascertainable.

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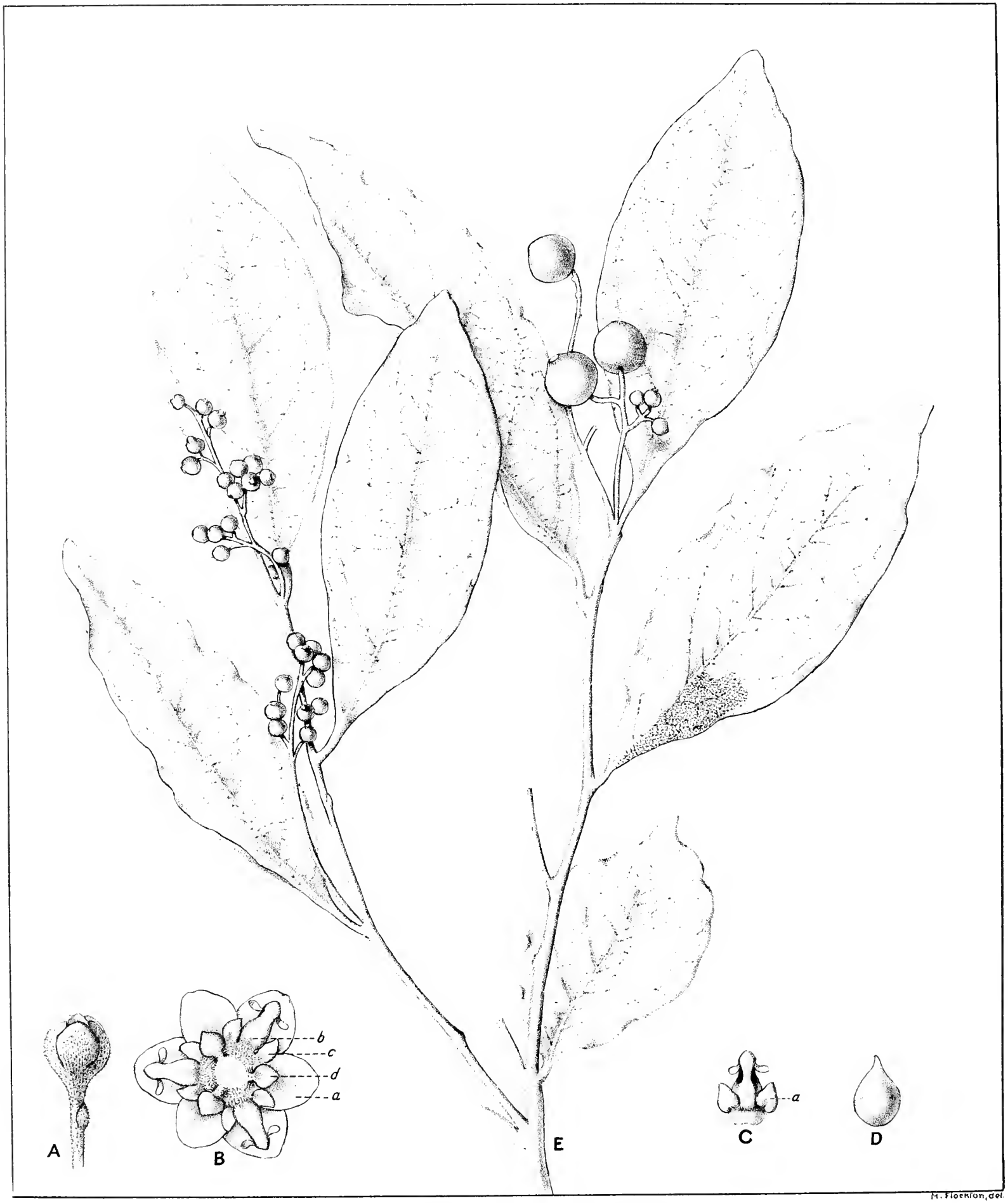
* For example, *Agric. Gazette N. S. W.*, vii, 504 (August, 1896).



ENDIANDRA MUELLERI, MEISSN.

Natural Re-afforestation.—A phase of the forest question that is not often inquired into is the conversion of grazing land into forest growth since European settlement. It is a well ascertained fact that, since the advent of the white man, a growth of trees, more or less dense, has, without artificial planting, taken possession of grass land. Inquiry might be made into the circumstances of each case, for opinions are by no means unanimous as to the cause of these forest growths. The reason of this change is attributed to the overstocking of country, the stock eating down the grass, so that bush-fires (which formerly consumed the seedlings of forest-trees) are now less frequent, and devastate smaller areas of country than they used to do. In some cases there is no doubt that stock aid in the propagation of trees by trampling the seeds into the ground, and even manuring the ground, thus preventing the seed being washed away by rain. At the same time one must not lose sight of the fact that stock have important influence on the formation of natural forest growths, as they eat out (particularly when grass is scarce) many young trees.

County and Parish Maps.—As the results come in, they will, after checking, be carefully entered by a draughtsman-clerk (many of whom already possess knowledge of plant names) in the county and parish maps. The county maps will serve for more general records, the parish maps for those in more detail. To accompany each map, or group of maps, registers could be attached, where information could be recorded which is unsuitable for (either on account of its bulk, or for other reasons) the maps themselves. Such registers could have printed columns and head lines; thus expense could be saved and neatness and uniformity secured.

I have begun such entries on maps, and could at any time, by means of the specimens in the National Herbarium, plot on maps all the recorded localities for every species of tree. Such a record, if available to the public, would be of the greatest value, but the work is beyond my resources at present.

Size.—A medium sized tree. Mr. W. Dunn says that on the Macpherson Range it is a tree of 25 feet, and that it reminded him a good deal of the better-known *Cryptocarya microneura*. (See No. 104, Part XXVIII of this work.)

Habitat.—Following are the localities recorded in the *Flora Australiensis*:—

New South Wales.—Hastings and Macleay Rivers (*Beckler*). A specimen from Bellinger River (*C. Moore*) may belong to it also, but is only in bud and doubtful.

In 1894 I recorded it from Glenfernie Forest Reserve, adding that the nearest locality recorded is a doubtful specimen from the Bellinger River.

Mr. W. Dunn, Forest Guard, discovered it at Acacia Creek, Macpherson Range, near the Queensland border.

The Rev. B. Scortechini found it on the Logan River, in South Queensland, and I have not a doubt that this tree (confused with others) will, ere long, be found in brushes very much south or north of recorded localities.

EXPLANATION OF PLATE 142.

A. Young flower.

B. Flower, opened out, pistil removed, showing—
   (*a*) Calyx (perianth segments).
   (*b*) Stamens (extrorse anthers).
   (*c*) Glands at the base of the stamens.
   (*d*) Staminodia.

C. Front view of stamen, with glands (*a*).

D. Pistil.

E. Fruiting twig.

The fruiting twig from Byron Bay (E. Betche); the flowers from Acacia Creek, Macpherson Range (W. Dunn).

ADDENDUM.

Birds and Animals as Aids to the Forester.

"Seriously (and not without good cause) as our British foresters object to the mischief done by squirrels in nibbling and breaking off the young shoots of growing timber, it cannot be denied that they are useful helpers as nurserymen, and constantly practise Sir Walter Scott's great maxim, 'Aye be stickin' in a tree.'

"For they are most provident little people, and, while enjoying their full share of good things in the present, do not fail to lay up abundant stores for wintry days. They establish subterranean granaries, in which they conceal all manner of nuts and seeds; and as they are always busy either eating or storing, they contrive in the course of the autumn to conceal ten times more material than they ever require.

"So these carefully-buried seeds spring up and become the nurslings of the forest; or, in the open country, they grow up singly, where they have room to expand; and there is no doubt that many of the noblest trees which give beauty to the land owe their existence to the provident instincts of these wise little folk."—("Granite Crags of California," by C. F. Gordon Cumming, p. 318.)

. . . . . .

"Squirrels are not nature's only good nurserymen. Rooks are equally useful, from their habit of burying both fir-cones and acorns for future use. An authentic instance of this is mentioned in a 'Natural History of Westmoreland and Cumberland,' published in 1709, in which the author, Mr. Robinson, tells how he watched 'a flock of crows' planting acorns, and how, a quarter of a century later, he found that these acorns had produced a grove of oaks tall enough for crows to build in."—(*Ib.*, p. 319.)

I looked up Gilbert White, of Selborne, but, strange to say, he does not appear to have recorded evidence on the subject.

I then wrote to Mr. Etheridge, Curator of the Australian Museum, who obligingly writes:—

(1) And I have to inform you that I know of no Australian animals that bury seeds, nor can I find any suggestion of the same in literature, nor do I know personally of any bird doing so, but will enquire of Mr. North on his return from the country.

(2) I now send you Mr. North's report on your question, "Do any of our native birds and mammals plant trees in this way?" *A.* "No. I know of 'magpies' (*Gymnorhina*) hiding various articles (seeds among them) under low, spreading bushes, but not of any bird *burying* seeds."

Perhaps the matter has escaped the attention of our bush naturalists.

SUPPLEMENTARY PHOTOGRAPHIC ILLUSTRATIONS.

Upper Richmond River at Kyogle, showing rich brush vegetation—*Eugenias, Backhousia, Phyllanthus*, &c.—(Kerry, photo.)

Ellenborough River (north of the Manning), just above the Falls.

Ellenborough Gorge, showing the Falls. (Both pictures showing rich brush forest vegetation, and presented by Mr. G. S. Hill, of Wingham.)

Kerry & Co., photo.

UPPER RICHMOND RIVER AT KYOGLE, SHOWING RICH BRUSH VEGETATION.

ELLENBOROUGH GORGE SHOWING FALLS AND RICH BRUSH FOREST VEGETATION.

ELLENBOROUGH RIVER (NORTH OF THE MANNING), JUST ABOVE THE FALLS. RICH BRUSH FOREST VEGETATION.

A Critical Revision of the genus Eucalyptus.*

THIS work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets):—

Eucalyptus acmenioides, Schauer (IX).
,, *amygdalina*, Labillardière (VI).
,, *Andrewsi*, Maiden (VII).
,, *apiculata*, Baker and Smith (IX).
,, *Behriana*, F.v.M. (X).
,, *Boormani*, Deane and Maiden (X).
,, *calycogona*, Turczaninow (III).
,, *capitellata*, Smith (VIII).
,, *Consideniana*, Maiden (X).
,, *coriacea*, A. Cunn. (V).
,, *dives*, Schauer (VII).
,, *eugenioides*, Sieber (VIII).
,, *hæmastoma*, Sm. (X).
,, *incrassata*, Labillardière (IV).
,, *Luehmanniana*, F.v.M. (IX).
,, *macrorrhyncha*, F.v.M. (VIII).
,, *microcorys*, F.v.M. (IX).
,, *Muelleriana*, Howitt (VIII).
,, *obliqua*, L'Héritier (II).
,, *pilularis*, Sm. (I).
,, *piperita*, Sm. (X).
,, *Planchoniana*, F.v.M. (IX).
,, *populifolia*, Hook. (X).
,, *regnans*, F.v.M. (VII).
,, *siderophloia*, Benth. (X).
,, *Sieberiana*, F.v.M. (X).
,, *stellulata*, Sieber (V).
,, *umbra*, R. T. Baker (IX).
,, *virgata*, Sieber (IX).
,, *vitellina*, Naudin (VII).
,, *vitrea*, R. T. Baker (VII).

* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, six shillings). Part IV will be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney: William Applegate Gullick, Government Printer.—1903.

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THE FOREST FLORA OF New South Wales.

J. H. MAIDEN.

VOL. IV. PART 8.

Published by Authority of the

GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

PART XXXVIII OF THE COMPLETE WORK.

INDEX OF TREES DESCRIBED.

Volume I (Parts I-X).

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THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,

Government Botanist of New South Wales and Director of the Botanic Gardens, Sydney.

PART XXXVIII.

Published by the Forest Department of New South Wales, under authority of The Honourable the Secretary for Lands.

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48581—A

No. 139.

Banksia collina, R.Br.

A Honeysuckle.

(Family PROTEACEÆ.)

Botanical description.—Genus, *Banksia*. (See Part VIII, p. 169.)

Botanical description.—Species, *B. collina*, R.Br., in *Trans. Linn. Soc.*, x, 204 (1809).

A tall, erect shrub, attaining 8 to 12 feet, the young branches tomentose or villous.

Leaves linear, much broader than in *B. spinulosa*, and always showing the white under surface, the margins only slightly recurved, more or less denticulate or rarely quite entire, $1\frac{1}{2}$ to 3 inches long.

Spikes oblong or cylindrical, 3 to 6 inches long.

Bracts with broad flat or scarcely acuminate ends.

Perianths silky, the tube above 1 inch long, the limb narrow-ovoid.

Style longer than the perianth, hooked, with a very small stigmatic end.

Fruiting cone cylindrical like that of *B. ericifolia*, or longer.

Capsules thick and scarcely protruding as in that species, but quite glabrous. (B.Fl. v, 548.)

Mr. F. M. Bailey (*Queensland Flora*, iv, p. 1360) says that "the typical form of *B. spinulosa*, Sm., so far as at present known, is confined to New South Wales, while *B. collina*, R.Br., besides Queensland, is met with in New South Wales and Victoria, but from the examinations of Queensland specimens of *B. collina* and the New South Wales one of *B. spinulosa*, I find nothing to keep the two as distinct species." As far as New South Wales specimens are concerned, the two species seem to be sufficiently different.

Botanical Name.—*Banksia*, already explained (see Part VIII, p. 170); *collina*, *collinus*, Latin "of a hill," hence that which grows in hilly country. The type came from "in collibus aprieis" (hills exposed to the sun), near the sea shore, Hunter River.

Vernacular Name.—A "Honeysuckle." I do not know of any qualifying adjective applied to it.

Aboriginal Name.—I know of none.

Synonyms.—Bentham gives the following:—*B. ledifolia*, A. Cunn.; *B. Cunninghamii*, Sieb.; *B. littoralis*, Lindl.; *B. prionophylla*, F. Muell.; *B. marginata*, var. *macrostachya*, Hort. Petrop.

Leaves.—Note that there is a good deal of variation in the margins of the leaves. Exceptionally they may be entire (see Plate 143).

Sometimes the young leaves of *B. marginata* (*e.g.*, Blackheath, N.S.W.—J.H.M.) simulate those of *B. collina*.

Timber.—This is but a tall shrub, or very small tree at the largest, so that its timber is not of economic importance.

"Often as many as a dozen small stems issue from a stool forming a flat-topped shrub, appearing as if they were branches" (J. L. Boorman).

Size.—Nine feet is the highest seen by me (at Morrisset).

Habitat.—It occurs from Victoria to Southern Queensland. The following localities are quoted in the "Flora Australiensis":—

Queensland.—Glasshouses, Moreton Bay (*C. Moore*).

New South Wales.—Hunter's River (*Caley*); Blue Mountains (*Sieber*, n. 6); western descent of the Blue Mountains (*A. Cunningham*); New England (*C. Stuart*); Richmond, Clarence, and Hastings Rivers (*Beckler*); Sydney woods, Paris Exhibition, 1855 (*Macarthur*, n. 215).

Victoria.—Wilson's Promontory (*Baxter*); Sealer's Cove and towards Mount Ararat (*F. Mueller*); Upper Yarra River (*C. Walter*).

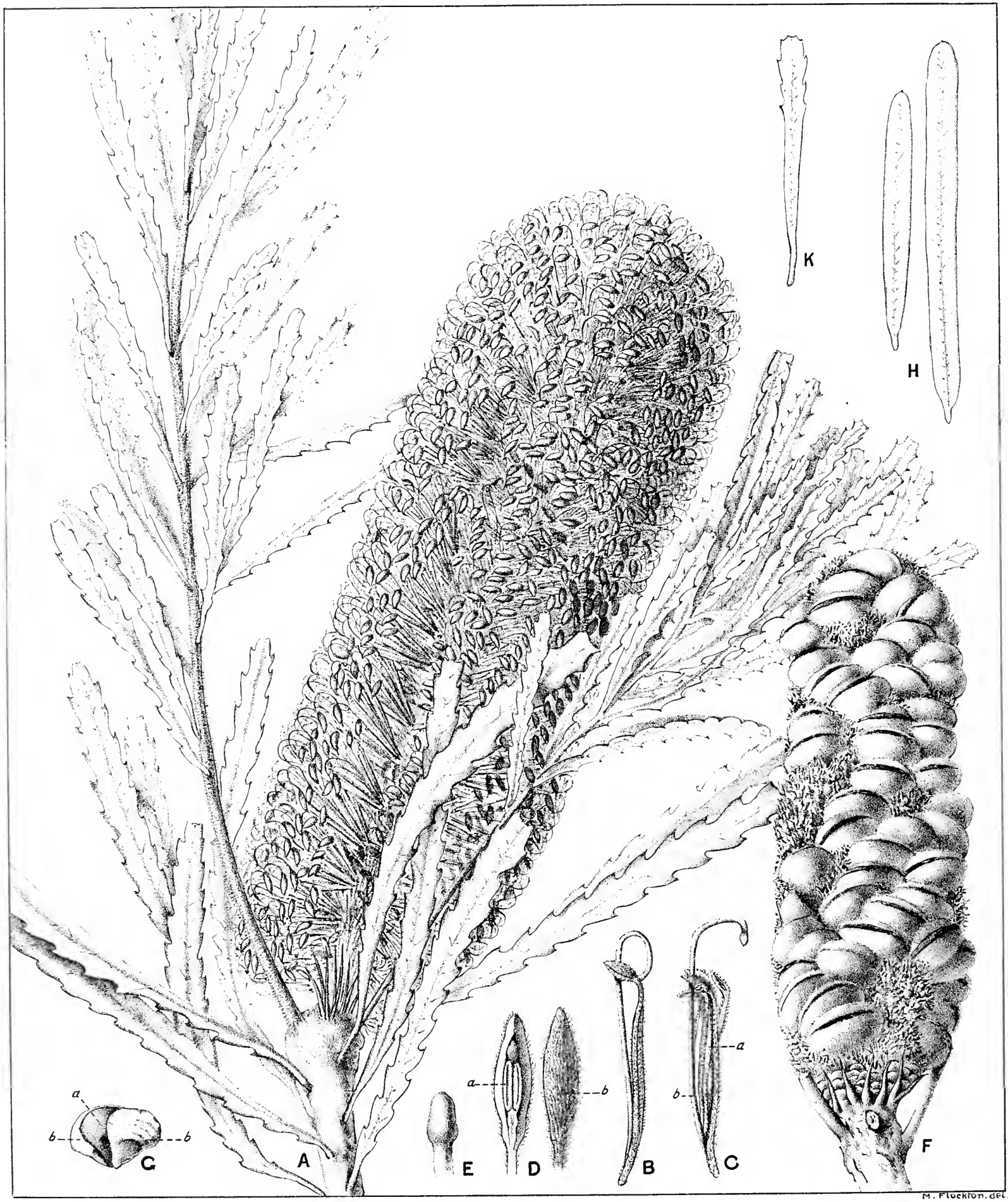
Following are localities represented in the National Herbarium, Sydney:—

Acacia Creek, Macpherson Range (*W. Dunn*); Chatsworth Island to South Woodburn (*J.H.M.*); Torrington (*R. H. Cambage*); Guy Fawkes and Round Mountain. I only found this species in this one limited district. It ascended as far as the very top of the Round Mountain (*J.H.M.*); Kahibah, near Newcastle (*E. Cheel*); Morrisset (*J. L. Boorman*); Wyong and Tuggerah Lakes (*E. Betche*, *J. L. Boorman*).

[There are no specimens in this Herbarium collected in New South Wales south of Sydney, and I cordially invite the attention of friends to this deficiency.]

Stockyard Creek, Victoria (*C. Walter*); Oberon Bay, Victoria (*J. L. King*).

Propagation.—This is one of the most beautiful of the smaller *Banksias*, and therefore it is recommended for cultivation.



A HONEYSUCKLE.

(*Banksia collina*, R.BR.)

EXPLANATION OF PLATE 143.

A. Inflorescence. (Flowering spike not fully opened.)

B. Unopened flower.

C. Opened flower.

- (*a*) Four-lobed corolla with stamens.
- (*b*) Pistil.

D. Corolla lobes.

- (*a*) Showing stamen (sessile anther) in the concave laminæ.
- (*b*) Back view.

E. Stigma.

F. Fruiting spike, showing the prominent capsules containing the winged seeds.

G. Seeds with dissepiment.

- (*a*) Plate (dissepiment) separating the two winged seeds (*bb*).

H. Leaves with entire edges, Torrington, New South Wales.

K. Leaf from a small-leaved form from Wyong.

No. 140.

Eucalyptus microcorys, F.v.M.

The Tallow-wood.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus*. (See Part II, p. 33.)

Botanical description.—Species, *E. microcorys*, F.v.M.

A tall tree, with a persistent furrowed fibrous bark (F. Mueller).

Leaves mostly ovate-lanceolate, or broad lanceolate, acuminate, straight or very unequal at the base, about 3 to 4 inches long, not very thick, the veins very divergent and fine, but prominent and not close.

Peduncles axillary or in short terminal corymbs, terete or somewhat angular, compressed, $\frac{1}{2}$ to 1 inch long, each with about 4 to 8 flowers.

Buds clavate, short, but tapering into thick pedicels of 2 to 3 lines.

Calyx-tube short, with the free part much dilated, about 2 lines diameter.

Operculum much shorter than the calyx, broad, flat, very obtuse or slightly umbonate.

Stamens inflected in the bud, the outer ones about 3 lines long, anantherous or with small abortive anthers, the inner ones much shorter and perfect; anthers small, with diverging at length confluent cells.

Ovary flat-topped.

Fruit obovoid-oblong, contracted at the orifice, tapering at the base, about 3 lines long and scarcely 2 lines diameter, the rim narrow, the capsule sunk. (B.Fl. iii, 212.)

Botanical Name.—*Eucalyptus*, already explained (see Part II, p. 34); *microcorys*, from two Greek words signifying "a little helmet," in allusion to the comparative smallness of the cap (*operculum*) of the bud.

Vernacular Names.—Tallow-wood is the name by which the timber and tree are universally known in New South Wales, owing to the greasy nature of the former. This is taken advantage of in using it for ball-room flooring. In Queensland it goes more or less under the names of "Peppermint," "Turpentine," and "Red Stringybark," names which in New South Wales are already appropriated to different trees. The two former names are in allusion to the oil contained in its leaves, the last in allusion to the colour of its bark, and not because of the colour of its wood, as is Red Stringybark in New South Wales.

Aboriginal Names.—The aborigines of the Richmond River, New South Wales, used to call it "Wangee," and those of the Brisbane River "Tee."

Kerry, photo.

"TALLOW WOOD" (*Eucalyptus microcorys*, F.v.M.) MANNING RIVER.

TALLOW WOOD LOGS ON TRAMWAY LINE, LANSDOWNE RIVER.

Leaves.—Messrs. Baker and Smith give the following determination of the oil of this species :—

Whence Collected for Oil.	Specific Gravity at 15° C.	Specific Rotation $[a]_D$.	Saponification Number.	Solubility in Alcohol.	Constituents found.
Tumbulgum, N.S.W.	0·895	+20·45	19·6	1 vol. 80 %	Pinene, eucalyptol.

The oils of "Bangalay" (*E. botryoides*) (*saligna*, var. *botryoides*); "Fuzzy Box" (*Baueriana*, var. *conica*); "White Gums" (*Gunnii*, var. *maculosa* and var. *rubida*); a Mallee (*Morrisii*); "Swamp Box" (*bicolor*); "Box" (*quadrangulata*); "Fat Cake Ironbark" (*sideroxylon*), and other species contain similar constituents.

Flowers.—Flowers from August to September, and the flowers are much sought after by bees. (Forester John Martin, late of Gosford.)

Bark.—The bark (often of a "corrugated" appearance) is sub-fibrous, of loose, and even woolly, texture. In colour it is of a sort of brick or rusty red, and is persistent even to the smallest branches.

"It has a corrugated, somewhat fibrous or stringy bark which is always riddled with the 'roads' of white ants into within $\frac{1}{4}$ of an inch of the sapwood." (Forester W. P. Pope, late of Murwillumbah.)

Timber.—Its colour is usually yellowish-brown or yellowish (sometimes, *e.g.*, at Camden Haven, much of the timber has a pink tinge), and like many other timbers darkens with age. One of the least liable to shrink of all our hardwoods. It is heavy, strong, and durable. It may be planed and turned with great satisfaction. It is not easily split, the greasy substance contained in it making it a tedious matter to get the wedge to "draw." I would express the opinion that, after Ironbark, Tallow-wood is the most valuable of our hardwoods.

It is used for flooring, particularly in ball-rooms. For this latter purpose it is selected on account of its greasy nature. It is excellent for decking, handrailing, girders, and some other parts of bridges. A favourite for building work generally, and it does not burn readily, which, in buildings, is, of course, a recommendation. It is, perhaps, the most valuable wood in New South Wales for paving blocks. It makes admirable posts and rails, lasting an indefinite period either above or below ground, but difficult to split for these purposes, as already remarked. White Mahogany is not infrequently substituted for Tallow-wood. Both are good timbers, and can stand on their own merits. The substitution can be readily detected by any man with a fair knowledge of colonial timbers.

Inferior only to Brush Box for hewn trolly wheels for timber (Kempsey). Used for knees (Laurieton). An engineer, who has laid down very large areas of wood-blocking, prefers this timber to all others for the purpose.

Tallow-wood timber is yellow in colour, with a peculiar greasy feel—is used generally for public works, building of bridges and culverts, also for house building, slabs, posts, and sawn stuff generally, but not flooring boards. Tallow-wood is considered to be very durable, and stands well in exposed places. White Mahogany is often passed off for Tallow-wood. It has been said against Tallow-wood that it does not hold nails well.—(Forester John Martin, late of Gosford.)

The timber is generally of a pale straw colour, but is sometimes pinkish, is oleaginous and close grained, and contains colouring matter; in contact with iron will turn water quite black, and shows stain marks where nails are, unless well seasoned. I know of no timber that suffers so little, naturally, after being cut down, even if left for many years; especially in moist shady places the duramen under the sap and bark is still found as fresh as in the growing trees. The charcoal from Tallow-wood is considered one of the best for the smithy.—(Late Forester A. Rudder, Booral.)

It is suitable for any dry work. Easy to work on account of its greasy nature. The best timber for any purpose where a smooth surface is required, and particularly for a ball-room floor. All that is necessary to revive the greasy nature for dancing is to spread a few loads of the sawdust on it for a day or so, making it a perfect floor. (N.B.—Sawdust can, of course, only be obtained from a mill.—J.H.M.) It does not burn very readily. White ants do not attack it as readily as Blackbutt, &c. Good timber for bridge decking, &c.; not good for rafters and studding for buildings. Because of its greasy nature the nails will draw and do not hold well. It is the only timber we have of a greasy nature; and it has the effect, when being worked, of cleaning and keeping clean tools such as saws, &c., which have got gummed in working other timbers. It is fairly durable in fresh water.

The farmers on the rivers many years ago, when ink, &c., was short, used to brand their bags of produce by steeping the chips of it in water for a day or two. (Very fair ink.) It is generally preferred to Blackbutt for the same uses it is put to.—(Forester G. R. Brown, late of Port Macquarie.)

The timber is very lasting both in and out of the ground, and is very valuable for bridge decking, posts and rails, but is rather hard for splitting. It is also cut for mill timber, but many trees are faulty, especially those that have bumps growing out of the barrel.—(Forester W. F. Crowley, late of Casino.)

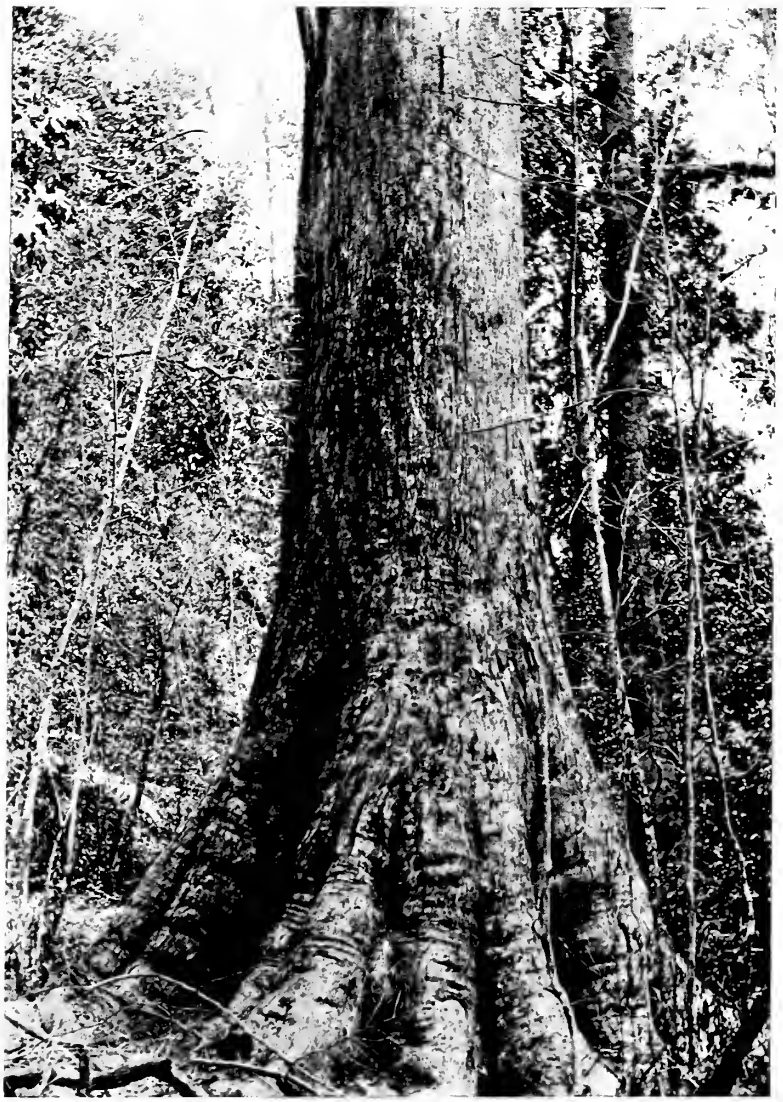
The "roads" of white ants to within $\frac{1}{4}$ of an inch of the sapwood are a great drawback to the value of the timber. It appears to suit white ants exactly There is generally a huge nest of them in the head; It seems to be the first timber they attack.

The timber, if left alone by the above pest, will last almost any number of years above or below ground. It is hard, strong, and fairly easily worked. The Roads Department use a quantity of it here for decking in culverts, bridges, &c., and it seems to stand traffic well. It is difficult to split because of the presence of a greasy or waxy substance making it a tedious matter to get a wedge to "draw," but when split makes splendid posts and rails. It does not burn well; when burning it exudes a kind of juice which puts the fire out.—(Forester W. P. Pope, late of Murwillumbah.)

Undoubtedly it is considered good timber for flooring, decking for culverts, slabs, piles or posts. It stands well in the ground, and I personally know slabs in a hut sound now after ten years at least. Of course you are aware it shrinks; also that the young timber is far from being so good as the old. It is not extensively used in this district, but I consider that is from ignorance; also from other timbers being much easier got, of inferior (much) quality.—(Late Forester E. J. Deverell, of Glen Innes.)

The nature of the tree generally is very sound, *i.e.*, has few pipes. The timber is valuable for any purpose for which hardwood is required, such as building, fencing, and bridges. For indoor work such as floors, the timber procurable on the table-land here would require to be well seasoned before using, as it has a tendency to warp, owing to the great amount of sap caused by the excessive rainfall. —(Late Forester R. L. Siddins, of Armidale.)

Exudation.—The "gum" or "kino" from the Tallow-wood is one of the most interesting of such substances. I do not think it is of such medicinal value as those from most other Eucalypts, but it is of considerable scientific interest. In



N. Stewart, photo.

"TALLOW WOOD," EASTERN SLOPES FROM GLEN INNES.

bulk it looks remarkably like a parcel of uncut garnets. Owing to its friability, the bright fractures become dulled with very little friction; the colour of the powder is orange-brown.

Dr. Lauterer* also examines this kino at length.

Size.—Mr. George S. Hill, of Wingham, quotes the size of a Tallow-wood :—Girth (3 feet from surface), 26 feet. It was growing 1,800 to 2,000 feet above sea-level on Bulga Mountain, head of Ellenborough River, and he adds that he hears that the Tallow-woods are much larger some distance beyond this.

The height of mature Tallow-wood trees is from 100 to 150 feet, with a circumference of from 7 to 12 feet. The trees appear to be healthful, and the young trees make good growth. Very large trees are rarely sound at heart.—(Forester John Martin, late of Gosford.)

Its approximate height is about 140 or 150 feet, diameter about 3 feet. It not unfrequently attains a height of 170 or 180 feet, with a diameter up to 5 or even 6 feet; 4 or 5 feet in diameter is frequent.

It is a tree of exceptionally large size, up to 25 feet in circumference by 180 to 200 feet in height. (Of twenty-five trees I measured at 4 feet from the ground the average circumference proved to be 17 feet 2 inches).—(Late Forester A. Rudder, Booral.)

A Tallow-wood tree in the forest near the Lansdowne River we measured by tape, and found to be 30 feet 4 inches in girth at 3 feet from the ground, and 27 feet 3 inches at 6 feet. We estimated its height at 150 feet. This tree is, to outward appearance, sound, though the heart has probably gone.

We noted some logs from the mountain lying at the wharf on the Lansdowne River. Following are their measurements :—A Tallow-wood, at 14 feet from the ground, was 13 feet 8 inches in girth. From this one tree 106 running feet of log were cut up at the mill. A second Tallow-wood was 13 feet in girth at 12 feet from the ground, and had an 11-inch pipe; 118 running feet of log were cut from this tree ready for the mill.

There were twenty Tallow-wood logs of varying lengths lying on the wharf, and we do not doubt that there were 2,000 feet of timber in each log (clear of pipe). From sap to heart the timber was of one uniform bright yellow colour. In a word, the Tallow-wood we saw here was, without exception, the largest and finest we have seen in the State.

The Tallow-wood is the chief glory of this magnificent forest. A monster fell a few hundred yards from our party, and the noise of falling was like the roar of a park of artillery. We took the following dimensions of this prostrate giant—15 feet of stump had been left. It was 62 feet more to the first fork, and its girth was 27 feet 4 inches at 3 feet from the ground. A log was 14 feet 2 inches in girth in the centre, and 8,820 feet was calculated in this log. Many trees will give 12,000 or 14,000 feet of timber each. We came across a fine tree 65 feet to the first branch. (Maiden and de Coque, in 1895.)

* "Gums and Resins exuded by Queensland plants chemically and technologically described." From pp. 35 to 80 of F. M. Bailey's Botany Bulletin No. xiii (April, 1896), "Contributions to the Queensland Flora."

It grows upon an average of about 60 feet high and from 6 to 7 feet in girth.—(Forester H. R. Huxham, late of Grafton.)

In some places in the County of Richmond the tree grows to a great height; I should think fully 150 feet.—(Forester W. F. Crowley, late of Casino.)

Tallow-wood, as a rule, grows tall and straight. I estimate the approximate height at 250 feet, the girth at 10 feet.—(Forester W. P. Pope, late of Murwillumbah.)

Habitat.—It is confined to New South Wales and Queensland, and does not usually extend more than 20 or 30 miles inland.

The most southerly locality is Cooranbong, 26 miles south of Newcastle. It again occurs at Port Stephens and thence along the coast ranges until Queensland is reached. In Queensland it is plentiful on most of the coastal ranges and other ridgy country. There is a large quantity of handy size and excellent quality on Fraser's Island.

Along the northern road, first noticed 1 mile south of Booral. Attains its greatest luxuriance near the coast and further north. While usually very yellow—almost canary-yellow—when freshly sawn, there is a good deal of Tallow-wood of a reddish cast on the northern rivers; and so intermixed is it with the yellow kind that in some places it would be difficult to fill a large order for Tallow-wood of one tint only.

The only place in my district in which Tallow-wood is to be found is an area about 4,000 acres in the neighbourhood of Cooranbong, 26 miles south of Newcastle. I believe that Tallow-wood crops up again at Port Stephens, so that there is a gap between the two places (Cooranbong and Port Stephens) where Tallow-wood does not grow, and why it should be found only about Cooranbong is more than I can tell. The Tallow-wood here grows in patches,—is not plentiful. Appears to like sheltered, well-drained localities, such as banks of creeks, heads of gullies, and spurs of ranges,—soil sandy loam enriched with leaf mould.—(Forester John Martin, late of Gosford.)

It occurs, more or less, all through this district, excepting on its higher elevations on its north-western parts, but is now most prevailing between Bullahdelah and Cooloongolook, and in the southern parts of the Parish of Alfred, commencing about 14 miles in a northerly direction from Dungog.

The best and largest timber is usually found in undulating scrubby forest country.

In localities mentioned it is in considerable quantity, but in most places, near to mills, it is getting relatively scarce since it is a favourite, as it cuts and turns out well. It fetches a higher price than most other timbers.—(Late Forester A. Rudder, Booral.)

It extends from about 8 miles south of the Macleay River to about Johns River, a distance of about 45 miles, and backwards about 10 miles.

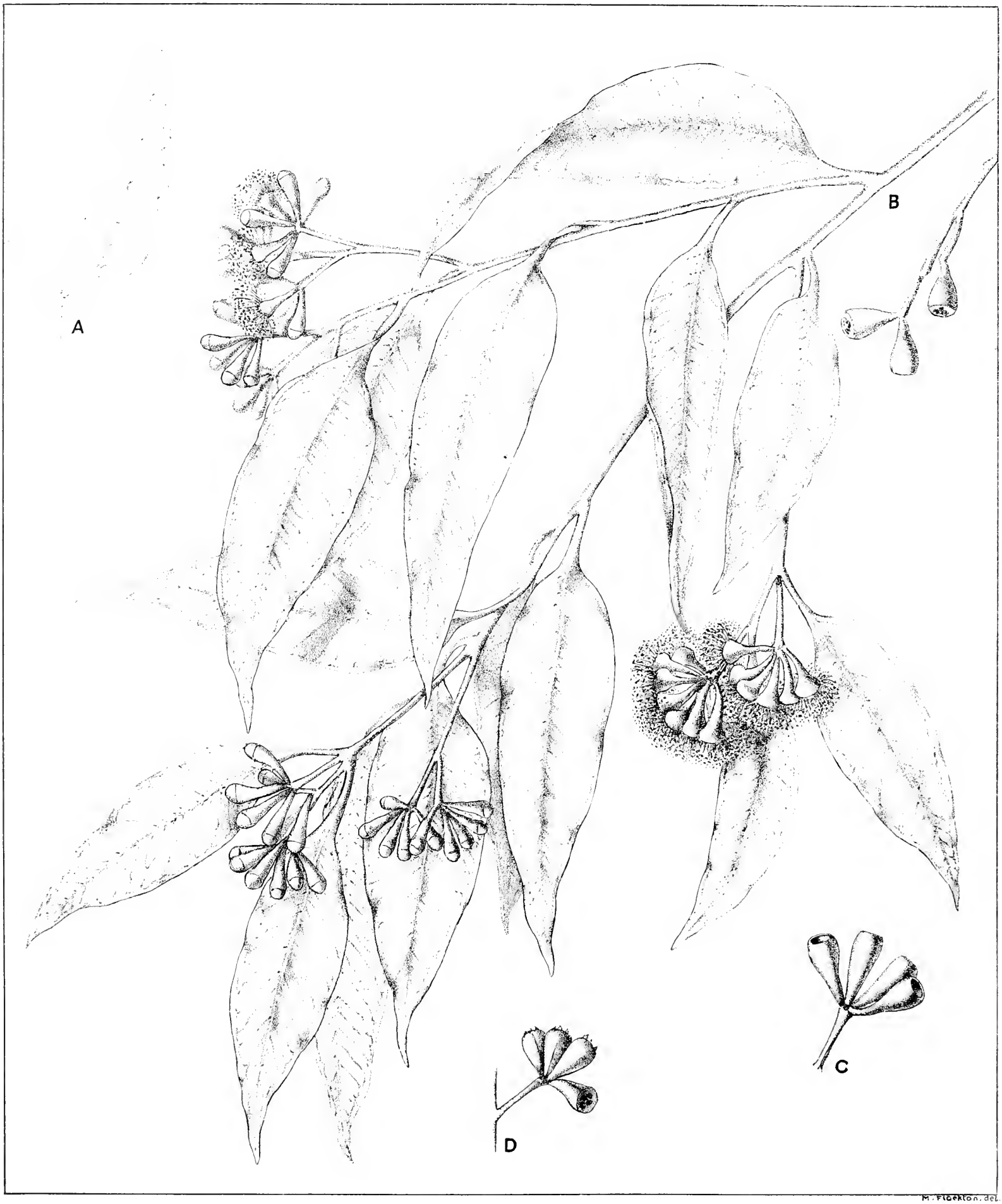
In abundance about next to Blackbutt, and an average of two per acre, averaging from 20 to 25 feet to first branch.—(Forester G. R. Brown, late of Port Macquarie.)

It grows pretty well all over this district, but is now rather scarce in the vicinity of water carriage, but plentiful further back.—(Forester H. R. Huxham, late of Grafton.)

It is found plentifully scattered all over the flat country in the County of Richmond. It is also growing in a few places in the Counties of Rous, Drake, and Buller.—(Forester W. F. Crowley, late of Casino.)

It is to be found in all stages of growth (up to 10 feet girth) on the eastern falls of Glen Innes and Tenterfield Districts in fair quantities.—(Late Forester E. J. Deverell, of Glen Innes.)

The tree flourishes on the eastern slopes of the Table-land, also close to the black brushes below, where the soil seems particularly suitable for its production, doing best where well drained, the land being



TALLOW WOOD.

(*Eucalyptus microcorys*, F.v.M.)

stony, with quantities of decayed vegetable on the surface and rather stiff soil underneath. On Forest Reserve 1,662, County of Clarke, there is a large quantity growing, some of which was cut in 1892 by men who had been bridge-building all over the Colony, who informed me that this particular lot was the best quality they had come across. This is produced on the high land about 2,400 feet above sea-level. It is distributed over a large area of the more open country under the Falls, but does not reach the size it does where better protected and the soil is richer.—(Late Forester R. L. Siddins, of Armidale.)

It is found all along the eastern slopes of the New England Table-land in fair quantity and good quality. It prefers a somewhat heavy soil. It is hardly ever found on granite formation, that is, where the soil is light and sandy.—(Forest Guard N. Stewart, Glen Innes.)

Tallow-wood, with the exception of the Common Box, grows more abundantly in this district than perhaps any other Eucalypt. It is found uniformly distributed through all forest land at about four trees to the acre. Other hardwoods are generally in patches, or favour certain spurs, but one never goes many yards in forest land without finding several of these trees.—(Forester W. P. Pope, late of Murwillumbah.)

EXPLANATION OF PLATE 144.

A. Juvenile leaf.

B. Flowering twig.

C. Fruit from Booral.

D. Fruit from Woolgoolga, showing slightly exserted valves.

PHOTOGRAPHIC ILLUSTRATIONS.

Tallow-wood tree, Manning River.—(Kerry & Co. photo.)

Group of logs of *E. microcorys* on tramway line, Lansdowne River.

Tallow-wood Glen Innes.—(Forest Guard Stewart, photo.)

No. 141.

Acacia glaucescens, Willd.

The Coast Myall.

(Family LEGUMINOSÆ : MIMOSEÆ.)

Botanical description.—Genus, *Acacia*. (See Part XV, p. 103.)

Botanical description.—Species, *A. glaucescens*, Willd.

A tree attaining 50 feet or more, the foliage generally ashy or hoary, with a very minute, close pubescence, or the young shoots yellowish ; branchlets more slender and much less angular than in *A. Cunninghamii*.

Phyllodia oblong-falcate, or lanceolate, narrowed at both ends, mostly 4 to 6 inches long, $\frac{1}{2}$ to near 1 inch broad in the middle, coriaceous, striate with numerous very fine nerves, 3 to 5 rather more prominent, the smaller ones occasionally anastomosing, and all free from the lower margin from the base.

Spikes nearly sessile or shortly pedunculate, often clustered in the upper axils, 1 to 2 inches long.

Flowers distinct or distant, mostly 5-merous, but occasionally 4-merous.

Calyx short, truncate or sinuate-toothed, pubescent or woolly. (B.Fl. ii, 406.)

The pod as described by Bentham (he had his doubts about it) is incorrect. It is figured on the plate, and following is a description of the pod and seeds :—

Pod linear, straight or nearly so, 2 to 3 inches long and $\frac{1}{6}$ to $\frac{1}{8}$ of an inch broad, minutely hoary pubescent, and with slightly thickened margins.

Seeds oblong, dark and shining, about 6 to 8 in the pod, placed longitudinally ; the funicle folded and dilated at the end, but not encircling the seed.

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104) ; *glaucescens*, from the Latin *glaucus*, sea-green (in botany, glaucous) ; it means, becoming glaucous.

Vernacular Names.—In the South Coast districts it is often known as "Myall," and in order to distinguish it from the Interior or Weeping Myall, I propose the name "Coast Myall" for it.

It is also sometimes called "Mountain Brigalow" and "Boree."

Aboriginal Name.—According to the late Sir William Macarthur, the aboriginal name for this tree in the Counties of Cumberland and Camden was

"Kaarreewan" (*Cat. N.S.W. Exhib. Paris*, 1855, *and London*, 1862, *Exhibitions*). The name has some resemblance to that ("Caariwan" or "Currawang") given to *A. doratoxylon*, and they are probably the same.

Synonyms.—*A. homomalla*, Wendl.; *A. cinerascens*, Sieb.; *A. leucadendron*, A. Cunn.; *Mimosa binervis*, Wendl.

Leaves.—It is hardly possible to do justice to the beautiful glaucous foliage of the Coast Myall. The foliage is of a pendulous habit, and when in full bloom its beauty, and that of the flowers, combine to make it one of the handsomest flowering trees of the State. The foliage quickly loses its beauty when removed from the tree, its glaucousness rapidly disappearing, so that persons who only know this wattle from dried specimens are not in a position to form an adequate idea of its beauty.

Flowers.—It almost seems beyond the power of art to depict the exquisite fluffiness of the spikes of flowers of the Coast Myall. The flowers are borne in enormous quantities in the early spring, and a row of these trees affords a charming sight. They are worthless as cut flowers, for almost as soon as they are removed from the tree the inflorescence shrinks, and the beautiful downy fluffiness is injured and destroyed.

Fruit.—I only draw attention to the long, straight, narrow pod in this place to again remind our readers of the inaccuracy of the description of the pod as given in the *Flora Australiensis*.

Bark.—Rugged, hard, and fibrous, and fortunately worthless as a tan, otherwise this beautiful tree would be in danger of extermination.

Bark from near Bombala, New South Wales, yielded 8·10 per cent. of tannic acid, and 14·29 per cent. of extract. (*Proc. Roy. Soc. N.S.W.*, 1887, p. 91.) It was locally termed "Myall," and was grown on limestone. Height, 20–25 feet; diameter, 6–12 inches. A deeply fissured bark, of a dark-grey colour.

Timber.—Hard, dark, and handsome. Strongly resembling the better-known Myall wood.

It is one of the few large species in the coastal districts with hard dark timber like that of the Myall class.

Wood close-grained and prettily marked, scented, though less so than some other species. It is very suitable for cabinet-making and turnery. It is used for spring bars, tool handles, spears, &c. It has been likened to English Walnut and Rosewood, though not very happily. A slab of this wood in the Technological Museum, which has been seasoned over twenty-five years (having been exhibited at the London International Exhibition of 1862), under the name of *A. homomalla*, has a weight which corresponds to 54 lb. 4 oz. per cubic foot.

Its excessive hardness, and the small diameter of the tree (in common with other Wattles) are against its extensive use.

A specimen of "Myall" from Tombong, Delegate, New South Wales, has the general appearance of Blackwood. It works fairly well, and is used for small ornamental work.

Exudation.—There is probably a saponin in the bark, and therefore in the gum of this species. Following is an experience of Mr. W. Baeuerlen, late Collector, Technological Museum:—

> While I was collecting the gum some particles of it dropped into my eyes, and having no water near to wash them immediately, the gum caused intolerable pain, and inflamed them so much that I had to keep in the house for a few days. . . . This tree always cuts more or less "gummy." Still, the gum is scarce and not to be obtained in large quantity.

Size.—This is one of the largest of our Wattles. Individual trees can be obtained much larger than those shown in the photographs. It attains a height of 50 feet, with a diameter of 2 feet.

Habitat.—The Coast Myall is almost invariably found skirting the tops of rocky gullies. It follows the Dividing Range and its spurs from the extreme south of New South Wales to at least as far north as New England, but we require further observations yet before we can completely define its geographical range, inasmuch as some of the localities given in the *Flora Australiensis* have now been found to refer to another species. Baron von Mueller gives the most northern locality as the Apsley River, New England, and the most southern as the Genoa River, which rises in New South Wales, but flows for the greater part of its course in Victoria, not many miles from the New South Wales border.

It is very common in the Counties of Cumberland and Camden, New South Wales, its favourite situation being on the banks (often rocky) of rivers.

Following are some records in the National Herbarium:—

Belowra, Tuross River (*J. S. Allan*), most southern New South Wales locality recorded; "Silver Wattle," Shoalhaven River (*A. Murphy, W. Forsyth, A. A. Hamilton*); Barber's Creek (*H. J. Rumsey*); Picton to Bargo, Thirlmere (*J.H.M.*); Nepean River (*J.H.M., E. Betche, R. H. Cambage*). Very common a mile from Tizzana towards Ebenezer, forming dense scrubs and also fairly large individual trees (*J.H.M.*); Grose River (*R. H. Cambage* and *J.H.M.*); Port Stephens and Nelson's Bay (*A. Rudder*); Port Macquarie (*G. R. Brown*).

Propagation.—It is one of the most lovely of all Wattles, and therefore worthy of cultivation in large gardens.

Propagated from seed which, as in the case of other Acacia seeds, should be soaked in hot water to facilitate germination.

W. Forsyth, photo.

Acacia glaucescens, WILLD., BANKS OF NEPEAN RIVER, NEAR NORTON'S BASIN.

R. H. Cambage, photo.

Acacia glaucescens, ALONG BANK OF GROSE RIVER, N.S.W.

R. H. Cambage, photo.

Acacia glaucescens, WILLD., BANK OF NEPEAN RIVER MULGOA, N.S.W.

R. H. Cambage, photo.

Acacia glaucescens, WILLD. MULGOA, N.S.W.

COAST MYALL.

(*Acacia glaucescens*, WILLD.)

EXPLANATION OF PLATE 145.

A. Flowering branch.

B. Individual bud.

C. Flower.

D. Bracts found at the base of each flower.

E. Flower, opened out, showing—

(*a*) Calyx.
(*b*) Corolla.
(*c*) Stamens.
(*d*) Pistil.

F. Pods, from Thirlmere, New South Wales.

G. Seed.

H. Leaf of broad-leaved form from Shoalhaven Road, above Badgery's.

PHOTOGRAPHIC ILLUSTRATIONS.

Acacia glaucescens along bank of Grose River.

,, ,, Mulgoa. (Taken in a fog, but showing the trunk.)

,, ,, bank of Nepean River, Mulgoa.

(All R. H. Cambage, photo.)

Acacia glaucescens. Plant growing on the banks of the Nepean River, near Norton's Basin.

(W. Forsyth, photo.)

No. 142.

Endiandra pubens, Meissn.

(Family LAURACEÆ.)

Botanical description.—Genus, *Endiandra.* (See Part XXXV, p. 79.)

Botanical description.—Species, *E. pubens*, Meissn. in DC. *Prod.* xv, 1, 509 (1864).

A large tree, the branches and petioles more or less velvety-tomentose and ferruginous.

Leaves oval to elliptical-oblong, obtusely acuminate or almost obtuse, narrowed at the base, 4 to 8 inches long, glabrous above, prominently veined, and pubescent or villous underneath.

Panicles axillary, broadly thyrsoid, usually about 1 inch long, sometimes more branched and half as long as the leaves, sometimes very short, more or less ferruginous-hirsute.

Bracts narrow, the lower ones often 1 line long, those in the cymes smaller.

Pedicels scarcely so long as the flower.

Perianth nearly $1\frac{1}{2}$ lines long, the tube thick, turbinate, broader than the limb, the lobes small and erect.

Stamens 3, usually exserted, the filaments rather narrow, without glands, but alternating with small staminodia, the outer series quite deficient.

Fruit globular, $\frac{1}{2}$ to $\frac{3}{4}$ inches diameter. (B.Fl. v, 302.)

Above is the form figured; there is a var. *glabriflora*. *Perianth* rather larger, glabrous. *Bracts* ovate, concave. Richmond River (*Henderson*). (B.Fl. v, 303.)

Botanical Name.—*Endiandra*, already explained (see Part XXXV, p. 79); *pubens*, Latin, downy, in reference to the short-hairiness of the leaves and inflorescence generally.

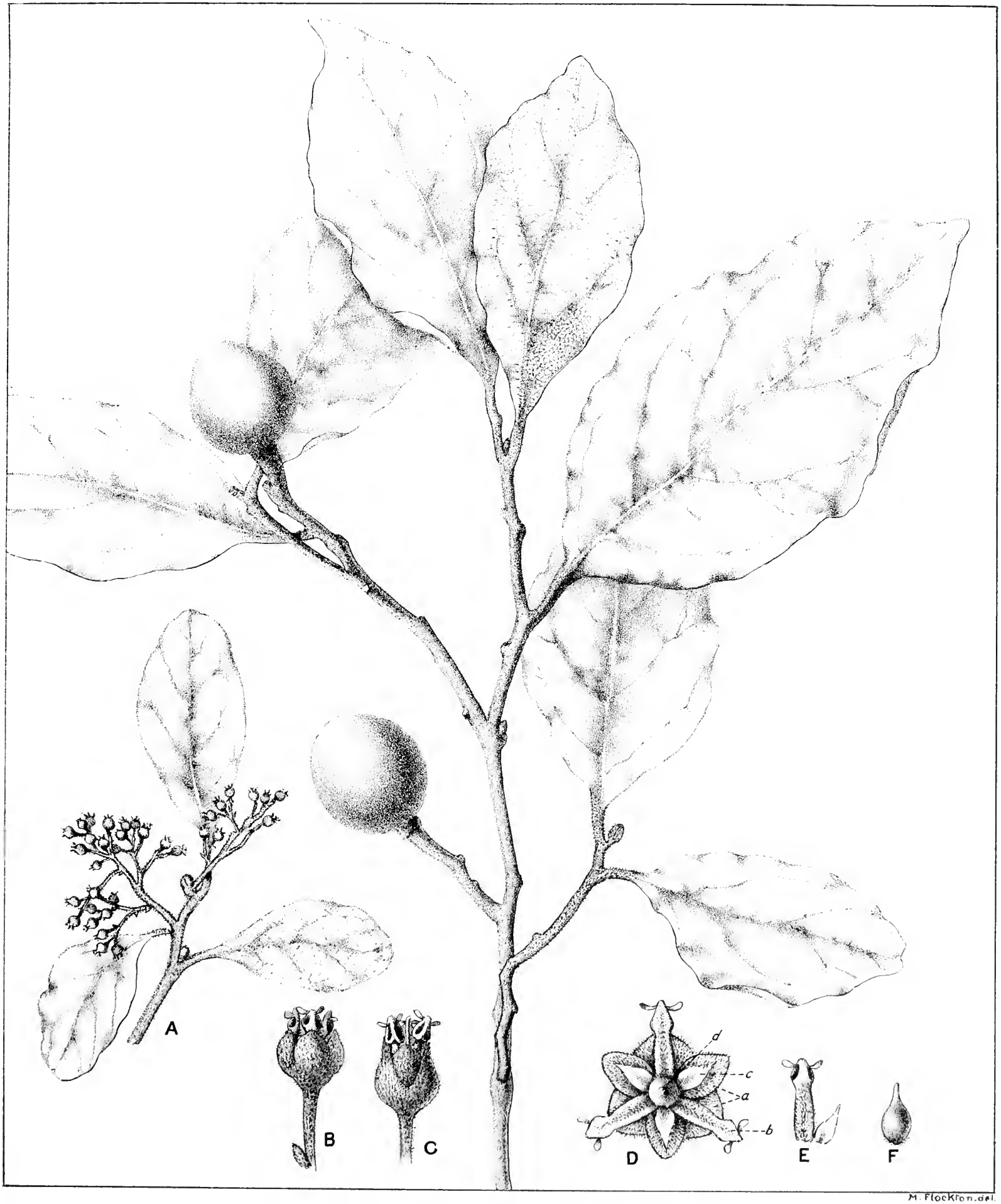
Vernacular Name.—I know of none.

Aboriginal Name.—I know of none.

Synonym.—*Cryptocarya Muelleri*, Meissn. l c. 73.

Timber.—This is another of our brush timbers of which we must confess our almost complete ignorance. By analogy, it is probably a good deal similar to that of other *Endiandra* timbers, but that is mere guesswork.

Size.—A tree which attains a height of 50 feet or so, but I have been unable to get precise measurements. I have seen it of the size quoted; it may attain a larger size. It has been noted as a tree of 20 feet at Casino, Richmond River.



ENDIANDRA PUBENS, MEISSN.

Habitat.—Recorded from the Northern Rivers of New South Wales and also South Queensland at present. Following are the *Flora Australiensis* localities:—

Queensland—Brisbane River, Moreton Bay (*F. Mueller*).

New South Wales—Clarence River (*Beckler*); Richmond River (*Henderson*); Bellinger River (*C. Moore*).

Localities of specimens in National Herbarium, Sydney, are:—

Between Clarence and Richmond Rivers (*A. Hagman*); Casino (*E. Betche*); large tree on the banks of the Richmond River (*W. Carron*); Ballina (*J.H.M.* and *J. L. Boorman*); Murwillumbah and Tweed River generally (*W. Forsyth*, *E. Betche*).

EXPLANATION OF PLATE 146.

A. Flowering twig.

B. Flower.

C. Flower more advanced.

D. Flower, opened out, showing—
   (*a*) Calyx (perianth segments).
   (*b*) Stamens (extrorse anthers).
   (*c*) Staminodia.
   (*d*) Pistil.

E. Stamen, front view, with staminode.

F. Pistil.

G. Fruiting branch.

APPENDIX.

(*a*) Walking-sticks and Umbrella handles from New South Wales.

Walking-sticks, canes, umbrella-handles, &c., of one sort or another are always in demand. Bizarre-looking sticks, such as saplings with twiners round them, simulating a snake, are out of fashion. The taste is for stieks of moderate size and symmetrieal appearance. At present, although we import a very large number of finished stieks, our quota to the world's supply of raw stieks is mainly limited to a few Mitchenbills or Walking-stick Palms (*Kentia monostachya*). It is a matter of everyday remark that sticks of a useful or ornamental charaeter are notieed in the bush, and are either passed by or cut down for temporary use and then cast away. But in the ornamental or curiously shaped sticks that we so often see in the bush, I see a prospective minor industry. The eollecting of sticks is not going to rival gold-mining, but the aceumulation of them at odd times (like the gathering of certain gums and resins) will be remunerative as soon as our people have learnt how and what to eolleet. Sticks of the kind required will not take up mueh room, nor are they objectionable in any way. If eaeh family in the bush eau make just a few pounds a year out of stieks, it will be with no interference with the ordinary duties of each member; but it will only lead to disappointment if stieks be gathered without rcferenee to what will probably be required, and therefore the hints which follow are commended to careful consideration.

[Circular.]

I am collecting information in regard to the suitability and availableness of Australian saplings and timbers for walking-sticks, umbrella and parasol handles, and I shall be grateful if you will help me in the inquiry.

I have jotted down the following general notes *re* walking-sticks. They should possess—

(*a*) Rigidity
(*b*) Strength.
(*c*) A good root or excrescence to form a handle.

Weight is not material. Straightness is not absolutely essential, as any sticks can be straightened by suitable processes. They should taper to the end. There should be facilities for collection and shipping, as they would require to be delivered at the port of shipment at a very low rate.

Sticks are of two kinds:—

1. Those cut out from the solid, *e.g.*, Forest Oak, Native Pear, Blackwood, Red Ironbark, and the outer portion of the stem of the Cabbage Palm. (These are now of no value in Europe.—J.H.M.)

2. Saplings, such as Tea-trees, Wattles, small Palms, and innumerable others. It is to this class that we should mainly look for suitable sticks.

There are innumerable kinds of suitable saplings to be obtained, and they might be procured at odd times by children and others, kept until a fair number accumulate, and then disposed of.

In the eourse of this inquiry I put myself into communication with Messrs. Henry Howell & Co., Cane and Stick manufaeturers, of 180, Old-street, London,

E.C., who are well known to be far and away the largest firm in the trade. I found that this firm had published some hints on the subject, and following is a copy of their circular:—

POINTS TO BE OBSERVED IN COLLECTING RAW STICKS, CANES, &C., FOR WALKING-STICKS, UMBRELLA HANDLES, &C.

Length.—The total length should not be less than 42 inches end to end, but if possible, they should be 48 inches.

Size.—The best sizes are of the diameter of ½ inch to 1 inch, measured about *midway*; they should not be larger than 1¼ inch in diameter.

Form.—It is indispensable that the diameter should gradually diminish from the root or handle to the point, so that the stick is not "top-heavy."

Handle.—It is always better, when possible, to send sticks with some kind of handle; if the plant be pulled up, the root should be left quite rough and untrimmed; if a branch be cut off, a part of the parent branch should be left on to form a knob or crutch handle.

Sticks without handles.—Sticks without handles can be used, especially if they are nicely grown, and have any peculiarity of structure or colour—but if there is any handle, however small, it should not be cut off. Young saplings of the different kinds of palms, bamboos, &c., &c., should always have the root left on.

Short handles.—Occasionally, the form of the root or handle part is attractive, while the stick itself is weak and defective; in such cases the handles only should be sent, and they should measure from 15 to 18 inches in length.

Send only specimens in first instance.—In sending specimens of new sticks it is better to send only small quantities, say, one or two dozens of each kind; then, if approved, further quantities can be asked for.

All kinds of wood.—Specimens of anything remarkable for form or colour, whether in the roots or stems of woody, herbaceous, or reedy structures should be sent, as sometimes the most unlikely things are found to possess value for use either as umbrella handles or walking-sticks.

Details.—Details as to quantity to be procured, prices, &c., should be sent, if possible.

I addressed a number of questions to Messrs. Howell & Co., and perhaps it will be better to quote their reply as fully as possible:—"The subject to which you refer, viz., 'the collection of raw sticks suitable for walking-sticks or umbrella handles,' is one in which we need hardly say we are particularly interested, and we are very much obliged to you for the way in which you are endeavouring to bring it before the people in Australia. From time to time we have seen sticks from the different colonies of Australia, and there has been a considerable quantity of one or two varieties sold in this market, the principal one being the Midgeen* cane, which we believe came from the neighbourhood of Brisbane. In an article in the *Gardeners' Chronicle* of 27th January and 3rd February, 1877, written by Mr. J. R. Jackson, Curator of the Kew Museums, that gentleman gives a list of sticks from Australia, amongst which he mentions the Cardwell cane (a species of *Calamus*), also the Loya,† apparently of some species of calamus or rattan, but of very small diameter, and with fantastic rustic roots; there is also the bramble, which possesses a root something like a potato, and which grows to a pretty good size, but none

* *Kentia* or *Bacularia monostachya*, the Midginbill or Mitchenbill, or Walking-stick Palm of our northern rivers (N.S.W.), and usually known in Queensland as the Midgeen Cane.

† (?) A corruption of Lawyer.

of these canes seem to have met with any success beyond the Midgeen, and unfortunately this has gone completely out of fashion, so that at the present time it is a complete dead letter in the market. We think, however, that there must be a very large number of plants which would be suitable either for walking-sticks or for the handles of sunshades or umbrellas, and if you could succeed in getting any intelligent collector to send us samples, we should be very glad to give our opinion as to their value, and if we saw any chance of using them, to give orders for a sample parcel in order to try the market. The present time is peculiarly suitable for the introduction of some new articles of this character, as the staple sticks now in use have had their day, and the trade generally would be glad of something new. It is, however, quite a mistake to suppose that any kind of stick possesses a value; it is essential there should be some peculiarity in the sticks themselves which will render them attractive, otherwise they are reckoned almost as firewood, the price realised for which would not suffice to pay the freight. In other words, we should not want firewood sent from Australia.

"We note with much interest your printed circular in regard to the collection of these goods, and we must say that you have indicated with remarkable exactness the class of goods which would be likely to prove most useful in the market here, and consequently of commercial value. Especially is this the case with the description you give under No. 2, viz., saplings such as tea trees, wattles, small palms, &c. We think that something new in palms or natural saplings would be more than anything else likely to meet with a demand here. Sticks cut from the solid, unless having a peculiar marking like figured ebony, palmyra, letter-wood (or snake-wood of British Guiana), do not seem to meet with any favour. Of course it is understood that our sticks are finished, and consequently are very much smaller, especially in the handle part, than they would be in the rough state. We like all sticks sent untrimmed, the root or handle part left as large as possible, so that we may use our own discretion as to the form of handle we may make. The round hook sticks, you will easily understand, are artifically bent, so that it does not follow that all sticks without handles are valueless, provided they possess some distinctive character, so as to be of use either for bending, or having artificial heads put on them. Seeing that they are usually sent with the bark on, which has often to be removed, the size of the sticks should be about 1 inch in diameter, measured about midway.

"As to the kinds of wood which can be used in our trade, it will be sufficient to point out that large quantities of mullein (or *Verbascum*), teasel (or *Dipsacus*), as well as certain kinds of Cacti, the woody structure of which presents a very remarkable appearance when cleared of the fleshy matter which is so abundant on this plant, have been employed as sunshade handles, and they make a very light and graceful handle. We think it would be well if you could get some person to interest himself sufficiently to study the matter, and to send us about a dozen of each specimen of wood which seems at all likely to be useful, taking care to keep

duplicates of the same properly numbered, so that in the event of an order being given there might be no doubt as to their identification, and as to what is required. If they are addressed to us, we will give a prompt reply as to the kinds which might be utilised. We think it is as well to mention that it is most unadvisable for any large quantity of sticks to be sent away unless they are properly selected to suit the market. We have known several instances of persons having done this who have invariably lost money by it. To sum up the matter, we may say that we should like to see specimens of every kind of palm which can be obtained in Australia, also anything of an herbaceous character, having, when dry, sufficient rigidity to carry a sunshade. In addition, any kind of wood which possesses any kind of 'figure' on the surfaee of the bark, or on the wood immediately under the bark. We have used an enormous quantity of English furze (*Genista*) lately. This, as you know, is very peculiar in its strueture, having holes and knots in the wood, which, when finished, present a very distinctive appearance. Anything of the 'Genista' type, we should think, would be likely to be of some use. Some time ago we saw some sticks, purporting to come from Australia, called the 'Australian Bay.' It had a peculiar nutty-brown bark when dry, with longitudinal indentations, and was inclined to be somewhat flat or square-sided, rather than rotund. A stiek of this kind, if it could be obtained with a good handle, would certainly be of some value here. In reference to the priees and quantities of stieks which might be imported, you will see from our observations that it is impossible to furnish this information until we have seen the woods and been able to form some idea as to their value."

In a list of stieks supplied to the London market, I find that small saplings of Tasmanian Blue-gum (*Eucalyptus globulus*) are supplied by Algeria, and none from Australia. Orange and lemon sticks are supplied by Algeria and the West Indies. Surely we could supply these as cheaply as anywhere else. Inquiries *re* walking-sticks should be addressed to the Curator, Technological Museum, Sydney.

(*b*) Woods used by Aborigines for the Purpose of Procuring Fire.

In the course of my inquiries concerning the above, finding but few timbers enumerated, I applied to Mr. R. Etheridge, Curator of the Australian Museum, and he, giving me what referenees he had, commented on the paucity of the records. The aborigines are dying out, and it will be soon too late to collect them. Will my readers assist in getting particulars of the woods used for the purpose?

There are three methods adopted by the aborigines, and all are figured by Brough Smyth in his "Aborigines of Victoria," i, 393 and 395.

Method 1.—A flat piece of wood, 10 inches in length and $1\frac{1}{2}$ inch in width, is placed on the ground, and held firmly in a horizontal position by the toes of each foot of the operator. In his hands the man holds upright, and with one end of it fixed in a slight depression previously made in the flat piece of wood, a stick about $\frac{1}{2}$ inch in diameter and 2 feet in length, which he twirls by a rapid motion of his

hands. The stick held between the palms of the hands is rubbed rapidly to and fro, and some pressure is exerted downwards. When the hands nearly touch the flat piece of wood, they are suddenly raised almost to the top of the vertical stick, but so skilfully as to keep the stick in its place, and then again the twirl and downward pressure follow, and the movements are repeated until the charcoal dust ignites.

When the sticks are dry, smoke and fire soon arise in the hole in the flat piece of wood. The native, having previously reduced to powder some dry leaves of the Eucalyptus, which easily ignite, turns or tilts the flat piece of wood towards the powdered leaves at the moment when ignition occurs, and soon gets a fire.

Method 2.—Out of a suitable piece of wood, the aborigine cuts a knife—in shape almost like a butcher's knife,—and in another piece he cuts a long thin slit. In the slit he places finely powdered dry gum-leaves, or powdered dry grass, or some other inflammable substance. Placing the stick with a longitudinal slit in it in a secure position, he rubs the wooden knife across or at right angles to the slit very rapidly, holding the knife generally with the right hand, and, for the purpose of giving greater energy and steadiness to his movements, keeping the right wrist firmly in the left hand. Instead of preparing a second stick with the longitudinal slit in it, he not seldom takes advantage of the cracks in the trunk of a dry fallen tree. Some dry substance carefully reduced to powder by the hand is put into the cracks, and the wooden knife, used in the same manner as above described, soon produces smoke and fire. In use on the Lower Murray, near Swan Hill.

Lower Murray, Lower Murrumbidgee, Lower Lachlan, Lower Darling. The account by Mr. P. Beveridge (*Proc. Roy. Soc. N.S.W.*, 1883, 67) of the method adopted by the aborigines in the above-mentioned districts is practically identical with that just described.

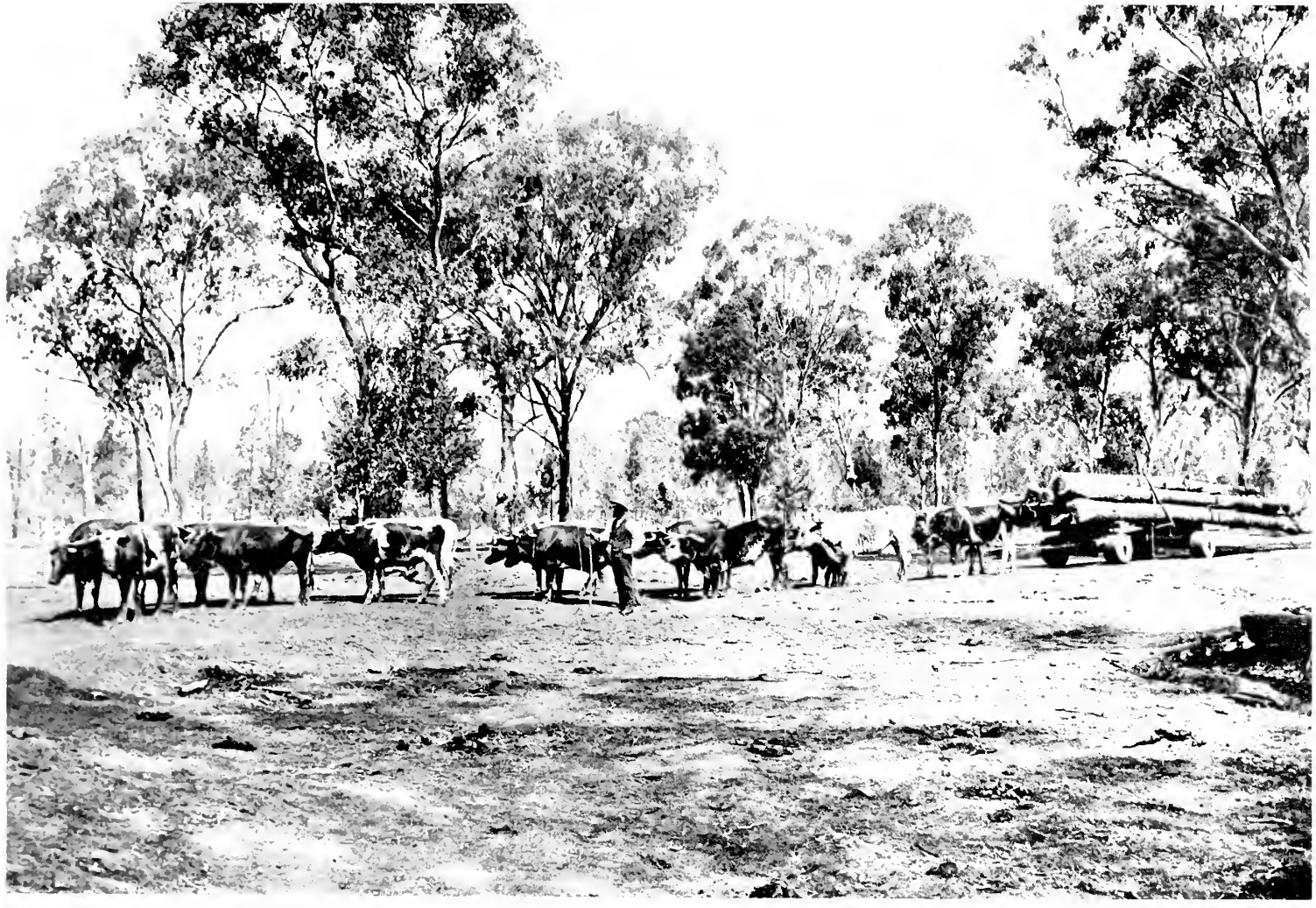
Method 3.—The operator places himself in a sitting posture, and having planted in the ground a strong stick, in which a longitudinal slit has been made, or in which there is a natural slit, and having filled the slit with dry powdered gum-leaves or the like, he draws the stick towards him, and keeps it firmly in its place by pressing his chest against it. In his hand he holds the wooden knife, which he rubs rapidly across the stick until he gets fire. (North-Eastern Australia.)

Method 1.—

(*a*) In the Yarra district of Victoria. "Native Mulberry" (*Hedycarya Cunninghami*) is used for the upright stick and "Mint Bush" (*Prostanthera lasianthos*) is used for the stationary piece.

(*b*) For an account of the use of the wood of *Hedycarya pseudomorus* (*Cunninghami*) at Western Port, Victoria, see Brough Smyth, *Trans. Roy. Soc. Vict.*, vi, p. xxxiv (Proc.).

(*c*) At the Endeavour River to Herberton River, Queensland, *Hibiscus tiliaceus*, L., as the rotatory piece, and *Mollinedia subternata*, Bailey, as the stationary piece.



F. A. Kirton, photo.

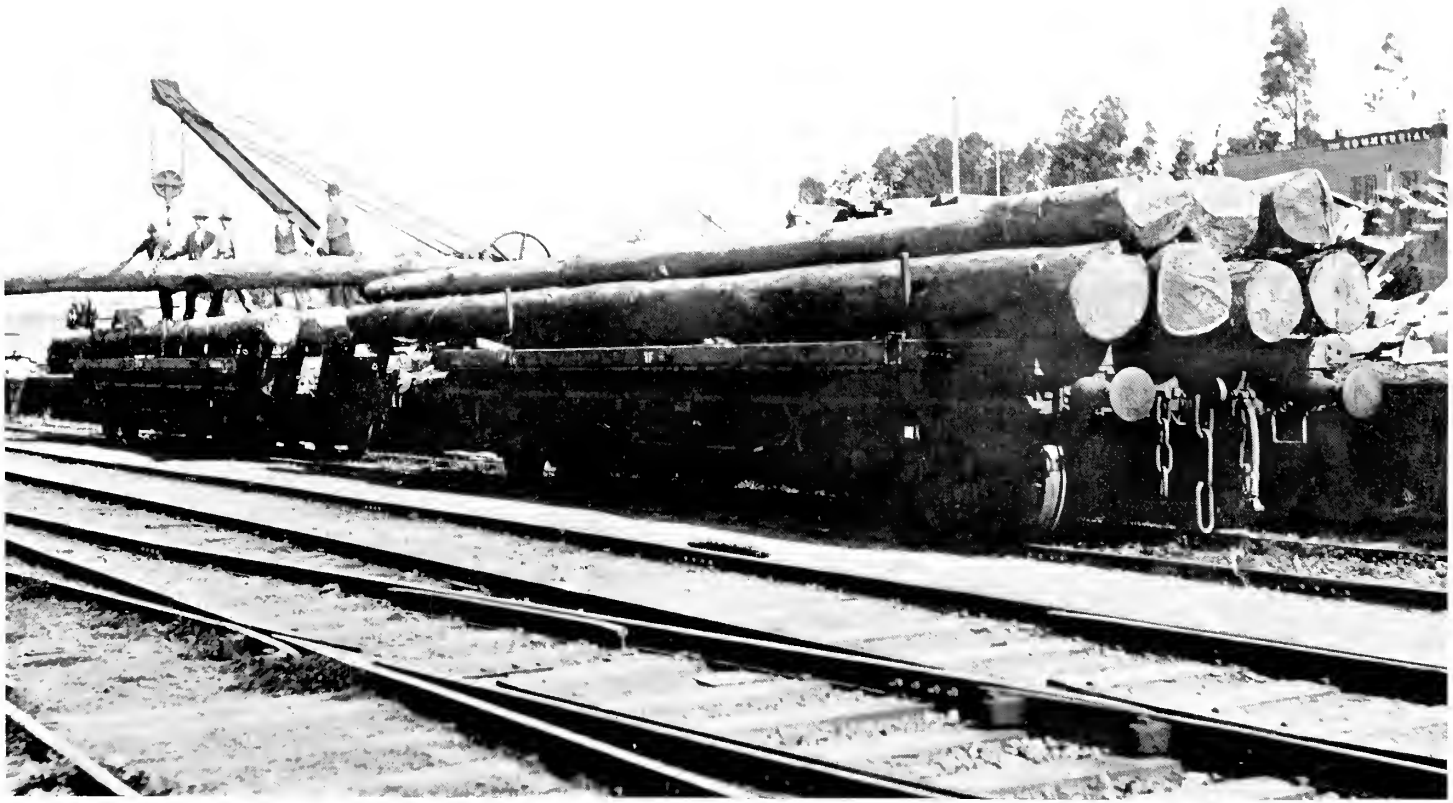
SCENE IN THE NARRANDERA (RIVERINA) COUNTRY, N.S.W.

F. A. Kirton, photo.

COLLECTING MINING PROPS (IRONBARK) IN THE WYONG DISTRICT, N.S.W.

F. A. Kirton, photo.

SPARE-CHAINING LOG IN THE BUSH, WYONG, N.S.W.



F. A. Kirton, photo.

LOADING PILES AT WYONG, N.S.W.

(*d*) At the Cloncurry River, Queensland, *Sesbania agyptiaca*, Pers., and *Ventilago viminalis*, Hooker (see Part IX, p. 190, of this work), are the woods used.

Grass-tree stems are used as the rotatory pieces in at least three States, viz. :—

(*e*) Sydney District (Port Jackson). (See Mann, *Proc. Geogr. Soc. Austr. N.S.W. and Vict. Br.*, 1895, i, p. 28.)

(*f*) Gippsland, Victoria. (See Howitt, in Smyth. *loc. cit.*, p. 393, footnote.)

(*g*) Omeo River, Victoria. (See Helms, *Proc. Linn. Soc. N.S.W.*, 1895, x (2), p. 396.)

(*h*) Boyne Island, Port Curtis, Queensland. Flower-stalk of *Xanthorrhœa arborea*, R.Br. (See Hedley, *Proc. Roy. Soc. Qld.*, 1888, v, pt. i, p. 13.)

(*i*) Burnett River District, Queensland. Dry ripe head of the flower-stalk powdered between the hands and used as tinder. (See Hughan in Smyth, *op. cit.*, p. 395, footnote.)

(*k*) Cape York, south to Fitzroy River. Flower-stalk of *Xanthorrhœa arborea*, R.Br.

(*l*) On the Lachlan and Darling Rivers, New South Wales. Quandong wood (*Fusanus acuminatus*) (see p. 97, Part IV of this work) is used as the knife-piece. (See Bennett, "Descriptive list of Australian aboriginal weapons in the Australian Museum," 1887, p. 4.)

Method 1 *or Method* 3 (?)—

(*m*) Flinders and Mitchell Rivers, Queensland. *Clerodendron floribundum*, R.Br. "Two dried sticks of this plant are used for drills to make fire with." *Ventilago viminalis*, Hooker. "They use two sticks of the same wood for making fire with." (See Palmer, *Journ. Roy. Soc. N.S.W.*, 1883, xvii, p. 108.)

(*n*) *Clerodendron inerme*, R.Br., Pennefather River, Queensland.

(*o*) *Clerodendron floribundum*, R.Br., Upper Cloncurry River, Queensland.

(*p*) *Premna Dallachyana*, Benth., Endeavour River to Princess Charlotte Bay, Queensland.

(*q*) *Premna obtusifolia*, R.Br., Pennefather and Tully Rivers, Queensland.

(*r*) *Psychotria sp.*, Mitchell River Queensland.

[The references to *c*, *d*, *k*, *n*, *o*, *p*, *q* are Roth, "North Queensland Ethnography" (*Bull.* No. 7, p. 10, 1904.)]

SUPPLEMENTARY PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) Scene in the Narrandera (Riverina) country, New South Wales. The logs on the truck (note the wooden wheels) are Black Pine (*Callitris calcarata*). The growing trees are Box (*Eucalyptus hemiphloia*, F.v.M. var. *microcarpa*, Maiden).

(*b*) Collecting mining props (Ironbark) in the Wyong District for the Newcastle coal-mines.

(*c*) Spare-chaining log in the bush, Wyong, New South Wales. The log is Blue Gum (*Eucalyptus saligna*).

(*d*) Loading piles at Wyong, New South Wales. The piles are Ironbark (*Eucalyptus paniculata*) and Turpentine (*Syncarpia laurifolia*) ; those with bark on.

(All F. A. Kirton, photo.)

A Critical Revision of the genus Eucalyptus.*

This work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets) :—

Eucalyptus acacioides, A. Cunn. (XI).
,, *acmenioides*, Schauer (IX).
,, *amygdalina*, Labillardière (VI).
,, *Andrewsi*, Maiden (VII).
,, *apiculata*, Baker and Smith (IX).
,, *Behriana*, F.v.M. (X).
,, *bicolor*, A. Cunn. (XI).
,, *Boormani*, Deane and Maiden (X).
,, *Bosistoana*, F.v.M. (XI).
,, *calycogona*, Turczaninow (III).
,, *capitellata*, Smith (VIII).
,, *Consideniana*, Maiden (X).
,, *coriacea*, A. Cunn. (V).
,, *dives*, Schauer (VII).
, *eugenioides*, Sieber (VIII).
,, *fruticetorum*, F.v.M. (XI).
,, *hæmastoma*, Sm. (X).
,, *hemiphloia*, F.v.M. (XI).
,, *incrassata*, Labillardière (IV).
,, *Luehmanniana*, F.v.M. (IX).

Eucalyptus macrorrhyncha, F.v.M. (VIII).
,, *microcorys*, F.v.M. (IX).
,, *microtheca*, F.v.M. (XI).
,, *Muelleriana*, Howitt (VIII).
,, *obliqua*, L'Héritier (II).
,, *ochrophloia*, F.v.M. (XI).
,, *odorata*, Behr. and Schlecht (XI)
,, *pilularis*, Sm. (I).
,, *piperita*, Sm. (X).
,, *Planchoniana*, F.v.M. (IX).
,, *populifolia*, Hook. (X).
,, *regnans*, F.v.M. (VII).
,, *siderophloia*, Benth. (X).
,, *Sieberiana*, F.v.M. (X).
,, *stellulata*, Sieber (V).
,, *umbra*, R. T. Baker (IX).
,, *virgata*, Sieber (IX).
,, *vitellina*, Naudin (VII).
,, *vitrea*, R. T. Baker (VII).

* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, Six shillings). Part IV will be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney : William Applegate Gullick, Government Printer.—1910.

Volume III (Parts XXI–XXX).

PART XXI. (Issued August, 1906.)

77.—The Crow's Ash or Bogum Bogum (*Flindersia Bennettiana*, F.v.M.). (*Two Plates.*)
78.—The Blackbutt or Peppermint (of New England) (*Eucalyptus Andrewsi*, Maiden).
79.—The Thready-barked Oak (*Casuarina inophloia*, F.v.M. and Bailey).

PART XXII. (Issued February, 1907.)

80.—The Hill Flindersia (*Flindersia collina*, F. M. Bailey). (*Two Plates.*)
81.—The Broad-leaved Messmate (*Eucalyptus obliqua*, L'Hérit.).
82.—The Cedar Wattle (*Acacia elata*, A. Cunn.).

PART XXIII. (Issued March, 1907.)

83.—The Rosewood (*Dysoxylon Fraseranum*, Benth.).
84.—The White-top Messmate (*Eucalyptus vitrea*, R. T. Baker).
85.—The Acacia decurrens Group of Wattles—Black, Green, and Silver Wattles (*Acacia decurrens*, Willd.). (*Two Plates.*)

PART XXIV. (Issued May, 1907.)

86.—The Bastard Pencil Cedar (*Dysoxylon rufum*, Benth.).
87.—Bastard Tallow-wood (*Eucalyptus Planchoniana*, F.v.M.).
88.—The Mountain Hickory (*Acacia penninervis*, Sieb.). (*Two Plates.*)

PART XXV. (Issued June, 1907.)

89.—The Rosewood (*Dysoxylon Fraseranum, Benth.*), also The Apple-tree of Lord Howe Island (*D. pachyphyllum*, Hemsl.).
90.—A Virgate Eucalypt (*Eucalyptus virgata*, Sieb.).
91.—The Two-veined Hickory (*Acacia binervata*, DC.).
92.—The White Cedar (*Melia Azedarach*, L., var. *australasica*, C. DC.).

PART XXVI. (Issued September, 1907.)

93.—The Hairy Dysoxylon (*Dysoxylon Becklerianum*, C.DC.).
94.—Luehmann's Gum (*Eucalyptus Luehmanniana*, F.v.M.).
95.—The Mulga (*Acacia aneura*, F.v.M.).
96. The Red-wooded Cryptocarya (*Cryptocarya erythroxylon*, Maiden and Betche).

PART XXVII. (Issued October, 1907.)

97.—The Red Bean (*Dysoxylon Muelleri*, Benth.).
98.—Red Stringybark (*Eucalyptus macrorrhyncha*, F.v.M.).
99.—A Brush Ironbark (*Acacia aulacocarpa*, A. Cunn.).
100.—A Brown Beech (*Cryptocarya glaucescens*, R.Br.).

PART XXVIII. (Issued December, 1907.)

101.—A Bog Onion (*Amoora nitidula*, Benth.).
102.—The Brown Stringybark (*Eucalyptus capitellata*, Sm.).
103.—The Broad-leaved Wattle (*Acacia pycnantha*, Benth.).
104.—The Murrogun (*Cryptocarya mieroneura*, Meissn.).

PART XXIX. (Issued January, 1908.)

105.—The Bastard Rosewood (*Synoum glandulosum*, A. de Jussien)
106.—A White Stringybark (*Eucalyptus eugenioides*, Sieb.).
107.—Baker's Wattle (*Acacia Bakeri*, Maiden).
108.—The Stinking Cryptocarya (*Cryptocarya fœtiaa*, R. T. Baker)

PART XXX. (Issued March, 1908.)

Recapitulatory. (Seventeen Photographic Illustrations).
109.—The Yellow Stringybark (*Eucalyptus Muelleriana*, Howitt)
110.—The Nealie (*Acacia rigens*, A. Cunn.).

Volume IV (Parts XXXI–XL).

PART XXXI. (Issued September, 1908.)

111.—The Onion Wood (*Owenia cepiodora*, F.v.M.).
112.—The Blackbutt (*Eucalyptus pilularis*, Sm.).
113.—Cootamundra Wattle (*Acacia Baileyana*, F.v.M.).
114.—Grey Sassafras (*Cryptocarya australis*, Benth.).

PART XXXII. (Issued November, 1908.)

115.—The Red Honeysuckle (*Banksia serrata*, L. f.).
116.—The White Mahogany (*Eucalyptus a menioides*, Schauer).
117.—The Gidgee (*Acacia Cambagei*, R. T. Baker).
118.—*Cryptocarya patentinervis*, F.v.M.

PART XXXIII. (Issued February, 1909.)

119.—A Honeysuckle (*Banksia æmula*, R.Br.).
120.—The Sydney Peppermint (*Eucalyptus piperita*, Sm.).
121.—Ironwood (*Acacia excelsa*, Benth.).
122.—The Three-veined Cryptocarya (*Cryptocarya triplinervis*, R.Br.).

PART XXXIV. (Issued May, 1909.)

123.—The Heath-leaved Honeysuckle (*Banksia ericifolia*, L.f.).
124.—Yowut or Mountain Ash (*Eucalyptus Sieberiana*, F.v.M.).
125.—The Brigalow (*Acacia harpophylla*, F.v.M.).
126.—*Cryptocarya Meissneri*, F.v.M.

PART XXXV. (Issued July, 1909.)

127.—Richmond River or Hoop Pine (*Araucaria Cunninghamii*, Ait.).
128.—Black Stringybark (*Eucalyptus Baileyana*, F.v.M.).
129.—The Yarran (*Acacia homalophylla*, A. Cunn.).
130.—A Cork Wood or Till (*Endiandra Sieberi*, Nees.).

PART XXXVI. (Issued October, 1909.)

131.—Honeysuckle or Warrock (*Banksia marginata*, Cav.).
132.—The Yertchuk (*Eucalyptus Considineana*, Maiden).
133.—The Bastard Myall or Kurrajabah (*Acacia Cunninghamii*, Hook.).
134.—The Ball Fruit (*Endiandra globosa*, Maiden and Betche).

PART XXXVII. (Issued January, 1910.)

135.—The Broad-leaved Honeysuckle (*Banksia latifolia*, R.Br.).
136.—White or Scribbly Gum (*Eucalyptus hæmastoma*, *Sm.*).
137.—The Currawang (*Acacia doratoxylon*, A. Cunn.).
138.—Endiandra Muelleri, Meissn.

THE FOREST FLORA

OF

New South Wales.

J. H. MAIDEN.

VOL. IV. PART 9.

Published by Authority of the

GOVERNMENT OF THE STATE OF NEW SOUTH WALES.

PART XXXIX *OF THE COMPLETE WORK.*

INDEX OF TREES DESCRIBED.

Volume I (Parts I-X).

Volume II (Parts XI-XX).

THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,

Government Botanist of New South Wales and Director of the Botanic Gardens, Sydney.

PART XXXIX.

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53956—A

No. 143.

Banksia spinulosa, Sm.

A Honeysuckle.

(Family PROTEACEÆ.)

Botanical description.—Genus, *Banksia*. (See Part VIII, p. 169.)

Botanical description.—Species, *B. spinulosa*, Sm. Specim., Bot. N. Holl. 13, t. 4 (1793).

A tall shrub, glabrous, or the young branches minutely pubescent.

Leaves narrow-linear, notched at the end with a prominent point in the notch, and often bordered towards the end with two or three small teeth on each side, otherwise entire, with revolute margins and the midrib prominent underneath, 1½ to 3 inches long.

Spikes ovoid, and 2 to 3 inches long, or rarely cylindrical and twice as long. (More usually cylindrical.—J.H.M.)

Bracts with broad, shortly acuminate, silky-pubescent tips.

Flowers yellow, larger than in *B. ericifolia*.

Perianth silky, the tube nearly 1 inch long.

Style, 1¼ to 1½ inch long, often purple, with a very short stigmatic end not thicker than the style.

Fruiting cone cylindrical.

Capsules scarcely protruding, glabrous, thick, smooth. (B. Fl. v, 547).

Botanical Name.—*Banksia*, already explained (see Part VIII, p. 170); *spinulosa*, a diminutive from the Latin *spinus*, a thorn or prickle, and hence, having small thorns or prickles. It refers, in the present species, to the small teeth of the margin of the leaf.

Vernacular Names.—I know of none. People could, of course, call it the "Spinulous-leaved Honeysuckle," but with every desire to further the use of vernacular names for plants, I very much doubt the practical utility of designations such as these. Only educated men could be expected to use such a name as the one I have quoted, but what use it would be to them I fail to see, since they would have no difficulty in saying "*Banksia spinulosa*," a shorter and more euphonious name.

The spread of education generally and the teaching of botany in schools will go far to promote the use of botanical names amongst people at large. Vernacular names, which are plant nick-names, will be increasingly coined as the public learn to discriminate more plants, but it does not seem easy to control the choice of the great public in this matter. European names are the product of a thousand years and more.

Synonym.—*B. denticulata*, Dum-Cours. (according to Meissner).

Leaves.—Note the spinulose margin (see plate).

Size.—This is a tall shrub, not a timber tree. I doubt if I have seen it with a thicker stem-diameter than 5 inches. Room should be found for it in quite a small garden.

Habitat.—This species is confined to New South Wales. In the *Flora Australiensis*, it is recorded from Port Jackson, Richmond (Nepean River), and Twofold Bay, which is not far from the Victorian border.

In the National Herbarium, Sydney, it is represented from the following intermediate localities :—Cataract Dam (J.H.M.); Barber's Creek (H. G. Rumsey); Bateman's Bay (J. L. Boorman); Buddawang, or Mount Baldy, near Braidwood (J. L. Boorman).

It is also not uncommon on the Blue Mountains, even on the highest and more westerly parts, *e.g.*, Mount Victoria (J.H M.); Clarence Siding (J. L. Boorman).

EXPLANATION OF PLATE 147.

A. Flowering spike, from North Ryde, Parramatta River.

B. Unexpanded flower.

C. Expanded flower, showing—
   (*a*) Four-lobed corolla with stamens.
   (*b*) Pistil.

D. Corolla lobes—
   (*a*) Showing stamen (sessile anther) in the concave laminæ.
   (*b*) Back view.

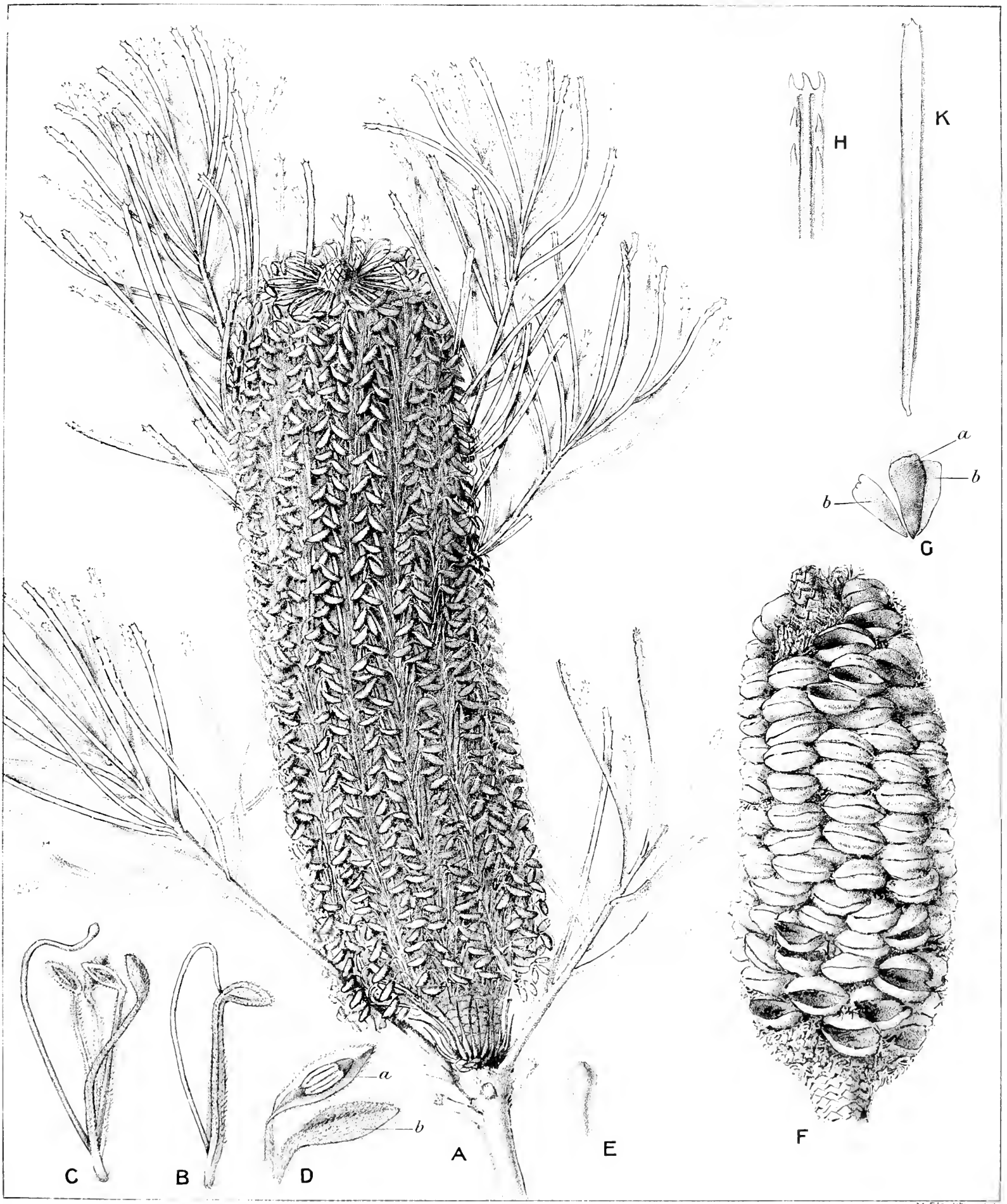
E. Stigma.

F. Fruiting spike showing the prominent capsules, containing the winged seeds.

G. Seeds with dissepiment—
   (*a*) Plate (dissepiment) separating the two winged seeds (b.b).

H. Part of leaf showing recurved edge and spines.

K. Leaf of larger form, from Mount Victoria.



A HONEYSUCKLE.

(*Banksia spinulosa*, SM.)

No. 144.

Eucalyptus sideroph1oia, Benth.

The Broad-leaved Ironbark.

(Family MYRTACEÆ.)

Botanical description.—Genus, *Eucalyptus.* (See Part II, p. 33.)

Botanical description.—Species, *E. sideroph1oia,* Benth. in B.Fl. iii, 220 (1866), where it is described as follows :—

A tall tree, with a hard, persistent, rough and furrowed bark (F. Mueller and others).

Leaves ovate-lanceolate or lanceolate, much acuminate, straight or more frequently falcate, about 3 to 6 inches long, often rather thick, with numerous fine diverging veins, the intramarginal one close to the edge.

Peduncles axillary, or in terminal corymbose panicles, more or less angular, each with about 6 to 12 flowers, on distinct angular pedicels.

Calyx-tube shortly turbinate, about 2 lines diameter.

Operculum conical or acuminate, rather longer than the calyx-tube in the ordinary form.

Stamens 2 to 3 lines long, all perfect, inflected in the bud; anthers very small and nearly globular, the cells very short, opening at first in oblong slits, extending at length to the base or sometimes almost confluent.

Ovary convex or conical in the centre.

Fruit globular-truncate or obovoid, 3 to 4 lines diameter, not at all or scarcely contracted at the orifice, the rim slightly prominent, the capsule not much or sometimes scarcely sunk, the valves often protruding.

A "coarse" species, that is to say, having coarse fruits (as compared with the other Ironbarks, *paniculata* and *crebra*) and coarsely furrowed bark. Altogether a very sturdy tree, reminding one, in this respect, of the British Oak.

There is a glaucous form (var. *glauca,* Deane and Maiden)* which goes under the name of "Blue-leaf Ironbark" and "Broad-leaf Ironbark" in the Dubbo district.

Botanical Name.—*Eucalyptus,* already explained (see Part II, p. 34); *sideroph1oia,* from two Greek words, *sideros,* iron, and *phloia,* bark, in reference to the common Australian name for such trees.

Vernacular Names.—"Broad-leaved Ironbark." Perhaps this is the most distinctive name for this species, a characteristic by which it may be readily distinguished, particularly in young trees. It is often called "Red Ironbark," particularly from northern localities.

* See *Proc. Linn. Soc. N.S.W.,* xxiv, 461 (1899), and *Crit. Rev. genus Eucalyptus,* Part x, p. 325.

We have four* principal Ironbarks, three of them of especial value. Timbers of this class are so important that it will be interesting to discriminate them. There is a good deal of confusion in regard to the local names given to Ironbarks, and the names I suggest for the four species seem to me the least objectionable. At the same time the names "Narrow-leaved Ironbark" and "Broad-leaved Ironbark" are too cumbersome for ordinary use, and certainly for persons outside the State. It is probable that Ironbark for the export trade will go forward under two names only, viz., Grey Ironbark and Red Ironbark, the first being the white or grey Ironbark, and the second including both the "narrow and broad-leaved Ironbarks," the timbers of which closely resemble each other. The fourth Ironbark, whose botanical name is *Eucalyptus sideroxylon*, is mainly an interior species, and will seldom, if ever, be exported. Perhaps timber will go forward under the single generic name of Ironbark; if so, I wish to impress on friends at a distance that our various species of Ironbark vary a good deal in colour, as a consignee may readily be confused if an Ironbark be sent to him different in appearance to that to which he has been accustomed. Because of the great importance of Ironbark, I proceed to deal with these timbers with a little more detail than with the other hardwoods.

Table of Ironbarks.—The following table brings out the principal points in Ironbark trees and Ironbark timbers, and may help to elucidate them:—

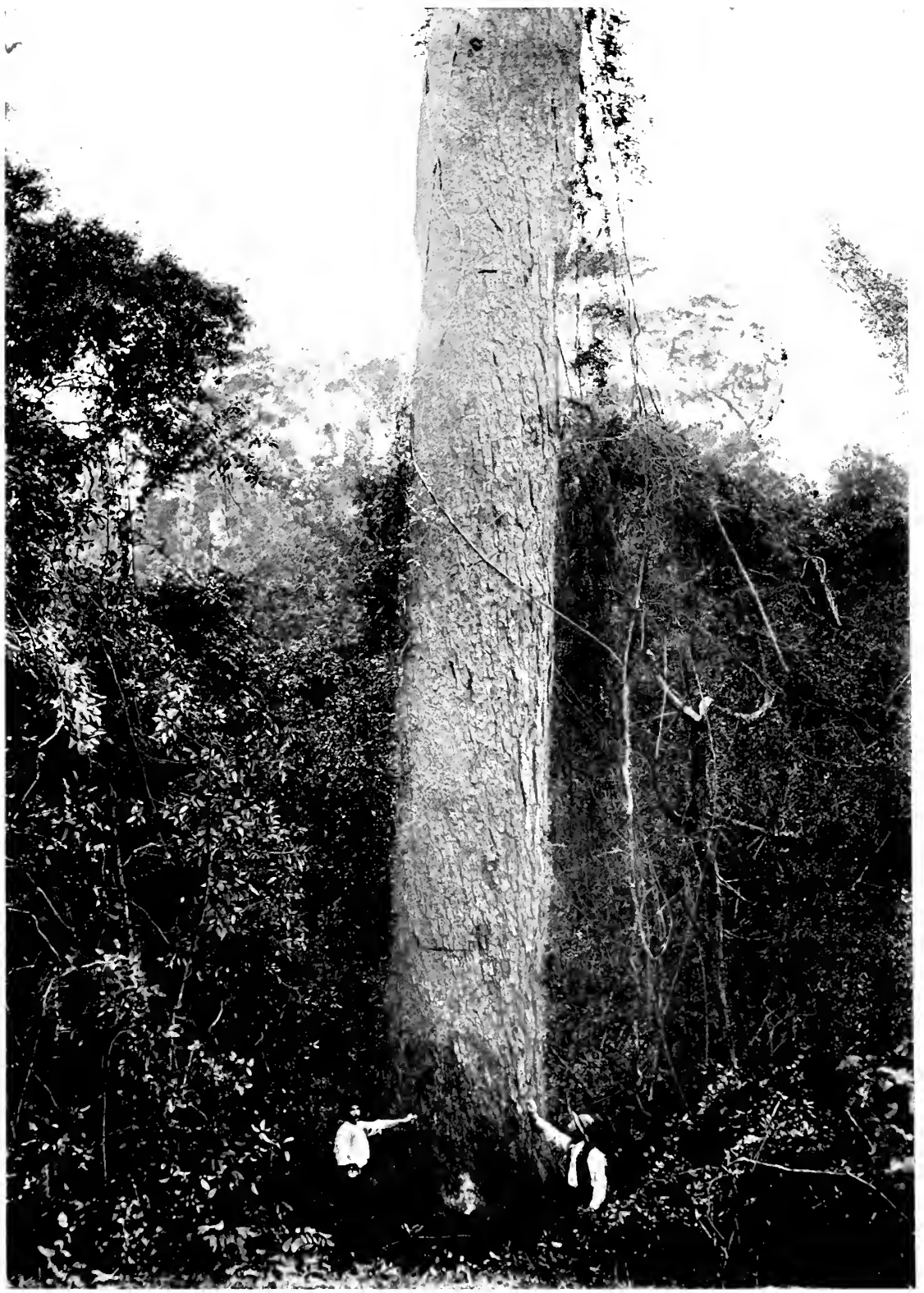
	White or She Ironbark (*paniculata*).	Narrow-leaved Ironbark (*crebra*).	Broad-leaved Ironbark (*siderophloia*).	Red Ironbark (*sideroxylon*).
Colour (darkens with age).	Very pale; pink when fresh.	Medium red... ...	Medium A little darker than preceding.	Very dark.
Strength of timber	Best...	Good	Good	Inferior.
Bark	Often pale coloured, even grey. Furrows often anastomosing.	Very deeply furrowed, inferior in depth only (if at all) to *sideroxylon*.	Often of a flaky character.	Dark; deepest furrowed.
Leaves	Narrow and medium	Very narrow ...	Very broad	Medium; foliage often sparse.
Flowers	White	White	White	Crimson; sometimes creamy.
Fruits	Small	Very small	Rather large	Large.

Aboriginal Names.—"Derrobarry" is the name given by the Sydney blacks according to George Caley, who collected for Sir Joseph Banks, 1800–1810. Later on (1854), the late Sir William Macarthur gave the name as "Terri-barri," evidently the same name.

"Algerega" of the Clarence River aborigines.

It is said to have been called "Tanderoo" by the natives of Southern Queensland.

* There are two others (*a*) the Silver-leaved Ironbark (*Eucalyptus melanophloia*), which is closely allied, botanically, to *E. crebra*. It occurs in the drier parts of the State, west and north-west. It is usually small. (*b*) *Eucalyptus Caleyi*, a New England Ironbark allied to *E. sideroxylon*.



F. A. Kirton, photo.

"BROAD-LEAVED IRONBARK" (*Eucalyptus siderophloia*, BENTH.), WYONG

Synonyms.—*E. fibrosa*, F.v.M., and *E. ornata*, Sieb. (See *Crit. Rev. gen. Euc.*, Part x, p. 325.)

Leaves.—The coarseness of the foliage in this species has already been alluded to.

Flowers.—The buds are often, when young, of the "egg-in-egg-cup" shape —that is to say, the operculum is of noticeably less diameter than the calyx. (See figure.)

The bud is commonly beaked, but it is a mistake to say that there is a beaked (rostrate) form of the species. This is dealt with at p. 324, Part x, of my *Critical Revision of the genus Eucalyptus.*

Fruits.—The fruits have generally exsert valves (teeth, some people call them), which is usually quite sufficient to distinguish this from other Ironbarks. (See figures D and E of Plate 148.)

Bark.—The ridges of bark common to all Ironbarks are flattest in this species, that is to say, in other Ironbarks they are sharper and more conical in section.

Timber.—*How to tell Ironbark.*—It is not very easy in a few words to give a definition of Ironbark. Of course, if the bark is available, the thing is simple enough, for most of the barks are characteristically furrowed and rugged. To describe it we must take note of a variety of circumstances. It is heavy (almost the heaviest of our hardwoods). It is hard, as may readily seen if it be touched with a plane, or a nail be driven (or attempted to be driven) into it. Its most characteristic property, however, is a certain "gumminess" in working, which is well brought out under the plane, and its horny texture. The result is that, when planed, ironbark shows the appearance of more or less parallel striæ or lines of close-textured wood, strongly resembling horn, while between these the wood has a more open grain, showing narrow pits which may be seen, even by the naked eye, to be filled by a substance of resinous texture. In some specimens it is not easy, however, to make out these lines of horny-textured wood, but the resin-pits appear to be always present. Ironbark is more or less curly in the grain, consequently it often gives trouble to plane to a perfectly smooth surface. If a blunt tool be used, the ironbark tears in fairly regular blotches, while to get a perfectly smooth surface the wood often requires to be traversed with the plane, or even to be gone over with the steel scraper. Its hardness and weight often precludes it from use—perhaps an advantage, as otherwise the consumption of this timber would be inordinate.

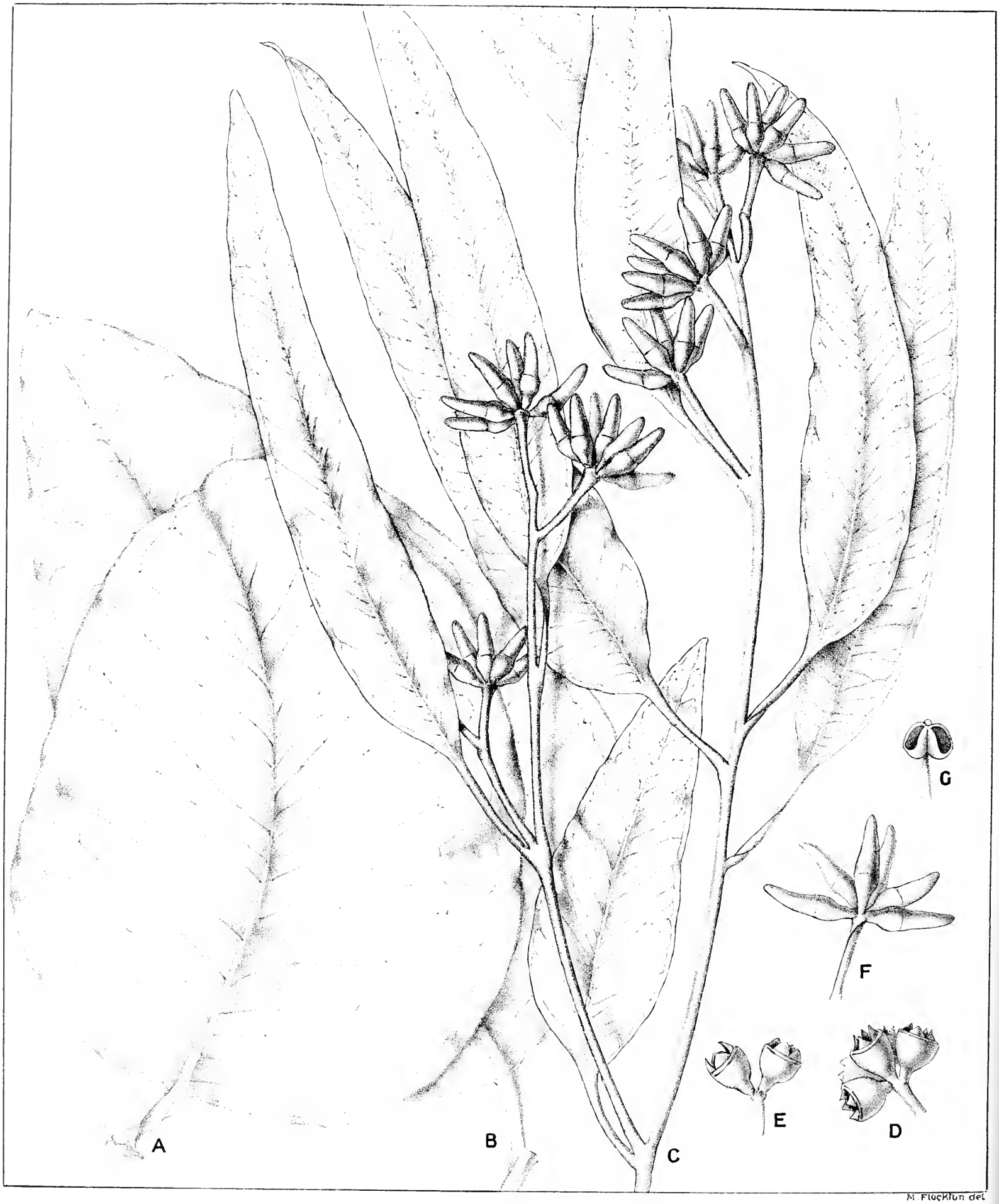
A rough-and-ready method (and in the hands of an expert a satisfactory method) of testing whether a timber is Ironbark, is to cut a fragment—say 2 or 3 inches long, and only as thin as a piece of twine—with a penknife; its tensile strength is tested between the fingers.

Principal Uses.—Ironbark is the king of New South Wales hardwoods—in fact, it is not excelled in any part of the continent for combined strength and durability. It is extensively used in bridge-construction, for railway sleepers, for posts, for naves, spokes, shafts, and framing by the waggon and carriage-builder; for large beams in buildings, particularly in stores for heavy goods—in a word, wherever great strength is required. For such purposes as railway sleepers it will last an indefinite period, and in many cases has to be taken up, not because it shows signs of decay from exposure on the permanent-way, or disintegrating because of the vibration to which it has been subjected, but because holes have been made in the sleeper by the renewal of bolts and spikes. I have seen specimens of sleepers which have borne the heaviest traffic of the main line near Sydney for twenty-five years, and which are as sound as the day they were laid.

Coming to the particular Ironbark of which we are speaking, the timber has the highest reputation for strength and durability, and is used for large beams in stores for heavy goods, railway sleepers, and other purposes where great strength is required. It is also used for dray poles. Its extreme hardness renders it difficult to work. It is largely used for spokes.

Following are specimens of this timber in the Technological Museum, interesting because of the notes in regard to them. Notes half a century old and more in regard to Ironbarks which can be botanically determined now, are rare. (1) No. 4, *London Cat.*, 1862; 137, *Paris Cat.*, 1855. "Broad-leaved Rough Ironbark," and "Terri-barri," names in Cumberland and Camden. Diameter, 24 to 48 inches; height, 80 to 120 feet. "From Appin, common in Cumberland; one of the strongest and most durable of timbers." The *Paris Cat.* also states: "Rough-leaved, rough-barked Ironbark." "This tree has been proposed as their emblem by the colonists of New South Wales." Of a very dark colour, very good to work, and even in grain. (2) "Ironbark of the Clarence"—"Algerega" of the aborigines. "This well-known tree attains a very large size in the northern districts—upwards of 100 feet in height, and as much as 5 feet in diameter. Timber very highly valued for its unequalled strength and durability; it is used for all kinds of fencing, shingles, beams, dray poles, plough beams, and various other purposes; when properly seasoned it will not shrink." (*Cat. London Exh.*, 1862.) It is of a dark-brown colour, heavy, hard, and close in the grain. (3) The wood described in the Sydney Mint Experiments, 1860, as "Rough-barked Ironbark, *E. resinifera*," is *E. siderophloia*. It came from Brisbane, and "is much prized for building and other purposes." Specific gravity, 1·15; value of E., 639,400; of S., 2,962. It has a wavy grain, and is of a dark, reddish-brown colour. It is tough, hard to work, and well adapted for the felloes of wheels of drays and carts of all sorts. It lasts well for piles in water, and for posts. It is very heavy.

The Ironbark of the Clarence is not liked as compared with southern Ironbark, as it is inclined to split and shell.



BROAD-LEAVED RED IRONBARK.

(*Eucalyptus siderophloia*, BENTH.)

Speaking of this Ironbark, chiefly from the Manning River district, the late Mr. Augustus Rudder wrote :—

The mature trees are generally pipy, and the colour of the wood is red. The timber of this Ironbark is strong, hard, dense, and heavy, but in lasting quality is not always reliable, as I have repeatedly seen it quite rotten after ten or fifteen years, but this is not usual. It is very plentiful in places, in the Clarence River district in particular, but in these parts the timber is of inferior quality, especially on the ridges, where the trees are stunted and badly grown. For railway sleepers this timber is fairly good, but is scarcely to be recommended in the round, as a rule, for bridge-work, as its central heartwood is not reliable, and it is very subject to the white ant, more so than any other hardwood I know of.

At the mill-brook, in the town of Stroud, are the remains of the old bridge, erected, when we examined it in 1895, about fifty years previously. The foundations consisted of logs in the round laid crosswise over each other. Mr. de Coque and I went into the bed of the creek, and examined two of the lowest logs, which were moss-grown, and which had been exposed on the ground, between wind and weather, for half a century. With the axe we took out chips, and the logs proved to be grey and red Ironbark, still perfectly sound, except where the water had got into the sun-cracks. It will be admitted that this is a good test of the durability of any timber.

Size.—This is a large tree, attaining the height of 100 feet, with a diameter of 4 feet and more. Being a timber in such demand, most of the largest trees have long since been cut down in readily accessible places.

Habitat.—It occurs from the Clyde Mountain in the south, along the coast ranges to North Queensland. Westward it is found as far as Wellington and Dubbo, also at Mudgee. With *E. crebra* it is found from Dubbo to the North-Western line.

I shall be glad if correspondents will send me specimens from as many southern and western (New South Wales) localities as possible.

Mr. A. Murphy has collected it from Rockhampton, Queensland, and his specimens are precisely similar to the Sydney ones.

EXPLANATION OF PLATE 148.

A. } Sucker-leaves from Smithfield, near Parramatta.
B. }

C. Flowering twig.

D. Fruits from the same branch.

E. Fruits from Smithfield.

F. Larger buds of what was at one time known as var. *rostrata*, of this species, from Cabramatta, near Liverpool.

G. Anther.

PHOTOGRAPHIC ILLUSTRATION.

A "Broad-leaved Ironbark" from Wyong. Girth 21 feet, and trunk 55 feet to first fork. Note the flat appearance of the ridges of the bark, which is characteristic of the species.—(F. A. Kirton, photo.)

No. 145.

Acacia salicina, Lindl.

The Cooba.

(Family LEGUMINOSÆ: MIMOSEÆ.)

Botanical description.—Genus, *Acacia.* (See Part XV, p. 103.)

Botanical description.—Species, *A. salicina,* Lindley, in Mitchell's *Three Expeditions*, II, 20 (1839).

A tall shrub or small tree, with branches often pendulous, the foliage of a pale or glaucous hue and quite glabrous; branchlets scarcely angular.

Phyllodia mostly straight or nearly so, oblong-linear or lanceolate, obtuse or slightly acuminate, much narrowed at the base, 2 to 5 inches long and not above ½ inch broad, but in some varieties occasionally broader or falcate, always rather thick, the midrib scarcely prominent, the lateral veins obscurely reticulate, the margins scarcely thickened, the gland very rare.

Racemes short, irregularly bearing two or three dense globular heads or reduced to a single head.

Flowers twenty or more, mostly 5-merous.

Calyx short, truncate, entire or minutely toothed.

Petals quite smooth.

Pod straight, 1 to 3 inches long, in the ordinary form not above 3 lines broad; valves somewhat convex, hard and thick.

Seeds orbicular, longitudinal; funicle thickened and usually scarlet almost from the base, forming several folds under the seed. (B.Fl. ii, 367.)

There are three more or less distinct forms of this species:—

(*a*) The plant just described, which may be termed a big Umbrella Bush.

(*b*) Var. *varians,* Benth., a fair-sized tree which Bentham (*loc. cit.*) describes in the following words:—

Var. *varians.* Branches more spreading. Phyllodia more veined, the lower ones often much broader and almost penniveined, as in *A. penninervis,* but without the thickened margin or gland. Pod about 4 lines broad, the seeds often oblique and the folds of the funicle extending up one side.—*A. varians,* Benth. in Mitch. *Trop. Aust.,* 132. To this belong all the tropical and subtropical specimens. It is generally a very distinct form, and it is with some hesitation that I have followed F. Mueller in considering it a variety only of *A. salicina.*

(*c*) Var. *Wayæ,* Maiden, *Proc. Roy. Soc. S.A.*, xxxii, 277 (1908), a small Umbrella Bush. These three forms will now be dealt with separately.

(*a*) Normal Form.

Following is the original description :—

In the woods we passed through this day we found a curious willow-like acacia, with the leaves slightly covered with bloom, and sprinkled on the under side with numerous reddish minute drops of resin. (Mitchell.)

Then we have Lindley's foot-note :—"This is allied in some respects to *A. vernicyflua* and *exudans*, but is a very distinct and well-marked species. *A. salicina* (Lindl. MSS.), glaucescens, ramulis angulatis, phyllodiis divaricatis lineari et oblongo-lanceolatis utrinque angustatis obtusissimis uninerviis venulis pinnatis: ipso apice glandulosis subtus resinoso-punctatis, capitalis 3–5 racemosis phyllodiis triplo brevioribus." (Mitchell, *Three Exped.*, ii, 20 [1839].)

The type was collected 30th March, 1836, near Oxley and G. W. Evans' marked tree on the Lachlan, New South Wales.

Botanical Name.—*Acacia*, already explained (see Part XV, p. 104); *salicina*, Latin *salix*, *salicis*, a Willow, and hence "willow-like," but this name is most applicable to the variety *varians*.

Vernacular Name.—"Umbrella Bush."

Aboriginal Names.—"Muntharra," Lake Eyre natives eat seed (W. Baldwin Spencer); "Wirrha," Cooper's Creek, near Lake Eyre (A. W. Howitt); "Kakooroo" or "Wurra" (Max Koch). ("Wurra" and "Wirrha" are evidently the same word.) All the above in use in South Australia.

Leaves.—This is one of the species whose leaves are used to burn for the ash which the aborigines mix with the Pituri, their masticatory.

Flowers.—Of a bright yellow colour, in contradistinction to the paler, sparser flowers of var. *varians*.

Fruit.—The pods are fleshy. The blacks eat the seed at Lake Eyre (W. Baldwin Spencer).

Exudations.—"We found a curious, willow-like *Acacia*, with the leaves slightly covered with bloom, and sprinkled on the underside with numerous reddish minute drops of resin" (Mitchell). This species also exudes a soluble gum from the bark. The genus *Acacia* therefore produces both a gum and a resin.

Size.—A tall shrub up to about 8 or 10 feet high, and very umbrageous.

Habitat.—The range of the normal species, as given in the *Flora Australiensis*, is as follows :—

North Australia.—Banks of creeks, Arnhem's Land, *F. Mueller*; Curtis Island, *Henne*.

Queensland.—Open forest lands on the Balonne, *Mitchell*; Suttor River, *F. Mueller*.

New South Wales.—On the Lachlan, and thence to the Barrier Range, *A. Cunningham, Mitchell, Victorian Expedition, &c.*; Liverpool Plains, *Leichhardt*.

Victoria.—In the N.W. desert, *F. Mueller.*

South Australia.—From the Murray to St. Vincent's and Spencer's Gulfs, and northward to the desert interior, *F. Mueller*; Memory Cove, *R. Brown.*

West Australia.—Dirk Hartog's Island, *A. Cunningham*; Shark's Bay, *Milne*; Murchison River, *Oldfield*; also a specimen from *Baudin's Expedition*, in Herb. R. Brown.

To which may be added the following notes from specimens in the National Herbarium, Sydney :—

New South Wales.—On red soil only, Bourke district. Grows about 8 feet high, with branches touching the ground and spread out like an umbrella (A. W. Mullen); Paroo River (E. Betche).

Queensland.—Bulloo River (through F. M. Bailey).

Victoria.—Mallee district (C. Walter).

South Australia.—"Umbrella Bush" 8–10 feet high, spreading; grows in sandy country; has yellow flowers; is non-pendulous, and grows in a dense head (Walter Gill).

East Wellington, No. 10, and Talowie Gorge and plains west of Flinders Range, No. 11. "The big globular 'Umbrella Bush' of the somewhat dry North, a rather tall, much branched shrub up to 4½ feet high. Pod exceeds in length anything described in the books, sometimes 20 cm. long." (J. M. Black.)

Bushy, 10 feet high, Port Augusta (J.H.M.); Murray Bridge (R. H. Cambage and J.H.M.).

Killalpanina, Cooper's Creek, near Lake Eyre (Dr. A. W. Howitt); Lake Eyre (Prof. W. Baldwin Spencer).

"Resembles in some respects No. 42 (see var. *varians*), the pods are similar, also the seeds have a red funicle folded, but still in other respects it is very dissimilar. The branches are rigid, not pendulous. It is a large shrub, not a tree. It is more or less distributed in the North; in some creeks this shrub grows almost exclusively. Mount Lyndhurst, No. 9" (Max Koch).

West Australia.—Fraser Range, Elder Exploring Expedition, 31st October, 1891 (R. Helms).

(*b*) Variety varians, Benth.

This is a tree, and the only form which yields timber. The original description is as follows :—

A. varians (Benth. MS.) glabra, pallida v. glauca, ramulis subangulatis, phyllodiis oblongo-lanceolatis v. inferioribus late obovatis summisve linearibus, omnibus basi longe angustatis apice obtusis v. oblique mucronatis subimmarginatis vix obscure glanduliferis uninervibus tenuiter reticulato-penniveniis, capitulis sub 20- floris solitariis subracemosis v. in racemos foliatos dispositis, calycibus truncatis, legumine glabro *crasso subligno*so. Very near *A. salicina*, and possibly a mere variety, but the phyllodia are generally considerably broader, and the inflorescence different. (Mitchell's *Trop. Aust.*, 132 [1848]).

Collected 22nd April, 1846, when Mitchell was at St. George's Bridge, say, 28° N. and 148° 60′ E. on the Balonne River, Queensland.

Vernacular Names.—The "Cooba," or "Koobah," of the aborigines and colonists of western New South Wales. "Native Willow" is another name. Called "Broughton Willow" in South Australia. "Gurley or Curley tree" of the Bogan, New South Wales (A. W. Mullen).

Aboriginal Names.—Mitchell calls it "Goobang," perhaps really the same as "Cooba," the modern name. About the Castlereagh River (New South Wales) it is one of the trees which takes the name of "Motherumba." "Bremgu" is the name at the Lake Hindmarsh aboriginal station (Victoria). "Bakka" is a Queensland aboriginal name. "Balkura" is a South Australian name.

Leaves.—The leaves are eaten by stock. This is another tree which is rapidly becoming scarce, owing to the partiality of stock to it.

Bark.—Mentioned by Sir T. Mitchell for poisoning the fish in small lagoons, and Mr. Hill says that the natives of the Fitzroy River, Queensland, put it to a like purpose.

Following is a condensed account of the analyses of two specimens of this bark, recorded by me in *Proc. R.S. N.S.W.*, 1888, 268:—

a. Tarella, Wilcannia.—Height, 20–25 feet; diameter, 12–18 inches. Collected August, 1887; analysed August, 1888. A coarse flaky bark, not so fibrous, more compact, and altogether more promising looking than most of the dry-country barks. Average thickness, up to $\frac{3}{4}$ inch; tannic acid, 13·31 per cent.; extract, 35·28 per cent.

b. Momba, Wilcannia.—Height, 30–40 feet; diameter, 12–18 inches. Collected August, 1887; analysed September, 1888. Not flaky on the outside like No. 1, but a harder, bonier bark; more rugged, but obviously a promising bark. Thickness, up to 1 inch; tannic acid, 13·51 per cent.; extract, 33·1 per cent.

A sample from the Lachlan River, N.S.W., which had then been in the Technological Museum five years, is a good specimen of this bark, being fairly smooth, close, compact, and containing comparatively little fibre. It was analysed May, 1890, and found to contain 15·1 per cent. of tannic acid, and 32·75 per cent. of extract.

This species is undoubtedly worthy of conservation, and even culture, in the dry interior where it is found, particularly as the barks there are usually so poor in tannic acid. The blacks are aware of the value of this tan-bark, as they use it for tanning wallaby and other skins.

Timber.—Close-grained, tough, heavy, dark brown, and nicely marked. The aborigines make boomerangs, and the colonists tables, chairs, and other furniture from it. (*General Report, Sydney International Exhibition*, 1879.) It is valued for bullock-yokes in western New South Wales, and also for shafts of carts. Mr. G. S. Home tells me that cheffoniers, and other articles of drawing-room furniture, are commonly made from it in western New South Wales, as it takes such a high polish. Specific gravity ·763, or weight of a cubic foot of the dried wood about 47½ lb. (Mueller).

Eumung (*Acacia salicina*). This acacia is found in the interior of New South Wales. It is similar in colour and texture to Blackwood (*Acacia melanoxylon*) and makes a good club, although inclined to chip and fray. (R. T. Baker, in "Golf Illustrated," 28th July, 1905.)

Acacia stenophylla is also called "Eumung" or "Eumong."

Habitat.—Following are some specimens in the National Herbarium, Sydney:—

Queensland.—Northern Queensland, Banks and Solander, 1770, ex British Museum; Diamantina (through F. M. Bailey).

New South Wales.—

Another tree growing on the river flats (Lachlan River) is *Acacia salicina*, Lindl. (Cooba or Native Willow). It has a diameter up to 2 feet, and is a most useful timber, being in request for cabinet-making and certain wheelwrights' work. (R. H. Cambage, *Proc. Linn. Soc. N.S.W.*, 1901, 209.)

Thackaringa (Acting Forester?); Bongbilla, Moulamein (T. Grieve). Local name, "Willow."

This tree in favourable situations attains a height of 35–40 feet, and is the largest and handsomest of our Acacias; is usually regarded as an indication of water at a shallow depth; wood remarkably light and tough. Ivanhoe, *viâ* Hay (K. H. Bennett).

Palesthan, *viâ* Condobolin (Miss M. A. Clements); Lake Cudgellico (J. L. Boorman); "Cooba." The most *western* limit in this part of the Central Division is 26 miles east of Nyngan (E. F. Rogers, Forest Guard, Nyngan); Marra Creek, *viâ* Coolabah (R. W. Peacock); Coolabah, large tree "Willow," locally called "Eumung" (J. L. Boorman).

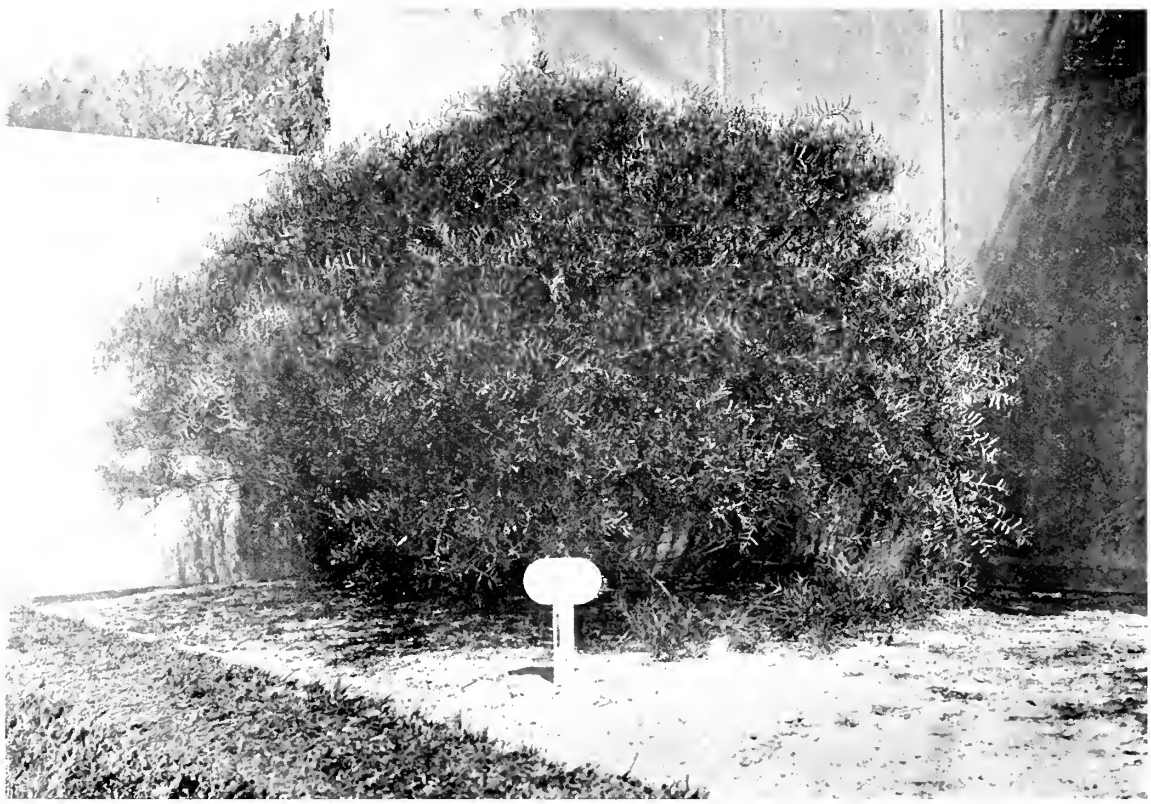
A bushy tree about 20–30 feet high. Grows in swampy Box flats or on river banks, Bogan River (A. W. Mullen); Brewarrina, Burren Junction (J. L. Boorman).

Drooping branches, has appearance of Myall, Page River, 8 miles from Scone (R. H. Cambage and J.H.M.); Minembah, Whittingham, near Singleton (Sylvester Browne); Denman (J.H.M. and J. L. Boorman); Denman. Small trees, rather erect. No. 1,648 (R. H. Cambage).

"Drooping foliage. Grows on ridge as well as in valley; some leaves rather viscid. Attunga, 12 miles north-west of Tamworth. No. 656" (R. H. Cambage); Warialda, No. 11 (Rev. H. M. R. Rupp).

Judge Docker, photo.

"KOOBAH" (*Acacia salicina*, LINDL., VAR. *varians*, BENTH.),
HILLSTON ROAD, NEAR GUNBAR.



Acacia salicina, LINDL., VAR. *Wayæ*, MAIDEN, BOTANIC GARDENS, SYDNEY.

Victoria.—On river Murray between Echuca and Swan Hill, "Native Willow"; height, 20–50 feet; diameter, 1–3 feet; bark on lower part of stems rugged and persistent; branches pendulous. Has a very graceful appearance. No. 29 (J. Blackburne).

South Australia.—"Broughton Willow." A tree, grows near water, in good rich red soil. Flowers creamy white, the branches pendulous (W. Gill).

Mt. Lyndhurst No. 42, "Willow-tree," narrow-leaved form, 15–20 feet. "Balkura" of the aborigines, who eat the seed (Max Koch).

Cootanoorinna, No. 66, Elder Exploring Expedition, 3rd May, 1891 (R. Helms); Rocky River, on road from Wirrabara and near Caltowie (W. Gill and J.H.M.).

Gladstone (in moist places) also along Rocky River, 7–14 feet a common size, but up to 33 feet. Lower branches drooping, flowers very light yellow. Flower and fruit very sparse (J. M. Black).

(*c*) Variety Wayæ, Maiden.

In *Proc. Royal Soc. S.A.*, xxxii, 277 (1908).

A specially compact umbrageous shrub of 3–6 feet high, chiefly distinguished by its habit and its moniliform pods. A beautiful small variety for cultivation, with bright yellow flowers borne in great profusion. It is much admired in the Botanic Gardens, Sydney.

Synonym.—*A. ligulata*, A. Cunn. This is given as a synonym of *A. salicina* in the *Flora Australiensis*, but no authenticated specimen of it appears to be in any Australian herbarium. I accordingly sent a specimen of var. *Wayæ* to the Director of the Royal Botanic Gardens, Kew, asking him to be so kind as to compare it with *A. ligulata.*

Following is his reply :—

"The Acacia sent for comparison is undoubtedly *A. ligulata*, A. Cunn., which may be distinguished from *A. salicina*, Lindl., by the narrower, oblong-linear phyllodia and the fruits, which are flat and much constricted between the seeds."

Following is the original description of *A. ligulata.*

A. ligulata (Cunn. MSS.) glabra, vix viscidula, ramulis angulatis, phyllodiis oblongo-linearibus obtusis recurvo-mucronulatis basi angustatis margine raro glanduliferis uninerviis venis obscuris, pedunculis brevibus, legumine *crasso* compresso sublignoso. Phyllodia breviora crassiora quam in *A. dodoniæfolia*, 1½–2 poll. longa. Flores non vidi. Legumen 2–3 pollicare, rectiusculum, 3 lin. latum.—Dirk Hartog's Island, W. Coast, *Cunningham*, S. Coast, *Fraser*. In Bagster's (Baxter's) K. George's Sound collection is an imperfect specimen which may be a long-leaved variety of this species. (Benth. in *Lond. Journ. Bot.*, i, 362, 1842).

Var. *Wayæ* is common on sand-cliffs, and in localities not very far from the sea in South Australia, where it has an extensive range, *e.g.*, Port Elliston, Marion Bay, Coffin Bay, Port Lincoln, Southern Yorke Peninsula, Kangaroo Island, Port Noarlunga.

EXPLANATION OF PLATE 149.

Acacia salicina, Lindl. ; var. *varians*, Benth.

A. Flowering twig.

B. Pod.

C. Portion of valve showing seed with folded funicle.

D. Seed (slightly magnified) with funicle extended.

E. Broad phyllode from Coolabah.

Acacia salicina, Lindl. ; typical form.

F. Flowering twig of normal form of *A. salicina*.

G. Flower-head.

H. Individual bud.

K. Bract found at the base of each flower.

L. Flower.

M. Flower, opened out, showing—

(*a*) Calyx.
(*b*) Corolla.
(*c*) Stamens.
(*d*) Pistil.

N Pod.

O. Portion of valve with seed (magnified).

Acacia salicina, Lindl. ; var. *Wayæ*, Maiden.

P. Flowering twig.

Q. Pod.

R. Fruiting twig from Botanic Gardens, Sydney.

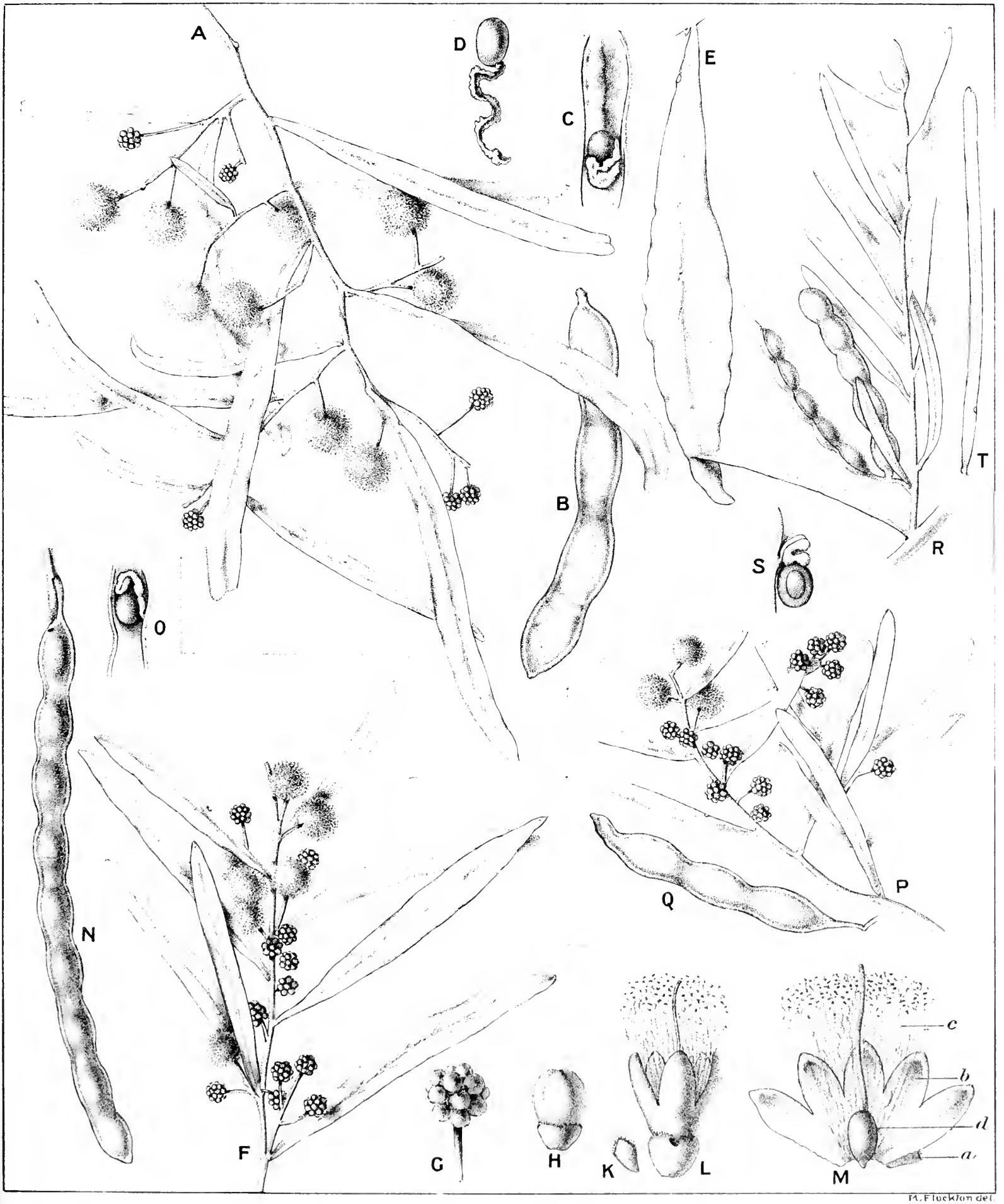
S. Seed.

T. Narrow phyllode.

PHOTOGRAPHIC ILLUSTRATIONS.

"Koobah" tree (*A. salicina*, var. *varians*) from the Hillston Road, near Gunbar.—(Judge Docker, photo.)

Var. *Wayæ*, from a specimen in the Botanic Gardens, Sydney.—(Govt. Printer, photo.)



THE COOBA.

(Acacia salicina, LINDL.)

No. 146.

Endiandra discolor, Benth.

Tick Wood.

(Family LAURACEÆ.)

Botanical description.—Genus, *Endiandra.* (See Part XXXV, p. 79.)

Botanical description.—Species, *E. discolor*, Benth., in *Flora Australiensis,* v, 301 (1870).

A shrub or tall tree, the young branches and inflorescence minutely hoary-tomentose.

Leaves ovate or elliptical, obtuse or shortly acuminate, 2 to 3 inches long, green and glabrous above, glaucous or white underneath, with few prominent primary veins, the smaller reticulations conspicuous on both sides in the full-grown leaf.

Panicles thyrsoid, much shorter than the leaves, the pedicels very short.

Perianth-tube small and turbinate, the limb very open, about $1\frac{1}{4}$ lines diameter, with ovate segments.

Stamens of the outer row entirely deficient, of the inner series 3, with sessile glands at their base and alternating with 3 small staminodia.

Fruit ovoid-oblong, $\frac{3}{4}$ to 1 inch long, resting on the unenlarged remains of the perianth. (*Op. cit.*)

It possesses a considerable superficial resemblance to *E. glauca*, R.Br., a species found in Queensland, and not also in New South Wales as *E. discolor* is. Both of them are doubtless frequently passed over in the bush for the common *Litsæa dealbata*, the leaves of all three trees being a good deal similar.

Botanical Name.—*Endiandra*, already explained (see Part XXXV, p. 79); *discolor*, from two Latin words, signifying two colours, in allusion to the difference in colour of the upper and lower surfaces of the leaf.

Vernacular Names.—This tree has been sent from several New South Wales coastal localities with the name "Tick Wood" or "Teak Wood." I believe that, originally, the name was "Teak," the wood being supposed to possess properties similar to that of the Native Teak of the Northern Rivers, *Flindersia australis* (see p. 149, Part XVII). Oftener than not it is called "Tick" now, and I therefore recommend that name for this particular tree. I do not believe that the name has originated with the noxious insects which are certainly found in some of the brushes it frequents.

I have heard it called "Hickory."

Aboriginal Name.—The name "Murrogun" was applied by the blacks to a timber labelled *Endiandra glauca*, and collected by Sir William Macarthur in 1854 at Brisbane Water for the Paris Exhibition (No. 224). *Endiandra glauca* is

confined to Queensland, as already explained, and *E. discolor* (the present species), with which it may perhaps have been confused, is, however, not recorded in the *Flora Australiensis* as occurring south of the Hastings River, so that there may be some mistake. It was, however, recorded by Mr. Betche and me from Gosford, Brisbane Water, in the year 1906.

I have applied the name "Murrogun" to *Cryptocarya microneura* (see Part XXVIII of this work), and it may be that the aborigines used the name in designating more than one tree of the Lauraceæ. Certainly, in the bush many Lauraceous trees exhibit a good deal of similarity to each other.

Leaves.—This tree has prominent domatia in the angles of the veins of the lower side of the leaf. See p. 83, Part XXV, and also figure G. of plate 150 (this Part).

Timber.—It is white to pinkish when fresh, with a slight grain near the bark as in *E. Sieberi*. It is a fissile, useful softwood of no present ascertained value. But I believe the time will come when we will value, much more than we do at present, these brush timbers which may be classed as softwoods.

Size.—Up to 70 or 80 feet high, with a diameter up to 6 feet. In the Gosford district Mr. Andrew Murphy says it is probably the tallest tree in the bush. There it attains a stem diameter of 6 feet, and the average thickness of trees cut by the timber-getter is 2–3 feet.

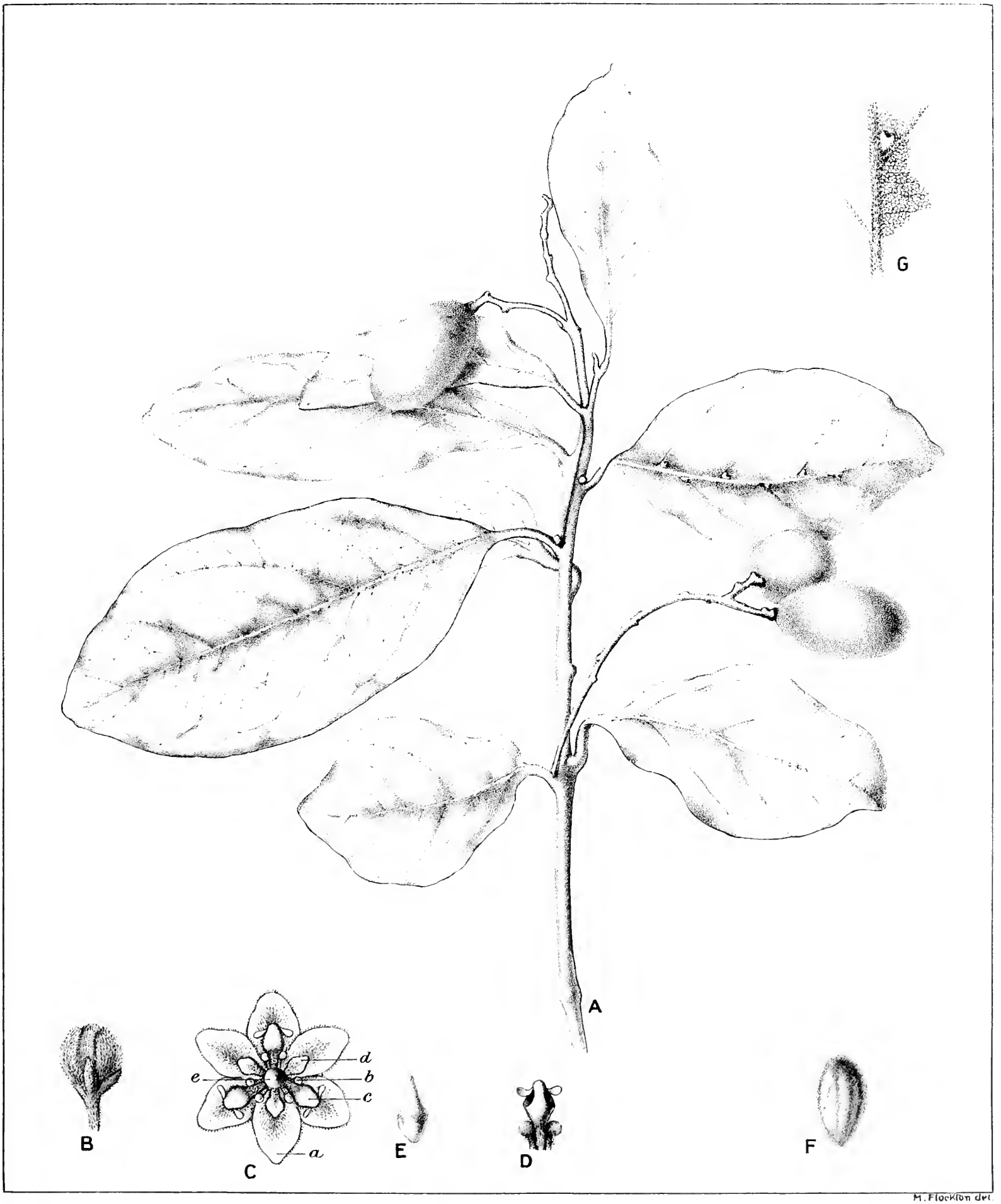
Habitat.—Following are the localities recorded in the *Flora Australiensis*:—

Queensland.—Albany Island and Cape York (*W. Hill*); Rockingham Bay (*Dallachy*).
New South Wales.—Macleay, Richmond, and Hastings Rivers (*C. Moore*).

It has been sent as "Tick or Teak Wood," Woodburn, Richmond River (W. Baeuerlen). It also has the same names at Matcham's Brush and Hogan's Brush, near Gosford, where it is common (A. Murphy); these form the most southern localities. It was not previously recorded south of the Hastings River.

EXPLANATION OF PLATE 150.

A. Fruiting twig.
B. Bud.
C. Flower, opened out, showing—
  (*a*) Calyx (perianth segments).
  (*b*) Stipitate glands at the base of stamens.
  (*c*) Stamens (extrorse anthers).
  (*d*) Staminodia.
  (*e*) Pistil.
D. Stamen and glands.
E. Pistil.
F. Seed (epicarp removed).
G. Portion of back of leaf, showing domatia and venation (magnified).



M. Flockton del.

TICK-WOOD.

(*Endiandra discolor*, BENTH.)

A. W. Mullen, photo.

DRIFT SAND AND THE "GIN BOTTLE," GOONERY SAND-HILLS, BOURKE-WANAARING ROAD.

SAND-DRIFTS IN WESTERN NEW SOUTH WALES.

In the Western plains, and thence to the centre of the continent, there occur drifting sand-hills which often destroy vegetation, including trees. The subject is of very great importance to all concerned in the welfare of the far west, and particularly in regard to conservation of existing vegetation. The subject is dealt with in two papers, entitled "The Sand-drift Problem in Arid New South Wales," by Colin J. McMaster, Chief Commissioner of Western Lands, and "The Sand-drift Problem in New South Wales," by myself. Both papers will be found in the *Proceedings of the Royal Society of New South Wales* for 1903.

The following photograph and descriptive note on some sand-hills in New South Wales, I owe to the kindness of Mr. A. W. Mullen, L.S., Western Land Board, Bourke.

"The photograph represents the Drift Sands known as the 'Gin Bottle,' or Goonery Sands. These sand-hills in the County of Barrona are situated 55 to 58 miles from Bourke, on the Wanaaring cleared road. The sand-hill shown is not more than about 300 to 400 yards wide, and extends in a northerly and southerly direction, crossing the Wanaaring Road at right angles.

"There are a series of these Goonery sand-hills extending over about 3 miles in width, and probably 10 in length. Between each sand-hill there is a clay flat. The sand ridges are from 200 to 400 yards wide, and the flats from 400 to 800 yards wide. The Gin Bottle is the largest of the Goonery sand-hills. In good seasons the soil does not move to any extent; but in drought, under the influence of prevailing westerly dry winds, the western side of these hills becomes wind-swept, the surface or sand being shifted on to the eastern side of hill, covering up vegetation in its course.

"In the 'Gin Bottle,' the tops of shrubs and small trees may be seen sticking out of the crest of the sand on the eastern side. The shifting of these sands only occurs in severe drought, when the surface of the ground has become dry and loose, and the surface covering has decayed. In the last severe drought, this sand-hill would advance, perhaps, 20 feet, and such a drought may not occur again for twenty years. I do not consider that these sands driven by windstorms do harm, as a thin coating of red sand is blown on to the grey plains, and helps to make the grey soil more friable and fertile.

"To bind sand-shifting country in the west, I recommend Spinifex or Turpentine Bush. If the sandy red soil west of the Darling is deprived of its natural covering of scrubs and shrubs, it is likely to become wind-swept and a desert, as the whole of the surface soil would be removed during a drought, and the result would be a subsoil known locally as 'scalded country,' upon which nothing grows."

A Critical Revision of the genus Eucalyptus.*

THIS work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets):—

Eucalyptus acacioides, A. Cunn. (XI).
„ *acmenioides*, Schauer (IX).
„ *amygdalina*, Labillardière (VI).
„ *Andrewsi*, Maiden (VII).
„ *apiculata*, Baker and Smith (IX).
„ *Behriana*, F.v.M. (X).
„ *bicolor*, A. Cunn. (XI).
„ *Boormani*, Deane and Maiden (X).
„ *Bosistoana*, F.v.M. (XI).
„ *calycogona*, Turczaninow (III).
„ *capitellata*, Smith (VIII).
„ *Consideniana*, Maiden (X).
„ *coriacea*, A. Cunn. (V).
„ *dives*, Schauer (VII).
„ *eugenioides*, Sieber (VIII).
„ *fruticetorum*, F.v.M. (XI).
„ *hæmastoma*, Sm. (X).
„ *hemiphloia*, F.v.M. (XI).
„ *incrassata*, Labillardière (IV).
„ *Luehmanniana*, F.v.M. (IX).

Eucalyptus macrorrhyncha, F.v.M. (VIII).
„ *microcorys*, F.v.M. (IX).
„ *microtheca*, F.v.M. (XI).
„ *Muelleriana*, Howitt (VIII).
„ *obliqua*, L'Héritier (II).
„ *ochrophloia*, F.v.M. (XI).
„ *odorata*, Behr. and Schlect (XI).
„ *pilularis*, Sm. (I).
„ *piperita*, Sm. (X).
„ *Planchoniana*, F.v.M. (IX).
„ *populifolia*, Hook. (X).
„ *regnans*, F.v.M. (VII).
„ *siderophloia*, Benth. (X).
„ *Sieberiana*, F.v.M. (X).
„ *stellulata*, Sieber (V).
„ *umbra*, R. T. Baker (IX).
„ *virgata*, Sieber (IX).
„ *vitellina*, Naudin (VII).
„ *vitrea*, R. T. Baker (VII).

---

* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, six shillings). Part IV will be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney: William Applegate Gullick, Government Printer.—1910.

Volume III (Parts XXI–XXX).

PART XXI. (Issued August, 1906.)

77.—The Crow's Ash or Bogum Bogum (*Flindersia Bennettiana*, F.v.M.). (*Two Plates.*)
78.—The Blackbutt or Peppermint (of New England) (*Eucalyptus Andrewsi*, Maiden).
79.—The Thready-barked Oak (*Casuarina inophloia*, F.v.M. and Bailey).

PART XXII. (Issued February, 1907.)

80.—The Hill Flindersia (*Flindersia collina*, F. M. Bailey). (*Two Plates.*)
81.—The Broad-leaved Messmate (*Eucalyptus obliqua*, L'Hérit.).
82.—The Cedar Wattle (*Acacia elata*, A. Cunn.).

PART XXIII. (Issued March, 1907.)

83.—The Rosewood (*Dysoxylon Fraseranum*, Benth.).
84.—The White-top Messmate (*Eucalyptus vitrea*, R. T. Baker).
85.—The Acacia decurrens Group of Wattles—Black, Green, and Silver Wattles (*Acacia decurrens*, Willd.). (*Two Plates.*)

PART XXIV. (Issued May, 1907.)

86.—The Bastard Pencil Cedar (*Dysoxylon rufum*, Benth.).
87.—Bastard Tallow-wood (*Eucalyptus Planchoniana*, F.v.M.).
88.—The Mountain Hickory (*Acacia penninervis*, Sieb.). (*Two Plates.*)

PART XXV. (Issued June, 1907.)

89.—The Rosewood (*Dysoxylon Fraseranum, Benth.*), also The Apple-tree of Lord Howe Island (*D. pachyphyllum*, Hemsl.).
90.—A Virgate Eucalypt (*Eucalyptus virgata*, Sieb.).
91.—The Two-veined Hickory (*Acacia binervata*, DC.).
92.—The White Cedar (*Melia Azedarach*, L., var. *australasica*, C. DC.).

PART XXVI. (Issued September, 1907.)

93.—The Hairy Dysoxylon (*Dysoxylon Becklerianum*, C.DC.).
94.—Luehmann's Gum (*Eucalyptus Luehmanniana*, F.v.M.).
95.—The Mulga (*Acacia aneura*, F.v.M.).
96. The Red-wooded Cryptocarya (*Cryptocarya erythroxylon*, Maiden and Betche).

PART XXVII. (Issued October, 1907.)

97.—The Red Bean (*Dysoxylon Muelleri*, Benth.).
98.—Red Stringybark (*Eucalyptus macrorrhyncha*, F.v.M.).
99.—A Brush Ironbark (*Acacia aulacocarpa*, A. Cunn.).
100.—A Brown Beech (*Cryptocarya glaucescens*, R.Br.).

PART XXVIII. (Issued December, 1907.)

101.—A Bog Onion (*Amoora nitidula*, Benth.).
102.—The Brown Stringybark (*Eucalyptus capitellata*, Sm.).
103.—The Broad-leaved Wattle (*Acacia pycnantha*, Benth.).
104.—The Murrogun (*Cryptocarya microneura*, Meissn.).

PART XXIX. (Issued January, 1908.)

105.—The Bastard Rosewood (*Synoum glandulosum*, A. de Jussieu).
106.—A White Stringybark (*Eucalyptus eugenioides*, Sieb.).
107.—Baker's Wattle (*Acacia Bakeri*, Maiden).
108.—The Stinking Cryptocarya (*Cryptocarya fœtida*, R. T. Baker)

PART XXX. (Issued March, 1908.)

Recapitulatory. (Seventeen Photographic Illustrations).
109.—The Yellow Stringybark (*Eucalyptus Muelleriana*, Howitt)
110.—The Nealie (*Acacia rigens*, A. Cunn.).

Volume IV (Parts XXXI–XL).

PART XXXI. (Issued September, 1908.)

111.—The Onion Wood (*Owenia cepiodora*, F.v.M.).
112.—The Blackbutt (*Eucalyptus pilularis*, Sm.).
113.—Cootamundra Wattle (*Acacia Baileyana*, F.v.M.).
114.—Grey Sassafras (*Cryptocarya australis*, Benth.).

PART XXXII. (Issued November, 1908.)

115.—The Red Honeysuckle (*Banksia serrata*, L. f.).
116.—The White Mahogany (*Eucalyptus acmenioides*, Schauer).
117.—The Gidgee (*Acacia Cambagei*, R. T. Baker).
118.—*Cryptocarya patentinervis*, F.v.M.

PART XXXIII. (Issued February, 1909.)

119.—A Honeysuckle (*Banksia æmula*, R.Br.).
120.—The Sydney Peppermint (*Eucalyptus piperita*, Sm.).
121.—Ironwood (*Acacia excelsa*, Benth.).
122.—The Three-veined Cryptocarya (*Cryptocarya triplinervis*, R.Br.).

PART XXXIV. (Issued May, 1909.)

123.—The Heath-leaved Honeysuckle (*Banksia ericifolia*, L.f.).
124.—Yowut or Mountain Ash (*Eucalyptus Sieberiana*, F.v.M.).
125.—The Brigalow (*Acacia harpophylla*, F.v.M.).
126.—*Cryptocarya Meissneri*, F.v.M.

PART XXXV. (Issued July, 1909.)

127.—Richmond River or Hoop Pine (*Araucaria Cunninghamii*, Ait.).
128.—Black Stringybark (*Eucalyptus Baileyana*, F.v.M.).
129.—The Yarran (*Acacia homalophylla*, A. Cunn.).
130.—A Cork Wood or Till (*Endiandra Sieberi*, Nees.).

PART XXXVI. (Issued October, 1909.)

131.—Honeysuckle or Warrock (*Banksia marginata*, Cav.).
132.—The Yertchuk (*Eucalyptus Consideniana*, Maiden).
133.—The Bastard Myall or Kurracabah (*Acacia Cunninghamii*, Hook.).
134.—The Ball Fruit (*Endiandra globosa*, Maiden and Betche).

PART XXXVII. (Issued January, 1910.)

135.—The Broad-leaved Honeysuckle (*Banksia latifolia*, R.Br.).
136.—White or Scribbly Gum (*Eucalyptus hæmastoma*, Sm.).
137.—The Currawang (*Acacia doratoxylon*, A. Cunn.).
138.—Endiandra Muelleri, Meissn.

PART XXXVIII. (Issued February, 1910.)

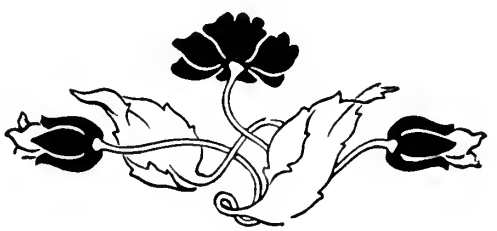
139.—A Honeysuckle (*Banksia, collina*, R.Br.).
140.—The Tallow-wood (*Eucalyptus microcorys*, F.v.M.).
141.—The Coast Myall (*Acacia glaucescens*, Willd.).
142.—*Endiandra pubens*, Meissn.

THE FOREST FLORA OF New South Wales.

J. H. MAIDEN.

VOL. IV. PART 10.

Published by Authority of the
GOVERNMENT OF THE STATE OF NEW SOUTH WALES.



PART XL OF THE COMPLETE WORK.

INDEX OF TREES DESCRIBED.

Volume I (Parts I-X).

Volume II (Parts XI-XX).

THE FOREST FLORA

OF

NEW SOUTH WALES.

J. H. MAIDEN,
Government Botanist of New South Wales and Director of the Botanic Gardens, Sydney.

PART XL.

Published by the Forest Department of New South Wales, under authority of The Honourable the Secretary for Agriculture.

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69567—A

PREFACE.

THIS part, being the concluding one of a volume, is, as usual, a supplementary one, bringing details of trees already dealt with, up to date. It contains 57 photographic illustrations and no lithographs.

No. 1. Part I. See also vol. ii, p. 183.

Grevillea robusta, A. Cunn.

THE SILKY OAK.

(Family PROTEACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Tree in the Botanic Gardens, Sydney. The tree is semi-deciduous, and the photograph shows it in that condition.—(Government Printer, photo.)

No. 2. Part I. See also vol. ii, p. 184.

Ficus rubiginosa, Desf.

THE RUSTY FIG.

(Family URTICACEÆ.)

See my Paper on Figs in the *Agricultural Gazette of N.S.W.* for October, 1908.

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) Tree in the Botanic Gardens, Sydney.—(Government Printer, photo.)

(*b*) A Giant Fig-tree at Wingham, Manning River.—(Judge Docker, photo.)

(*c*) Fig-tree, Wingham, Manning River.—(F. A. Kirton, photo.)

(*d*) "Small-leaved Fig," 164 feet high, 81 feet in girth 4 feet from ground, and can be seen from a great distance. Rous, Richmond River.—(H. T. Blanch, photo.)

No. 3. Part I. See also vols. ii, p. 185; iii, p. 161.

Syncarpia laurifolia, Ten.

THE TURPENTINE TREE.

(Family MYRTACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Squared Turpentine girders, Wyong.—(F. A. Kirton, photo.)

No. 4. Part I. See also vol. iii, p. 161.

Pittosporum phillyræoides, DC.

THE NARROW-LEAVED PITTOSPORUM.

(Family PITTOSPORACEÆ.)

Fruits.—See vol. i, p. 30.

"The fruits of *P. phillyræoides*, DC., yielded an extract frothing at 1-4000 and hæmolytic at 1-1500"

(Phytochemical investigations at Kew by the late Dr. M. Greshoff, *Kew Bulletin*, No. 10, 1909, p. 415.)

PHOTOGRAPHIC ILLUSTRATION.

"Butter-bush," Mungindi District.—(Kerry, photo.)

No. 6. Part II. See also vol. ii, p. 186.

Alphitonia excelsa, Reissek.

THE RED ASH.

(Family RHAMNACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Tree in the Botanic Gardens, Sydney.—(Government Printer, photo.)

No. 7. Part II. See also vol. ii, p. 187.

Doryphora sassafras, Endl.

THE N.S.W. SASSAFRAS.

(Family MONIMIACEÆ.)

Timber.—See vols. i, p. 43; ii, p. 187.

A useful softwood for lining in buildings. Useless for outside work. Like Colonial Pine, it will not stand the weather. The trees attain a good size.—(Forest Guard N. Stewart, Glen Innes.)

Habitat.—See vols. i, p. 44; ii, p. 188.

Speaking of its local occurrence, Mr. Stewart writes that it is to be found in all the brush forests about Pheasant Creek and on to Tenterfield.

PHOTOGRAPHIC ILLUSTRATION.

"Sassafras," Glen Innes District.—(Forest Guard N. Stewart, photo.)

No. 8. Part II. See also vols. ii, p. 188; iii, p. 162.

Alstonia constricta, F.v.M.

A "BITTER BARK."

(Family APOCYNACEÆ.)

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) A young tree in the Botanic Gardens, Sydney, showing its characteristic habit of growth, with many stems.—(Government Printer, photo.)

(*b*) "Quinine," Coolabah.—(R. W. Peacock, photo.)

No. 9. Part III. See also vol. ii, p. 188.

Cedrela australis, F.v.M.

THE RED CEDAR.

(Family MELIACEÆ.)

C. De Candolle calls the Australian species of *Cedrela*—*C. australis*, F.v.M., *Prod.* (*Monograph Phanerogam*), i, p. 743 (1878).

In his revision of the Indo-Malayan species of *Cedrela* (*Records of the Botanical Survey of India*, iii, 368), Calcutta, 1908, he includes the Australian *Cedrela* in *C. Toona*, Roxb., and divides it into two varieties: *C. Toona var. australis*, C.DC., and *C. Toona var. parviflora*, Benth. The latter variety is mentioned in the *Flora Australiensis* by Bentham.

The chief differences are:—

(According to C.DC.)

Var. australis.	*Var. parviflora.*
Leaves sub-obliquely oblong-ovate, up to 12 cm., and 5 cm. wide. Sepals rounded.	Leaves ovate-lanceolate, up to 6 cm. long and 28 mm. broad. Sepals ovate; acute at the top.

(According to Bentham.)

Petals nearly 3 lines long.	Petals scarcely 2 lines long.
N.S.W. localities given by C.DC.	*N.S.W. localities given by C.DC.*
Paterson's River.	Hastings River.
Hunter River.	Hunter River.

We have no specimen in the herbarium we could call *C. Toona* var. *parviflora*, though the size of the leaves varies much there are no specimens in the herbarium with leaves under 2 inches long (DC.'s "Leaves up to 6 cm. long" amounts to under 2 inches).

Habitat.—See vols. i, p. 59; ii, p. 189.

To be found in all the brush forests on the extreme eastern slopes of the New England Tableland from north to south, but it is not plentiful owing to the great demand for this timber in the past, and it does not seem to readily re-afforest.—(Forest Guard N. Stewart, Glen Innes.)

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) "Red Cedar," Glen Innes District.—(Forest Guard N. Stewart, photo.)
(*b*) "Red Cedar," Botanic Gardens, Sydney.—(Government Printer, photo.)

No. 12. Part IV. See also vol. ii, p. 191.

Eucalyptus saligna, Sm.

THE N.S.W. BLUE OR FLOODED GUM.

(Family MYRTACEÆ.)

Timber.—See vols. i, p. 78; ii, p. 192.

It is of a deeper red colour than the Coast Blue Gum, also more dense. Mostly used here for wheelwright purposes and weatherboards in buildings, as it shows a nice smooth surface when planed.—(Forest Guard N. Stewart, Glen Innes.)

Habitat.—See vols. i, p. 83; ii, p. 192.

To be found all along the Eastern Tableland. It prefers a heavy soil; fairly plentiful.—(N. Stewart.)

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) "Blue Gum," Glen Innes District.—(Forest Guard N. Stewart, photo.)
(*b*) Big Blue Gum log, Wyong.—(F. A. Kirton, photo.)
(*c*) "Sydney Blue Gum," Wyong. Girth, 20 feet; barrel, 60 feet.—(F. A. Kirton, photo.)

No. 14. Part IV. See also vols. ii, p. 194; iii, p. 163.

Melaleuca leucadendron, L.

THE BROAD-LEAVED TEA-TREE.

(Family MYRTACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Tree in the Botanic Gardens, Sydney.—(Government Printer, photo.)

No. 15. Part IV. See also vols. ii, p. 195; iii, p. 163.

Fusanus acuminatus, R.Br.

THE QUANDONG.

(Family SANTALACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

"Quandong," Coolabah.—(R. W. Peacock, photo.)

This photograph shows a rather sparse head; the tree is usually much more dense.

Sandalwood Collection in West Australia.—The collection of Sandalwood, though a diminishing industry in Western Australia, is still of some importance. The "logs" are small, say, 6 or 8 feet long and up to 5 or 6 inches in diameter. They are bent and gnarled, are of a pale yellow or brown colour externally (often nearly white), and are covered with adze or axe marks where the outer rough bark has been removed.

In my recent visit to Western Australia I noticed that Sandalwood is collected by pulling up the whole shrub or small tree by a horse and chain. The trunk is then cut off and the branches are left on the ground.

Sandalwood "trees" are gnarled shrubs of, say, 8—10 feet, with a black, flaky bark, which, however, is cleaned off before the Sandalwood is sent to market.

Leaves rather (sometimes very) fleshy, and the shrubs bear a profusion of fruit. Inner bark crimson, white sap-wood, brown centre.

No. 16. Part V. See also vols. ii, p. 195; iii, p. 164.

Tristania conferta, R.Br.

THE BRUSH BOX.

(Family MYRTACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

"Brush Box," 28 feet circumference 3 feet from ground. Near Ellenborough Falls, *vid* Wingham.—(G. Hill, photo.)

No. 19. Part V.

Cupania anacardioides, A. Rich.

A CUPANIA.

(Family SAPINDACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Cupania tree on Hexham to Tomago road.—(W. A. Windeyer, photo.)

No. 21. Part VI. See also vol. ii, p. 197.

Eucalyptus hemiphloia, F.v M.

THE WHITE OR GREY BOX.

(Family MYRTACEÆ.)

Vernacular Names.—See vol. i, p. 130.

A Box. Sometimes the timber is locally called "Gum-top Box" and "White or Grey Box."—(Forest Guard W. Dunn, Acacia Creek.)

Aboriginal Names.—See vol. i, p. 131.

I am indebted to Dr. C. Sutton, of Melbourne, for the name "Booloitch" of the Loddon aborigines (Victoria).

Bark.—See vol. i, p. 133.

The barrel of the tree is grey in colour, up to where the tree commences to fork, then it appears white, somewhat resembling, say, *E. tereticornis*.—(Forest Guard W. Dunn, Acacia Creek.)

Box bark (from var. *albens*) is used a good deal for roofing in the Gulgong district, there being no Stringybark. It is often called "White Box."

Timber.—See vol. i, p. 133.

The timber is durable, and is used for building and other purposes.—(W. Dunn.)

Habitat.—See vols. i, p. 134; ii, p. 197.

The habitat is generally on undulating ground, hill sides and the like. It grows fairly large, and carries a somewhat dry foliage—less sappy than any of the Gums.—(W. Dunn.)

For a fuller botanical account of this species, see my "*Critical Revision of the genus Eucalyptus*," Part XI.

PHOTOGRAPHIC ILLUSTRATION.

E. hemiphloia, typical form, Mulgoa.—(R. H. Cambage, photo.)

No. 24. Part VII. See also vol. ii, p. 197.

Castanospermum australe, A. Cunn.

THE BLACK BEAN.

(Family LEGUMINOSÆ.)

Leaves.—See vol. i, p. 146.

Leaves of *Castanospermum australe* contain saponin, readily recognised by the strong frothing of an extract. I could not detect any saponin in the seeds. (Phytochemical investigations at Kew by the late Dr. M. Greshoff, *Kew Bulletin*, No. 10, 1909, p. 405.) In this connection see Brunnich on frothing of the seeds, bottom of p. 149, vol. i, of this work.

PHOTOGRAPHIC ILLUSTRATION.

Tree in the Botanic Gardens, Sydney.—(Government Printer, photo.)

No. 25. Part VII. See also vol. ii, p. 198.

Eucalyptus maculata, Hook.

THE SPOTTED GUM.

(Family MYRTACEÆ.)

Timber.—See vol i, p. 158.

The tensile strength of this timber is not equal to the Coast Spotted Gum, although it has been used here for wheelwright purposes.—(Forest Guard N. Stewart, Glen Innes.)

Habitat.—See vols. i, p. 164; ii, p. 198.

To be found at Oakwood, near Kookrabookra, but not plentiful.

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) "Spotted Gum," Glen Innes District.—(Forest Guard N. Stewart, photo.)
(*b*) "Spotted Gum," Wyong. Girth, 17 feet; barrel, 45 feet.—(F. A. Kirton, photo.)

No. 27. Part VIII.

Banksia integrifolia, L.f.

WHITE HONEYSUCKLE.

(Family PROTEACEÆ.)

Aboriginal Name.—See vol. i, p. 171.

Dr. Sutton, of Melbourne, gives the name "Bown," in use by the Lake Tyers (Victoria) aborigines.

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) Group of "White Honeysuckle" trees, Long Bay, Sydney.—(Government Printer, photo.)
(*b*) White Honeysuckle tree, Long Bay.—(Government Printer, photo.)

No. 29. Part VIII.

Barklya syringifolia, F.v.M.

(Family LEGUMINOSÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Tree in the Botanic Gardens, Sydney.—(Government Printer, photo.)

No. 31. Part IX. See also vol. ii, p. 199.

Gmelina Leichhardtii, F.v.M.

THE WHITE BEECH.

(Family VERBENACEÆ.)

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) Tree in the Botanic Gardens, Sydney.—(Government Printer, photo.)

(*b*) "White Beech."—(From the Report of the Forestry Branch, Department of Lands, N.S.W., 1906–07.)

No 32. Part IX. See also vols. ii, p. 200; iii, p. 164.

Ventilago viminalis, Hook.

THE SUPPLE JACK.

(Family RHAMNACEÆ.)

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) "Supple Jack," Coolabah.—(R. W. Peacock, photo.)

(*b*) "Supple Jack," Mungindi District.—(Kerry, photo.)

No. 37. Part X. See also vols. ii, p. 201; iii, p. 165.

Flindersia maculosa, F.v.M.

THE LEOPARD WOOD.

(Family MELIACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Photo showing early stages of growth of the Leopard Wood tree. See vols. i, p. 213; iii, p. 165.

These trees grow in large numbers at Lightning Ridge, about 40 miles westerly from Collarenebri, where the above photograph was taken.—(C. J. McMaster, photo.)

No. 38. Part X. See also vol. ii, p. 202.

Macadamia ternifolia, F.v.M.

THE QUEENSLAND NUT.

(Family PROTEACEÆ.)

Leaves.—See vol. i, p. 217.

A well-known Australian plant, *M. ternifolia*, F. Muell., the "Queensland Nut," must, according to my analysis at Kew, be considered among the most strongly cyanogenetic [*i.e.*, producing hydrocyanic (prussic) acid owing to fermentative changes.—J.H.M.] plants; in the fresh leaf the hydrocyanic acid content was more than 0·1 per cent.

Our chemical knowledge of this order (*Proteaceæ*) is still very slight.

(Phytochemical investigations at Kew by the late Dr M. Greshoff, *Kew Bulletin*, No. 10, 1909, p. 413.)

PHOTOGRAPHIC ILLUSTRATION.

"Queensland Nut" in the Botanic Gardens, Sydney.—(Government Printer, photo.)

No. 39. Part XI.

Eucalyptus tereticornis, Sm.

THE FOREST RED GUM.

(Family MYRTACEÆ.)

Timber.—See vol. ii, p. 2.

Mostly used for house blocks and fencing posts, as the trees are generally too faulty for milling purposes.—(Forest Guard N. Stewart, Glen Innes.)

Habitat.—See vol. ii, p. 3.

To be found along the western slopes of the Dividing Range from Dundee to Tenterfield.—(Forest Guard N. Stewart, Glen Innes.)

PHOTOGRAPHIC ILLUSTRATION.

"Forest Red Gum," Glen Innes District.—(Forest Guard N. Stewart, photo.)

No. 44. Part XII. See also vols. ii, p. 204; iii, p. 166.

Callitris Macleayana, F.v.M.

(Family CONIFERÆ.)

PHOTOGRAPHIC ILLUSTRATION.

"Cypress Pine," 12 feet 3 inches circumference 3½ feet from ground. Near Ellenborough Falls, *vid* Wingham.—(G. Hill, photo.)

No. 54. Part XIII. See also vols. ii, p. 206; iii, p. 167.

Casuarina lepidophloia, F.v.M.

THE BELAH.

(Family CASUARINACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Belah Forest, Bourke District.—(A. W. Mullen, photo.)

No. 58 (57). Part XIV. See also vols. ii, p. 208; iii, p. 168.

Casuarina glauca, Sieb.

THE SWAMP OAK.

(Family CASUARINACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Group of trees in the Botanic Gardens, Sydney. These were not planted by the hand of man.—(Government Printer, photo.)

No. 60. Part XV. See also vols. ii, p. 209; iii, p. 169.

Acacia melanoxylon, R.Br.

THE BLACKWOOD.

(Family LEGUMINOSÆ : MIMOSEÆ.)

Aboriginal Names.—See vols. ii, p. 107; iii, p. 169.

Dr. C. Sutton, of Victoria, gives the following Victorian aboriginal names for this wattle:—

"Moéang" (Coranderrk); "Mootch-ong" (Loddon); "Mudgerabah"; "Myrniong"; "Weetya" (Glenisla); "Yowan" (Lake Tyers).

No. 61. Part XV. See also vol. ii, p. 210.

Eucalyptus coriacea, A. Cunn.

A WHITE OR CABBAGE GUM.

(Family MYRTACEÆ.)

Aboriginal Names.—See vol. ii, p. 115.

Dr. C. Sutton gives the following Victorian aboriginal names:—"Baa-napp" (Loddon); "Balook" (Lake Tyers); "Bapp" (Lake Tyers); "Beyal" (Hindmarsh).

For a fuller botanical account of this species, see my *Crit. Rev. genus Encalyptus*, Part V.

No. 62. Part XV. See also vols. ii, p. 210; iii, p. 169.

Casuarina Cunninghamiana, Miq.

THE RIVER OAK.

(Family CASUARINACEÆ).

PHOTOGRAPHIC ILLUSTRATION.

Tree in the Botanic Gardens, Sydney.—(Government Printer, photo.)

No. 63. Part XV. See also vols. ii, p. 211; iii, p. 169.

Atalaya hemiglauca, F.v.M.

THE WESTERN WHITEWOOD.

(Family SAPINDACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

"Whitewood," Bourke.—(R. W. Peacock, photo.)

No. 64. Part XVI. See also vols. ii, p. 212 ; iii, p. 169.

Acacia pendula, A. Cunn.

THE WEEPING MYALL.

(Family LEGUMINOSÆ : MIMOSEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

"Myall," Coolabah.—(R. W. Peacock, photo.)

No. 65. Part XVI. See also vols. ii, p. 212 ; iii, p. 170.

Eucalyptus amygdalina, Labill.

A PEPPERMINT.

(Family MYRTACEÆ.)

Aboriginal Name.—See also vols. ii, p. 132; iii, p. 170.

"Woorun" (Coranderrk), Victorian aboriginal name. Communicated by Dr. C. Sutton, Melbourne.

For a fuller botanical account of this species, see my *Crit. Rev. genus Eucalyptus*, Part VI.

No. 66. Part XVI. See also vol. ii, p. 212.

Casuarina torulosa, Ait.

THE FOREST OAK.

(Family CASUARINACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

"Shingle Oak," probably *Casuarina torulosa*, 19 feet circumference 3 feet from ground, growing on ridge leading to Comboyne from Keilobakh.—(G. Hill, photo.)

No. 68. Part XVII. See also vols. ii, p. 213 ; iii, p. 170.

Casuarina stricta, Ait.

THE DROOPING SHE-OAK.

(Family CASUARINACEÆ.)

Aboriginal Names.—See vol. ii, p. 141.

The following Victorian aboriginal names were communicated by Dr. Sutton, Melbourne :—

"Barn" (Lake Tyers) ; "Bruck-bruck" (Western District and Lake Hindmarsh) ; "Goburt" (Glenisla) ; "Kooloitch."

No. 71. Part XVIII. See also vol. iii, p. 171.

Flindersia Schottiana, F.v.M.

THE CUDGERIE.

(Family MELIACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Tree in the Botanic Gardens, Sydney.—(Government Printer, photo.)

No. 73. Part XVIII.

Casuarina suberosa, Otto et Dietr.

THE BLACK SHE-OAK.

(Family CASUARINACEÆ.)

Aboriginal Names.—See vol. ii, p. 168.

Dr. Sutton, of Melbourne, says that the name "Dahl-wah" is also used by the Victorian aborigines.

No. 83. Part XXIII; also No. 89. Part XXV. See also vol. iii, p. 172.

Dysoxylon Fraseranum, Benth.

THE ROSEWOOD.

(Family MELIACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Tree in the Botanic Gardens, Sydney.—(Government Printer, photo.)

No. 85. Part XXIII. See also vol. iii, p. 172.

Acacia decurrens, Willd.

AND ITS VARIETIES.

(Family LEGUMINOSÆ: MIMOSEÆ.)

Var. *dealbata*, F.v.M.

Aboriginal Name.—See vol. iii, pp. 56, 172.

"Whar-rar-rark" (Loddon) is a Victorian aboriginal name according to Dr. Sutton.

No. 88. Part XXIV.

Acacia penninervis, Sieb.

THE MOUNTAIN HICKORY.

(Family LEGUMINOSÆ: MIMOSEÆ.)

Vernacular Names.—See vol. iii, p. 71.

Locally known as Motherumbung." Pilliga Scrub, Coonabarabran District.—(W. U. Nowland.)

No. 95. Part XXVI.

Acacia aneura, F.v.M.

THE MULGA.

(Family LEGUMINOSÆ : MIMOSEÆ.)

Timber.—See vol. iii, p. 109.

Our great standby ; is one of the best for posts, shafts, best charcoal, but not much good for fire-wood. Should make good railway sleepers ; and, taken all round, is one of the best and most useful western timbers, but does not grow to any great size. It makes very pretty walking-sticks and picture-frames ; sometimes found with rings in it.—(R. J. Dalton, Wanaaring.)

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) Mulga lopped for stock feed. Polamacca.—(C. J. McMaster, photo.)
(*b*) Mulga Scrub. Bourke District.—(A. W. Mullen, photo.)
(*c*) "Mulga," Coolabah.—(R. W. Peacock, photo.)

No. 96. Part XXVI.

Cryptocarya erythroxylon, Maiden and Betche.

THE RED-WOODED CRYPTOCARYA.

(Family LAURACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

"Red Cryptocarya."—(Bell and Mauch, photo. ; presented by Forest Guard W. Dunn, Acacia Creek, Macpherson Range.)

No. 97. Part XXVII.

Dysoxylon Muelleri, Benth.

THE RED BEAN.

(Family MELIACEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Tree in the Botanic Gardens, Sydney.—(Government Printer, photo.)

No. 98. Part XXVII. See also vol. iii, page 173.

Eucalyptus macrorrhyncha, F.v.M.

RED STRINGYBARK.

(Family MYRTACEÆ.)

For a fuller botanical account of this species, see my *Crit. Rev. genus Eucalyptus*, Part VIII.

PHOTOGRAPHIC ILLUSTRATION.

"Red Stringybark."—(From Report of the Forestry Branch, Department of Lands, N.S.W July, 1906—June, 1907.)

No. 103. Part XXVIII.

Acacia pycnantha, Benth.

THE BROAD-LEAVED WATTLE.

(Family LEGUMINOSÆ : MIMOSEÆ.)

Aboriginal Names.—See vol. iii, p. 137.

"Wyrack" (Loddon) is a Victorian aboriginal name given by Dr. Sutton.

No. 106. Part XXIX.

Eucalyptus eugenioides, Sieb.

A WHITE STRINGYBARK.

(Family MYRTACEÆ.)

Timber.—See vol. iii, p. 152.

The timber is very plentiful in this district, and is largely used for building purposes, especially for flooring-boards and weatherboards; also telegraph poles and piers for buildings.—(Forest Guard N. Stewart, Glen Innes.)

Habitat.—See vol. iii, p. 153.

Mr. Stewart says that it is usually found growing on light sandy soil.

For a fuller botanical account of this species, see my *Crit. Rev. genus Eucalyptus*, Part VIII.

PHOTOGRAPHIC ILLUSTRATION.

"White Stringybark," Glen Innes District.—(Forest Guard N. Stewart, photo.)

No. 112. Part XXXI.

Eucalyptus pilularis, Sm.

THE BLACKBUTT.

(Family MYRTACEÆ.)

Timber.—See vol. iv, p. 5.

This timber is very plentiful in this portion of the district, and is in great demand for house-building and bridge-decking.—(Forest Guard N. Stewart, Glen Innes.)

Habitat.—Mr. Stewart says it is found all along the eastern Tableland from north to south.

For a fuller botanical account of this species, see my *Crit. Rev. genus Eucalyptus*, Part I.

PHOTOGRAPHIC ILLUSTRATION.

"Blackbutt," Glen Innes District.—(Forest Guard Stewart, photo.)

No. 115. Part XXXII.

Banksia serrata, L.f.

THE RED HONEYSUCKLE.

(Family PROTEACEÆ.)

Leaf.—See a paper "On the structure of the leaf of *Banksia serrata*" by A. G Hamilton. *Proc. Aust. Assoc. Adv. Science*, xi, 484 (with 4 plates).

Flowers.—On a young tree in the Botanic Gardens, Sydney, I measured a head of flowers 10 inches long and $1\frac{1}{2}$ inches in diameter!

No. 117. Part XXXII.

Acacia Cambagei, R. T. Baker.

THE GIDGEE.

(Family LEGUMINOSAE: MIMOSEÆ.)

PHOTOGRAPHIC ILLUSTRATION.

Gidgea forest, Bourke District.—(A. W. Mullen, photo.)

No. 125. Part XXXIV.

Acacia harpophylla, F.v.M.

THE BRIGALOW.

(Family LEGUMINOSÆ: MIMOSEÆ.)

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) "Brigalow," Mungindi district.—(Kerry, photo.)

(*b*) Group of Brigalow trees, Walgett Road, near Combogolong.—(Judge Docker, photo.)

No. 127. Part XXXV.

Araucaria Cunninghamii, Ait.

RICHMOND RIVER OR HOOP PINE.

(Family CONIFERÆ.)

PHOTOGRAPHIC ILLUSTRATION.

"Sticks" of Richmond River Pine. Dorrigo Brush.—(Judge Docker, photo.)

No. 129. Part XXXV.

Acacia homalophylla, A. Cunn.

THE YARRAN.

(Family LEGUMINOSÆ: MIMOSEÆ.)

PHOTOGRAPHIC ILLUSTRATIONS.

(*a*) "Yarran," Kooringo Station, near Young.—(C. Lewis, photo.)

(*b*) Yarran trees, Hillston Road.—(Judge Docker, photo.)

No. 137. Part XXXVII.

Acacia doratoxylon, A. Cunn

THE CURRAWANG.

(Family LEGUMINOSÆ: MIMOSEÆ.)

Aboriginal Names.—See vol. iv, p. 110.

"Currawang" is also given by Dr. Sutton, of Melbourne, as a Victorian aboriginal name.

No. 140. Part XXXVIII.

Eucalyptus microcorys, F.v.M.

THE TALLOW-WOOD.

(Family MYRTACEÆ.)

The following recent reports supplement those given in regard to the distribution of tallow-wood in New South Wales in Part XXXVIII, p. 124. Compare also the Schedule at p. 296 of the *Agricultural Gazette of N.S.W.* for May, 1894.

F.R. 70 contains, with F.R. 16,806 and F.R. 5,873, about 4,000 acres of tallow-wood country, in the Parishes of Mandalong and Olney. Now much depleted, except in the more inaccessible places. Originally probably averaged three trees per acre, of from 2 to 6 feet diameter. Young growth for future supply only moderate.

F.R. 9,242 contains tallow-wood in the gullies; not plentiful.

F.R. 41,446.—Tallow-wood may be found over most of this area, wherever the country suits its growth. Supply moderate, probably less than one tree per acre.

F.R. 32,943 contains a few patches of tallow-wood of mature growth, principally on steep ledges.

F.R. 32,806.—Tallow-wood occurs on this reserve in limited quantity.

Tallow-wood is found as far south as Yambo Trig. Station, and thence northward along the range to the vicinity of Mount Myall.

In the Jilliby watershed its occurrence is confined to the slopes of the Jilliby-Mandalong divide.

In the watershed of Dora Creek tallow-wood may be met with on the range wherever the conditions favour its growth; but the timber is not plentiful, occurring in patches perhaps miles apart, with a few isolated trees here and there. (Charles J. Clulee, Acting Assistant Forester, Wyong.)

SCHEDULE from District Forester T. Hardiman, Taree.

Tallow-wood (*Eucalyptus microcorys*).

No. of F.R.	County.	Area of F.R. in acres.	How distributed.		Size (girth).	Quality.	Remarks.
			No. of trees per acre.	Over area of F.R.			
					ft. in.		
43,549	Macquarie ...	7,500	4	7,500	7 6	Fair to good.	
34	,, ...	10,000	1	1,000	7 6	,,	
13,877	,, ...	11,100	2	11,100	5 6	,,	
16,573							
26,694	,, ...	3,400	3	3,400	5 0	,,	
26,695	,, ...	6,850	2	5,000	7 6	Fair.	
234	,, ...	610	nil	...	...	.....	Only sapling growth.
35,498	,, ...	9,950	1	1,000	7 6	Fair to good.	
33	,, ...	2,100	1	175	7 6	,,	
41,483	,, ...	7,800	1	7,800	7 6	,,	
37,396	,, ...	12,250	·5	7,680	9 6	,,	
35,498	,, ...	9,950	·25	2,800	9 6	,,	
27,643	,, ...	1,990	·16	1,820	9 6	,,	
34,670	,, ...	6,700	·10	4,080	9 6	,,	
33,036	,, ...	5,200	1	5,200	9 6	,,	
235	,, ...	3,840	·12	1,400	9 6	,,	
15,577	,, ...	1,460	·11	1,460	9 6	,,	
37,393	,, ...	10,500	·10	9,000	9 6	,,	
37,399	,, ...	1,450	·4	1,200	9 6	,,	
15,038	,, ...	1,750	·7	800	9 6	,,	
37,485	,, ...	2,100	·5	2,100	8 0	,,	
15,588	,, ...	648	·10	648	8 0	,,	
15,589	,, ...	330	·10	330	8 0	,,	
30,300	,, ...	4,715	·10	4,715	8 0	,,	
16,437	,, ...	1,670	·10	1,670	9 0	,,	
23,765	,, ...	1,000	·10	1,000	9 0	,,	
26,158	,, ...	393	·10	393	9 0	,,	
26,902	,, ...	4,370	·10	4,370	9 0	,,	
27,432	,, ...	3,870	·10	3,870	9 0	,,	
37,348	,, ...	6,900	·8	6,900	8 0	,,	
11,637	Gloucester ...	2,300	1	500	4 6	,,	Re-afforesting fairly good generally.
23,304	,, ...	6,300	1	2,000	6 6	Fair.	
34,607	,, ...	10,000	1	1,000	6 0	,,	
27,147	,, ...	6,000	1	500	6 0	,,	
37,721	,, ...	50	nil	...	...	.....	
46A	,, ...	25,630	·4	25,630	7 6	Fair to good.	
8,797	,, ...	161	·4	161	7 6	,,	
23,925	,, ...	1,610	·4	1,610	7 6	,,	
28,370	,, ...	3,930	·4	3,930	7 6	,,	
38,959	,, ..	480	1·20	480	7 6	,,	
37,836	,, ...	12,586	1·20	12,586	7 6	,,	
12,528	,, ...	8,500	1·5	8,500	7 6	,,	
34,563	,, ...	20,540	·6	20,540	7 6	,,	
14,587	,, ...	2,500	1·8	2,500	7 6	,,	
20,968	,, ...	...	1·8	...	7 6	,,	
34,171	,, ...	8,500	1·8	8,500	7 6	,,	
20,969	,, ...	12,800	1·25	12,800	7 6	,,	
20,919	,, ...	...	1·5	...	7 6	,,	
25,244	,, ...	10,380	1·5	10,380	7 6	,,	
34,562	,, ...	21,000	1·8	21,000	7 6	,,	
35,245	,, ...	21,020	·4	21,020	7 6	,,	
35,221	,, ...	8,745	·4	8,745	7 6	,,	

SCHEDULE from District Forester T. Hardiman, Taree—*continued.*

Tallow-wood (*Eucalyptus microcorys*).

No. of F.R.	County.	Area of F.R. in acres.	How distributed.		Size (girth).	Quality.	Remarks.
			No. of trees per acre.	Over area of F.R.			
					ft. in.		
13,362	Gloucester ...	3,730	1·2	3,730	7 6	Fair to good.	
34,083	,, ...	5,860	·5	3,000	7 6	,,	
28,405	,, ...	38,400	2	38,400	7 6	,,	
34,834	,, ...	6,360	·4	3,500	7 6	,,	
34,835	,, ...	8,740	·6	8,740	7 6	,,	
34,142	,, ...	2,500	·75	2,500	7 6	,,	Re-afforesting fairly good generally.
36,701	,, ...	880	1	880	6 8	Good.	
35,565	,, ...	700	1	700	6 8	,,	
35,564	,, ...	600	1	600	6 8	,,	
34,013	,, ...	1,020	1	1,020	6 8	,,	
34,502	,, ...	3,260	1	3,260	6 8	,,	
16,050	,, ...	79,640	1	79,640	6 8	,,	

SCHEDULE from District Forester A. E. Stopford, Armidale.

No. of F.R.	County.	Area of F.R. in acres.	How distributed.		Size (girth).	Quality.
			No. of trees per acre.	Over area of F.R.		
					ft. in.	
32,130	Buller	21,512	1	7,000	7 0	Good.
37,004	,, ...	32,763	2	16,000	7 0	,,
4 (part)	,, ...	24,000 (about)	1	5,000	7 0	,,
35,944	,, ...	12,310	1	6,000	6 0	Fair.
40,491	Clive	18,300	1	12,000	6 6	,,
40,492						
37,551	,, ...	47,780	2	15,900	6 6	,,
39,433	Gough	15,790	1	10,000	6 6	Good.
40,494	,, ...	12,000	1	6,000	6 6	,,
40,519	Gresham	7,200	1	4,000	6 0	Fair.
36,928	,, ...	16,500	1	6,000	6 0	,,
1,662	Clarke	37,710	1	7,500	6 0	Excellent.
10,993	,, ...	13,556	1	6,500	6 0	,,
29,433	,, ...	26,000	1	6,500	6 0	,,
13,457	Vernon	4,755	1	1,000	6 0	Good.
1,293	Vernon and Hawes ...	35,177	1	5,000	6 0	,,

REMARKS.—*E. microcorys* is conspicuous in this district for the scarcity of sapling growths.

On the coastal area extending from the Parish of Maryvale, County of Clarence, it is found in fairly large proportions right through to the southern boundary of the Kempsey district, westerly in great quantities on Billy's Hill, Clouds Creek, and the range extending from junction of Blick's River and Wild Cattle Creek, all through the western slopes of the range dividing the Dorrigo from the Little Murray, and down the eastern slopes of the range extending to Coramba and Tallawudjah Creek. The greater portion of this area contains large, well-timbered belts of tallow-wood; the greater proportion of it is found in F.R. 354, particularly on Billy's Creek. Here it is found to perfection, and is the prevailing timber,—(T. H. Wilshire, District Forester, Grafton.)

SCHEDULE from District Forester W. P. Pope, Casino.

No. of F.R.	County.	How distributed.	Average Girth.	Quality.	Remarks.
			ft. in.		
37,009	Rous	2 trees per acre...	7 6	Good.	
33,200	„	2 „ ...	7 6	„	
10,723	„	3 „ ...	7 6	„	
37,010	„	2 „ ...	7 6	„	
4,353	„	3 „ ...	8 0	„	
249	„	2 „ ...	7 6	„	
250	„	2 „ ...	7 6	„	
11,761	„	.....	.....	.....	All brush.
40,377	„	2 trees per acre...	7 6	Good.	
33,199	„	3 „ ...	8 0	„	
35,878	„	2 „ ...	7 6	„	
24,272	„	3 „ ...	7 6	„	
18,185	„	3 „ ...	7 6	„	
27,728	„	2 „ ...	7 6	„	
32,773	„	3 „ ...	7 0	„	
864	„	1 „ ...	.....	.....	Largely cut out.
37,008	„	2 „ ...	7 6	Good.	
35,077	„	2 „ ...	7 6	„	
31,841	„	4 „ ...	8 0	„	
2,123	Clarence	3 „ ...	7 6	„	
27	„	2 „ ...	7 0	„	
41,814	Buller	3 „ ...	8 0	„	
4	„	4 „ ...	8 0	„	
26,956	Richmond	2 „ ...	7 6	„	
1,137	„	2 „ ...	7 6	„	
625	„	.....	.....	.....	Cut out.
42,273	„	2 trees per acre...	7 6	Good.	
974	„	3 „ ...	7 6	„	
35,769	„	3 „ ...	7 6	„	
10,571	„	2 „ ...	7 6	„	
973, 10, 12, 9	„	2 „ ...	7 6	„	
27,838	„	1 „ ...	7 6	„	
27,760	„	1 „ ...	7 6	„	
29,248	„	3 „ ..	7 6	„	
38,694	„	2 „ ...	7 6	„	
36,634	„	2 „ ...	7 6	„	
894	„	2 „ ...	8 0	„	
1,101	„	2 „ ...	7 6	„	
38,695	„	2 „ ...	7 6	Very good.	
22,413	Drake	3 „ ...	8 0	„	
9,999	„	3 „ ...	8 0	„	
1,111	„	3 „ ...	8 0	„	
27,774	„	3 „ ...	8 0	„	
6,369	„	3 „ ...	8 0	„	
35,365	„	3 „ ...	8 0	„	
11,452	„	3 „ ...	8 0	„	
31,556	„	2 „ ...	7 6	Good.	
248	„	2 „ ...	7 6	„	
537	„	1 tree to 3 acres...	7 0	„	
379	„	1 tree per acre ...	7 0	„ ...	Chiefly brush reserve.
913	„	1 tree to 3 acres...	7 0	Fair.	
42,334	„	2 trees per acre...	7 6	Good.	
41,842	Rous	3 „ ...	7 6	„	
42,456	„	3 „ ...	7 6	„	
42,457	„	3 „ ...	7 6	„	
43,279	Richmond	3 „ ..	7 6	„	
43,754	„	3 „ ...	7 6	„	
379	„	1 „ ...	7 0	„ ...	Chiefly brush reserve.
43,836	Drake	2 „ ...	7 0	„	
1,120	„ and Rous ...	3 „ ...	7 6	„	

For a fuller botanical account of this species, see my *Crit. Rev. genus Eucalyptus*, Part IX.

A Critical Revision of the genus Eucalyptus.*

THIS work is, like the present one, issued in Parts, and each Part also contains four plates (except Part IV, which contains twelve plates). It contains botanical details and critical observations which would be unsuitable for the present work, which is more of a popular character.

Of the New South Wales species of Eucalyptus, the following are dealt with in the "Critical Revision" (the number of the Part of which is given in brackets) :—

Eucalyptus acacioides, A. Cunn. (XI).
" *acmenioides*, Schauer (IX).
" *amygdalina*, Labillardière (VI).
" *Andrewsi*, Maiden (VII).
" *apiculata*, Baker and Smith (IX).
" *Behriana*, F.v.M. (X).
" *bicolor*, A. Cunn. (XI).
" *Boormani*, Deane and Maiden (X).
" *Bosistoana*, F.v.M. (XI).
" *calycogona*, Turczaninow (III).
" *capitellata*, Smith (VIII).
" *Considenіana*, Maiden (X).
" *coriacea*, A. Cunn. (V).
" *dives*, Schauer (VII).
" *eugenioides*, Sieber (VIII).
" *fruticetorum*, F.v.M. (XI).
" *hæmastoma*, Smith (X).
" *hemiphloia*, F.v.M. (XI).
" *incrassata*, Labillardière (IV).

Eucalyptus Luehmanniana, F.v.M. (IX).
" *macrorrhyncha*, F.v.M. (VIII).
" *microcorys*, F.v.M. (IX).
" *microtheca*, F.v.M. (XI).
" *Muelleriana*, Howitt (VIII).
" *obliqua*, L'Héritier (II).
" *odorata*, Behr and Schlecht. (XI).
" *pilularis*, Smith (I).
" *piperita*, Smith (X).
" *Planchoniana*, F.v.M. (IX).
" *populifolia*, Hooker (X).
" *regnans*, F.v.M. (VII).
" *siderophloia*, Bentham (X).
" *Sieberiana*, F.v.M. (X).
" *stellulata*, Sieber (V).
" *umbra*, R. T. Baker (IX).
" *virgata*, Sieber (IX).
" *vitellina*, Naudin (VII).
" *vitrea*, R. T. Baker (VII).

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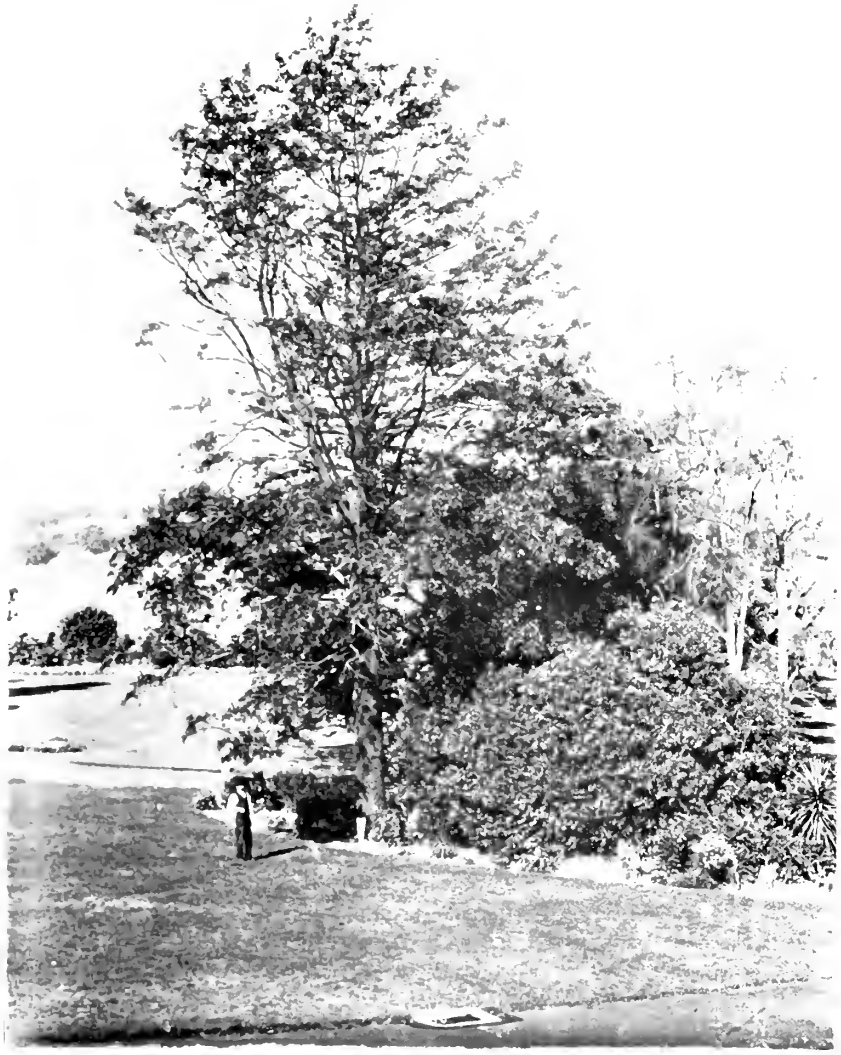
* Quarto. Government Printer, Sydney. Two shillings and sixpence a part (Part IV, Six shillings). Part IV will be charged Two shillings and sixpence to subscribers only. For this work Mr. Maiden has received Eucalyptus specimens from the principal Herbaria throughout the world.

Sydney : William Applegate Gullick, Government Printer.—1910.

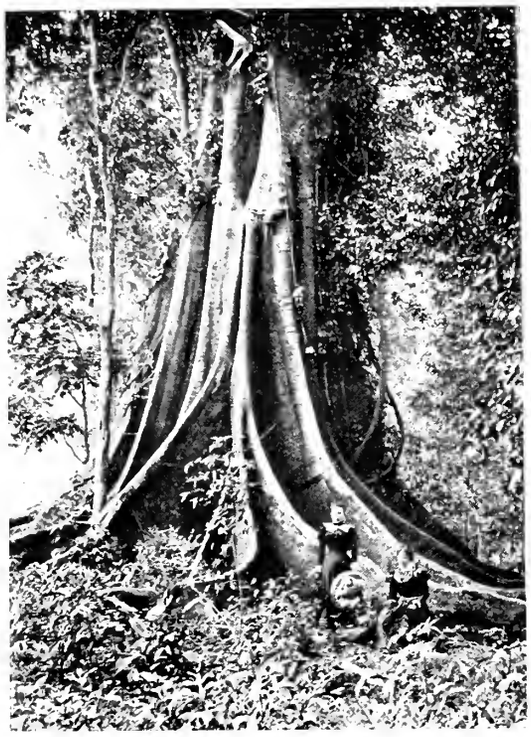


Govt. Printer, photo.

SILKY OAK (*Grevillea robusta*, A. Cunn.), BOTANIC GARDENS, SYDNEY.

Govt Printer, photo.

THE RUSTY FIG (*Ficus rubiginosa*, Desf.), BOTANIC GARDENS, SYDNEY.



E. B. Docker, photo.

A GIANT FIG TREE AT WINGHAM, MANNING RIVER, N.S.W.

F. A. Kirton, photo.

Ficus rubiginosa, DESF., WINGHAM, N.S.W.

H. T. Blanch, photo.

SMALL-LEAVED FIG (*Ficus rubiginosa*, DESF.), ROUS, RICHMOND RIVER, N.S.W.

F. A. Kirton, photo.

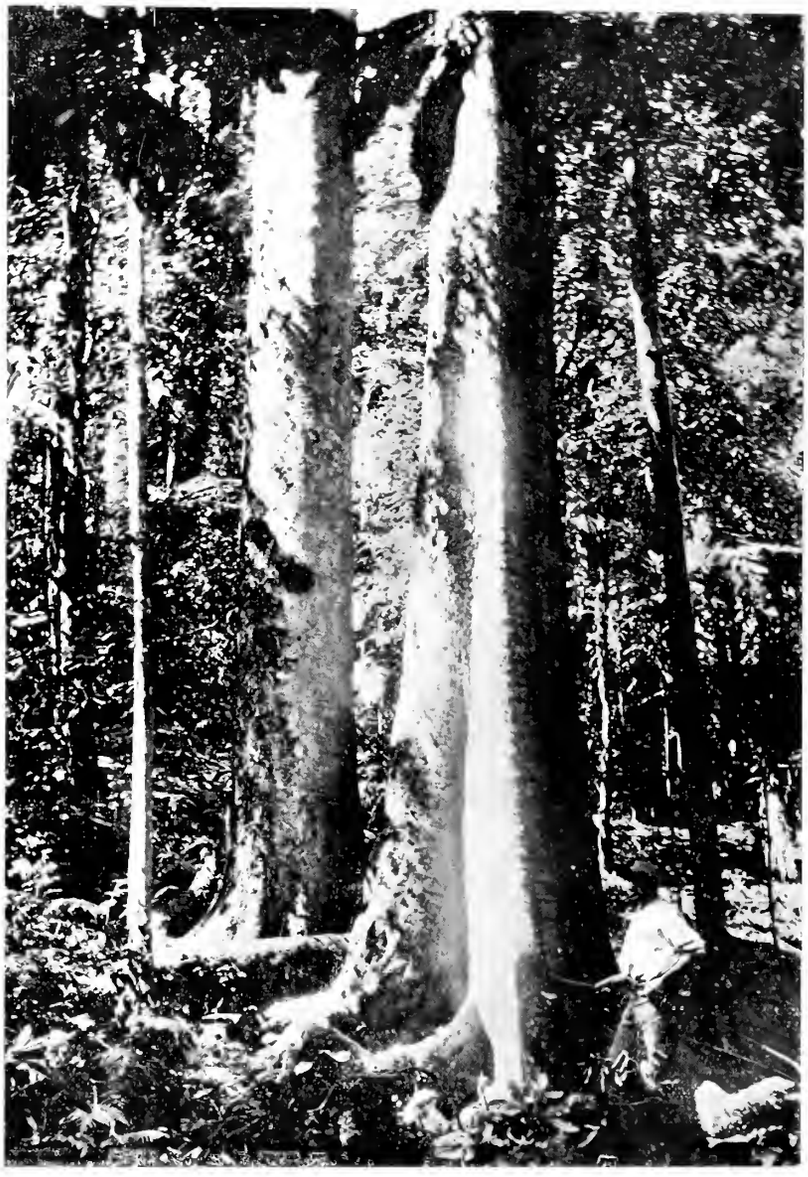
SQUARED TURPENTINE GIRDERS, WYONG, N.S.W.

Kerry, photo.

BUTTER BUSH *(Pittosporum phillyræoides,* DC.). MUNGINDI DISTRICT, N.S.W.

Govt. Printer, photo.

RED ASH (*Alphitonia excelsa*, REISSEK.), BOTANIC GARDENS, SYDNEY.



N. Stewart, photo.

SASSAFRAS *(Doryphora sassafras,* ENDL.), GLEN INNES DISTRICT, N.S.W.

Govt. Printer, photo.

Alstonia constricta, F.v.M., BOTANIC GARDENS, SYDNEY.

R. W. Peacock, photo.

QUININE *Alstonia constricta*, F.v.M.), COOLABAH, N.S.W.

N. Stewart, photo.

RED CEDAR *(Cedrela australis,* F.v.M.), GLEN INNES DISTRICT, N.S.W.

Govt. Printer, photo.

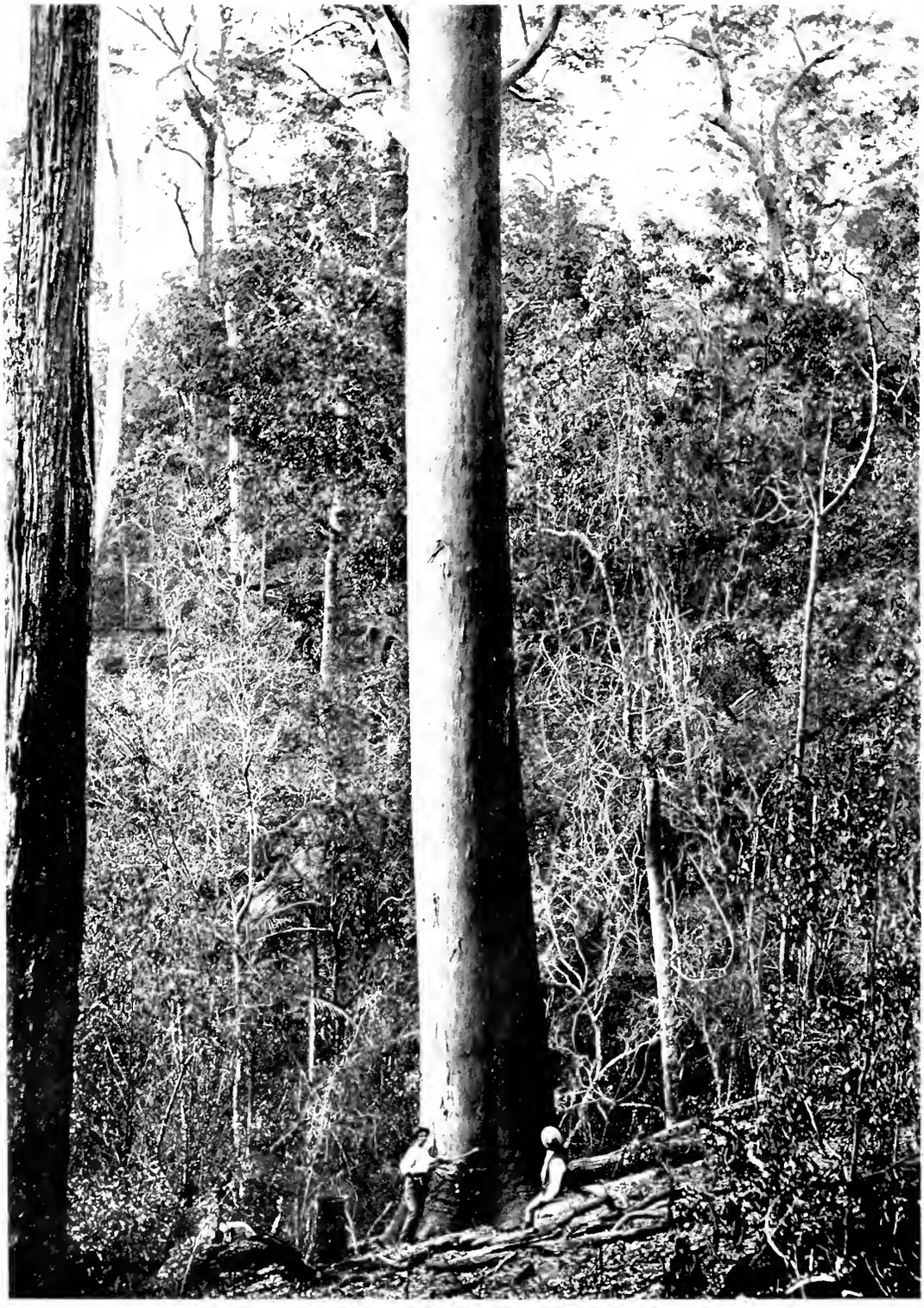
RED CEDAR, BOTANIC GARDENS, SYDNEY.

N. Stewart, photo.

BLUE GUM *(Eucalyptus saligna,* Sm.), GLEN INNES DISTRICT, N.S.W.

F. A. Kirton, photo.

BIG BLUE GUM LOG, WYONG, N.S.W.



F. A. Kirton, photo

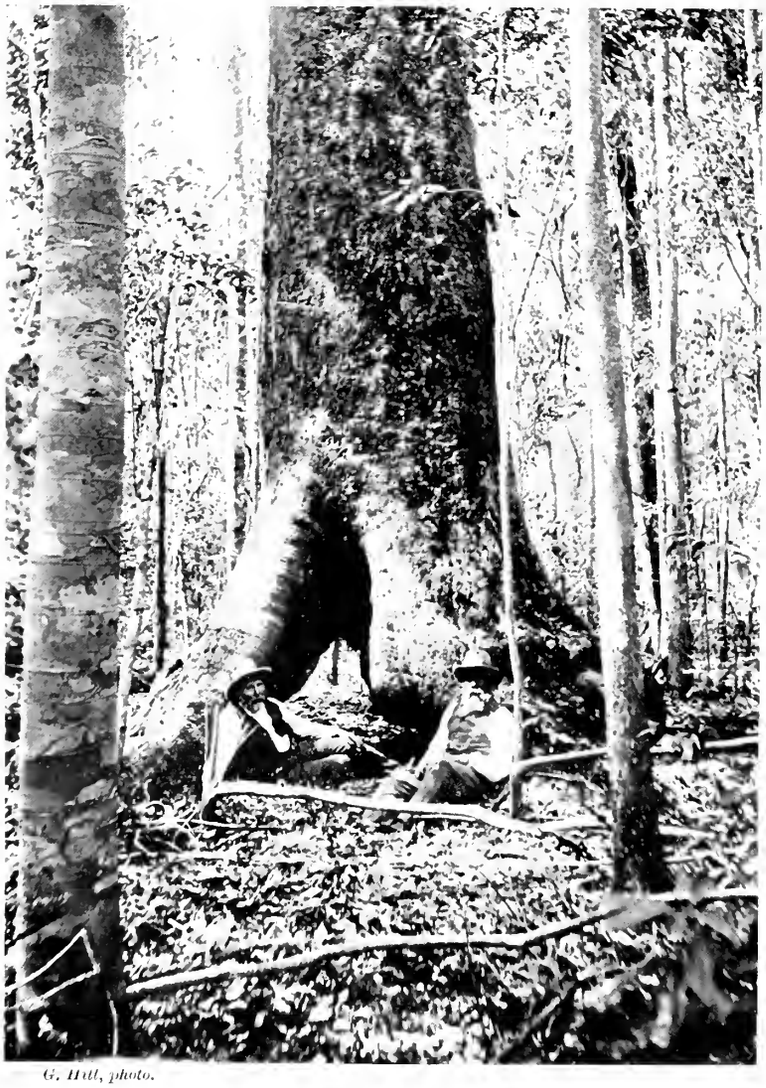
SYDNEY BLUE GUM, WYONG. N.S.W.

Govt. Printer, photo.

BROAD-LEAVED TEA-TREE *(Melaleuca leucadendron,* L.), BOTANIC GARDENS, SYDNEY.

R. W. Peacock, photo.

QUANDONG (*Fusanus acuminatus*, R.Br.), COOLABAH, N.S.W



G. Hull, photo.

BRUSH BOX (*Tristania conferta*, R.Br.), ELLENBOROUGH FALLS, WINGHAM DISTRICT, N.S.W.

W. A. Windeyer, photo.

Cupania anacardioides, A. Rich., HEXHAM TO TOMAGO ROAD, N.S.W.

R. H. Cambage, photo.

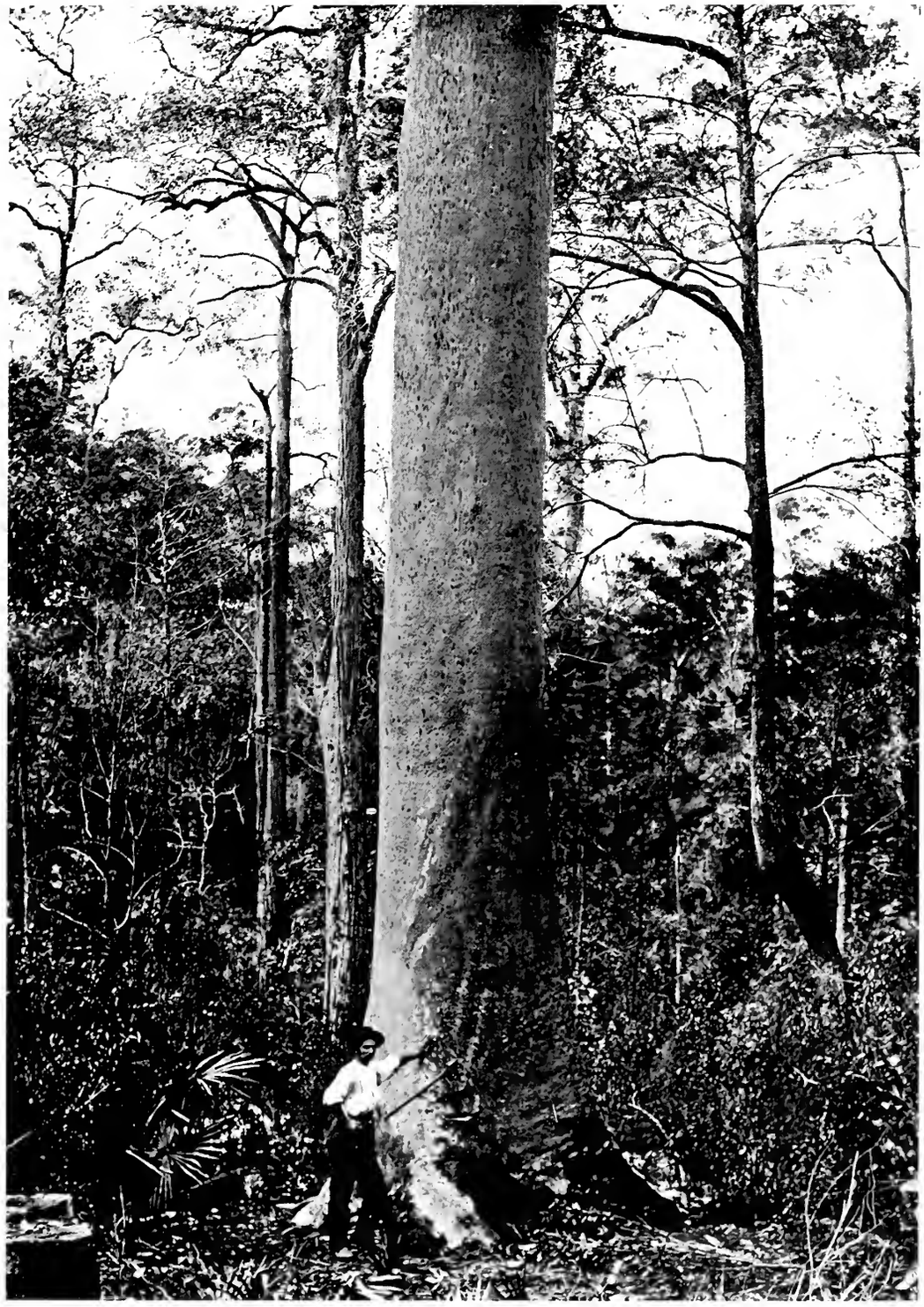
Eucalyptus hemiphloia, F.v.M., Typical Form, MULGOA, N.S.W.

Govt. Printer, photo.

BLACK BEAN *(Castanospermum australe,* A. Cunn.), BOTANIC GARDENS, SYDNEY.

N. Stewart, photo.

SPOTTED GUM *(Eucalyptus maculata.* Hook.), GLEN INNES DISTRICT, N.S.W.

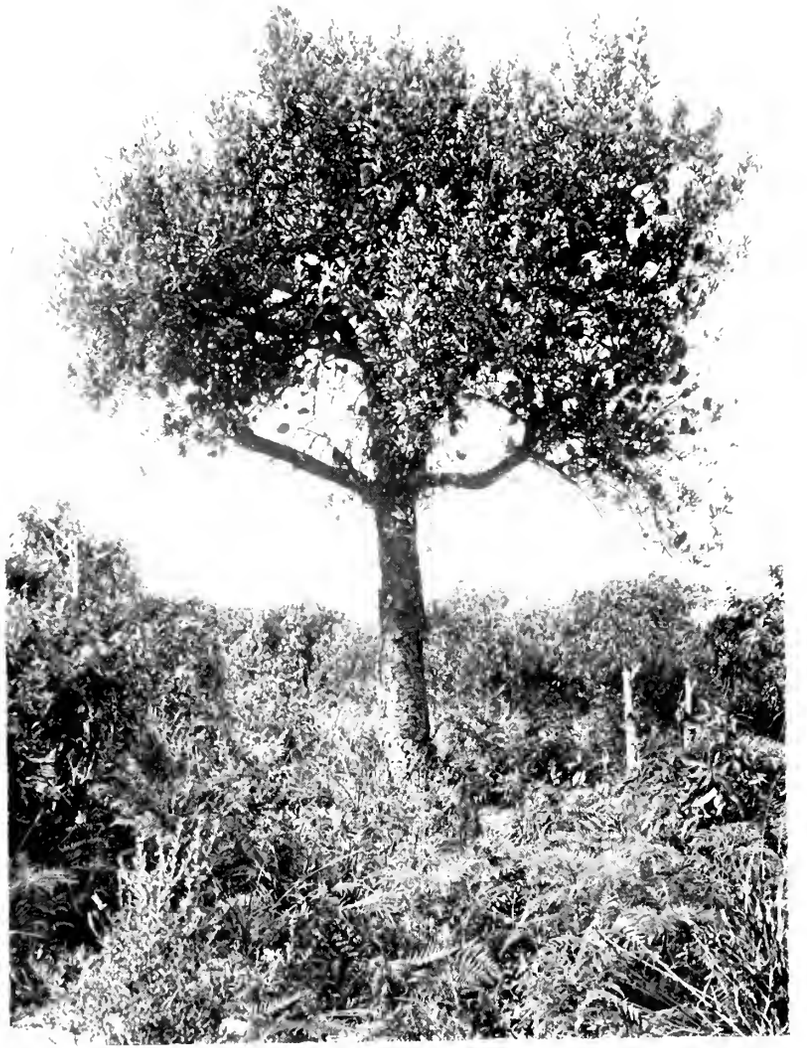


F. A. Kirton, photo.

SPOTTED GUM, WYONG, N.S.W.

Govt. Printer, photo.

GROUP OF WHITE HONEYSUCKLE TREES (*Banksia integrifolia*, L.F.), LONG BAY, NEAR SYDNEY.



Govt. Printer, photo.

WHITE HONEYSUCKLE TREE, LONG BAY, NEAR SYDNEY

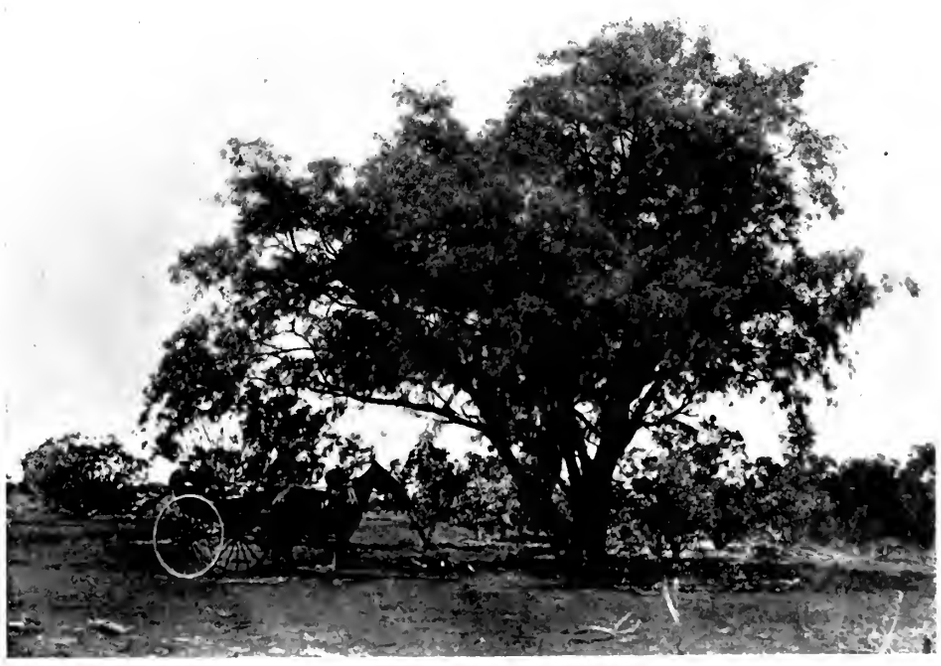
Govt. Printer, photo.

Barklya syringifolia, F.v.M., BOTANIC GARDENS, SYDNEY.

Govt. Printer, photo.

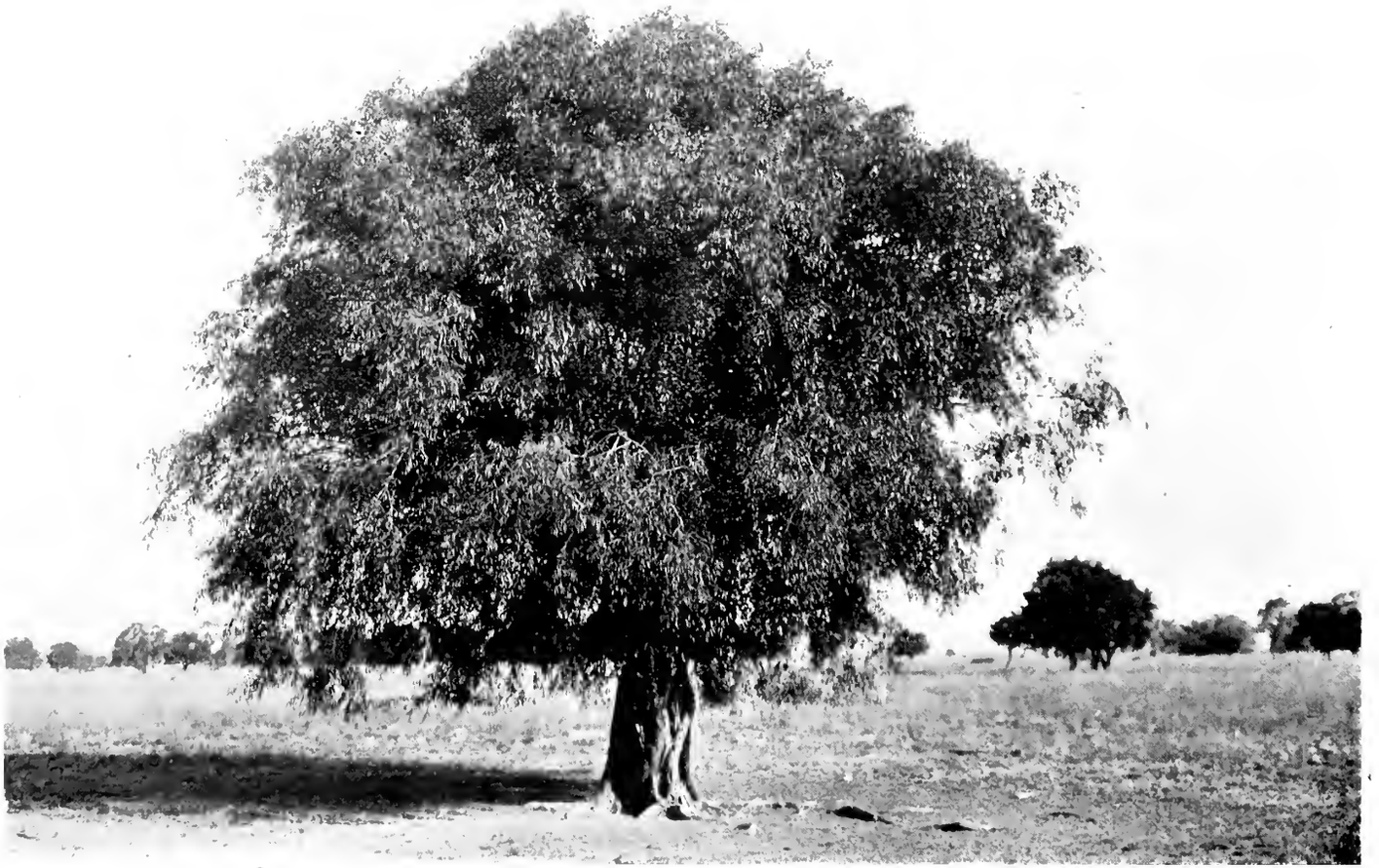
WHITE BEECH *(Gmelina Leichhardtii.* F.v.M.), BOTANIC GARDENS, SYDNEY.

WHITE BEECH (*Gmelina Leichhardtii*).



R. W. Peacock, photo.

SUPPLE JACK (*Ventilago viminalis*, Hook), COOLABAH, N.S.W.



Kerry, photo.

SUPPLE JACK, MUNGINDI DISTRICT, N.S.W.

C. J. McMaster, photo.

LEOPARD WOOD *(Flindersia maculosa,* F.v.M.), EARLY GROWTH, LIGHTNING RIDGE, 40 MILES W. OF COLLARENEBRI, N.S.W.

Govt. Printer, photo.

THE QUEENSLAND NUT *(Macadamia ternifolia,* F.v.M.), BOTANIC GARDENS, SYDNEY.

N. Stewart, photo.

FOREST RED GUM (*Eucalyptus tereticornis*, Sm.), GLEN INNES DISTRICT, N.S.W.

G. Hill, photo.

CYPRESS PINE (*Callitris Macleayana*, F.v.M.), NEAR ELLENBOROUGH FALLS, WINGHAM DISTRICT, N.S.W.

A. W. Mullen, photo.

BELAH FOREST (*Casuarina lepidophloia*, F.v.M.), BOURKE, N.S.W.

Govt. Printer, photo.

SWAMP OAKS *(Casuarina glauca,* SIEB.) BOTANIC GARDENS, SYDNEY.

Govt. Printer, photo.

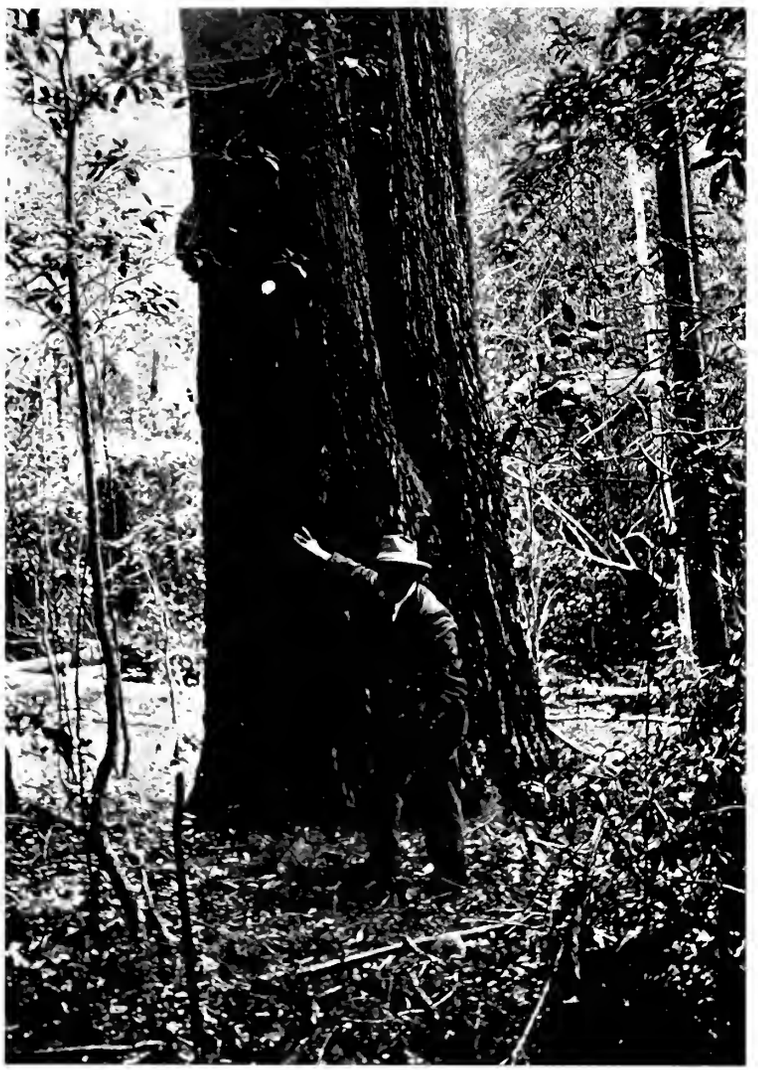
RIVER OAK (*Casuarina Cunninghamiana*, MIQ.), BOTANIC GARDENS, SYDNEY.

R. W. Peacock, photo.

WHITEWOOD (*Atalaya hemiglauca*, F.v.M.), BOURKE, N.S.W.

R. W. Peacock, photo.

MYALL (*Acacia pendula*, A. Cunn.), COOLABAH, N.S.W.



G. Hill, photo.

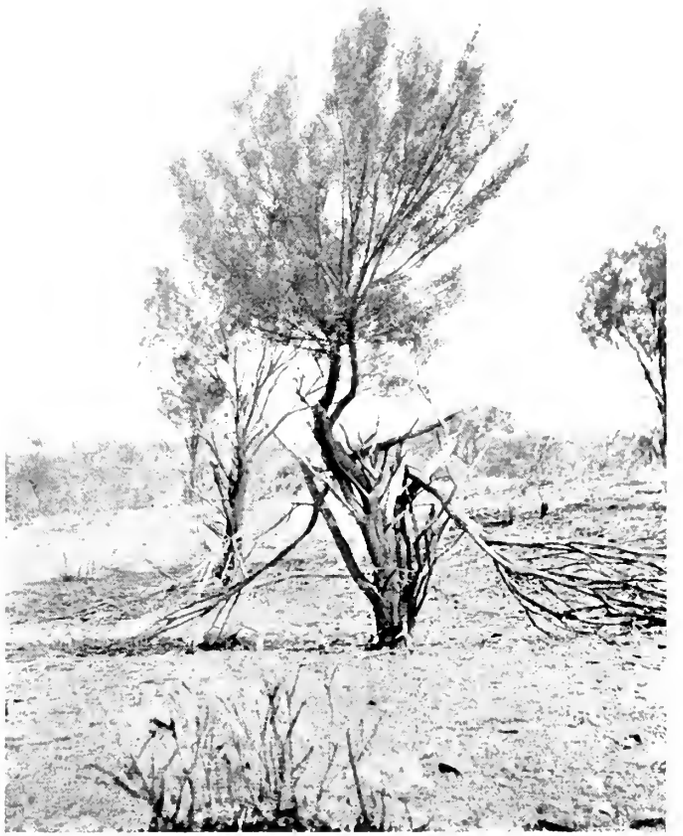
SHINGLE OAK (*Casuarina torulosa*, AIT.), COMBOYNE DISTRICT, N.S.W.

Govt. Printer, photo.

THE CUDGERIE (*Flindersia Schottiana*, F.v.M.), BOTANIC GARDENS, SYDNEY.

Govt. Printer, photo.

THE ROSEWOOD (*Dysoxylon Fraseranum*, BENTH.), BOTANIC GARDENS, SYDNEY.



C. J. McMaster, photo.

MULGA (*Acacia aneura*, F.v.M.) LOPPED FOR STOCK FEED, POLAMACCA, N.S.W.

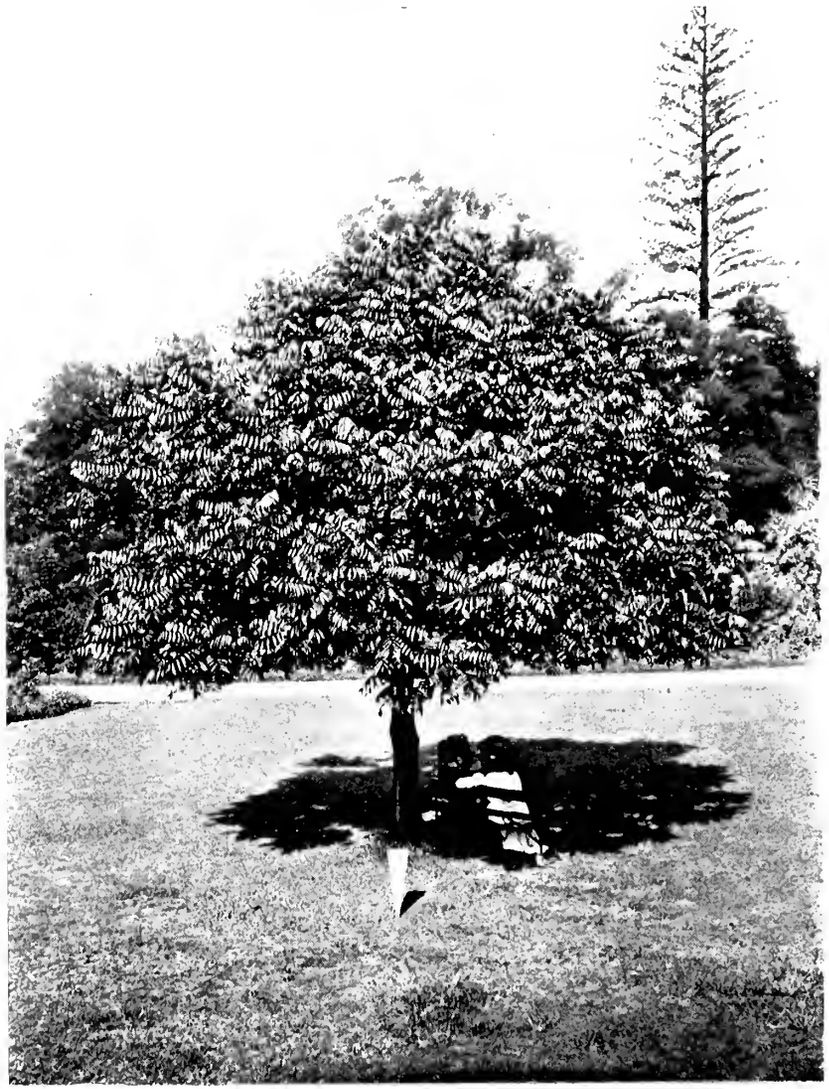
A. W. Mullen, photo.

MULGA SCRUB, BOURKE DISTRICT, N.S.W.

R. W. Peacock, photo.

MULGA, COOLABAH, N.S.W.

RED CRYPTOCARYA (*Cryptocarya erythroxylon*, MAIDEN AND BETCHE), TOOLOOM RANGE, N.S.W.



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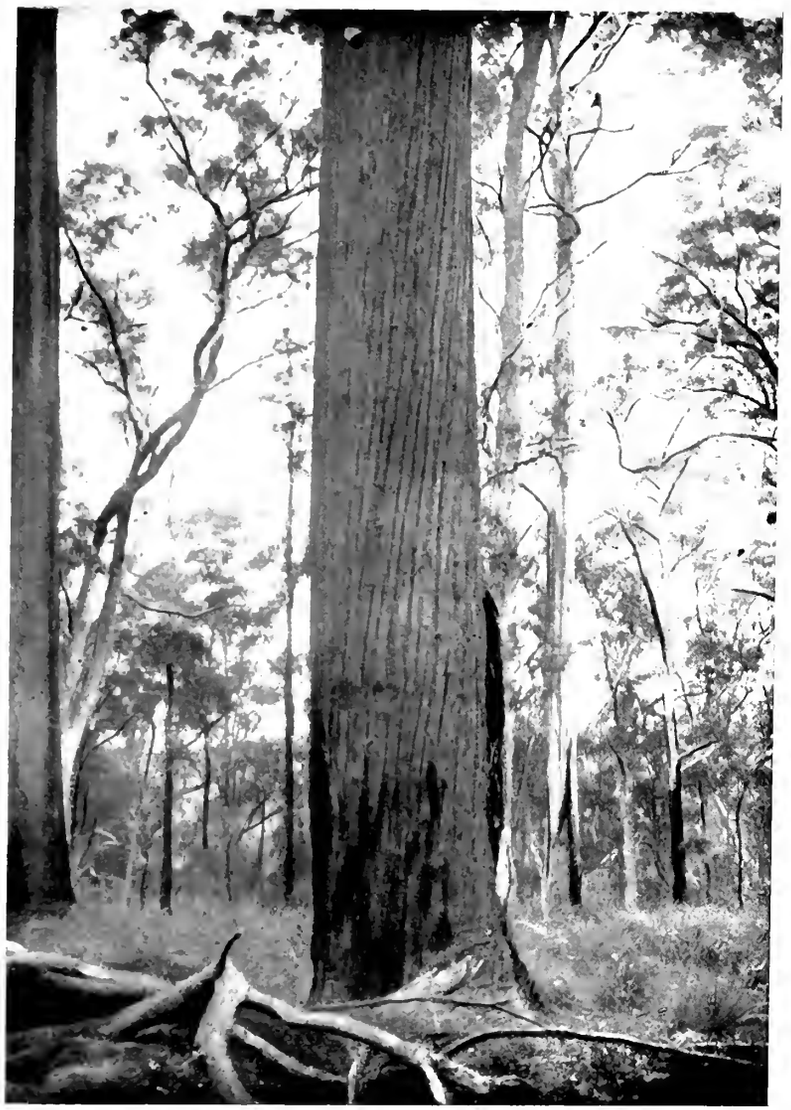
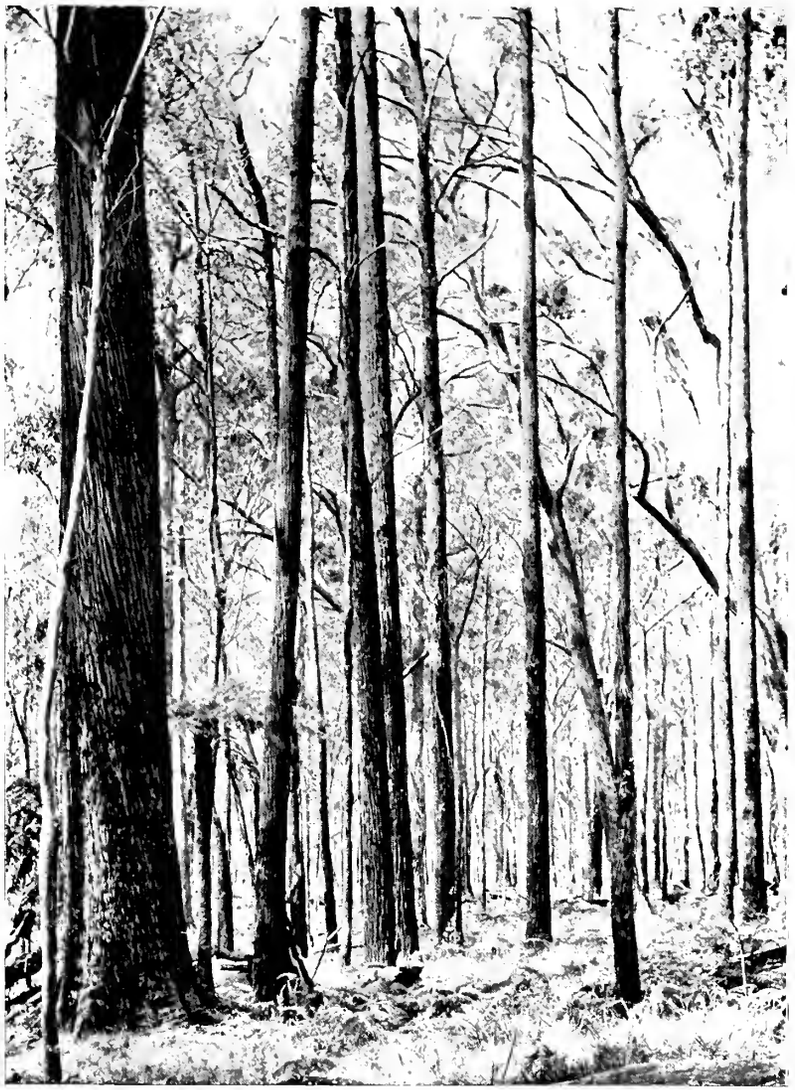
RED BEAN (*Dysoxylon Muelleri*, BENTH.), BOTANIC GARDENS, SYDNEY.



RED STRINGYBARK (*E. macrorrhyncha*).



N. Stewart, photo.

WHITE STRINGYBARK (*Eucalyptus eugenioides*, SIEB), GLEN INNES DISTRICT, N.S.W.

N. Stewart, photo.

BLACKBUTT (*Eucalyptus pilularis*, Sm.), GLEN INNES DISTRICT, N.S.W.

A. W. Mullen, photo.

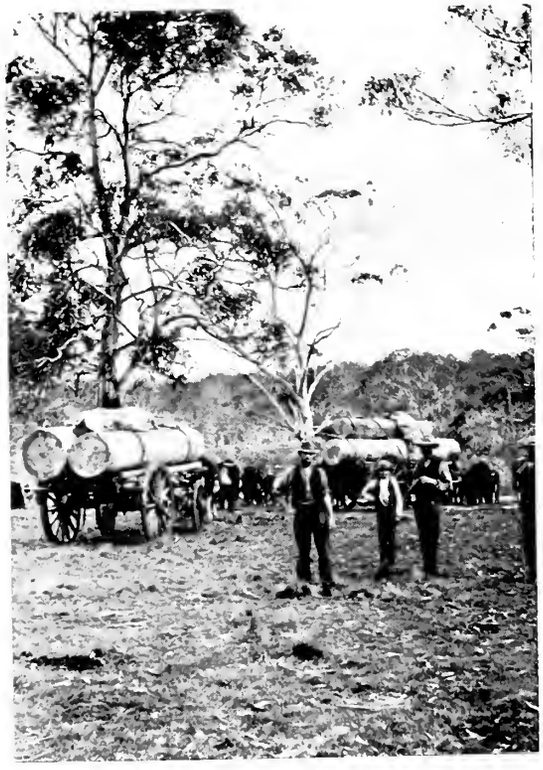
GIDGEA FOREST (*Acacia Cambagei*, R. T. Baker), BOURKE DISTRICT, N.S.W.

Kerry, photo

BRIGALOW (*Acacia harpophylla*, F.v.M.), MUNGINDI DISTRICT, N.S.W.

E. B. Docker, photo.

GROUP OF BRIGALOW TREES, WALGETT ROAD, NEAR COMBOGOLONG, N.S.W.



E. B. Docker, photo.

"STICKS" OF RICHMOND RIVER PINE (*Araucaria Cunninghamii*, AIT.) FROM THE DORRIGO BRUSH, N.S.W.

C. Lewis, photo.

YARRAN (*Acacia homalophylla*, A. Cunn.), KOORINGA STATION, NEAR YOUNG, N S W

E. B. Docker, photo.

YARRAN TREES, MALLEE IN DISTANCE, HILLSTON ROAD, N S W

Volume III (Parts XXI–XXX).

PART XXI. (Issued August, 1906.)

77.—The Crow's Ash or Bogum Bogum (*Flindersia Bennettiana*, F.v.M.). (*Two Plates.*)
78.—The Blackbutt or Peppermint (of New England) (*Eucalyptus Andrewsi*, Maiden).
79.—The Thready-barked Oak (*Casuarina inophloia*, F.v.M. and Bailey).

PART XXII. (Issued February, 1907.)

80.—The Hill Flindersia (*Flindersia collina*, F. M. Bailey). (*Two Plates.*)
81.—The Broad-leaved Messmate (*Eucalyptus obliqua*, L'Hérit.).
82.—The Cedar Wattle (*Acacia elata*, A. Cunn.).

PART XXIII. (Issued March, 1907.)

83.—The Rosewood (*Dysoxylon Fraseranum*, Benth.).
84.—The White-top Messmate (*Eucalyptus vitrea*, R. T. Baker).
85.—The Acacia decurrens Group of Wattles—Black, Green, and Silver Wattles (*Acacia decurrens*, Willd.). (*Two Plates.*)

PART XXIV. (Issued May, 1907.)

86.—The Bastard Pencil Cedar (*Dysoxylon rufum*, Benth.).
87.—Bastard Tallow-wood (*Eucalyptus Planchoniana*, F.v.M.).
88.—The Mountain Hickory (*Acacia penninervis*, Sieb.). (*Two Plates.*)

PART XXV. (Issued June, 1907.)

89.—The Rosewood (*Dysoxylon Fraseranum, Benth.*), also The Apple-tree of Lord Howe Island (*D. pachyphyllum*, Hemsl.).
90.—A Virgate Eucalypt (*Eucalyptus virgata*, Sieb.).
91.—The Two-veined Hickory (*Acacia binervata*, DC.).
92.—The White Cedar (*Melia Azedarach*, L., var. *australasica*, C. DC.).

PART XXVI. (Issued September, 1907.)

93.—The Hairy Dysoxylon (*Dysoxylon Becklerianum*, C.DC.).
94.—Luehmann's Gum (*Eucalyptus Luehmanniana*, F.v.M.).
95.—The Mulga (*Acacia aneura*, F.v.M.).
96. The Red-wooded Cryptocarya (*Cryptocarya erythroxylon*, Maiden and Betche).

PART XXVII. (Issued October, 1907.)

97.—The Red Bean (*Dysoxylon Muelleri*, Benth.).
98.—Red Stringybark (*Eucalyptus macrorrhyncha*, F.v.M.).
99.—A Brush Ironbark (*Acacia aulacocarpa*, A. Cunn.).
100.—A Brown Beech (*Cryptocarya glaucescens*, R.Br.).

PART XXVIII. (Issued December, 1907.)

101.—A Bog Onion (*Amoora nitidula*, Benth.).
102.—The Brown Stringybark (*Eucalyptus capitellata*, Sm.).
103.—The Broad-leaved Wattle (*Acacia pycnantha*, Benth.).
104.—The Murrogun (*Cryptocarya microneura*, Meissn.).

PART XXIX. (Issued January, 1908.)

105.—The Bastard Rosewood (*Synoum glandulosum*, A. de Jussieu).
106.—A White Stringybark (*Eucalyptus eugenioides*, Sieb.).
107.—Baker's Wattle (*Acacia Bakeri*, Maiden).
108.—The Stinking Cryptocarya (*Cryptocarya fœtida*, R. T. Baker).

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Recapitulatory. (*Seventeen Photographic Illustrations*).
109.—The Yellow Stringybark (*Eucalyptus Muelleriana*, Howitt)
110.—The Nealie (*Acacia rigens*, A. Cunn.).

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112.—The Blackbutt (*Eucalyptus pilularis*, Sm.).
113.—Cootamundra Wattle (*Acacia Baileyana*, F.v.M.).
114.—Grey Sassafras (*Cryptocarya australis*, Benth.).

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116.—The White Mahogany (*Eucalyptus a menioides*, Schauer).
117.—The Gidgee (*Acacia Cambagei*, R. T. Baker).
118.—*Cryptocarya patentinervis*, F.v.M.

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119.—A Honeysuckle (*Banksia æmula*, R.Br.).
120.—The Sydney Peppermint (*Eucalyptus piperita*, Sm.).
121.—Ironwood (*Acacia excelsa*, Benth.).
122.—The Three-veined Cryptocarya (*Cryptocarya triplinervis*, R.Br.).

PART XXXIV. (Issued May, 1909.)

123.—The Heath-leaved Honeysuckle (*Banksia ericifolia*, L.f.).
124.—Yowut or Mountain Ash (*Eucalyptus Sieberiana*, F.v.M.).
125.—The Brigalow (*Acacia harpophylla*, F.v.M.).
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PART XXXV. (Issued July, 1909.)

127.—Richmond River or Hoop Pine (*Araucaria Cunninghamii*, Ait.).
128.—Black Stringybark (*Eucalyptus Baileyana*, F.v.M.).
129.—The Yarran (*Acacia homalophylla*, A. Cunn.).
130.—A Cork Wood or Till (*Endiandra Sieberi*, Nees.).

PART XXXVI. (Issued October, 1909.)

131.—Honeysuckle or Warrock (*Banksia marginata*, Cav.).
132.—The Yertchuk (*Eucalyptus Consideniana*, Maiden).
133.—The Bastard Myall or Kurracabah (*Acacia Cunninghamii*, Hook.).
134.—The Ball Fruit (*Endiandra globosa*, Maiden and Betche).

PART XXXVII. (Issued January, 1910.)

135.—The Broad-leaved Honeysuckle (*Banksia latifolia*, R.Br.).
136.—White or Scribbly Gum (*Eucalyptus hæmastoma*, Sm.).
137.—The Currawang (*Acacia doratoxylon*, A. Cunn.).
138.—Endiandra Muelleri, Meissn.

PART XXXVIII. (Issued February, 1910.)

139.—A Honeysuckle (*Banksia, collina*, R.Br.).
140.—The Tallow-wood (*Eucalyptus microcorys*, F.v.M.).
141.—The Coast Myall (*Acacia glaucescens*, Willd.).
142.—*Endiandra pubens*, Meissn.

PART XXXIX. (Issued June, 1910.)

143.—A Honeysuckle (*Banksia spinulosa*, Sm.).
144.—The Broad-leaved Ironbark (*Eucalyptus siderophloia*, Benth.).
145.—The Cooba (*Acacia salicina*, Lindl.).
146.—Tick Wood (*Endiandra discolor*, Benth.).