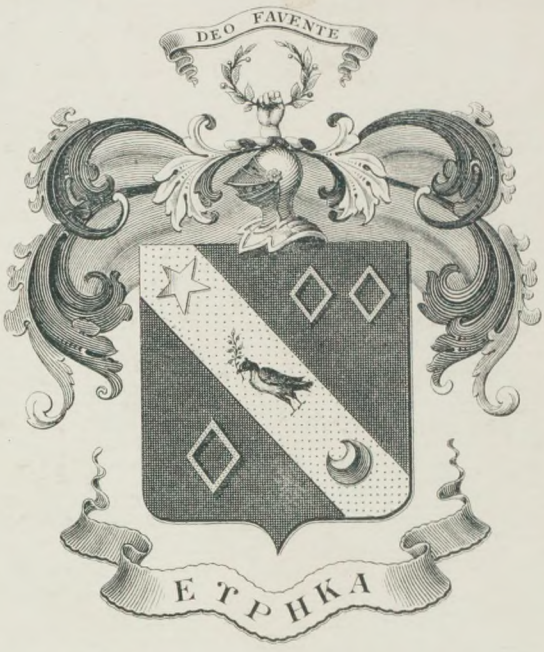

David Scott Mitchell.

DEPARTMENT OF MINES AND AGRICULTURE

(FOREST BRANCH),

NEW SOUTH WALES.

FLOWERING PLANTS AND FERNS

OF

NEW SOUTH WALES,

WITH ESPECIAL REFERENCE TO THEIR ECONOMIC VALUE,

BY

J. H. MAIDEN, F.L.S.,

ASSISTED BY W. S. CAMPBELL, F.L.S.

PART I.

PRICE, 2s. 6d.

[NON-SUBSCRIBERS, 3s. 6d.]

SYDNEY: CHARLES POTTER, GOVERNMENT PRINTER, PHILLIP STREET.

APRIL — 1895.

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1893.

INTRODUCTORY.

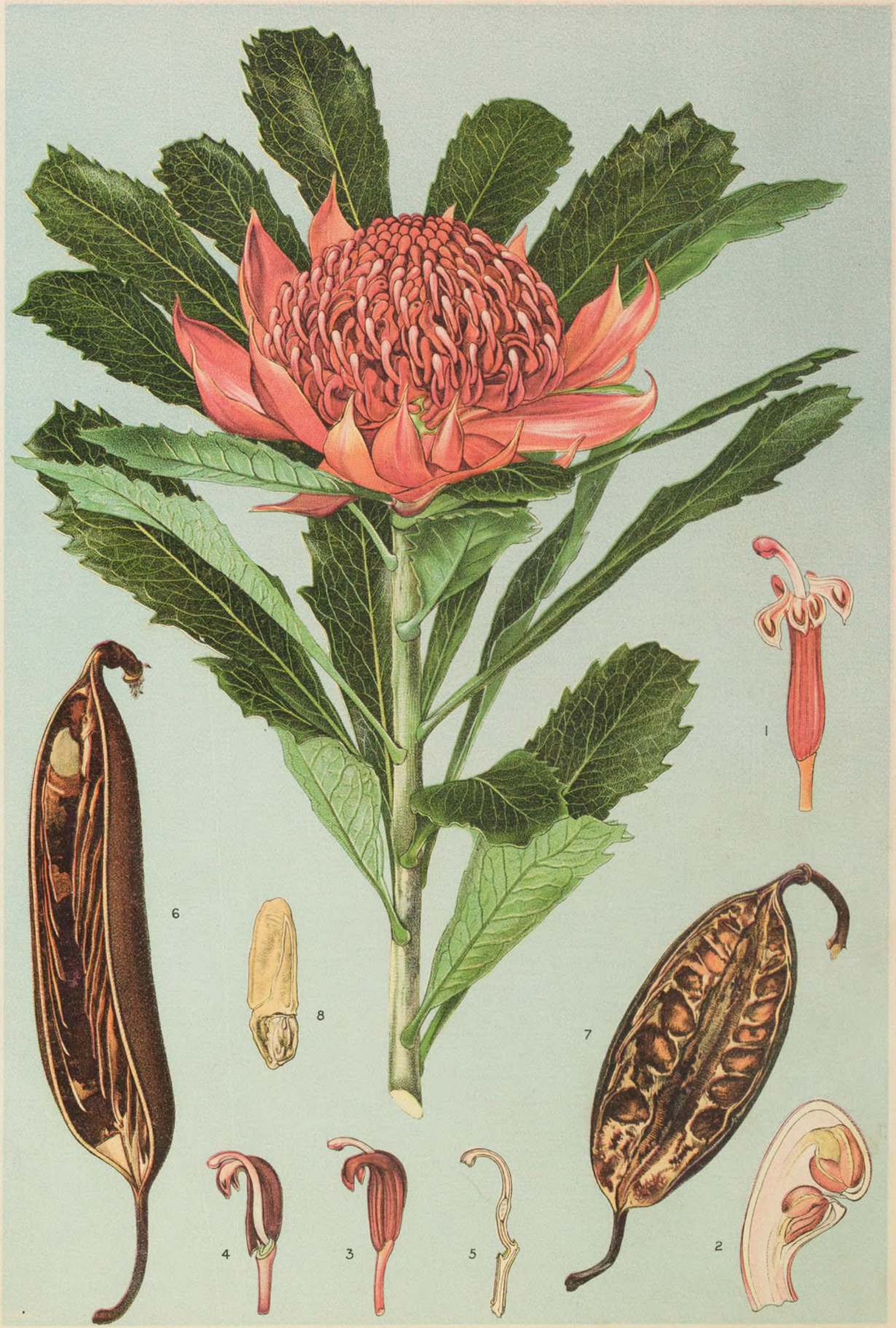
THE part now issued is intended to be a fair average specimen of the work, which it is hoped will familiarise our readers with the principal flowering plants and ferns of the Colony. As far as possible, each part will contain illustrations and descriptions of two forest trees (consequently of economic value), and of two flowering shrubs or smaller plants selected without any utilitarian considerations, but because of the beauty or scientific interest of their flowers or foliage.

The illustrations will not be overburdened with structural detail, and every effort will be made to secure pictorial accuracy.

The printed matter will follow a definite plan of arrangement, so as to facilitate reference. The descriptions will be written in a popular style, but at the same time we trust that scientific accuracy will be in no way sacrificed to homely language. The botanical descriptions (in brevier) mainly follow those of BENTHAM in the *Flora Australiensis*.

We believe that such a work as this has long been a desideratum of both botanists and of those who are content with the less ambitious but pleasing designation of lovers of flowers. Bearing in mind the character of the illustrations, the price of the work is very reasonable, and it is hoped that the public will support it sufficiently to justify its continuance.

In a work of this kind it is but fitting that we should draw attention to the skill of Messrs. E. W. MINCHEN and H. J. A. BARON, the artists engaged on it. To Mr. R. T. BAKER, himself a skilled botanical draughtsman, our warm thanks are due for kind suggestions in regard to the plates.



No. 1. THE WARATAH, (Telopea speciosissima, *R. Br:*)

No. 1.

THE WARATAH.

Telopea speciosissima, R. Br.

Vernacular names.—"Warratau" was one of the very earliest spellings. By many people this plant is known as the "Tulip" or "Native Tulip." It bears neither affinity nor resemblance to that flower, and the name is probably a corruption of *Telopea.*

We have sometimes heard it said that it was the presence of Waratahs in abundance that caused Botany Bay to receive the name it now bears. This, however, has no foundation on fact. The name is probably a translation of "Coste des herbaiges" (the coast of plants or pastures), a name given in an old 16th century chart to part of Eastern Australia. Those who desire to look into the matter are invited to turn to *The Historical Records of New South Wales,* vol. i, Part i, p. 161. Cook's name for Botany Bay was "Stingray Harbour."

Aboriginal names.—The aboriginal name of the Waratah is "Mewah," according to the Honourable George Thornton (*Notes on the Aborigines of New South Wales,* p. 6. Chicago Exhibition publications, 1893).

Waratah is doubtless an aboriginal name, but its origin does not appear to be clear at the present time.

Botanical name.—*Telopea,* from the Greek *Telopos,* "perceived from afar," in allusion (as the distinguished author of the name, Robert Brown, himself tells us), to the conspicuous crimson flowers. *Speciosissima,* the superlative of *speciosa,* the Latin word for beautiful or handsome.

The genus *Telopea* contains two other species, viz., *T. truncata,* the Tasmanian Waratah, and *T. oreades,* usually known as the Gippsland Waratah, which, however, is not an entirely satisfactory name, as it occurs at least as far north as the Fitzroy Falls, near Moss Vale, New South Wales.

Botanical description.—A stout, erect, glabrous shrub of 6 to 8 feet.

Leaves cuneate-oblong or almost obovate, 5 to 10 inches long, mostly toothed in the upper part, tapering into rather a long petiole, coriaceous, penniveined with the midrib prominent, a few rarely quite entire.

Flowers crimson, in a dense ovoid or globular head or raceme of about 3 inches in diameter.

Involucral bracts coloured, ovate-lanceolate, the inner ones 2 to 3 inches long, the outer ones few and small, surrounded by a dense tuft of floral leaves like the stem ones, but smaller and more entire.

Bracts under the pairs of flowers very short.

Pedicels thick, recurved, ¼ to ½ inch long.

Perianth glabrous, nearly 1 inch long.

Ovules 12 to 16.

Fruit recurved, 3 to 4 inches long.

Seeds 10 to 20, the nucleus broad, obliquely quadrate, the wing obliquely truncate, ¼ to above ½ inch long.

In the early days of the Colony the smiths used to give the aborigines trifles for a supply of the stems of this plant, which they used for twisting round their punches and other implements while working heated iron.

Flowers.—The illustration hardly does full justice to this strikingly handsome flower, which has come to be recognised as the national flower of New South Wales. It lends itself in a remarkable degree to decorative treatment, and hence is frequently depicted literally, or as a *motif*, in wrought-iron, wood and stone carving, stained-glass, and pottery decoration.

As early as 1793 it was recorded by Smith ("A Specimen of the Botany of New Holland") that the natives made an agreeable repast by sucking the flowers, which abound in honey. In this work, and also Curtis's *Botanical Magazine*, vol xxviii, plate 1,128 (1808), it is figured under the name of *Embothrium*.

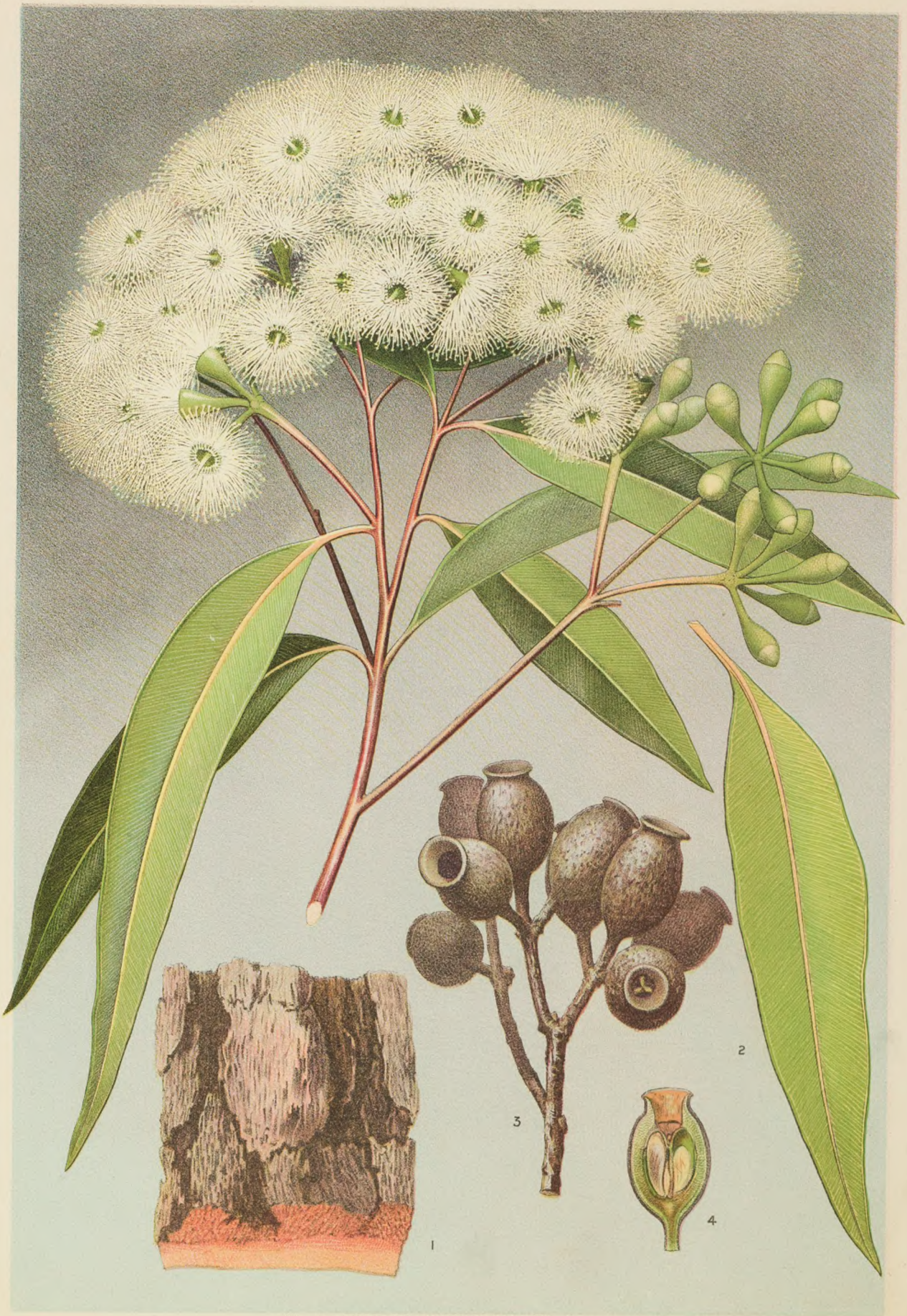
Fruit.—The fruit is technically known as a follicle. One Waratah "flower" (composed, of course, of a large number of individual flowers) matures, under favourable circumstances, twelve to twenty follicles.

Distribution.—The Waratah is found in the coast and mountain districts of New South Wales, from the Hunter River in the north to the Clyde and Braidwood district in the south. It is one of those plants which finds its southern limit where the sandstone formation ends; it does not pass over to the granite. It delights in rocky situations, and if it were not for the fact that it grows in the Blue Mountains and other coast ranges, frequently in very rough country, it would be threatened with extinction.

Propagation.—From seed, which readily germinates when fresh. The Waratah is a plant which is coming increasingly into favour in private gardens, and under cultivation it attains a luxuriance unknown in its wild state. It is one of the most gorgeous of all sub-tropical plants under cultivation. Our experience of it is that it flowers the third year from seed.

[*Reference to Plate.*

1. Front view of an individual flower.
2. Anthers, enlarged.
3. Individual flower, in profile.
4. Ditto, with part of the perianth removed to show the hypogynous gland.
5. Pistil.
6. Follicle, before it has shed the seeds.
7. Follicle, after it has shed the seeds.
8. Winged seed.



No. 2. THE BLOODWOOD, (Eucalyptus corymbosa, *Sm.*)

No. 2.

THE BLOODWOOD.

Eucalyptus corymbosa, Sm.

Vernacular name.—This tree is perhaps as fortunate in its vernacular name as any of the eucalypts. It exudes abundance of kino (popularly known as "gum"—hence "gum-tree"), and, when freshly exuded, this has all the appearance of a stream of blood. So freely does it flow, and so like blood is it, that sometimes the appearance of the ground at the foot of one of these trees is quite startling. It is one of the few eucalypts that enjoys but one vernacular name. At the same time there are some other bloodwoods in various parts of the Australian Colonies.

Aboriginal names.—"Mannen" was the aboriginal name of the tribes in the counties of Cumberland and Camden, according to the late Sir William Macarthur. Mr. Forester G. R. Brown states that its name amongst the blacks of the Port Macquarie district is "Bookeybarng," the word "barng" signifying "tree." In a catalogue of timbers, published many years ago, Mr. Charles Moore stated it to be the "Weni Aabie" of the aborigines of the Clarence and Richmond. By those of southern Queensland it used to be called "Boona."

Botanical name.—*Eucalyptus*, from two Greek words *eu*, well, *kalypto*, I cover, in allusion to the little cap (usually more or less conical) which well covers the unexpanded flower, and which is thrown off as the flower opens. *Corymbosa*, from the Greek *korumbos* or Latin *corymbus*, a summit. Hence the term *corymb* in botany, where the stalks of the individual flowers are gradually elongated, so that the flowers are brought approximately to the same level (or top, or summit). The inflorescence of the bloodwood (see plate) is not a perfect corymb.

Botanical description.

Leaves ovate-lanceolate or lanceolate, acuminate, about 3 to 6 inches long, with numerous fine transverse parallel veins, often scarcely visible.
Umbels loose, several-flowered, mostly in a terminal corymbose panicle, the peduncles slightly compressed or angular.
Flowers rather large, on pedicles of 2 to 4 lines.
Calyx-tube, when open, broadly turbinate, 3 to 4 lines diameter, often dilated at the margin.
Operculum short, hemispherical, umbonate, or shortly acuminate.
Stamens attaining 5 or 6 lines; anthers very small, but ovate, with distinct parallel cells opening longitudinally.
Ovary short, flat-topped.
Fruit more or less urceolate (urn-shaped), ½ to ¾-inch long, usually contracted above the capsule, and often expanded at the orifice, the rim narrow, the capsule sunk.
Seeds large, ovate, more or less bordered by a wing, usually narrow.

The bloodwood is a fine timber tree, attaining the height of 100–120 feet and a diameter of 2 to 4 feet. It belongs to the natural order Myrtaceæ.

Flowers.—White or creamy in colour. The bloodwood flowers at a very early age, and very profusely. It is in consequence much visited by parrots, and bees and other insects. As far as beetles are concerned the trees about Sydney flower too late in the season for the flower-haunting beetles, but a number of the fossorial wasps (*Scolias* and *Thynnus)* are very fond of this tree, and so also are a few of the late beetles.

Fruit.—The shape of the fruit of the bloodwood should be particularly noticed, for it is unlike that of any other eucalypt.

Leaves.—The fine parallel venation of the leaves should be observed, for it is characteristic. If the very young leaves be pulled asunder it will be noticed that they are drawn into fine glutinous threads, which are largely composed of caoutchouc or india-rubber.

In common with all other Eucalyptus leaves those of the bloodwood contain some Eucalyptus oil, but not in quantity sufficient to make its extraction commercially profitable. Over thirty years ago Mr. Joseph Bosisto distilled a little for experimental purposes. Recently Messrs. Schimmel & Co., of Leipzig, have prepared a small quantity, and describe it as "a colourless oil, rich in Cineol (Eucalyptol)."

Exudation.—The kino, or red "gum," which exudes from this tree, has already been briefly referred to. When freshly exuded it has a distinct smell, which appears to be characteristic, and is soon recognised. It is something of a vinous odour. Much of the kino exuded becomes entangled in the scaly, porous bark, but one frequently comes across quite a store of the substance through tapping the communication with a reservoir which has collected behind the bark, or between the concentric circles of the wood. The passage gets choked up with indurated kino, but picking off the substance often causes the stream to flow afresh.

It is the most brilliant in appearance of all kinos. It is exceedingly friable, and it is highly astringent. When freshly collected from the outside of the tree, it contains over 80 per cent. of catechin and tannic acid. The blacks used to chiefly employ this kino for tanning the skins of animals. Their *modus operandi* was to skin the animal, put in the "gum" and some water, tie up, and shake the skin "bottle" until the tanning was complete.

Bark.—The scaly appearance of this bark is characteristic, and should be noticed. It covers the whole of the trunk and extends to the tips of the smallest branches. It is of a reddish-brown colour, and is often blotched with blood-like stains of kino.

The late Dr. Joseph Bancroft stated that charcoal was made from bloodwood bark by the aborigines of Moreton Bay, and used by them as an antiseptic application to wounds. This particular species was chosen, we imagine, from the scaly nature of the bark.

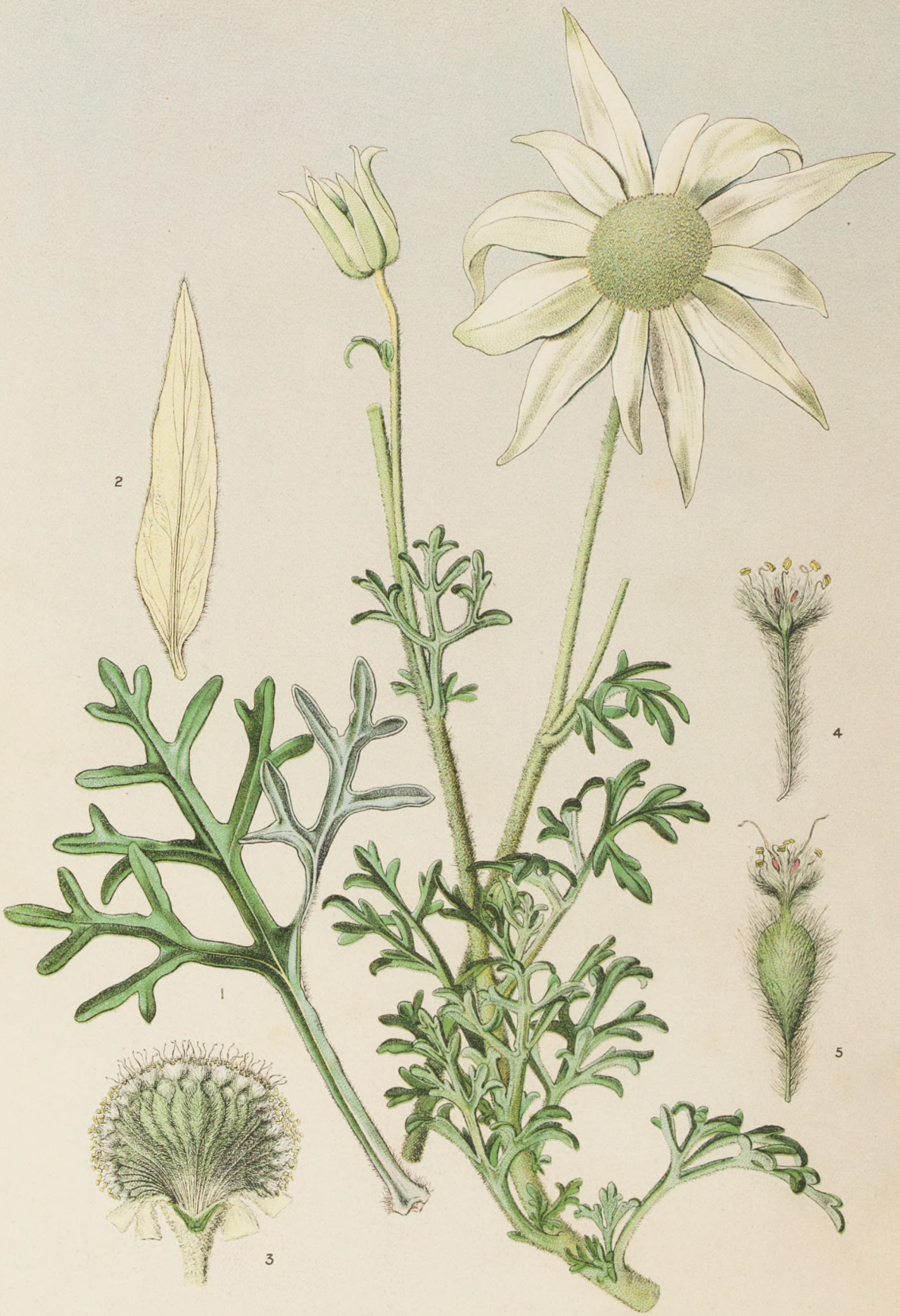
Timber.—A dark red, heavy timber, very subject to gum-veins; in fact, it may usually be readily recognised from this circumstance. Often the veins are increased to the size of pockets, owing to the tendency of the timber to shell, and the hollows thus formed to be filled with extravasated kino. Formerly there was a good deal of prejudice against this wood, but it is coming more into favour, owing to its durability and its uninflammable nature. It may be described as a good above-ground hardwood, but it will not stand ramming; neither is it a favourite as sawn timber, owing to its gum-veins.

Distribution.—It extends all along the coast from the Bega District northwards to Queensland. It is also found on the coast ranges, where it attains a greater magnitude than in the coast country. It is very widely diffused in Queensland, extending to the northernmost part of that Colony, and is abundant withal.

Propagation.—From seed, which is of comparatively large size.

Reference to Plate.

1. Scaly bark.
2. Leaf, showing venation.
3. Cluster of fruits.
4. Longitudinal section of a fruit.



No. 3. THE FLANNEL FLOWER, (Actinotus Helianthi, *Labill:*)

No. 3.

THE FLANNEL FLOWER.

Actinotus Helianthi, Labill.

Vernacular names.—We only know one truly local name for this plant, and that is the "Flannel Flower"—a rather unpoetical designation, but a really descriptive one, and one universally accepted. It is, of course, in allusion to the involucre, which looks as if it were snipped out of white flannel. It is also known to a few by the name of Australian Edelweiss. The true Edelweiss is found on the Alps of Europe, and its botanical name is *Leontopodium alpinum.* It belongs to the Daisy family (Compositae), to which our flannel flower does *not* belong, as we shall presently see.

Botanical name.—It was called *Actinotus Helianthi* by Labillardière, the celebrated French botanist, who visited the eastern and southern coasts of Australia (including what is now known as Tasmania), during the latter part of the last century. The generic name *Actinotus* is from the Greek *actinotos*, radiated, in reference to the rayed appearance of the involucre, *i.e.* what people often call "petals" in speaking of the flannel flower, but whether correctly or not will be evident later on. The word is akin to a Greek word which signifies the rays of the sun. The specific name *helianthi* is from *helianthus*, the botanical name for the sunflower, which word is again derived from the Greek *helianthes*, a sunflower. The name, therefore, is in allusion to the general resemblance of the flannel flower to the sunflower.

Botanical description.—Erect, perennial, 1 to 2 feet high, covered with a soft dense almost floccose or woolly tomentum, rarely wearing off from the upper sides of the leaves.

Leaves twice 3-partite, with linear or oblong-linear, mostly obtuse segments, entire or again 2 or 3 lobed.
Umbels dense, on long stout peduncles.
Involucre radiating to a diameter of 2 or 3 inches, consisting of 10 to 18 coloured softly tomentose bracts.
Flowers on filiform pedicels of 1½ to 2 lines, but so numerous as to form a dense head of ½ to ¾ inch diameter—the outer ones all males; the central ones perfect; both in numerous rows.
Calyx-limb hairy; transparent; about ½ line long; deeply divided into obtuse linear lobes.
Petals none.
Disk-lobes oblong, gland-like, adnate to the entire base of the style.
Fruit about 2 lines long, covered with long silky hairs.

Flowers.—There is a little catch in regard to the botany of the flannel-flower. Does it not belong to the daisy family (*Compositæ*) ? Certainly not. But does it not possess an external resemblance to many members of that family ? Indeed it does. It, however, belongs to that natural order whose members have their flowers in umbels (Umbelliferæ). Our flannel-flower is, therefore, closely related to the carrot, parsnip, celery, and other prosaic plants, and not to the daisy, of which the minor poets love to sing. Let us explain. Take a flannel-flower. Pull the so-called petals off, for they are in the way. We then have a soft woolly hemisphere, which consists, not of one flower, but of a very large number closely packed together. Either cut or pick away half the flower-head. Even by the naked eye it will then be seen that the flower-head is as is stated, and it will be observed that the tiny flowers all radiate from one point, like the spokes of an umbrella. If you are ever in doubt as to what an umbel is, always think of the spokes of an umbrella. Of course, in the case of the flannel-flower, where the individual florets are so minute, the stalks of the umbel must be even more minute; in fact, they are so small that beginners overlook them altogether. It is best to examine this flower with a magnifying glass if one is handy, but this is not necessary to anyone with good eyesight, who can easily make out the parts with the naked eye. Most of the little florets have anthers, which can be seen to be more abundant towards the circumference (periphery) of the flower-head, where it is yellow, than towards the middle. When the flannel-flower is fully out, and has not run to seed, this can be made out readily by the naked eye.

Just one other note about the flower. It may be that some of our readers scarcely thought we were serious in throwing doubts upon the "petals" being petals. But the fact of the matter is, the flannel-flower has no petals. If you were to put the most searching power of the microscope on to those little florets we have been speaking about, you would find no petals.

The "petals" of the flannel-flower are *bracts*—that is to say, each "petal" is a bract—and the whole lot of them, the whole "star," is collectively known as an *involucre*. A bract may be described as a floral leaf, and it is not an essential part of the flower. The gaudy crimson part of the *Poinsettia* so often seen in gardens consists of bracts, the flower proper being comparatively inconspicuous.

The flannel-flower not infrequently shows good examples of what is known to botanists as "floral prolification," and popularly as "hen and chickens." Six to eleven (and even more) small heads of flowers, each on pedicels, and surrounded by say six bracts, often grow out of a common involucre.

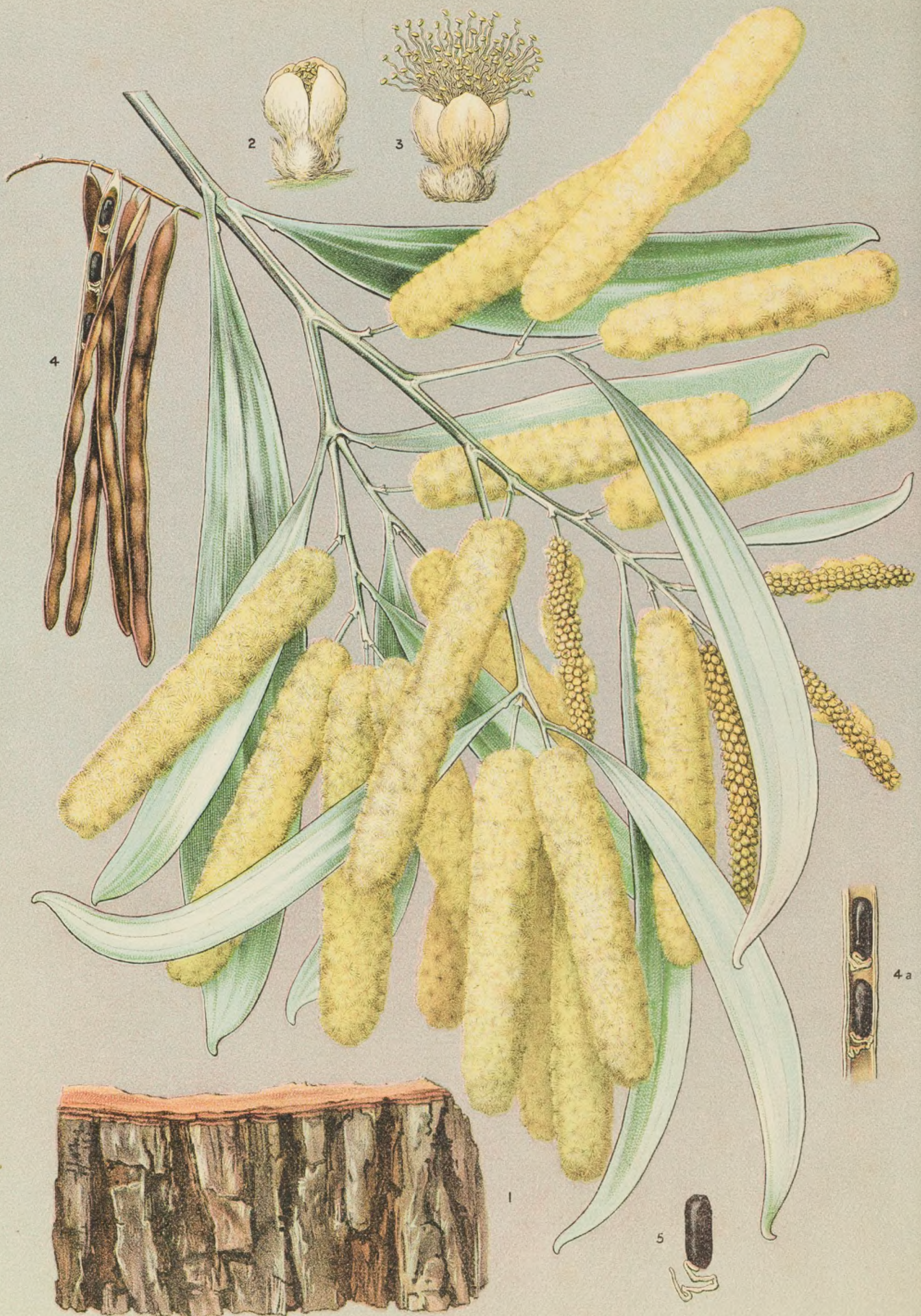
In this connection it may be desirable to allude to the fusion of parallel shoots known as "fasciation." Often what appears to be the stalk of the flannel-flower is apparently flattened out to a ribbon more or less wide. We have seen them as much as 4 inches wide, but fasciated stems half an inch wide are common. This phenomenon is usually accompanied by floral prolification.

Distribution.—From Gippsland to Southern Queensland. It is particularly abundant in New South Wales, where it is apparently confined to the coast district, the dividing ranges, and the table-lands. Found usually in the most sterile soil, though not exclusively so.

Propagation.—The amateur will not find it easy to propagate the flannel flower. Our experience is that the fruitlets do not readily germinate, but it may be propagated from "seed" or fruitlets. Another method is by dividing the plant, but no matter what method is adopted it is not easy to ensure success.

Reference to Plate.

1. Individual leaf.
2. Bract.
3. Dense head of flowers partially dissected to show their umbelliferous arrangement.
4. Outer male flower.
5. Central perfect flower.



No. 4. THE COAST MYALL, (Acacia glaucescens, *Willd:*)

No. 4.

THE COAST MYALL.

Acacia glaucescens, Willd.

Vernacular names.—"Mountain Brigalow" is a name under which this tree sometimes goes. In the South Coast districts it is often known as "Myall," and in the extreme South (*e.g.* Delegate) it is called both "Myall" and "Boree." The wood strongly resembles that of Myall, and as it is purely a coast and coast-range species we propose to designate it "Coast Myall." In this way confusion with the ordinary or Weeping Myall (*A. pendula*), will be obviated. The term "Boree" is pre-occupied for at least one species of *Acacia*.

Aboriginal names.—The late Sir William Macarthur (who knew this tree under the the name of *Acacia homomalla*), stated that the aborigines of the counties of Cumberland and Camden used to call it "Kaarreewan."

Botanical name.—*Acacia*, from *ac* (Celtic), a point, or *akazo* (Greek), I sharpen, as many of the species are furnished with spines. Spines are, however, the exception in Australian species. *Glaucescens*, glaucous like, from the Latin *glaucus*, grey or blue, or sea-green. In botany the word glaucous means covered with a "bloom" like on a cabbage leaf or bunch of grapes. The "leaves" of the Coast Myall are covered with a beautiful bloom of a peculiarly delicate nature—hence the name *glaucescens*.

Botanical description.

Foliage ashy or hoary.

Phyllodia oblong-falcate or lanceolate, narrowed at both ends, mostly 4 to 6 inches long, ½ 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.

Pod straight, narrow linear, pubescent, about 3 inches long, and 1½–2 lines wide.

Seeds longitudinal, arillus of 2 or 3 folds, not encircling the seed.

It will be observed that the description of the pod differs from that given in the *Flora Australiensis*. The pod there described belongs to another species (*Acacia Maidenii*), and an account of the confusion which has existed in regard to the pod of *A. glaucescens* is detailed by Baron von Mueller in a paper entitled, "Notes on an undescribed Acacia from New South Wales" (*Macleay Memorial Volume* (1893), page 222).

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.—We 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*.

Leaves.—It is hardly possible to do full 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 those of the flowers, combine to make it one of the handsomest flowering trees of the Colony. 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.

Exudation.—Not known.

Bark.—Rugged, hard and fibrous, and fortunately worthless as a tan, otherwise this beautiful tree would be in danger of extermination.

Timber.—Hard, dark and handsome, strongly resembling the better-known myall wood. Its excessive hardness, and the small diameter of the tree, are against its extensive use. It is chiefly used for small ornamental work, for mallets, &c., and for turnery.

Distribution.—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.

Propagation.—From seed which, as in the case of other Acacia seeds, should be soaked in hot water to facilitate germination.

Reference to Plate.

1. The bark.
2. Flower-bud.
3. Fully expanded flower.
4. Pods (legumes).

4a. Portion of pod (with one valve removed), showing the arrangement of the seeds therein.

5. Seed, with elongated funicle.

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JULY —1895.

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NOTICE TO SUBSCRIBERS.

Owing to certain delays inseparable from the production of a work of this kind, Part II could not be issued in July. Steps have been taken to remove these initial difficulties, Part III being well advanced and will certainly be ready in October, while subsequent Parts will be ready at Quarterly intervals as agreed upon.

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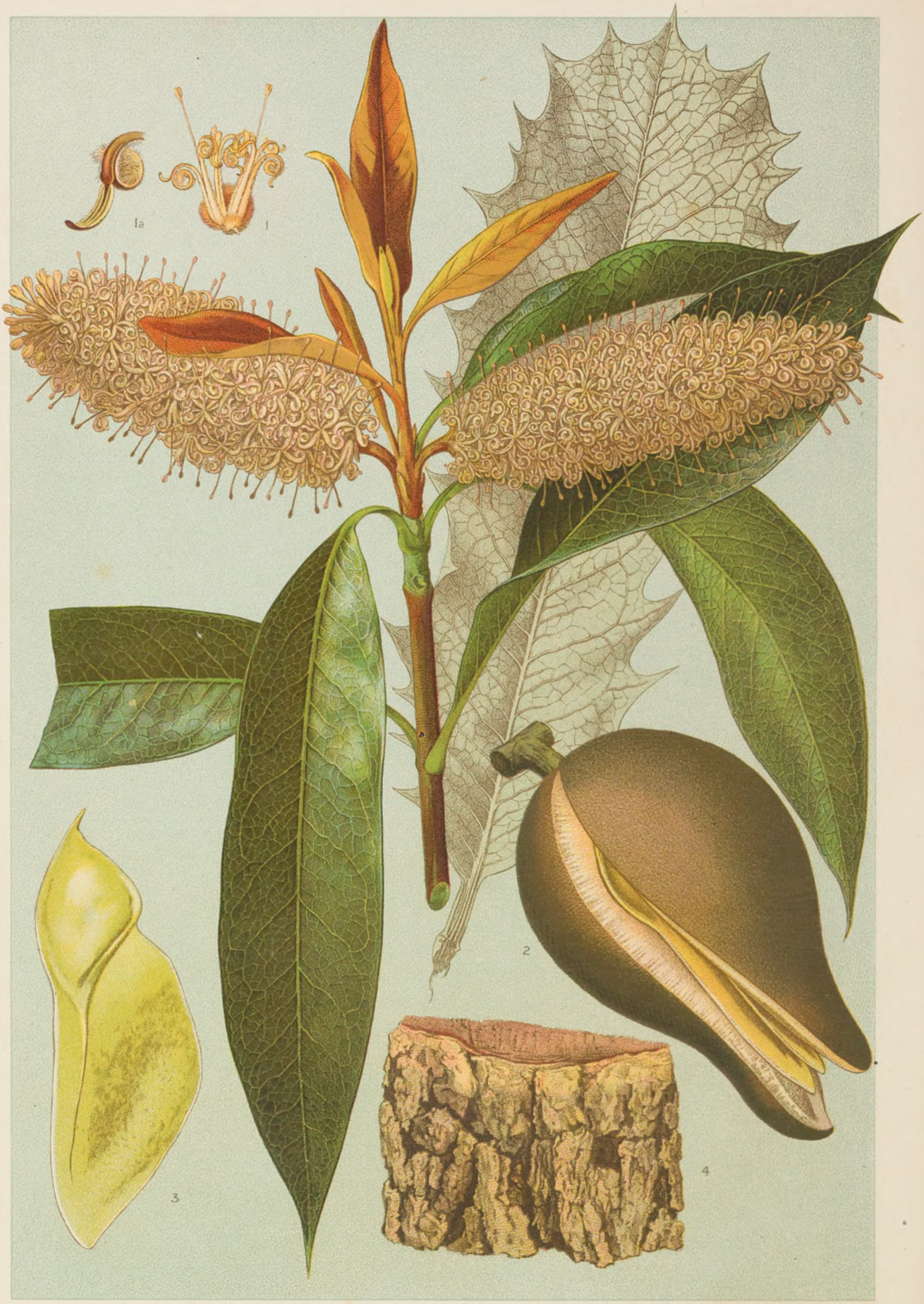


No. 5. THE NATIVE PEAR (Xylomelum pyriforme, *Knight*).

No. 5.

THE NATIVE PEAR.

Xylomelum pyriforme, Knight.

Vernacular names.—This is the well-known "Native or Wooden Pear," which so promptly attracted the notice of the first settlers. The existence of wooden pears, and of cherries which bore their stones outside their fruits, was related in England as evidence of the general topsy-turveydom prevailing in this southern land.

Aboriginal name.—"Meridja-courroo" of those of the counties of Cumberland and Camden, according to the late Sir William Macarthur.

Botanical name.—*Xylomelum,* from the Greek *xylon,* "wood," and *melon,* an apple; *pyriforme,* from the Latin *pyrum* or *pirum,* a pear, and *forma,* shape. Both the generic and specific names are in allusion to the shape or texture of the fruit.

The genus *Xylomelum* is peculiar to Australia, and contains four other species, two of which are peculiar to Western Australia, and two others which, in addition to our Native Pear, are peculiar to Queensland.

Botanical description.—A tree of moderate size, the young shoots ferruginous-villous or tomentose, but soon becoming glabrous, the spikes remaining densely tomentose-villous.

Leaves of the flowering branches usually entire, lanceolate, or ovate-lanceolate, very acute, 4 to 9 inches long, and tapering into rather a long petiole, those of the flowerless branches or of younger plants often sinuate and prickly-toothed, and attaining 8 inches, with short petioles, all at length coriaceous and shining.

Spikes very dense, 2 to 3 inches long, usually clustered three to six together, and at first appearing terminal, but soon lateral, by the growing out of the shoots.

Bracts woolly-villous, orbicular, 1½ to 2 lines diameter.

Perianth about 5 lines long. Style-end clavate.

Fruit (the so-called "Pear") 2½ to 3 inches long, and above 1 inch in diameter near the base, somewhat tapering above the middle.

Seed flat, obliquely ovate, with a long terminal oblique or falcate wing.

It belongs to the natural order Proteaceæ.

Fruit.—At first the fruit is quite pear-shaped, but as it ripens it opens with irresistible force and, gaping, exposes two yellow-coloured winged seeds. The wing dries brown.

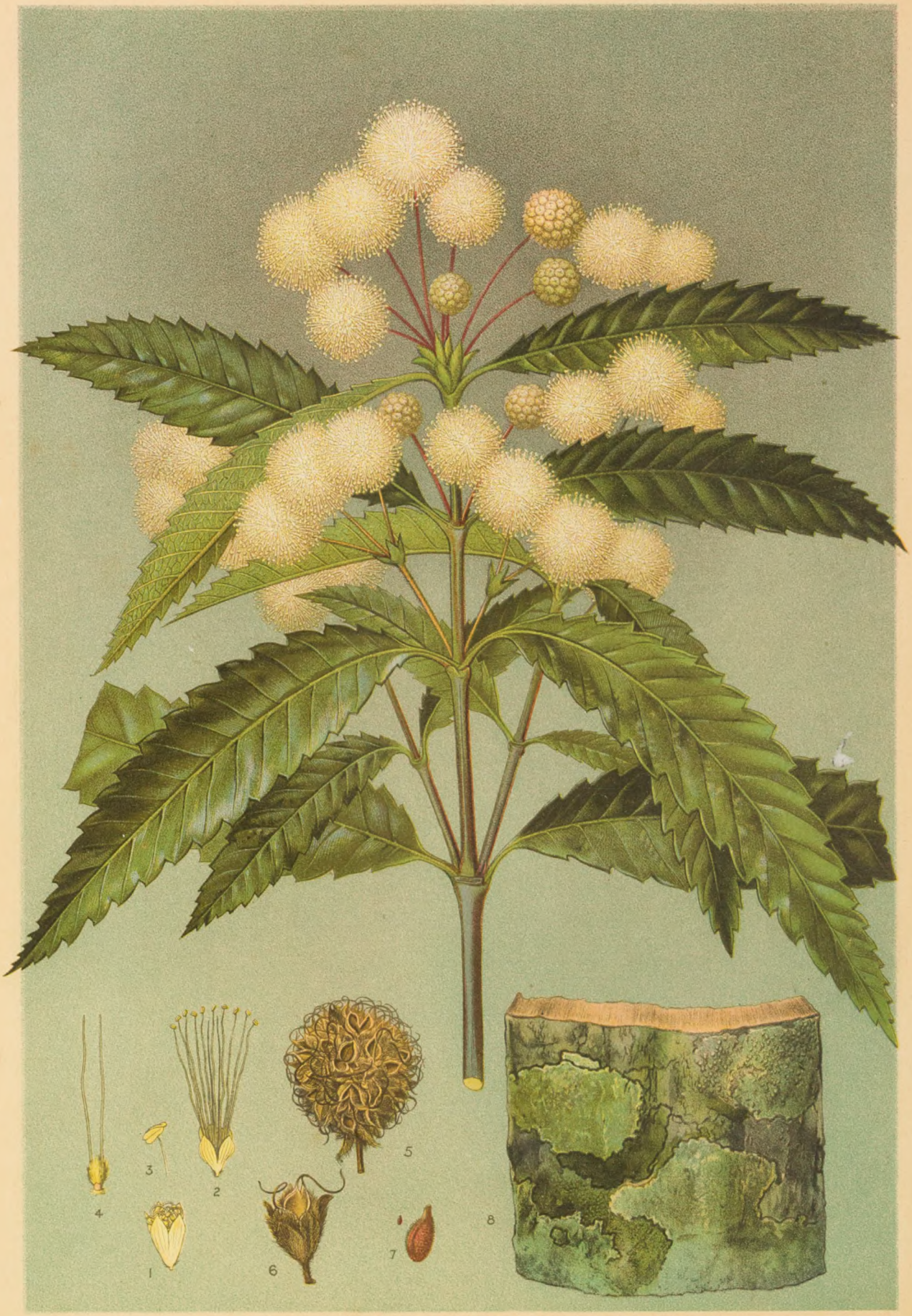
Timber.—Dark-coloured and prettily marked, after the usual manner of Proteaceous timbers, belonging to the class known as Honeysuckle timbers in the Colony. It is occasionally used for making picture-frames, for ornamental cabinet-work, for veneers, and walking-sticks. It does not attain any large size.

Bark.—Very furrowed, and of a corky texture.

Distribution.—The coastal districts and eastern mountain slopes of New South Wales from between Picton and Mittagong in this Colony as far as Southern Queensland. It is generally found on poor, rocky soil. Its precise southern boundary is not yet defined; we have, however, noticed it growing in abundance between the Cataract River and Bargo Brush.

Reference to Plate.

1. Two individual flowers.
1a. Anther, showing attachment to perianth.
2. Fruit (Native Pear).
3. Winged seed.
4. Bark.



No. 6. THE SAW-LEAVED CALLICOMA (Callicoma serratifolia, *Andr.*)

No. 6.

THE SAW-LEAVED CALLICOMA.

Callicoma serratifolia, Andr.

Vernacular names.—Although, as we shall presently show, this plant has been called at one time or another by no less than five vernacular names, and one aboriginal one, not one of these names can be submitted for general acceptance, and in spite of ourselves we have to submit a half popular, half scientific name to the public.

To the very early colonists it went by the name of Black Wattle, because its young saplings were split for making the rough wattle and daub houses of long ago. It was, in fact, this particular tree that gave the name "Blackwattle Swamp" to what is now a portion of Wentworth Park, between Sydney and the Glebe. The name Black Wattle has, however, for many years been given to an *Acacia;* in fact, many *Acacias* are invariably known as Wattles—so that to call *Callicoma* "Black Wattle" now, would only lead to confusion.

In the Braidwood district it is known as "Coachwood," while we have also heard it called "Native Beech," and even (in the Illawarra), "Rosewood," but all three names are preoccupied and are unsuitable. An intelligent old resident of Mount Victoria calls it "Native Quince," and if the fruit, flowers, or foliage resembled in any way that of the quince we perhaps might have adopted the name.

Aboriginal name.—"Tdjerruing" of the aborigines of the county of Camden, according to the late Sir William Macarthur.

Botanical name.—*Callicoma*, from the Greek *kalos*, beautiful, and *kome*, hair, in allusion to the appearance of the heads of flowers. *Serratifolia* is from two Latin words meaning saw-tooth leaves (*serrati, folia*).

There is one other species of *Callicoma* found in Australia (*C. Stutzeri*, belonging to Queensland), although D. Don's *C. Billardieri* is in the *Index Kewensis* still recognised as distinct. There is one non-Australian species, viz., *C. ternata*, Montr., found in New Caledonia.

Botanical description.—A small tree, which, in favourable situations, attains a height of 40 or 50 feet, with a diameter of a foot

or more. The young shoots often tomentose or villous, the branches soon glabrous.

Leaves from eliptical-oblong to ovate-lanceolate, shortly acuminate, coarsely serrate, 2 to 4 inches long, coriaceous, glabrous and shining above, either white underneath with a minute tomentum, or softly tomentose or villous and more rust-coloured, the parallel pinnate veins prominent underneath.

Stipules ovate, very deciduous.

Flowers numerous, in dense globular heads on peduncles of ½ to 1 inch, of which two to four are usually on a short common peduncle in the upper axils, and several form a terminal cluster or short panicle.

Sepals and *capsules* not above 1½ lines long, tomentose or villous.

Stamens more than twice as long.

It belongs to the natural order Saxifrageæ.

A figure of the plant is given in Curtis' *Botanical Magazine*, vol. xliii, plate 1,811, where, however, from the imperfect information available at the time, it was described as a shrub 4 feet high. In this work the drawings of the structure of the flower found in Forster's *Characteres Generum Plantarum*, published in the year 1776, plate No. 30, *Codia*, are inadvertently referred to as those of a synonym of our plant. There is a small figure of our plant in G. Don's *Dichlamydeous Plants*, vol. iii, p. 202.

Timber.—Close in the grain, works remarkably well to a nice smooth surface. It has no figure to speak of; it is of a pinkish colour when fresh. It is used sometimes for wheelwrights' work, but it is never large enough for anything of much size. It requires very careful seasoning to avoid splitting.

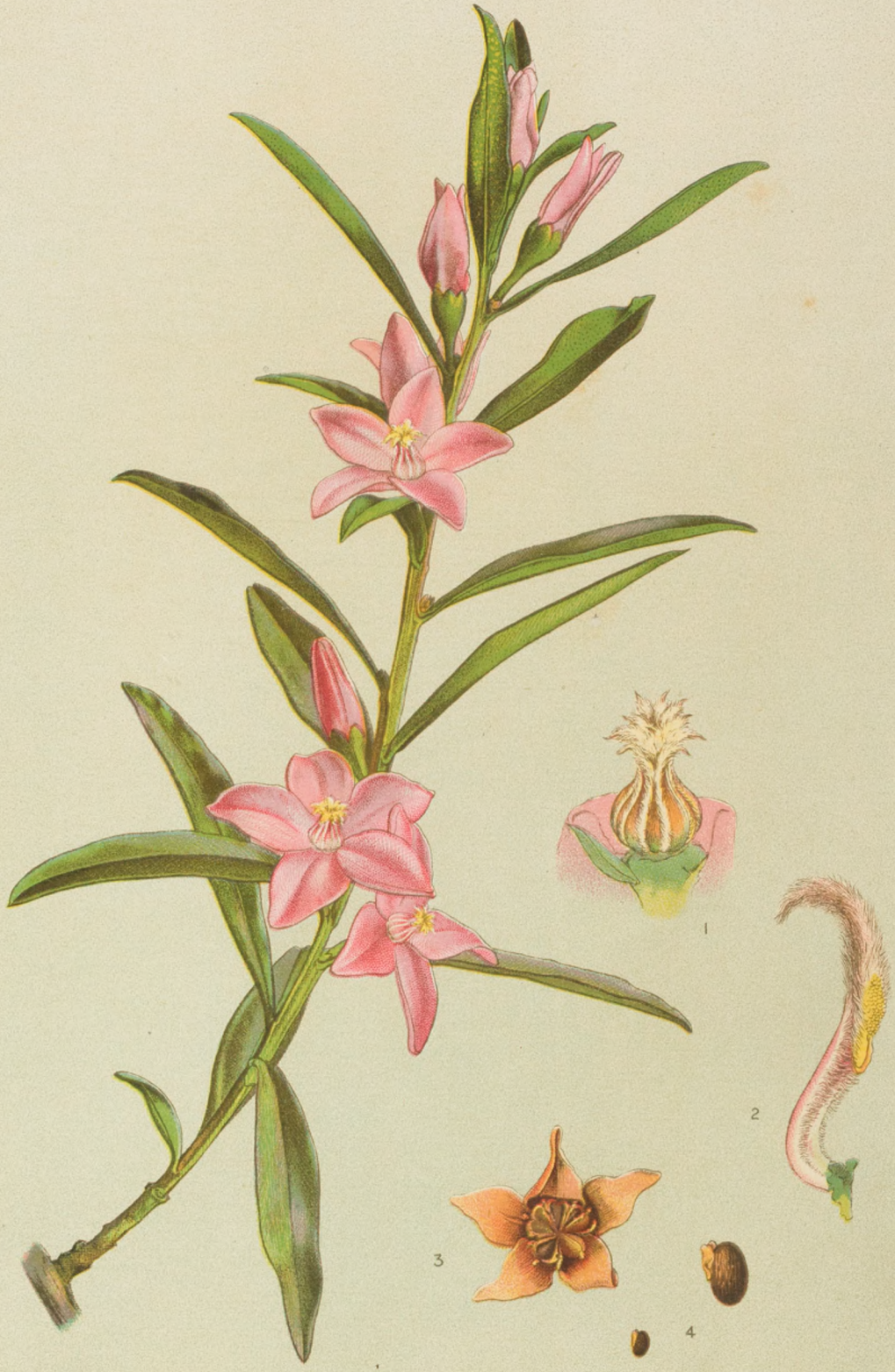
In spite of its name of "Coachwood," we have never been able to learn that it has been used in the direction indicated. The wood of young saplings splits easily in very thin strips (as has already been alluded to when speaking of Black Wattle), and has been used for basket-making. Don says, "the twigs are used for making baskets in New Holland."

Distribution.—From southern New South Wales, along the coast, and coast mountain districts, to southern Queensland. Its favourite habitat is lining the banks of creeks in gullies.

It finds its southernmost limit on the Sugarloaf Mountain, Clyde district, at an elevation of about 3,000 feet.

Reference to Plate.

1. Flower-bud.
2. Expanded individual flower.
3. Stamen.
4. Pistil.
5. Head of fruits.
6. Individual fruit. (Nos. 1–6 all enlarged to various extent).
7. Seed, natural size and magnified.
8. Bark.



No. 7. THE WILLOW-LEAVED CROWEA (Crowea saligna, *Andr.*)

No. 7.

THE WILLOW-LEAVED CROWEA.

Crowea saligna, Andr.

Vernacular name.—We do not know of any, and the name we have employed is only provisional.

Botanical name.—*Crowea*, in honour of James Crowe, of Norwich, an excellent British botanist, and a great collector of willows. *Saligna*, a Latin adjective, signifying of, or belonging to, a willow. In the present species the allusion is to the shape of the leaves, which are more or less willow-like. So that our plant both in its specific and generic name is associated with a willow.

Synonym.—*Eriostemon Crowei*, F. v. M. (partly). Baron von Mueller merges *Crowea saligna* and *C. exalata* into one species of *Eriostemon* (*E. Crowei*). While admitting at once the very close affinities of the two genera (they differ only in the absence or presence of anther-appendages), it is a convenience, at least to people in New South Wales, to retain the name *Crowea*, as the appearance of these plants is very different to that of any *Eriostemon*, except *salicifolius*, while when growing the two plants could never be mistaken for each other. They flower at different seasons of the year, *Crowea saligna* being a winter flowerer, while the *Croweas* are thin leaved, have prominent oil dots, are strictly glabrous, and *E. salicifolius* is always ashy grey.

C. saligna is a comparatively common plant in the Sydney district, while *C. exalata* is of rare occurrence, and, if not truly distinct, then a very marked variety.

We have written thus after careful examination of *C. saligna* and *C. exalata* extending over many years. We note Mr. Stirling's remarks on Australian Alps forms in *Proc. Linn. Soc. N.S.W.* [2] i, 1,057.

Botanical description.—A slender shrub of about 2 feet high, the branches prominently angular.

Leaves mostly lanceolate, narrowed at each end, acute or obtuse, 1 to 2 inches long, of a much thinner consistence than those of *Eriostemon salicifolius*, which this species somewhat resembles, in some specimens passing into a broadly oblong or elliptical-ovate shape, in others almost linear, like those of *C. exalata*.

Flowers pink, on axillary pedicels shorter than the leaves, thickened upwards, with two very minute bracts at their base.

Sepals short and broad.

Petals 7 to 9 lines long.

Appendage of the Anthers longer than the cells themselves.

Style very short, with a large globular stigma.

Cocci short, united to near the top.

Seeds reticulate, somewhat shining.

It belongs to the natural order Rutaceæ.

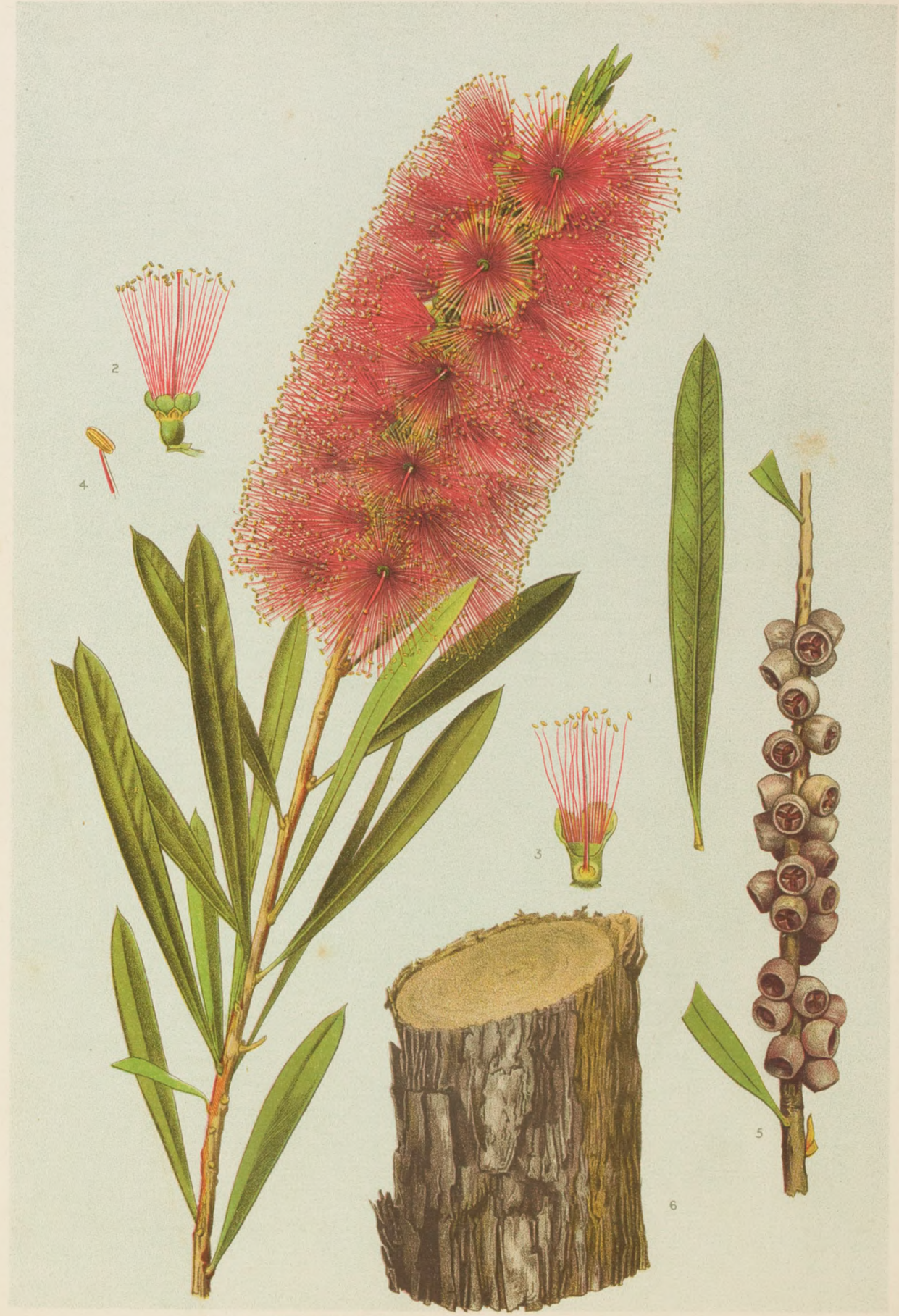
It is figured in Curtis' *Botanical Magazine*, volume XXV, plate 989, and the note is added, "It is one of the handsomest flowering shrubs that has been as yet introduced from New Holland."

This plant has no economic application of any kind, so far as we know at present.

Distribution.—From the Illawarra along the coast districts and coast mountain ranges to South Queensland. Baron von Mueller (*Fragm.* IX, 106) records its occurrence in New England. It, however, prefers the proximity of the sea. It is usually found under the shelter of rocks, or protected by the shade of larger or more woody shrubs.

Reference to Plate.

1. Flower partly dissected, showing the woolly stamens.
2. A stamen (magnified).
3. Fruit.
4. Seed, natural size and enlarged.



No. 8. THE RED BOTTLE-BRUSH (Callistemon lanceolatus, *DC.*)

No. 8.

THE RED BOTTLE-BRUSH.

Callistemon lanceolatus, DC.

Vernacular names.—Its common name is "Red Bottle-brush," for obvious reasons. It is a pity that the beauty of so gorgeous a plant should be discounted by such a name as this, but it has obtained too firm a hold to be changed now. The *Banksias*, or "Honeysuckles," are sometimes called Bottle-brushes too, but they are not related to *Callistemon*. Occasionally, very occasionally, it is (with other plants) known as "Water Gum."

Aboriginal name.—"Marum" of some Queensland aborigines. We do not know of any New South Wales aboriginal names for the plant, which could not, however, have possibly escaped their notice.

Botanical name. — *Callistemon*, from the Greek *kallistos*, very beautiful, and *stemon*, or *stamen*, in allusion to the beautiful stamens of some of the species. *Lanceolatus* (Latin), lanceolate, referring to the shape of the leaves.

Botanical description.—Usually a tall shrub, but sometimes low and bushy, and at others attaining the dignity of a small tree 30 feet in height, the young shoots silky or loosely hairy, and the inflorescence usually pubescent, otherwise glabrous.

Leaves lanceolate, variable in breadth, usually acute and 1½ to 2 inches long, but varying from 1 to 3 inches, rather rigid, more or less distinctly penniveined, the margins often nerve-like.

Flower-spikes 2 to 4 inches long, not very dense, the rhachis and calyxes pubescent, hirsute, or rarely glabrous; occasionally, especially in cultivation, the flowers are more distant, and a few of them in the axils of leaf-like bracts.

Calyx-tube usually about 2 lines long, lobes broad and very obtuse.

Petals greenish or reddish, from 1½ to nearly 3 lines diameter.

Stamens red, in some specimens deeply coloured and 1 inch long, in others much paler, more slender and scarcely above ½ inch, quite free, or very shortly united in a ring at the base.

Fruiting-calyx not much enlarged, the truncate orifice usually open.

This plant belongs to the natural order Myrtaceæ, and is one of the most commonly cultivated of our native plants. Under cultivation it displays great variation in habit, size, foliage, inflorescence, &c.

A sparse-flowered form was figured under the name of *Metrosideros citrina* in the year 1794, in Curtis' *Botanical Magazine*, vol. viii, plate 260, the root having been sent to London from "Botany Bay." Such a form with very silky leaves is to be found on the South Coast, *e.g.*, Twofold Bay. A very narrow-leaved form is common about Drake and Casino, and the Upper Richmond generally. A very broad-leaved form is found about Bateman's Bay and other places. At Port Macquarie the Red Bottle-brush has been found with the interesting mistletoe, *Viscum articulatum*, growing upon it. For other notes, see "Distribution."

Timber.—Hard and heavy, and liable to crack and warp, like other myrtaceous timbers. It never attains a large size, so that its uses are limited. It is sometimes employed for tools such as mallets, axe and chisel-handles, and also for making gauges and small work where strength is required. Years ago it was sometimes used for boat-knees and braces. Its shavings will bend like a ribbon.

Distribution.—It is found in each of the three Colonies of eastern Australia,—Victoria, New South Wales, and Queensland. It is found from end to end of our own Colony, though how far west remains to be defined. Its common situation is on the banks of creeks, and it occurs on the western slopes of the Blue Mountains, and of the Dividing Range generally. It is found on the high lands near the sources of the Clarence, Richmond, &c.

Reference to Plate.

1. Leaf, to show venation.
2. Individual floret.
3. The same, with petals removed to show the stamens free,—not in bundles.
4. Stamen.
5. Cluster of fruits.
6. Piece of stem, to show foliaceous character of bark.

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(FOREST BRANCH),
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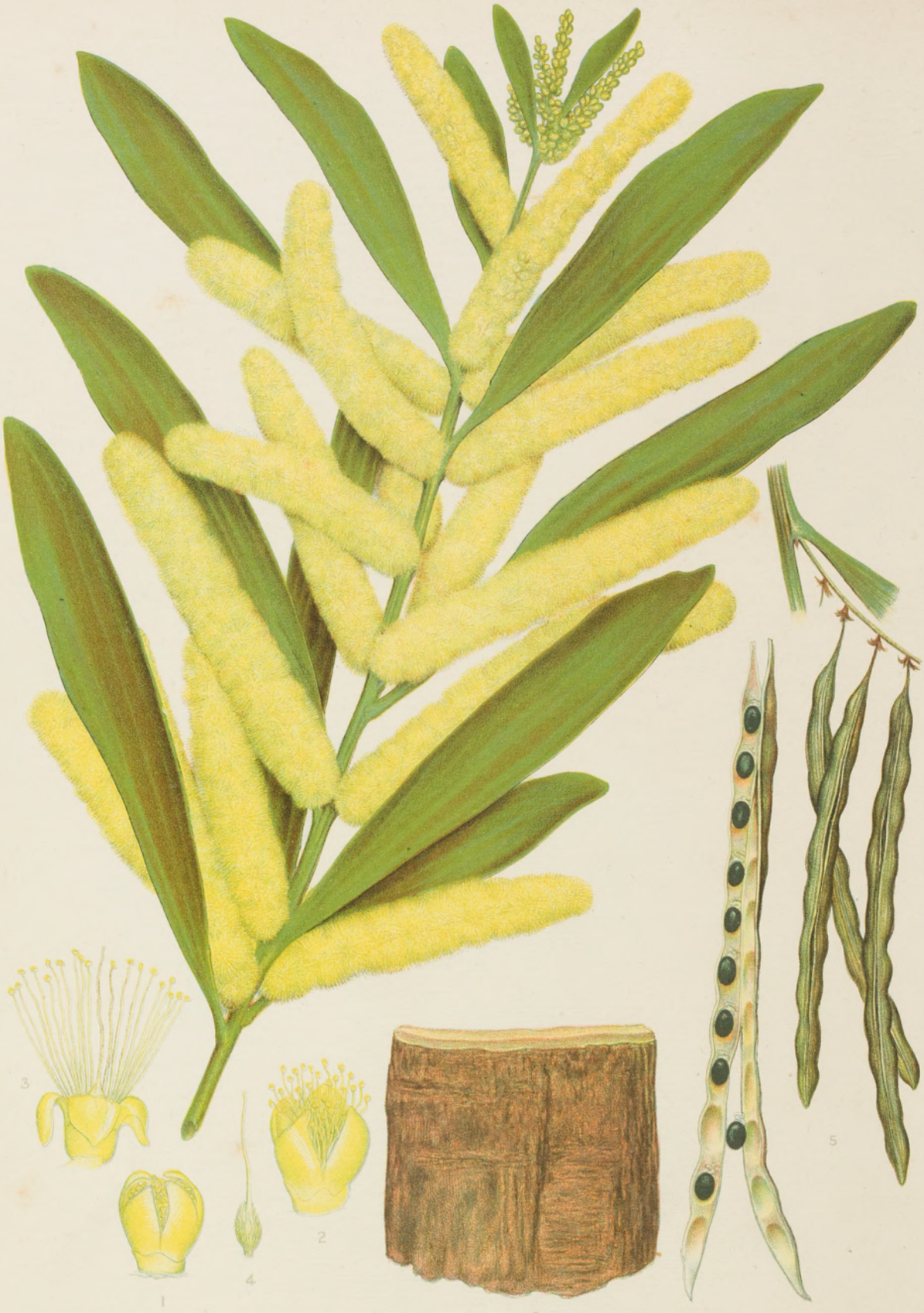


No. 9. SYDNEY GOLDEN WATTLE (Acacia longifolia, *Willd.*)

No. 9.

THE SYDNEY GOLDEN WATTLE.

Acacia longifolia, Willd.

Vernacular names.—Usually called "Golden Wattle" in this Colony, and as most of the other colonies have their own special Golden Wattles, the name Sydney Golden Wattle will be distinctive for our species. It is sometimes called "White Sally" ("Sally" being a corruption of "sallow," an English name for a willow), some of the forms of the species being of a more or less pendulous habit. The form we have figured is rather erect in habit, but the variety *floribunda* (not to mention other forms), which is usually found on the banks of streams, has pendulous branches, and goes pretty generally under the name of "Sally." It has no exclusive use of the name "Sally," as the variety *typica* is also called by that name, particularly in Southern New South Wales, and also by the name of "Hickory," and further, both names are shared by other species of Acacia.

Mr. F. M. Bailey says that the variety *Sophoræ* is known as "Black Wattle" in Queensland.

Aboriginal names.—It is singular that we have no record of the aboriginal name for such a conspicuous and widely diffused plant as the typical species, and it would be well if our old inhabitants would look over old memoranda, or search into the recesses of their memory, for the names the fast dying-out aborigines gave this and many other plants. Unfortunately we have a number of aboriginal names for native plants which are of no use to us, because we are unable to indicate with precision the particular species referred to. The variety *Sophoræ*, the sea-coast form to which our plant bears the closest resemblance, has two names given to it by the now extinct Tasmanian aborigines, viz., "Gur-we-er", our authority being Allan Cunningham, in Capt. P. P. King's *Narrative of a Survey*, &c., i, 162. The other name is "Boobialla" or "Boobyalla," see Appendix D of Backhouse's *Narrative of a Visit, &c.*, xxxiii.

The variety *floribunda* was called "Marrai-uo" by the aborigines of the Illawarra, New South Wales, according to the late Sir William Macarthur.

Botanical name.—*Acacia*, *see* Part i, (plate 4) ; *longifolia*, Latin, long-leaved.

The name *longifolia* is particularly applicable to the phyllodes of trees of this species from the Goulburn River, New South Wales, which Mr. R. T. Baker and one of us record as varying from 16 to 20 inches in length!

Botanical description.—An erect shrub, sometimes low and bushy, but attaining often a considerable size, or growing into a middle-sized tree; glabrous or slightly pubescent when young; branchlets angular.

Phyllodia from broadly oblong to oblong-lanceolate or linear, very obtuse or almost acuminate, usually narrowed towards the base, with two to five more or less prominent longitudinal nerves, and conspicuously or faintly reticulate between them, varying in length from 2 to 3 inches in some varieties, to 5 or 6 in others, or even to 20 inches.

Spikes axillary, loose and interrupted.

Flowers not imbricate, almost always 4-merous.

Calyx very short, toothed.

Petals smooth, united at the base, or sometimes quite separating.

Pod linear, often several inches long, 2 to 4 lines broad or rarely more; valves coriaceous, convex over the seeds, usually contracted between them.

Seeds longitudinal, often distant, funicle not much folded, thickened almost from the base into a turbinate almost cup-shaped aril at the base of the seed, and sometimes nearly as large.

This is an exceedingly variable species, and in the *Flora Australiensis* no less than six varieties are described and named. Our plate most nearly depicts the variety *Sophoræ* (the most showy flowerer of all the forms), which, however, merges into the longer leaved variety *typica* by insensible gradations, of which this represents one. The variety *mucronata*, common in Tasmania, has also been found on the Delegate River, in the extreme south of this Colony.

It will be noticed that we have used the term "phyllodia" for what are generally known as the "leaves." The word is from two Greek words signifying "like leaves," a phyllode being structurally a flattened leaf-stalk. The great majority of our Wattles do not have true leaves. Another instance is that of the Coast Myall, in Part i.

The variability in length of the phyllodes has already been alluded to, and we would add that the phyllodes also vary between very wide limits in respect to their breadth, some of the forms being nearly linear, and others being between 2 and 3 inches broad.

We have also found the variety *Sophoræ* with leaves nearly as fleshy as those of a house-leek, some sent to us from the coast, near Wollongong, by Miss Meares, being one-eighth of an inch thick. Of course sea-coast and desert plants exhibit a marked tendency to succulence of foliage, but the leaf noted is an extreme form.

Cattle occasionally browse upon the young leaves of this Wattle even when grass is by no means scarce.

The Golden Wattle may be recommended to those with large gardens as a very free flowerer. When in full bloom its appearance is simply gorgeous—a blaze of bright yellow. An advantage is that it flowers in midwinter, when flowers are scarce. Like other Wattles, it is a useful bee plant, particularly because of its abundant pollen, which is assiduously gathered by the bees for the sustenance of their larvæ and of themselves.

Exudation.—No gum has as yet been recorded for this species, though it is highly improbable that some will not be found by persons on the look out for it.

Bark.—This is smooth in young trees, but in old ones it becomes flaky and very fibrous. It yields an inferior tanning material, though it is used to some extent in the districts in which it grows. For instance, the bark of the variety *Sophoræ* is used in Queensland for tanning light skins, while Sydney fishermen sometimes tan their nets and sails with it, and are well pleased with it, the articles being pliable after use.

Timber.—Of a pleasing pale brown colour. It is tough, but it is not put to any special use, except occasionally that of staves. Half a century ago the timber of the variety *floribunda* was used in the Illawarra for axe-helves and bullock-yokes.

Distribution.—In one form or another this Wattle is found in every Australian colony (including Tasmania), except Western Australia. As regards our own Colony, it does not extend very far west, being bounded by the Dividing Range and its spurs, while the variety *Sophoræ* grows right on the coast in saline sea-sand, and in rock crevices even exposed to the ocean spray. The coast form is often so scrambling, and roots so readily, that it has been recommended as a plant for fixing coast sands. The variety *floribunda* is usually found lining the banks of rivers and creeks like willows, while the variety *typica* (a much smaller plant than *floribunda*, as a rule) is found in similar situations, or in low-lying, dampish grass-land. The species is a lover of moisture, hence it will not succeed in the drier parts of the Colony.

Insect enemies.—This Wattle is of more than ordinary interest to the entomologist, from the number and variety of the insects which are found upon it. Amongst them may be noted *Cecidomyia acaciæ-longifoliæ*, Skuse (*Proc. Linn. Soc. N.S.W.* [2], v, 374), where a figure of the insect is given. It was bred from the bunches of brown woody galls.

Mr. W. W. Froggatt (*ib.* p. 697) refers to a *Cynips* forming large oval galls on the young stems of this Wattle. At vol. vi, pages 154 and 155, the same author describes two species of *Cynips*, whose host-plant is *Acacia longifolia*, viz., *Cynips acaciæ-longifoliæ* and *C. Maideni*. Both these insects are found on the south shore of Port Jackson, and for a description of them, as well as of the galls they produce, the reader is referred to the paper itself.

Mr. Froggatt notes that the larva of the Wattle goat-moth (*Eudoxyla eucalypti*, Hubn.) is particularly destructive to the timber of *Acacia longifolia* and its near allies. It is figured in McCoy's *Prodromus of the Zoology of Victoria*, and is never found in Eucalyptus trees, in spite of its name.

Mr. C. French, of Melbourne, found the larva of a beetle (*Uracanthus triangularis*, Hope) feeding on the variety *Sophoræ* of *Acacia longifolia*, and Mr. Froggatt, who notes this (*Proc. Linn. Soc. N.S.W.* [2] viii, 30), also, in his interesting notes on the life-histories of Australian Coleoptera, announces that the larva of another beetle (*Pachydissus sericeus*, Newman) has a preference for dead or dying bushes of *Acacia longifolia*, forming large parallel chambers, never of any great length, in the sap-wood of the larger stems. The larva of another beetle (*Symphyletes nigrovirens*, Donovan) feeds upon the twigs of our Wattle, pupating at the extreme tip of the broken stem. The beetle itself is found in December and January feeding upon the bark of the young shoots (*ib.* p. 32). Mr. Froggatt has also bred *S. albocinctus*, Guérin, and *S. neglectus*, Pascoe, from this Wattle. The same observer has noted (*ib.* p. 34) how destructive the larva of *Piesarthrius marginellus*, Hope, is to young Wattles of this species. Still another beetle, *Neissa inconspicua*, Pascoe, is found in the favourite *Acacia longifolia* (*ib.* ix, 117), likewise *Stephanops nasuta*, Newman; *Pentacosmia scoparia*, Newman; *Sybra acuta*, Pascoe. The larvæ of a number of the smaller *Buprestidæ*, chiefly belonging to the genera *Cisseis* and *Melobasis*, have also been recorded from this *Acacia*.

We make no apology for the above and some other notes on native plants in their relations to insect life, because botany and entomology are so interdependent, and we would recommend our

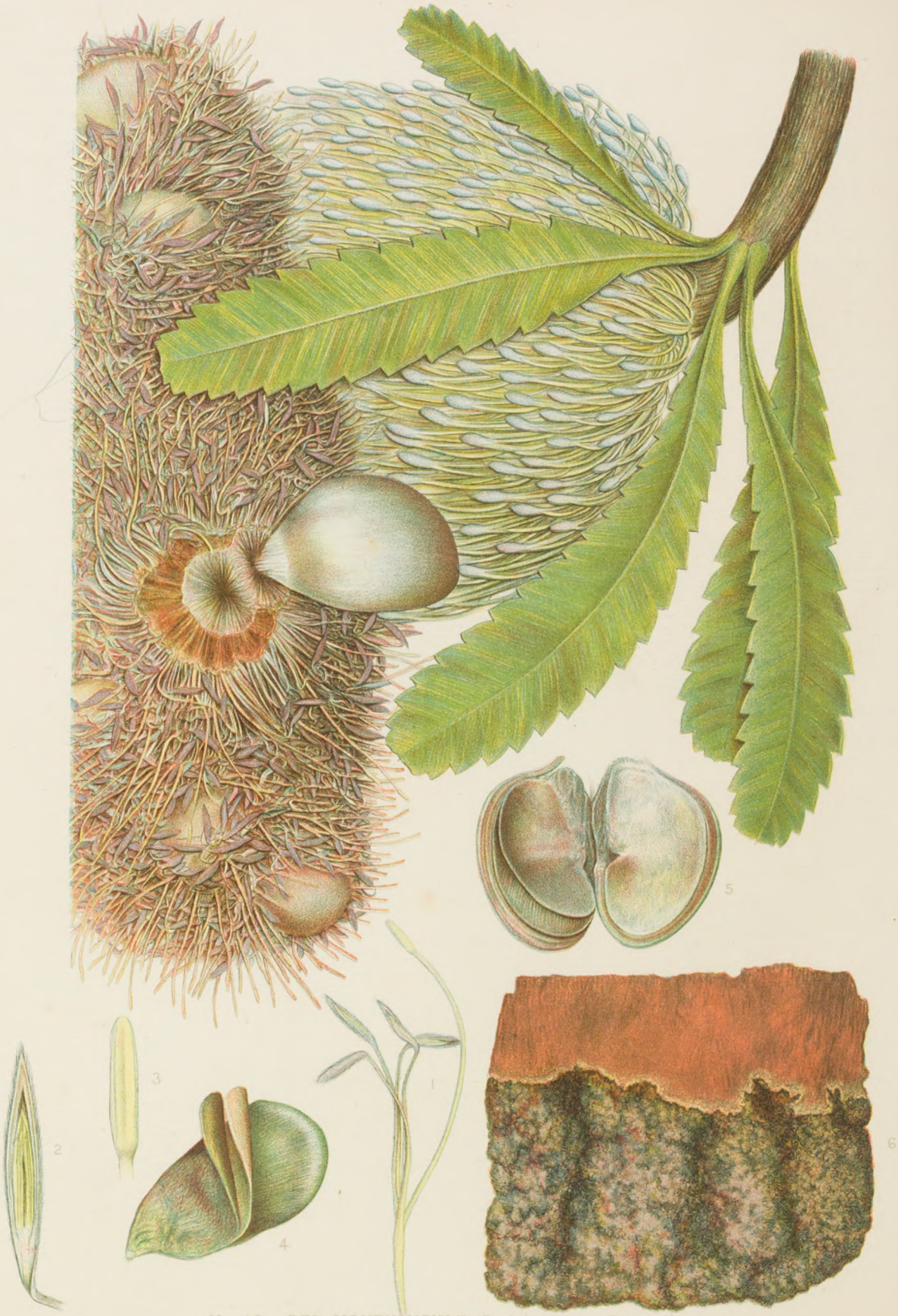
younger entomologists to study botany, feeling sure that it would assist them in their special science in a variety of ways. And conversely, the botanist who notes the insects and their work on our native plants will find his observations interesting, both from a purely scientific as well as an economic point of view. It is only of recent years that Australian entomologists have made special endeavours to obtain the names of the plants affected by insects, but the advantages are so obvious, that botanical books in future will probably take some cognisance of entomology.

Host for fungi.—More attention is being directed, at the present time, to the fungi, particularly the micro-fungi, on indigenous plants. Many of them are quite minute, and look like mere discolourations of the leaves, &c. Much more attention has been given in Victoria and Queensland to the collection of these lower forms of plant-life, and we would like to invite the attention of observers all over the Colony to this matter, and to state that careful search will probably be rewarded by the discovery, not only of species of micro-fungi new to the Colony, but also new to science.

On the phyllodes of the Golden Wattle, *Trabutia phyllodiæ*, Cke. and Mass., and *Septoria phyllodiorum*, Cke. and Mass., have been found in Victoria. Who will discover these species (on the Golden Wattle) in New South Wales?

Reference to Plate.

1. An individual flower-bud.
2. The same, more expanded.
3. A fully-expanded individual flower.
4. Pistil with hairy ovary.
5. Bunch of linear pods.
6. The bark of a young tree.



No. 10. RED HONEYSUCKLE (Banksia serrata, *Linn. f.*)

No. 10.

THE RED HONEYSUCKLE.

Banksia serrata, Linn. f.

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."

Botanical name.—*Banksia,* in honour of Sir Joseph Banks, President of the Royal Society of London, who accompanied Captain Cook in one of his voyages of discovery, and who subsequently interested himself greatly in the arrangements for colonising New South Wales, and also in investigating its natural history. *Serrata,* from a Latin adjective meaning saw-like, in allusion to the notches on the margin of the leaves.

Botanical description.—A gnarled-looking tree, attaining a height of up to 50 feet, and a trunk-diameter of 3 feet. 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 inches long, ½ to 1 inch wide, coriaceous, flat, hoary or rarely white underneath, with parallel transverse veins.

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

Perianth shortly silky, the tube above 1 inch 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 a line long and thickened at the base.

Capsules very prominent, tomentose, thick and hard, obliquely rounded or ovate, above 1 inch broad.

This plant belongs to the natural order Proteaceæ.

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.

Distribution.—It is found in the colonies of Tasmania and Victoria, in addition to our own. 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.

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."

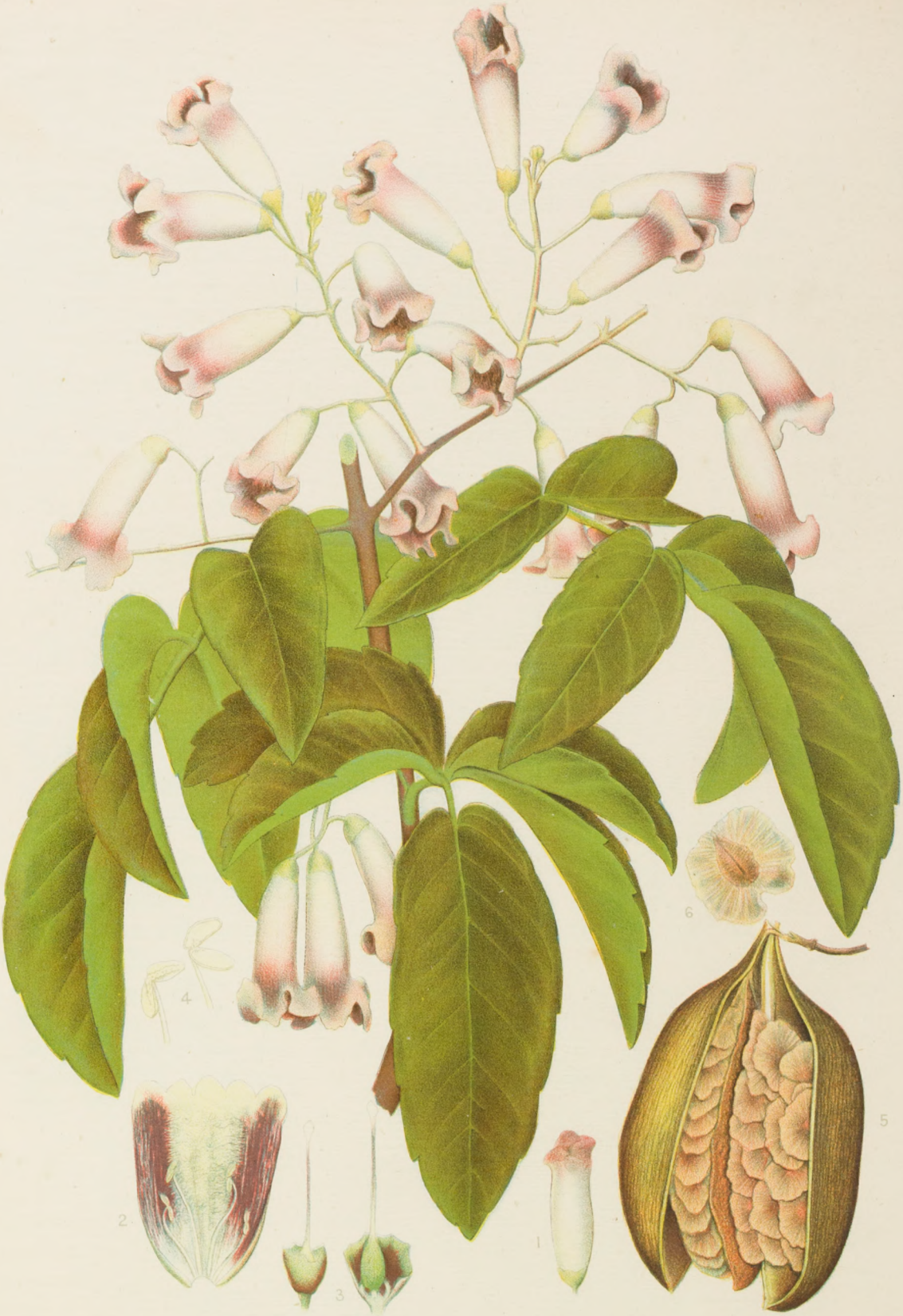
Mr. Froggatt informs us that a number of galls are also found on the foliage of this tree. They are chiefly small, are found upon the under side of the leaves, and are probably formed by small hymenoptera of the family Chalcididæ.

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.

Reference to Plate.

1. Individual flower.
2. Narrow anthers, "sessile in the concave laminæ."
3. Stigma. ("Cylindrical, somewhat furrowed, stigmatic end of style").
4. Side-view of a seed.
5. Capsule laid open.
6. Bark.

The plate shows portion of a flower-spike with leaves attached; part of the remainder of the spike is concealed by portion of a spike in fruit; one of the fruits or capsules has been torn out to show its outline more plainly.



No. 11. WONGA WONGA VINE (Tecoma australis, *R. Br.*)

No. 11.

THE WONGA WONGA VINE.

Tecoma australis, R. Br.

Vernacular names.—Besides the name given (which is by no means universally employed for this plant), it is sometimes called "Supple-jack," because of its tough, straggling stems.

In volume xxii, plate 865 (1805) of Curtis' *Botanical Magazine* it was figured as *Bignonia Pandoræ*, or "Norfolk Island Trumpet flower," it having been raised by the celebrated nurseryman Loddiges, of Hackney, London, from seeds brought from Norfolk Island by Governor Paterson. Curtis adds, "from whose information it appears that a very destructive blight generally makes its first appearance upon the young shoots of this shrub (climber), and spreads from thence over the whole vegetation of Norfolk Island." We have not noticed this blight in New South Wales; what is it?

Aboriginal name.—We know of none.

Botanical name.—*Tecoma*, from the Mexican name (*Tecomaxochitl*) for a plant belonging to this genus. *Tecoma*, of course, includes a number of our showiest garden climbers, some of which are better known under the name of *Bignonia*, a closely allied genus, which botanists have made less comprehensive than formerly. *Australis* is a Latin adjective signifying "southern."

Botanical description.—A tall, woody, glabrous climber, with more or less twining branches.

Leaflets usually five to nine, ovate-oblong, ovate-lanceolate, or almost linear, entire, or here and there coarsely crenate, from under 1 inch to nearly 3 inches long, but exceedingly variable, all small or all large; sometimes, especially on barren shoots, all coarsely toothed, and then occasionally all very small and much more numerous.

Flowers of a yellowish-white, tinged inside with purple or red, in loose terminal panicles, leafy at the base, the primary and often the secondary branches opposite, the ultimate inflorescence cymose or racemose.

Calyx smooth, 1 to 1½ lines long.

Corolla-tube from about ½ to ¾ inch long, slightly curved and dilated upwards; lobes broad, not one-third as long as the tube, the two upper rather smaller, with purple or red spots or streaks at their base, the throat bearded inside under the lower lip.

Capsule 1½ to 3 inches long, usually acute at both ends, the valves hard and very concave (boat-shaped).

Seeds very flat, obovate, surrounded by a broad wing.

This plant belongs to the natural order Bignoniaceæ.

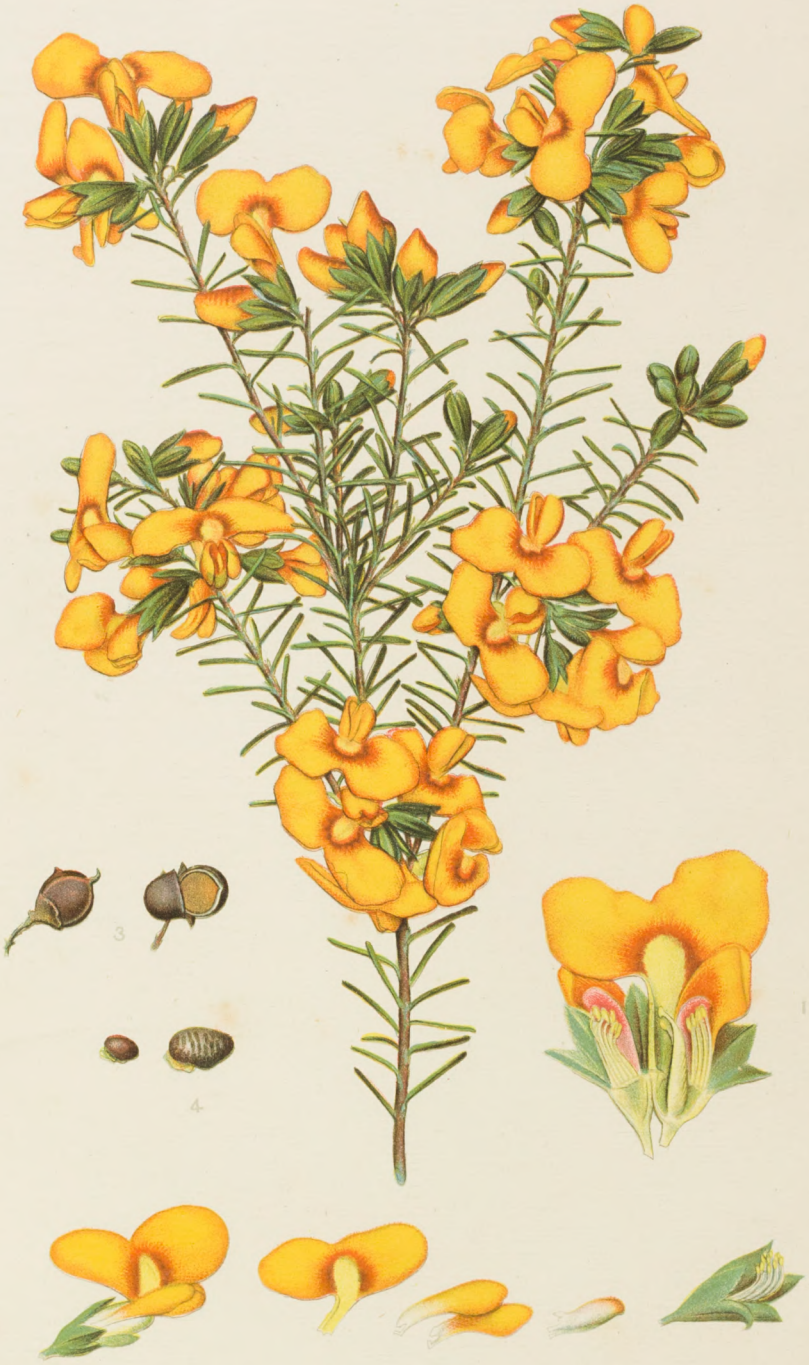
Flowers.—A correspondent from Werris Creek informs us that the flowers of this plant sometimes have a putrid smell, and hence attract blowflies. We have not observed this odour; have any of our readers ?

Though the flowers of this species are not so showy as those of so many exotic *Tecomas* commonly cultivated in New South Wales gardens, or even of the other Australian species, they are very neat and pleasing, and are borne in great profusion. This plant is propagated readily, both by seeds and cuttings, and is highly to be commended as a creeper. It readily adapts itself to wide differences of climate as regards temperature and moisture, yet it is often passed over in favour of some more conveniently purchasable yet inferior exotic. Many of our nurserymen offer to supply a great variety of native plants, but the patronage of the public in this direction is not so great as the frequent verbally-expressed desire to procure them would lead one to suppose.

Distribution.—It is found in all the colonies except Tasmania and Western Australia. It occurs in the rainiest districts of our north coast, and also in the driest parts of our western country, extending into the deserts of Central Australia. As might be expected, it is a variable species.

Reference to Plate.

1. Flower-bud.
2. Corolla-tube opened out, showing stamens and bearded throat.
3. Pistil with and without the calyx partially removed.
4. Stamens, showing the 2-celled anthers.
5. Capsule, showing seeds.
6. Winged obovate seed.



No. 12. HEATH-LEAVED DILLWYNIA (Dillwynia ericifolia, *Sm.*)

No. 12.

THE HEATH-LEAVED DILLWYNIA.

Dillwynia ericifolia, Sm.

Vernacular and Aboriginal names.—Wide-spread as this plant is, it appears to have been given no name, either by aborigines or colonists.

Botanical name.—*Dillwynia*, in honor of Lewis Weston Dillwyn, author of "British Confervæ" (1809), and other less important botanical works. *Ericifolia*, heath- (*Erica*) leaved, having leaves like a heath. The name *Ericifolia* was a very favourite one with botanists at the close of the last and beginning of the present century, doubtless because the *Ericas* of the Cape of Good Hope were prominently before them at the time.

Botanical description.—An erect heath-like shrub, usually attaining 2 or 3 feet, but sometimes dwarf and stunted; the branches erect and virgate, or short and divaricate, glabrous or pubescent.

Leaves numerous, rather slender, usually ¼ to ½ inch long, but sometimes nearly ¾ inch, or under 2 lines, terete or scarcely keeled, straight or spirally twisted when dry, obtuse, with a very short recurved or straight, but scarcely pungent point, rarely quite obtuse.

Flowers yellow, in very short racemes or clusters, sometimes several together, almost sessile in a terminal leafy corymb, sometimes each one on a terminal or rarely axillary long or short peduncle.

Calyx glabrous, silky-pubescent, or shortly scabrous-hirsute, 2 to 3½ lines long, distinctly turbinate at the base, the lobes shorter than the tube, the two upper ones broadly rounded and falcate, united to the middle.

Petals deciduous; *standard* with a claw usually as long as the calyx, the lamina more than twice as broad as long; *wings* much shorter; *keel* still shorter, obtuse.

Pod ovate or nearly globular, slightly exceeding the calyx.

This plant belongs to the natural order Leguminosæ.

Like *Acacia longifolia*, Bentham describes six forms of this variable species, the form figured being that of *normalis*, which is the commonest one found in the coastal districts of this Colony. Ornamental as it is, we think it is the least ornamental of all the varieties, chiefly on account of the comparative sparseness of the foliage. Some of the

dwarf procumbent mountain forms are perfect gems in their way, and worthy of wide cultivation. The form we have figured is also well worthy of cultivation. Two other forms are figured in Curtis' *Botanical Magazine*, viz., variety *glaberrima* in vol. xxiv, plate 944, and variety *parvifolia* in vol. xxxvii, plate 1,527.

Distribution.—Found in all the colonies except Western Australia. In our own Colony it extends throughout the whole of the coastal portion, and is also found on the Dividing Range and its spurs, ascending to the summits of the highest. It is perhaps the commonest flowering plant in the nighbourhood of Port Jackson. Not only is it exceedingly abundant as regards individuals, but it is nearly always in flower.

Insect enemies.—It is the food-plant of two very interesting beetles, viz., *Ethon corpulentum*, Boheman, and *E. marmoreum*, Laporte and Gory. Mr. W. W. Froggatt found both species forming galls on the roots (near the stem) of this *Dillwynia*, near Botany Bay, Sydney, the former being particularly abundant.

Reference to Plate.

1. Flower opened out.
2. Flower ; standard, two wings, keel, and calyx with stamens.
3. Pod, closed and open.
4. Seed, natural size and enlarged.

DEPARTMENT OF MINES AND AGRICULTURE

(FOREST BRANCH),

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PART IV.

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No. 13. THE SYDNEY BLACK WATTLE (Acacia decurrens, *Willd.*)

No. 13.

THE SYDNEY BLACK WATTLE.

Acacia decurrens, Willd.

Vernacular Names.—The very old colonists used to call this wattle "Black Wattle," and the variety *mollis* "Green Wattle," but these distinctions have not been strictly maintained as years have rolled on.

The vernacular names for all the other varieties have been dealt with very fully in a pamphlet* published by the Government Printer; partly for this reason, and partly because it may, later on, be found desirable to separately figure these varieties in the present work, they are not set forth at this place.

Aboriginal Name.—"Book-kerriking" of the aborigines of the counties of Cumberland and Camden, New South Wales, according to the late Sir William Macarthur.

Botanical Name.—*Acacia*, already given; *decurrens*, Latin for decurrent or running down, in allusion to the raised ribs or wings which extend from the petioles down the stem and branches.

Botanical Description.—A handsome tree of 30 to 50 feet in height, glabrous or more or less tomentose-pubescent; branches more or less prominently angled, sometimes almost winged.

Pinnæ 8 to 15 pairs, or sometimes even more, rarely reduced to 5 or 6.

Leaflets very numerous (30 to 40 pairs, or even more), linear, from under 2 lines to nearly 5 lines long, according to the variety.

Flower-heads small, globular, in axillary racemes, the upper ones forming a terminal panicle.

Flowers 20 to 30 in the head, mostly 5-merous.

Calyx short, broadly lobed, ciliate.

Petals with slightly prominent midribs.

Pod usually 3 to 4 inches long, about ¼ inch broad or rather more, more or less contracted between the seeds.

Seeds ovate.

* "Wattles and Wattle-barks," by J. H. Maiden. 2nd edition. 1891.

Acacia decurrens is a very variable species. Four varieties have been described in the "Flora Australiensis," viz.:—

a. Normalis (the form which we have figured), "glabrous, or the young shoots slightly tomentose-pubescent. Leaflets long and narrow, usually 3 to 4 lines; glands numerous along the primary rhachis."

b. Mollis, the black wattle of Tasmania and Victoria, and widely distributed in our own Colony.

c. Pauciglandulosa. This and (*d*) are variously called Black and Green Wattle.

d. Leichhardtii.—Both these varieties are common in this Colony. Of these four varieties, *mollis* has recently been restored to specific rank (*A. mollissima*, Willd.), while *Leichhardtii* has been raised to specific rank by Baron von Mueller under the name of *A. Shanesii.*

The great variation of *A. decurrens* in so many points, and the question whether the forms should best be styled varieties or different species, has been very fully discussed by one of us in "Wattles and Wattle-barks," to which our readers are referred, as it is unnecessary to discuss it at length here.

Exudation.—This wattle often exudes a gum which at one time was used for food by the aborigines. At the present time it is eagerly collected by children and eaten on the spot. It must possess some nutritive value, as instances are on record of the lives of children and others who have been lost in the bush having been sustained by it. Boys sometimes soak it in water to make a thick jelly and sweeten it; thus a toothsome confection is made. It exudes capriciously, and, as a rule, it is only slightly soluble in water, simply swelling up when placed in that liquid. In other words, it contains a substance known as "metarabin," while the soluble gum, known as gum-arabic, contains "arabin."

Bark.—It is smooth, and is used for tanning purposes, being rich in tannin. Speaking generally, it comes third amongst Australian barks, that of the golden wattle (*Acacia pycnantha*) of South Australia coming first, and the black wattle of Tasmania and Victoria (*Acacia decurrens*, var. *mollis*) coming second, although picked pieces of the bark of the Sydney black wattle very nearly equal those from Tasmania and Victoria.

Timber.—Pale coloured and fissile; it is, however, comparatively little used, as after the bark is stripped for tanning purposes the timber is usually left in the forest to decay. The timber, however, makes very good fuel, particularly for bakers' ovens. It is also used to a limited extent for cask-staves and for axe-handles, though far inferior to our best timbers for the purpose.

Distribution.—The form we have figured is confined to this Colony, and is restricted to the neighbourhood of Sydney; say, a few miles to the north, about 100 miles to the south, and westerly as far as the coast range.

Insect Life.—As might readily be supposed, with so abundant and widely-diffused a species as *Acacia decurrens*, insects of various kinds are well represented on this plant.

Mr. Froggatt has collected the larvæ of the butterfly *Ialmenus evagoras*, Don., on the foliage of *A. decurrens*, and noticed that they were visited by numberless ants, attracted by a sugary excretion (*Proc. Linn. Soc., N.S.W.* [2], vii. 40).

Mr. Henry Edwards (*Proc. Linn. Soc., N.S.W.* [2], v. 300) notes that the larva of *Cryptophasa unipunctata*, Don., which at one period was only to be found burrowing into the stems and younger branches of *A. decurrens*, has now attacked introduced fruit-trees.

Among lepidoptera the larva of *Diastictis australiaria*, Gn., is common on *A. decurrens*, on which it feeds (*Proc. Linn. Soc., N.S.W.* [2], vi. 587); so does that of *Selidosema excursaria*, Gn., though perhaps not exclusively on the wattle in question (*ib.* 610); *Lophodes sinistraria*, Gn. (*ib.* 620); and *Thalaina clara*, Walk. (*ib.* 654); *Iodis dichloraria*, Gn. (*ib.* ii 884).

Amongst micro-lepidoptera, Meyrick (*Proc. Linn. Soc., N.S.W.* [2], 546) has bred *Tinea nectarea* from "flattened-oval irregular-edged cases found in plenty on the stems of *A. decurrens*, but these were probably pupation cases only, as in some other species. I failed to find the larvæ feeding, and they may have come from *Eucalyptus* trees near."

The so-called "Fire-blight," which has worked such destruction with Black Wattle (*A. decurrens*, var. *mollis*) in Victoria, is a beetle, *Paropsis orphana*, Cr., one of the Chrysomalidæ.

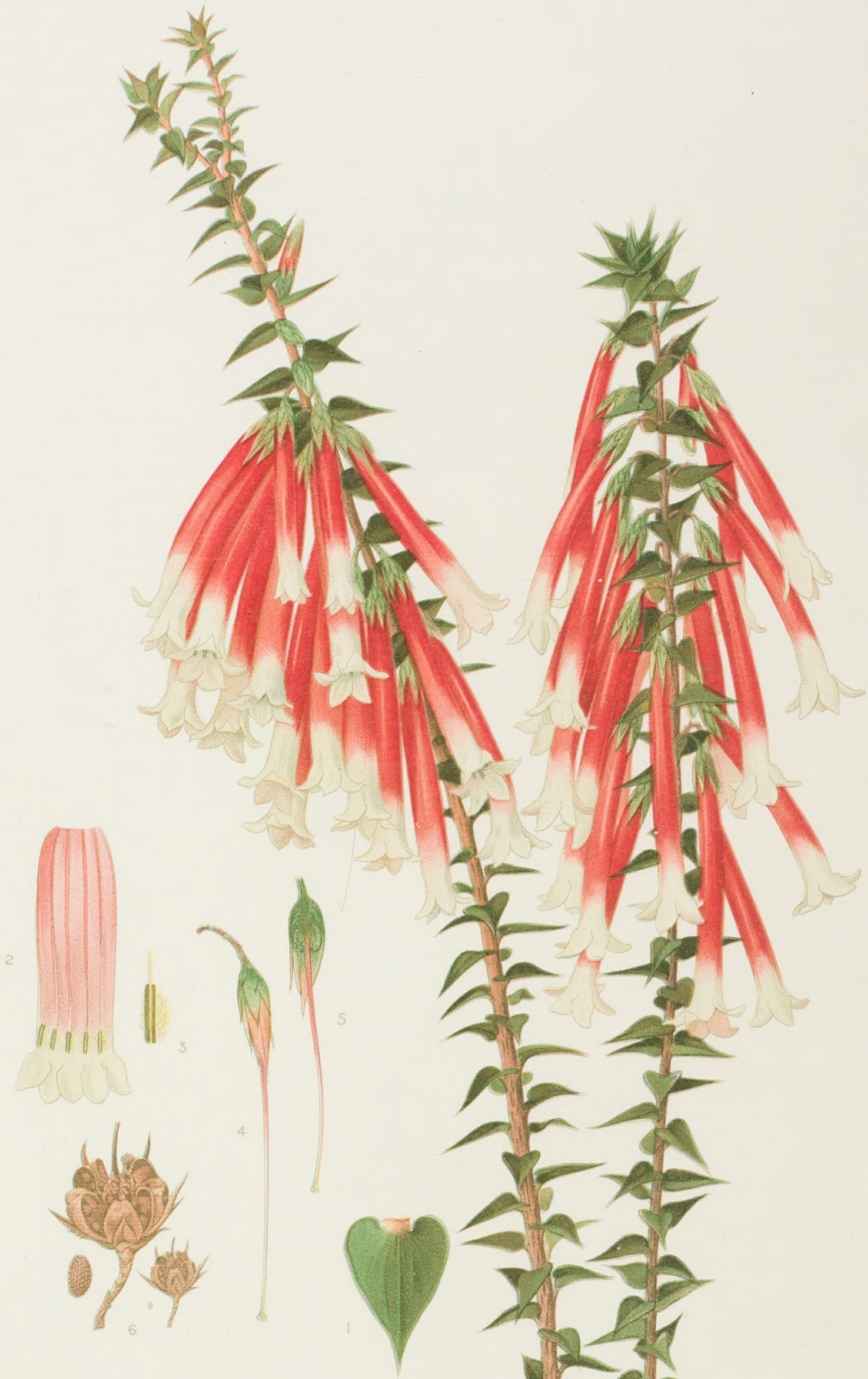
The larvæ not only attack the leaves, but gnaw the bark. See *Proc. Linn. Soc., N.S.W.* [2], v. 510.

Mr. Froggatt records the larvæ of *Piesarthrius marginellus*, Hope, from *A. decurrens* (*ib.* viii. 34), and the "Botany Bay Diamond Beetle" (*Chrysolophus spectabilis*, Donovan) on *A. decurrens* and other wattles (*ib.* 38); also *Calomela Bartoni*, Baly, on the same wattle (*ib.* 40).

Host for Fungi.—Although *Acacia decurrens* is our most widely diffused *Acacia*, it is somewhat singular that, up to the present, no species of fungus has been recorded from it. At the same time, a large number have been recorded from wattles, the specific name of which is not available, and now that attention has been drawn to the matter, collectors will doubtless take the matter in hand.

Reference to Plate.

1. Bud of an individual flower; each head of flowers containing 20—30 such.
2. Expanded individual flower.
3. Pistil.
4. Pod (legume).
5. Seed (showing aril).
6. Bark.



No. 14. THE NATIVE FUCHSIA (Epacris longiflora, *Cav.*)

No. 14.

THE NATIVE FUCHSIA.

Epacris longiflora, Cav.

Vernacular Names.—"Native Fuchsia" is a very common name for this plant about Sydney, but *Correa speciosa* also shares this name, while, in the Western districts, species of *Eremophila* are called "Native Fuchsia" as well.

Under the name of "Crimson Epacris" an excellent illustration of this plant is given in plate 982 of Curtis' *Botanic Magazine* (1806).

Botanical Name.—*Epacris*, from two Greek words, *epi*, upon, and *akris*, the top, in reference to the species growing on the tops of hills,—a description of their habit which is of course only very partially true. *Longiflora*, from two Latin words signifying long-flowered.

Synonym.—*Epacris grandiflora.* This is the name by which this plant is usually known to nurserymen. It is a descriptive one, but more recent than *longiflora.* It is figured as *E. grandiflora* in the *Treasury of Botany.*

Botanical Description.—An erect shrub, with long straggling, usually pubescent, branches.

Leaves shortly petiolate, or almost sessile, ovate or ovate-lanceolate, tapering into a pungent point, rounded or cordate at the base, several nerved, under ½ inch long, and in some specimens, scarcely ¼ inch long.

Flowers usually drooping, on pedicels of one to two lines.

Bracts acute, often decussate.

Sepals acutely acuminate, two lines long or rather more.

Corolla-tube cylindrical, often slightly curved, ½ to ¾ inch long or even more, crimson red except at the end, where it is white as well as the lobes.

Hypogynous scales short and very broad, free, or cohering in a ring.

It belongs to the natural order Epacrideæ.

Occasionally the corolla-tube is quite white, probably when grown in shady situations.

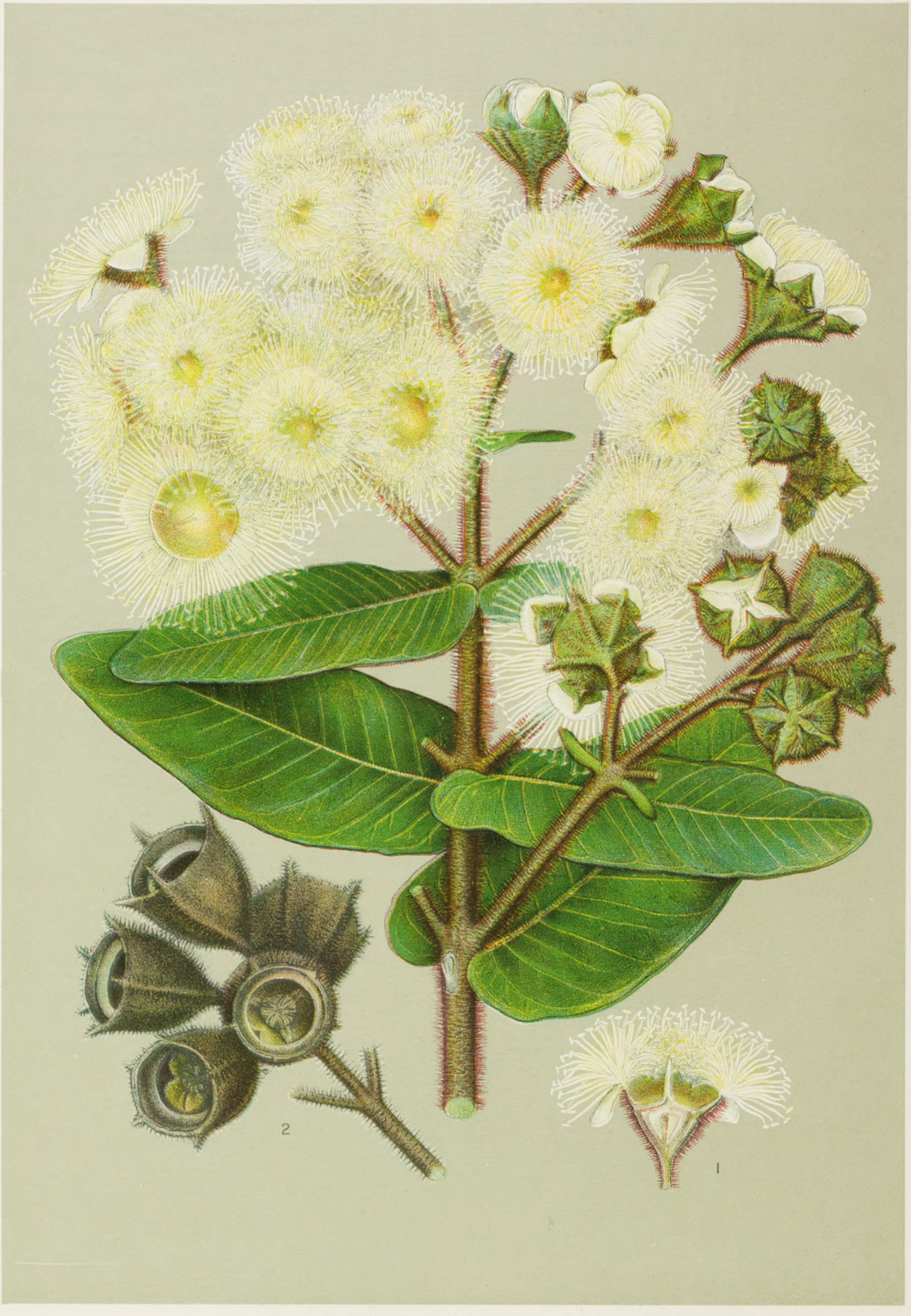
This is one of the most beautiful of our native flowering shrubs, and it was very popular in England at the beginning of this century, when Cape and Australian woody plants were in vogue.

In Curtis' *Botanic Magazine* (*loc. cit.*) it is said: "This beautiful Epacris was sent to us in blossom in May, 1806, the first time, perhaps, that it has been seen in Europe. It seems to be the freest grower of any species we have seen, and may be propagated from layers as well as from seeds."

Distribution.—New South Wales and Victoria, the eastern portions of each, being found in the coast districts and the coastal mountain ranges. Its most northern locality is Mount Lindsay, on the borders of Queensland. It seems not unreasonable to expect that further search may show that it occurs in the latter colony. Westerly it has been found as far as the Mudgee district.

Reference to Plate.

1. A leaf detached.
2. Corolla tube opened out.
3. Anther.
4. Part of flower with corolla tube pulled out.
5. Section of the preceding, in early fruit, showing ovary.
6. Fruit and seed, natural size and magnified.



No. 15. THE DWARF APPLE (Angophora cordifolia, *Cav.*)

No. 15.

THE DWARF APPLE.

Angophora cordifolia, Cav.

Vernacular Name.—"Apple" is a name which is usually applied in the eastern colonies to species of *Angophora*, because of the similarity of the habit of the rough-barked species to that of the well-known fruit-tree. Our plant is quite the smallest of the *Angophoras*, and we would suggest for it the name "Dwarf Apple-tree."

Botanical Name.—*Angophora*, from two Greek words, *aggos* (*angos*) a vessel, in allusion to the shape of the fruits, and *phora*, a carrying or bearing.

Under the name of *Metrosideros hispida* a good figure (although not of a very robust specimen) of this plant will be found in plate 1960 of Curtis' *Botanical Magazine* (1818). Accompanying the plate are the following interesting notes:—"It is by no means tender (in England), only requiring to be protected from frost. Propagated from cuttings. First raised about the year 1787 in the garden of the late Dr. William Pitcairn, at Islington, London." If there be no mistake about the date, this is therefore one of the comparatively few Australian plants which found their way into English gardens prior to the colonisation of New South Wales. How the seeds were first obtained can only be a matter of conjecture,—perhaps Banks and Solander who accompanied Captain Cook's celebrated voyage of discovery collected them.

It is a very free flowerer, and quite an ornamental plant. It seems a matter for surprise that it is not oftener seen in cultivation.

Botanical Description.—A tall shrub or small tree, more or less pubescent, with minute rigid hairs or glaucous, the smaller branchlets

and inflorescence hispid with bristly, often reddish hairs, the older bark smooth and falling off in large flakes.

Leaves ovate or oblong, mostly obtuse, nearly sessile and deeply cordate with rounded auricles, 2 to 4 inches long, glabrous and shining above, glaucous or pubescent underneath.
Flowers rather large, 4 to 6 inches each umbel, forming a rather dense terminal corymb.
Calyx-tube 3 lines long, and opening out nearly flat to ½ an inch in diameter.
Petals acutely acuminate, 3 to 4 lines in diameter.
Fruiting-calyx very hard, often ¾ of an inch broad at the top, and as much in length.

It belongs to the natural order *Myrtaceæ*, and is very closely related to the Eucalypts.

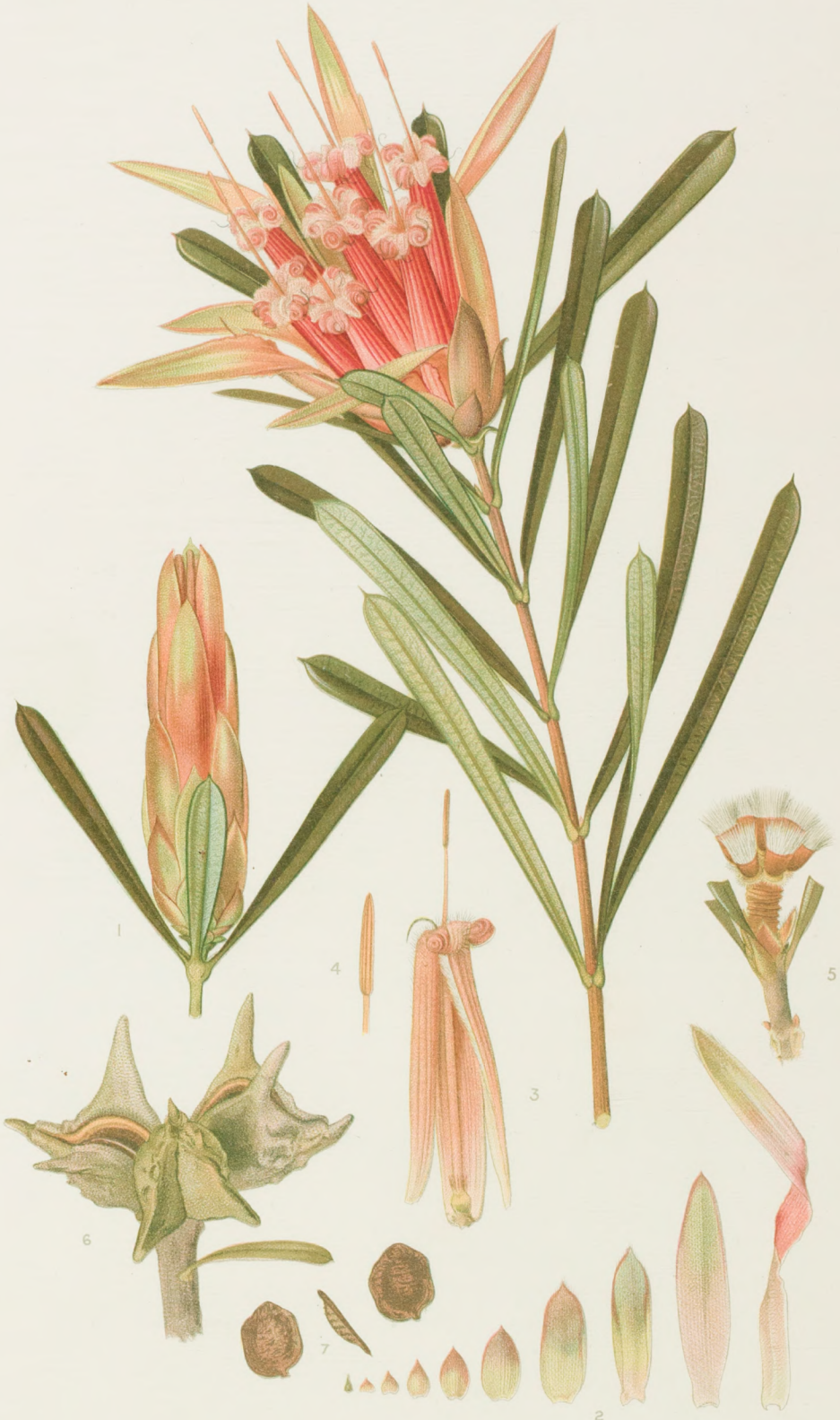
Timber.—Quite small, containing gum-veins, and of no economic value.

Distribution.—This species is confined to the Colony of New South Wales, and to the coastal districts, being usually found either quite near the coast or on barren sandstone ridges, exposed to the sea air. It is common about Port Jackson, and some miles south and north; its precise range in either direction does not appear to have been ascertained.

Insect Life.—The flowers of this plant are a favourite hunting-ground for the entomologist. Hundreds of beetles may be captured upon the flowers in a good season about Sydney, some coming to feed upon the honey, and others again upon the smaller beetles and flies that are attracted by the nectar. Most of our larger buprestid beetles (genus *Stigmodera*) are obtained on this plant, *Stigmodera variabilis*, Don.; *S. macularia*, Don.; *S. sutaralis*, and a dozen others being very common. The following rose chafers, *Eupœcila australasiæ*, Don.; *Cacochroa gymnopleura*, Fischer; *Diaphonia dorsalis*, Don,; *Macropœcila breweri*, Janson; *Polystigma octopunctata*, Burm.; and *Glycyphana brunnipes*, Kirby. A number of fine longicorns, among them most of the genus *Hesthesis*, which have short wing-cases and wasp-like bodies; also several of the large flower longicorns of the genus *Tragoceris*, numbers of the smaller Cleridæ and soldier beetles (Telephorus), together with four or five species of the smaller lamellicorns (genus *Phyllotocus*), and many other beetles, ants, wasps, and flies.

Reference to Plate.

1. Vertical section of an individual flower.
2. Cluster of fruits.



No. 16. THE HONEY-FLOWER (Lambertia formosa, *Sm.*)

No. 16.

THE HONEY-FLOWER.

Lambertia formosa, Sm.

Vernacular Names.—It is called "Honeyflower" because its tubular flowers contain an unusual quantity of honey, well known to small boys, and doubtless to the aborigines also. This plant belongs to a natural order (Proteaceæ) whose members yield honey freely. Our plant is sometimes called "Honeysuckle," but it is best to restrict this name to *Banksia* amongst Australian plants.

Botanical Name.—*Lambertia*, after Aylmer Bourke Lambert, a writer in the early part of this century, chiefly on the difficult and extensive genera of *Cinchona* and *Pinus*, and the owner of a fine herbarium, to which he allowed botanists free access; *formosa*, Latin for beautiful.

Botanical Description.—A tall shrub, glabrous, or with a slight pubescence on the young shoots, and here and there a few spreading hairs.

Leaves linear or slightly linear-cuneate, rarely linear-lanceolate, mucronate, with a fine pungent point, the margins recurved, contracted into a very short petiole, rigid, shining above, pale, or almost ferruginous underneath, with a prominent midrib, varying from scarcely 1 inch to above 2 inches long.

Involucres terminal, usually solitary, seven-flowered usually, the inner bracts narrow, silky-pubescent outside, 1½ to 2 inches long, the outer ones short and ovate.

Perianth 1½ to 2 inches long, glabrous outside, dilated in the middle, the segments bearded inside below the anthers, the laminæ with pubescent tips.

Anther-connectives produced into minute appendages.

Hypogynous scales united into a truncate tube or cup surrounding the ovary.

Follicle smooth, glabrous or villous.

It belongs to the natural order Proteaceæ.

Distribution.—Confined to New South Wales. Western Australia is the home of *Lambertias*, of which it possesses no less than 9, all of them peculiar to the western colony. In none of the other Australian Colonies is the genus found.

L. formosa finds its most southern limit in the Clyde and Braidwood district, where the sandstone ends. How far north of Port Jackson it extends is not precisely known. Its western limit appears to be the coast ranges.

Reference to Plate.

1. Buds overlapped by bracts.
2. Series of bracts.
3. Individual flower opened out to show ovary.
4. Anther.
5. Showing hypogynous scales united into a truncate cup, and surmounted by bristly hairs.
6. Cluster of fruits.
7. Back, front and side view of seed.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THE

FLOWERING PLANTS AND FERNS

OF

NEW SOUTH WALES.

WITH ESPECIAL REFERENCE TO THEIR ECONOMIC VALUE,

BY

J. H. MAIDEN, F.L.S.,
ASSISTED BY W. S. CAMPBELL, F.L.S.

PART V.

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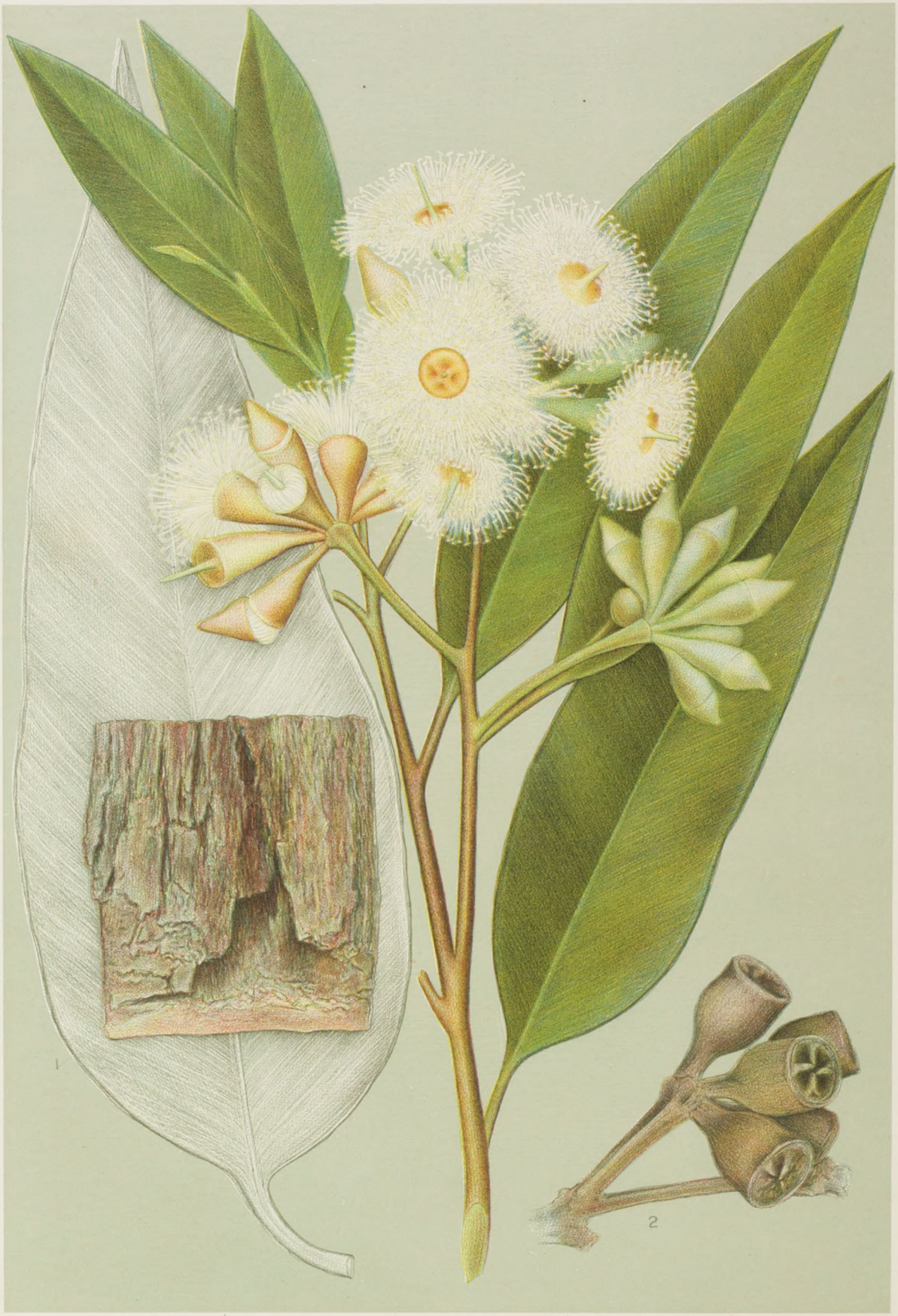


No. 17. SWAMP MAHOGANY (Eucalyptus robusta, *Sm.*)

No. 17.

THE SWAMP MAHOGANY.

Eucalyptus robusta, Sm.

Vernacular Names.—It is called "Swamp Mahogany" because of the situation in which it grows, and because the wood was supposed to resemble the true mahogany of Central America in appearance. Our ordinary "Mahogany" (*Eucalyptus resinifera*), usually qualified by the adjectives "red" or "forest," more strongly resembles the American timber. The term "Mahogany" was applied to Port Jackson timbers within the very first year of Australian settlement. With an excellent figure of *E. robusta*, in Sir James Smith's "A specimen of the Botany of New Holland," published in London in 1793, we have the name "New Holland Mahogany," or "Brown Gum-tree" applied to this tree. The latter name was, doubtless, given because "its resin (kino) is an inferior sort of red gum, of a brown hue." This name, "Brown Gum," is occasionally still quoted in English books in connection with this species, and it is simply referred to at this place in order to point out that the term is never employed in Australia, and was simply Smith's appellation.

Aboriginal Names.—"Gunnung," Richmond River, New South Wales; "Gnorpin" and "Kimbarra," various Queensland tribes; "Dadangba" was also an aboriginal Queensland name, according to Leichhardt.

Botanical Name.—*Eucalyptus* (already explained) *robusta*, Latin, strong, firm, robust, &c. The botanist who first described this tree said, "The size and strength of the tree, like that of the European *Quercus Robur* (the Oak), seem particularly to justify the name *robusta*."

Botanical Description.—A fine, umbrageous tree, attaining a height of 80 to 100 feet and more, and a trunk-diameter of 3 or 4 feet.

Leaves ovate-lanceolate, nearly straight or the upper ones narrower and falcate, 4 to 6 inches long, or sometimes more, with numerous fine but prominent parallel veins almost transverse, the intramarginal one very near or close to the edge.

Peduncles axillary or lateral, stout, angular or flattened, often 1 inch long, each with about 4 to 12 rather large flowers, on thick angular pedicels.

Calyx-tube narrow-turbinate or slightly urceolate, 3 to 4 lines long, tapering into the pedicel.

Operculum thick, obtusely acuminate, usually rather longer than the calyx-tube.

Stamens 4 to 6 lines long, somewhat raised above the calyx border by the annular margin of the disk.

Anthers ovoid-oblong, with distinct parallel cells.

Ovary flat-topped or slightly conical in the centre.

Fruit ovoid-oblong, truncate, smooth, contracted above the middle, about ½-inch long, or rather more, the rim thin and slightly prominent, the capsule much sunk.

It may be mentioned that Smith's original description of this species consists simply of the following words:—"Lid conical, contracted in the middle. Umbels lateral and terminal: general and partial flower-stalks compressed," but the figure he published is so good that no mistake can arise as to the species referred to.

Leaves.—There appears to be no record of the leaves of this tree having been tested for Eucalyptus oil. They are so coriaceous that they promise but little in this direction. Smith, in 1793, remarked, "This is not so highly aromatic as some other species."

Exudation.—The Swamp Mahogany yields but a very small quantity of a reddish-brown gum or so-called kino, which contains true gum in its composition, and which, therefore, belongs to the "Gummy Group," a group numerically much inferior to either the Ruby or Turbid group.

Bark.—Brownish, sub-fibrous, scaly; of no economic value.

Timber.—A reddish timber, difficult to split, and rather brittle (for a hardwood); resembles Bluegum (*Eucalyptus saligna*) in colour. Much valued for wheelwrights' work, for ship-building, and for general building purposes; used for shingles; fairly durable for posts, especially in damp situations, such as the tree itself frequents, yet only a timber of the second class, being much inferior in quality to red mahogany (*Eucalyptus resinifera*). It is worthy of very careful tests as regards its suitability for wood-paving.

Distribution.—It is a coast-district species, confined to New South Wales and Queensland, and extending from Twofold Bay in the south of New South Wales to Queensland in the north. It does not extend far inland, in the Sydney district not further than Parramatta and the Lower Hawkesbury.

As regards Queensland localities, the late Revd. B. Scortechini remarks (*Proc. Linn. Soc., N.S.W.*, viii, 248), "I found it growing in wet places not far off the banks of Nerang Creek. Since then Mr. F. M. Bailey and I found it at Stradbroke Island, close to Dunwich. Afterwards I followed its course to the Brisbane River, and as far inland as Brown Plains, not far away from the Logan. In all instances this gum-tree was found growing on wet marshy ground, having for its companion *Melaleuca leucadendron*, *Linn.* Whether this tree crosses over to the north side of the Brisbane River remains to be proved by further investigation."

Insect enemies.—F. A. A. Skuse recorded the finding of a gall of the Coccid *Brachyscelis munita*, Schrad., on this tree (*Proc. Linn. Soc. N.S.W.*, 2nd ser. v. 268). For a full account of this gall, found on the same tree, see *op. cit.* vii. 360, 361, where W. W. Froggatt, in his *Notes on the Family Brachyscelidæ*, remarks that the leaves of *E. robusta* appear to be attacked by many insect larvæ. In a further series of the same *Notes*, Froggatt (*op. cit.* viii, 344), records the finding of *Opisthoscelis pisiformis* (n. sp.) on *E. robusta*.

Mr. Froggatt exhibited a twig of this tree attacked by "lerp"-making Psyllæ, and observed that a large number of these trees had their foliage entirely destroyed by the countless numbers of the larvæ of these insects (*Proc. Linn. Soc. N.S.W.*, 2nd ser., vii. 380).

In the Sydney district this is one of the Eucalypts frequented by the noisy Cicada or "Locust," known to boys as "The Double Drummer," and to entomologists as *Thopha saccata*, Amyot (Froggatt, *op. cit.* x. 528).

The Rev. T. Blackburn describes (*op. cit.* ix. 95) a new beetle, *Ceratognathus Froggattii*, belonging to the family Pectinicornes, bred by Mr. Froggatt from *E. robusta*, collected at Botany Bay. Froggatt (*op. cit.* p. 120) gives the following notes in regard to this little stag-horn-beetle :—"The larva lives in the bark of *E. robusta*, the trunk of which, when the trees are large, is covered with a thick, felty, fibrous, outer bark, which shelters numbers of small insects and their larvæ. The *Ceratognathus* excavates oval chambers about half-an-inch below the outer surface, where it lies lightly curled round. At Botany I found the beetles and pupæ in these cavities early in November."

The larvæ of the beetle *Mæchidius rugosus* live in the thick bark of *E. robusta*, where they pupate. (Froggatt, *op. cit.* x. 331.)

The soft young foliage of *E. robusta* is much frequented by many of the leaf-eating beetles such as *Anoplognathus* (several species) and the beautiful pale green *Xylonychus eucalypti*, Boisd., which is often

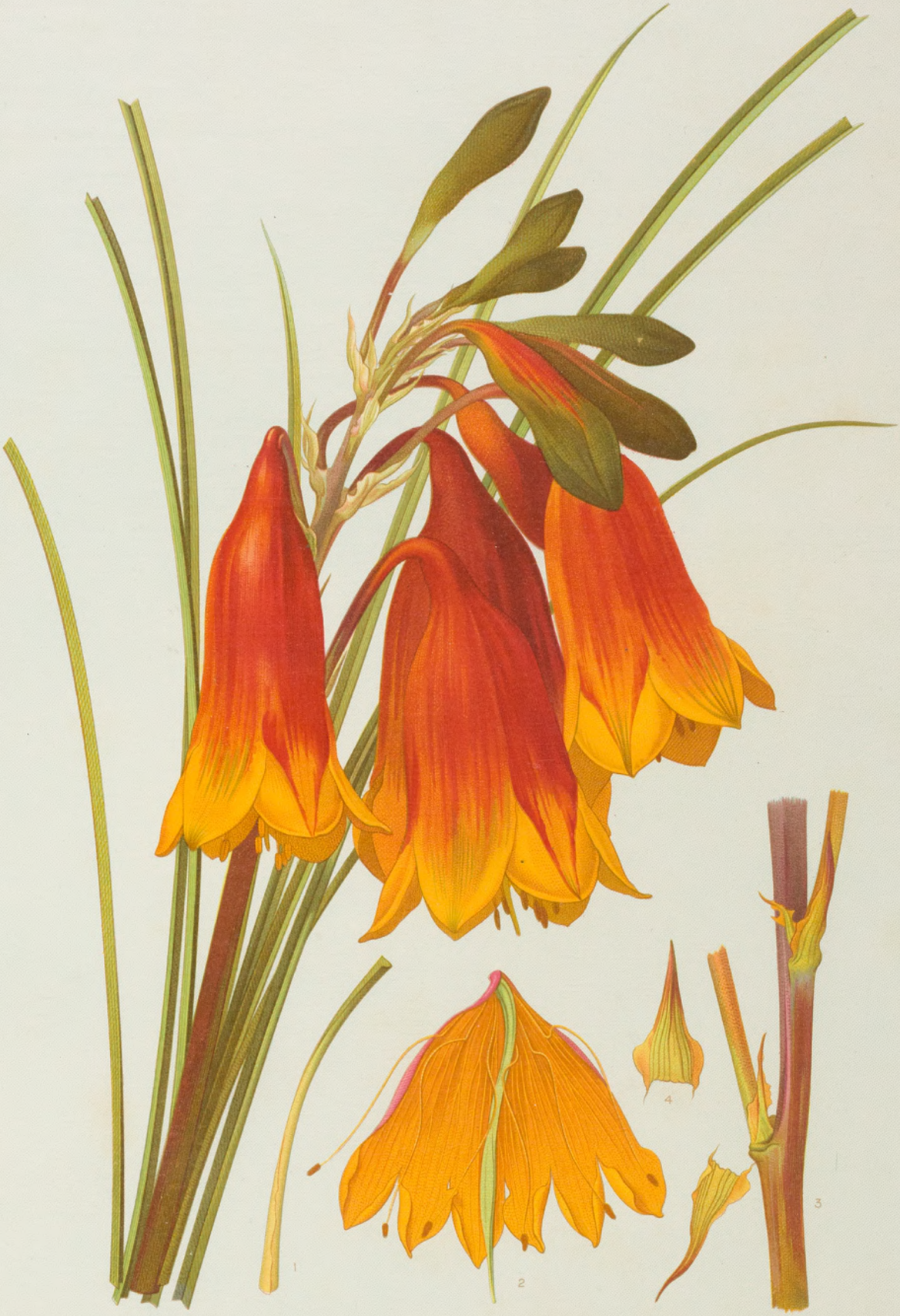
found feeding upon it in November and December. There is a large nut-like gall formed on the branchlets by the larvæ of an undescribed gall-fly (*Cynipidæ*); and the homopterous galls of the four-horned brachyscelis (*B. munita*, Sch.) sometimes form great masses as big as a man's head upon the branches.

Dactylopius eucalypti, Mask., which was described by Maskell as occurring under the bark, was found by Froggatt burying itself in the young leaves and causing them to wither and become discoloured. Mr. Maskell records this fact from the former's notes in the *Trans. N.Z. Inst.*, vol. xxv, p. 233, 1892.

Mr. Froggatt has bred the beautiful wood-moth, *Charagia splendens*, Scott, from a tree of *Eucalyptus robusta* (*Proc. Linn. Soc., N.S.W.*, 2nd ser. ix. 382). "This species breeds annually, forming a thick felty bag all round the branch, and boring a hole several inches down the stem or branch, the larvæ pupating about the middle of December, and the moth coming forth three or four weeks later."

Reference to Plate.

1. Leaf to show venation and usually large size.
2. Cluster of fruits.



No. 18. LARGE CHRISTMAS BELLS (Blandfordia flammea, *Hk.*)

No. 18.

LARGE CHRISTMAS BELLS.

Blandfordia flammea, Hook.

Vernacular name.—Originally given, of course, because these beautiful flowers were to be seen during the Christmas season, but stray blooms may be seen as early as August and as late as March.

Botanical name.—*Blandfordia*, in honour of George, Marquis of Blandford (son of the Duke of Marlborough), who lived during the latter part of the last and the early part of the present century. *Flammea*, Latin adjective signifying flame-coloured, yellow or reddish-yellow, in allusion to the colour of the flowers.

Botanical description.—A tall species, with the narrow foliage and usually few flowers and short bracts of *B. nobilis*, but the flowers much larger and differently shaped.

Perianth usually above 1½ inch long, much dilated almost from the base and very broad upwards, so as to be almost campanulate, the

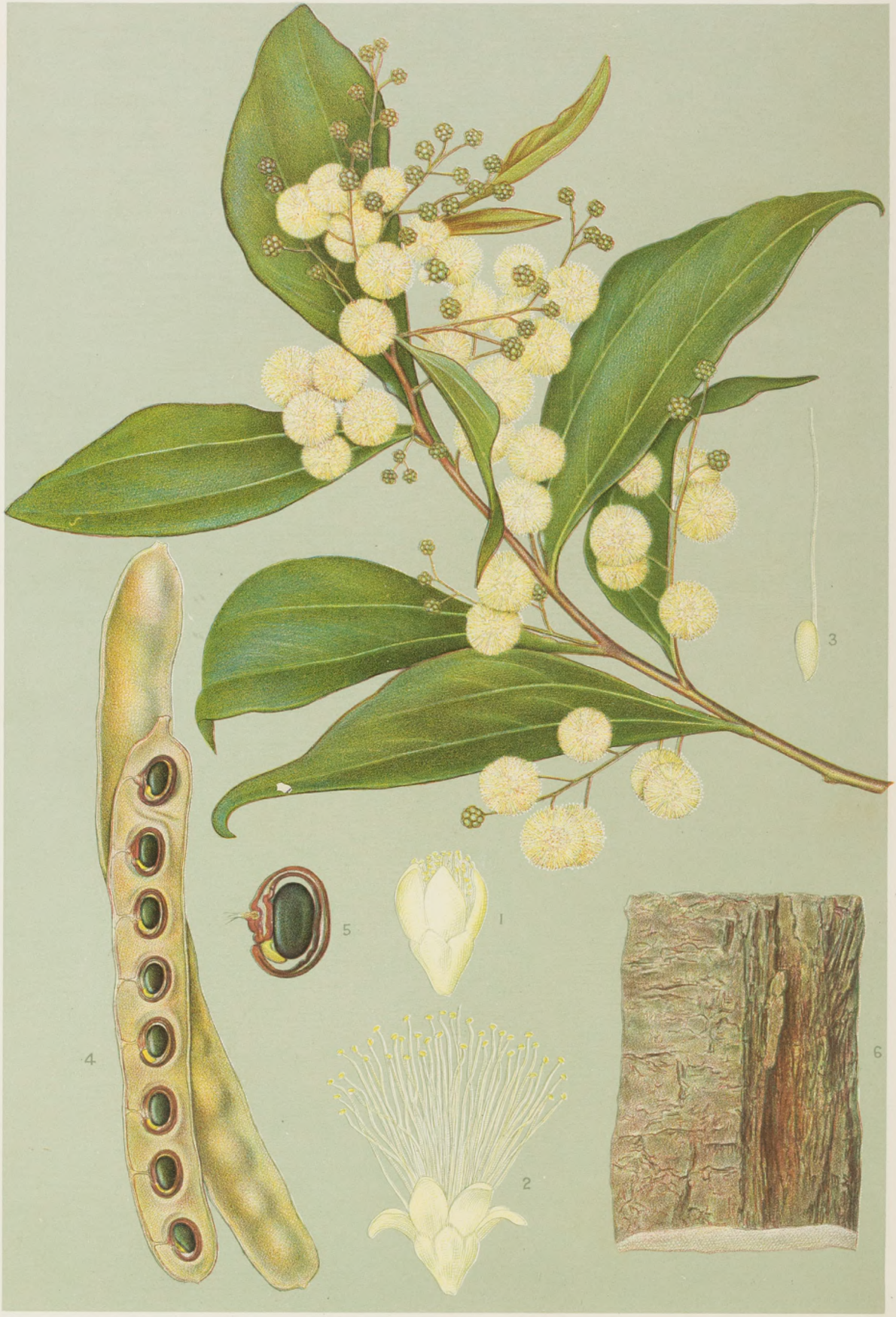
Lobes short, broad, and obtuse, the colour usually a rich brown-red in the lower part, the broad upper portion from yellow to orange, but sometimes yellow or orange almost or quite from the base.

This plant belongs to the Liliaceæ. The flowers are universal favourites in the districts in which they grow, and are frequently sent to Sydney for sale.

Distribution.—It is confined to New South Wales and Queensland. Its most southerly locality appears to be the Hawkesbury River, thence going north to Queensland, and as far west as New England.

Reference to Plate.

1. Part of leaf.
2. Corolla or perianth, cut open to show stamens.
3. Part of flowering stem, showing peduncles and bracts.
4. Bract.



No. 19. A HICKORY OR BLACK WATTLE (Acacia binervata, *DC.*)

No. 19.

THE TWO-VEINED HICKORY.

Acacia binervata, DC.

Vernacular names.—In the Illawarra district, where this Wattle is particularly abundant, and attains its greatest luxuriance, it usually goes under the name of Black Wattle, but to save confusion it would appear desirable to restrict the use of this term as far as possible to the forms of *Acacia decurrens*.

It shares with other broad "leaved" (for an explanation of the use of this term as applied to *Acacias* see *A. glaucescens*, in Part I), Wattles the name of Hickory, and in order to distinguish it, the name "Two-veined Hickory" is proposed.

It is figured in Curtis' *Botanic Magazine* (plate 3338) under the name *Acacia umbrosa*, or the "Shady Acacia."

Aboriginal Names.—Sir William Macarthur stated that "Myimbarr" was the name the Illawarra blacks used to give to this tree. "Malla-waundie" is a name stated to have been given by aborigines in the northern part of this Colony.

Sir William Macarthur (Catal. of N.S.W. Timber Exhibits, Exhib., London, 1862) stated that the aboriginal name "Meroangange" was given at Illawarra to *Acacia umbrosa*, which is usually accepted as a synonym of *A. binervata*. I wish, however, to point out that Sir William, in the same catalogue, gave "Myimbarr" as the Illawarra aboriginal name for *A. binervata*, as already stated, and that in describing the identical timber specimen for the previous (1855) Paris Exhibition, he stated that the tree has "large pinnate leaves," altered in the 1862 catalogue for the identical specimen to "very broad leaves." This description of pinnate leaves could only apply to *A. elata*, a beautiful umbrageous tree "common at Illawarra," and I only consider the matter worthy of attention because the aborigines of the district are now all but extinct. We have but few records of their plant-names, and we should endeavour to make these few as accurately defined as possible.

Botanical name.—*Acacia* (already explained). *Binervata* (Latinized adjective, from *nervus* a nerve or vein), denoting "two-nerved," in allusion to the two veins in the leaves (phyllodia), a characteristic so readily recognized that every student can bear it in mind.

Botanical description.—A tall shrub or bushy tree, attaining sometimes 30 to 40 feet, glabrous, with slightly angular branchlets, soon becoming terete.

Phyllodia falcate, oblong or lanceolate, narrowed at each end, mostly 3 to 4 inches long, with two or three longitudinal nerves and pinnately veined between them, the marginal gland below the middle rather conspicuous.

Peduncles rather slender, three to eight at first in an axillary raceme, but after flowering the raceme often grows out into a leafy branch with the peduncles at the base, each bearing a globular head of about twenty flowers, mostly five-merous.

Calyx scarcely half as long as the corolla, sinuate-toothed.

Petals smooth.

Pod long, flat, and *very* thin, about ½ inch broad.

Seeds obovate, longitudinal along the centre of the pod.

Funicle folded and dilated under the seed, but not surrounding it.

Exudation.—It yields a (usually) dark-coloured gum, which is fairly soluble in water, and which forms an inferior gum-arabic

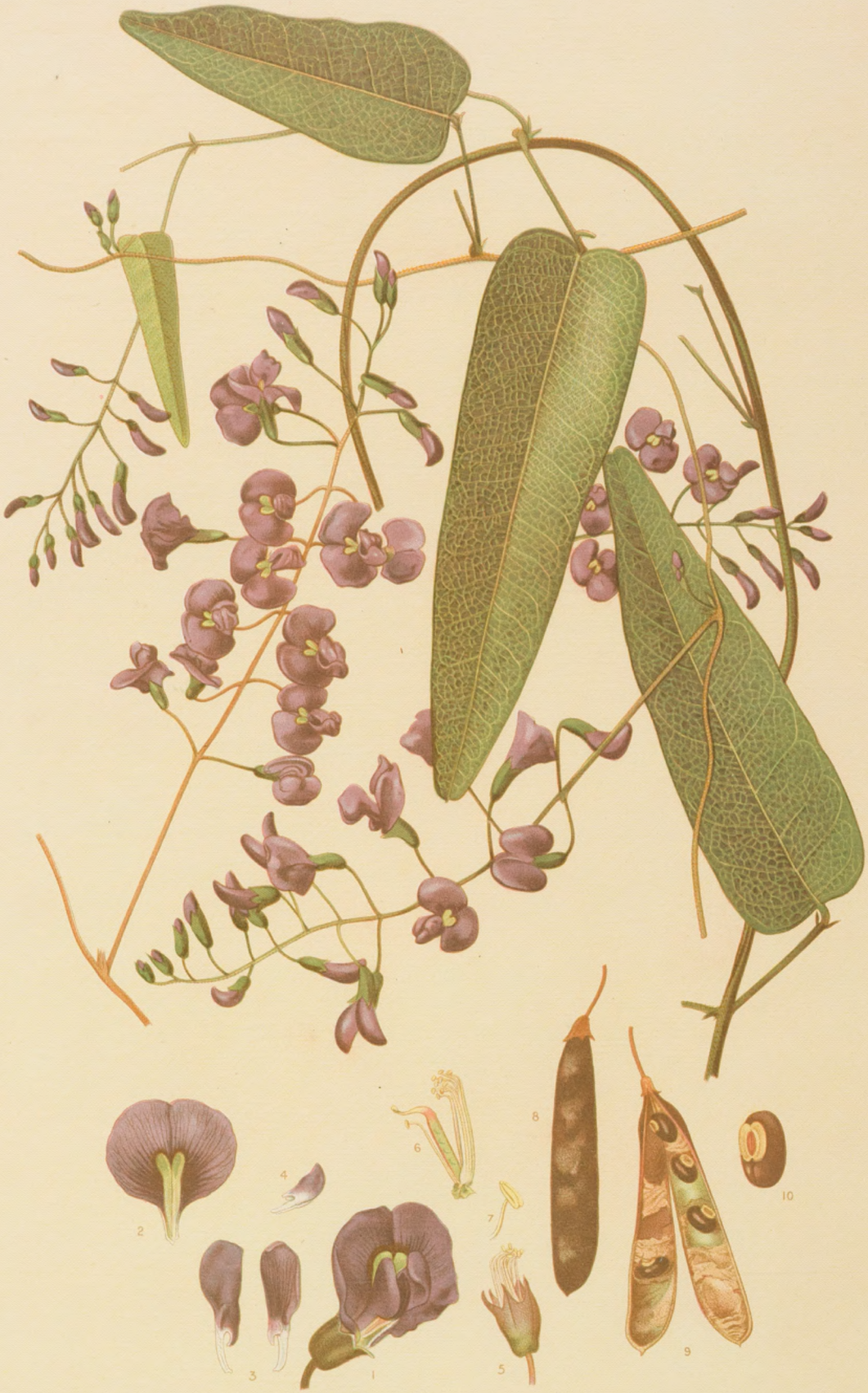
Bark.—It yields a large quantity of a roughish bark, which is used a good deal locally by tanners, but many are prejudiced against it because of its fibrous nature. This disadvantage might, however, be got rid of by suitable machinery, for the bark is richer in tannin than is usually supposed. For full particulars on this head see Maiden's "Wattles and Wattle Barks," second edition, page 50.

Timber.—Pale-coloured, close-grained, tough and light. An excellent fuel-wood; at one time highly prized for axe-helves and bullock-yokes.

Distribution.—It is found in New South Wales and Queensland. In the former Colony it occurs as far south as Mount Dromedary, but it attains its greatest luxuriance in the Illawarra. North of Port Jackson it is less plentiful, becoming more and more scarce to Southern Queensland. Going west, it is found sparsely in New England, and also in the Mudgee district.

Reference to Plate.

1. Unexpanded individual flower. (N.B.—Each of the globular flowers or rather "heads of flowers" is composed of a large number of individual flowers.)
2. Fully expanded individual flower.
3. Pistil.
4. Pod, with one valve removed to show seeds.
5. Seed.
6. Bark.



No. 20. FALSE SARSAPARILLA (Hardenbergia monophylla, *Benth.*)

No. 20.

FALSE SARSAPARILLA.

Hardenbergia monophylla, Benth.

Vernacular name.—We know of none except "False Sarsaparilla." We may mention, however, that this is one of the few Australian plants known to the general public by a scientific rather than a common name. By them it is known as "Kennedya."

Botanical name.—*Hardenbergia*, in honour of Frances, Countess of Hardenberg, sister of Baron Huegel (1795–1870), an Austrian traveller and botanist, who visited our shores, and contributed not a little to Australian botany in his day. *Monophylla*, from two Greek words signifying single leaves, in allusion to the leaves, which are always solitary.

Synonym *Kennedya monophylla.*

Botanical description.

Leaflets always solitary, usually ovate or lanceolate, 2 to 3 or even 4 inches long, obtuse or rather acute, often coriaceous and strongly reticulate, but varying from broadly cordate ovate to narrow lanceolate, more or less cordate or rounded at the base, articulate on a petiole of ½ to 1 inch.

Flowers, usually numerous, about 5 lines long, on pedicel rather longer than the calyx, in pairs, or, rarely, three together, the upper racemes often forming a terminal panicle.

Calyx about 1½ lines long.

Pod sessile, flat, attaining about 1½ in., coriaceous, more or less filled between the seeds with a pithy pulp.

Seeds very oblique, almost transverse.

Leaves.—Sometimes mistaken for those of our "Native Sarsaparilla," which they distantly resemble, and hence collected by ignorant persons. Their medicinal properties are, however, imaginary.

Roots.—These are stated to have been used as a substitute for Sarsaparilla. It may be mentioned that in the case of ordinary Sarsaparilla (*Smilax officinalis*), the root is the part employed, while the sweet leaves are used in the case of the ordinary native or Colonial Sarsaparilla (*S glycyphylla*).

Distribution.—Found in all the colonies except Western Australia, chiefly in the coastal and coast-mountain districts, and varying somewhat in habit, shape of leaves, &c.

Host for Fungi.—*Septoria Hardenbergiæ*, Sacc., has been recorded from South Australia as having been found on the leaves.

Reference to Plate.

1. Flower.
2. Standard.
3. Wings.
4. Keel.
5. Calyx.
6. Stamens.
7. Anther.
8. Pod.
9. Do showing seeds.
10. Seed.

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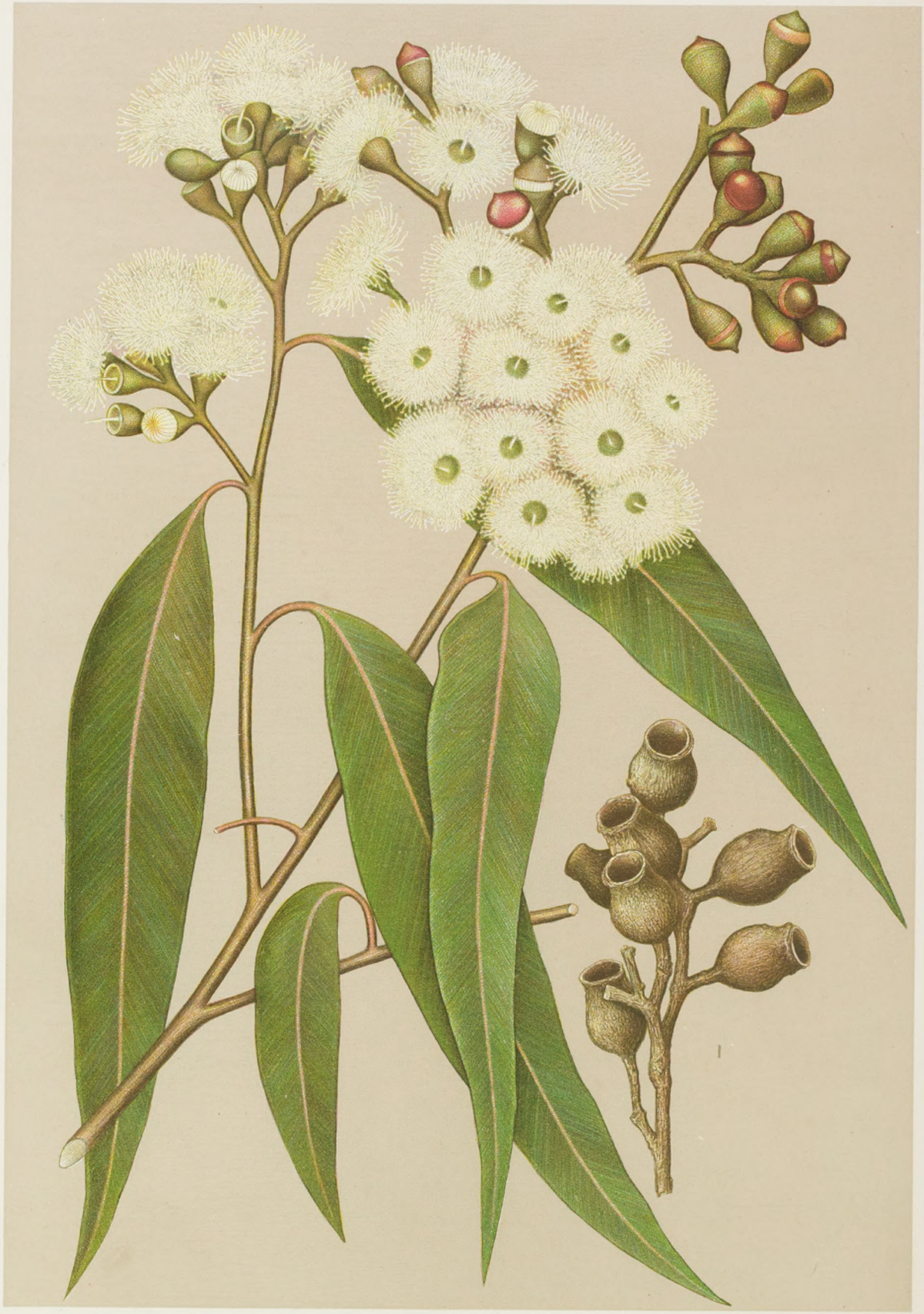


No. 21. SPOTTED GUM (Eucalyptus maculata, *Hook.*)

No. 21.

THE SPOTTED GUM.

Eucalyptus maculata, Hook. f.

Vernacular names.—The one given is now uniformly used in New South Wales. Forty years ago it was sometimes called "Mottled Gum." It is not to be confused with *E. goniocalyx*, the "Mountain Gum" of New South Wales, which is known as "Spotted Gum" in Victoria.

Aboriginal names.—"Booangie" of the aborigines of the counties of Cumberland and Camden; "Yah-ruigne" of those of the Illawarra. Mr. Forester Allan quotes the aboriginal name about Ulladulla as "Thurraney."

Botanical name.—*Eucalyptus*, already explained; *maculata*, Latin for "spotted," in allusion to the appearance of the bark.

Botanical description (*Flora Australiensis*, vol. iii, p. 258).—A lofty tree with a smooth bark falling off in patches so as to give the trunk a spotted appearance.

Leaves ovate-lanceolate or lanceolate, straight or falcate, acuminate, mostly 4 to 6 inches long or even more, with numerous parallel but rather oblique veins, rather coarse, the intramarginal one close to the edge.

Umbels three-flowered, usually several together, on short leafless branches, forming a panicle or corymb.

Peduncles or pedicels, short and thick, scarcely angular.

Calyx-tube, in the young bud shortly cylindrical, when open broadly turbinate, 3 to 4 lines diameter.

Operculum hemispherical, much shorter than the calyx-tube, the outer one much thicker and more persistent than in most species where it has been observed, and usually umbonate or shortly acuminate, the inner one (corresponding to the single one of most species), thin, obtuse, smooth, and shining.

Stamens attaining 4 or 5 lines; anthers ovate with parallel distinct cells opening longitudinally.

Ovary flat-topped.

Fruit ovate-urceolate, usually about half an inch long, and nearly as much in diameter, the rim narrow, the capsule deeply sunk.

Leaves.—A variety (*citriodora*) of this species is the Citron-scented Gum of Queensland, a tree which is hardy in the warmer coast districts of this Colony. The odour of its leaves is well known. It is

interesting to note that the leaves of the ordinary spotted gum tree, when young and tender emit, when crushed in the warm hand, a faint odour of a character similar to that of the Citron-scented Gum—additional evidence of the relationship of the trees.

Some years ago the late Mr. K. T. Staiger, of Brisbane, examined spotted gum oil, and reported, "a neutral oil of specific gravity, 0·891." Subsequently Messrs. Schimmel & Co., of Leipzig, examined the oil with the following results:—"Specific gravity at 15° C., 0·900; boils between 210° and 220°; contains citronellon and geraniol (?)." It is not, however, likely that the distillation of the oil of the spotted gum will ever be commercially successful.

Exudation.—Spotted gum exudes kino comparatively abundantly. Usually it is of an olive-brown to a reddish-brown colour. A full account of it will be found in a paper published by the present writer in the Proceedings of the Linnean Society of New South Wales for 1891, page 418, to which the student is referred.

Bark.—The bark is smooth, yet blotched with irregular patches of a colour paler than the rest of the bark. The bark is undergoing a continuous process of "ripening" in patches (blotches). The outer layer of a patch of bark darkens in colour, becomes brittle and dry, and drops off the tree, exposing a pale patch of new bark underneath (thus forming the spotted appearance). In this way a process of renewal of the whole surface of the bark takes place.

There is one tree which sometimes may be mistaken for the spotted gum if the bark alone be looked at. We have seen trees that required rather careful inspection to distinguish them from the smooth-barked apple (*Angophora lanceolata*); but, as a rule, the bark of the latter is of a more purplish cast, the branches are more scrambling, and the trunk more gnarled.

Timber.—Because of the conflicting statements in regard to the merits of this timber, the Minister for Mines recently appointed a Committee, consisting of Messrs. J. H. Maiden, G. S. Cowdery, and J. V. de Coque, to inquire into the subject and to report. Their report was published *in extenso* in pamphlet form by the Government Printer in 1896, and in an abbreviated form in the *Agricultural Gazette* for April, 1896. Those interested in the subject are invited to peruse the original report, as a full account of the timber would be out of place in the present publication.

Spotted gum timber is pale in colour (yellowish, cream-coloured, or very pale brown), and has a coarse wavy grain, which is

frequently ornamental. Drawbacks to its use are the presence of gum-veins, and the comparatively great thickness of sapwood, which is peculiarly liable to decay. Nevertheless it is a very valuable timber, and well worth taking pains over. When chosen free from sap and heart it is one of the most durable timbers we have, being valuable even for wood-paving, a peculiarly trying situation. It is without a rival amongst colonial timbers for elasticity and toughness, hence it is largely used by the coachbuilder, while it is much valued for such purposes as levers and handles.

Distribution.—It occurs in New South Wales, from north to south, extending westward as far as the Dividing Range. It is abundant (though to a less extent than in New South Wales), in Queensland. It has now been found in Victoria, Miss Howitt (daughter of Mr. A. W. Howitt, the well-known authority on Gippsland eucalypts) having recently found it on the east side of the Tarra Mountain, 15 miles south of Buchan, Gippsland.

An excellent note by Tenison-Woods on the distribution of this species (and its variety *citriodora*) in Queensland, will be found in *Proc. Linn. Soc. N.S.W.*, vii, 338.

Full details as to New South Wales localities will be found in the Report on spotted gum already referred to.

Insect Enemies.—*Lyctus brunneus*, Douglas, and *L. costatus*, Blackb., are two small brown beetles which do so much damage to the sapwood of dried timber of this and other eucalypts. The sapwood of spotted gum in particular is speedily converted into a flour-like substance by their agency.

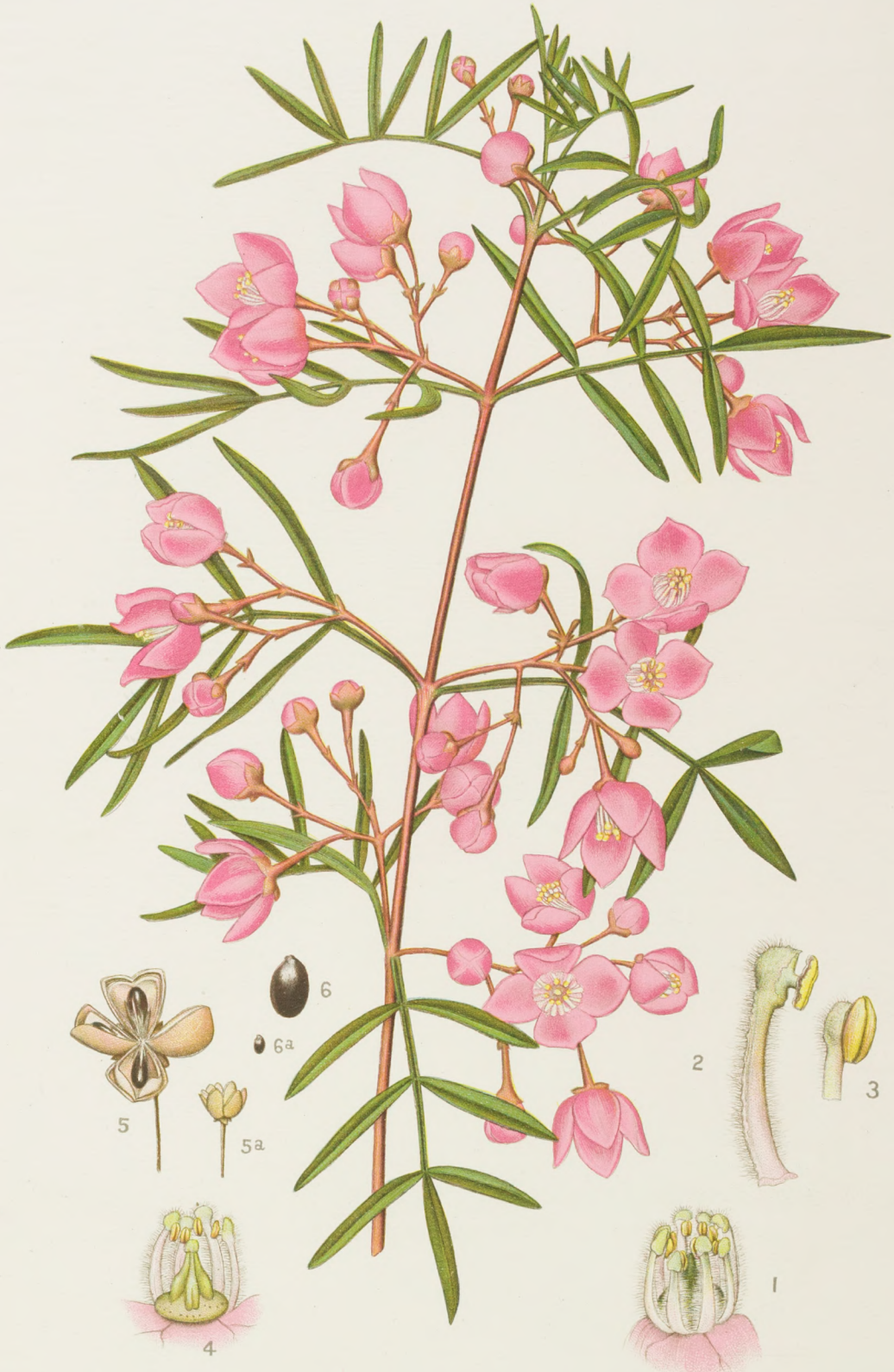
Phoracantha semipunctata, Fabr., *P. tricuspis*, Newm., and *P. recurva*, Newm., belong to a genus of fine longicorn beetles, the members of which are only found in eucalypts, the larvæ living between the bark and in the dead wood of these trees, including spotted gums.

Rhagiomorpha concolor, W. S. Macl., also a longicorn beetle, has similar habits, and is found in the dead wood of many gums.

Host for Fungi.—The so-called wash-leather fungus (*Xylostroma giganteum*) has been found in the timber of spotted gum, as well as that of other Eucalyptus timbers.

Reference to Plate.

1. Fruits.



No. 22. Boronia pinnata, *Sm.*

No. 22.

Boronia pinnata, Sm.

Vernacular names.—Although this plant is so well known to non-botanists, we never heard it called by any name other than "Boronia" or "Pink Boronia." Neither name is, however, distinctive. Why not boldly adopt the name *Boronia pinnata* in popular language?

Botanical name.—*Boronia*, in memory of Francis Borone, an Italian, the faithful personal attendant of Dr. Sibthorp, the author of the colossal and exceedingly beautiful *Flora Græca*. A certain plant was observed, near Athens, in a situation difficult of access, and, in spite of the doctor's warning, Borone endeavoured to secure the prize for him, but, alas! overbalanced himself and was killed.

Pinnata, pinnate, in allusion to the disposition of the leaflets.

Botanical description (*Flora Australiensis*, vol. i, 318).—A glabrous shrub, attaining 2 or 3 feet, but sometimes dwarf or diffuse, the small branches more or less angular.

Leaves pinnate; leaflets 5 to 9 or rarely more, linear or oblong-lanceolate, acute, rigid, the pairs rather distant and the common petiole often dilated between them.

Flowers rather large, usually 3 or more together, in loose axillary or subterminal corymbose cymes.

Sepals small, acute.

Petals attaining 3 to 5 lines, imbricate, glabrous or minutely tomentose, inside usually mucronate.

Filaments woolly-hairy, especially towards the thickened summit.

Anthers very minutely or not at all apiculate.

Style short.

Seeds smoth and shining.

This plant belongs to the Natural Order Rutaceæ.

Under *B. pinnata*, in the *Flora Australiensis*, Bentham makes the following remarks:—"These specimens appear to be sexually dimorphous. In some I find the stamens densely woolly, the anthers small, four of them perhaps imperfect, and the very short style bearing a thick globular stigma as large as, or larger, than the ovary.

In other specimens the filaments are shorter and not quite so woolly, the anthers larger and more perfect, the style cylindrical, with the stigma scarcely thickened." Explanation of the above is found in the fact that Bentham included under *B. pinnata* the closely allied *B. floribunda* of Sieber, an opinion that other botanists never disputed for many years. Baron von Mueller looked into the matter, and a note on the subject communicated to the Linnean Society of New South Wales, September, 1896, was his last botanical effort. He pointed out the distinctness of the two species, *B. pinnata* having stamens all equal, which are sometimes quite glabrous or nearly so. The stigma is small. In *B. floribunda* four stamens are longer and with larger anthers than the other four; the stigma is swollen and comparatively large.

Boronia pinnata is a plant usually 2 or 3 feet high, and with flowers of a rather deep pink colour. *B. floribunda* attains a height of 8 or 9 feet and even more (we have seen it nearly 10 feet high at the National Park), has paler flowers, and has usually a slenderer and more straggling habit than the preceding species. Sydney botanists, as far as we have understood, always looked upon these two plants as the same species, and sprays of each are very much alike. The following recorded observations are interesting, and may indicate recognition of the two species; at all events it would appear to be desirable to look for the two species in the localities indicated.

The late Rev. Dr. Woolls (*Proc. Linn. Soc., N.S.W.* [2], ii, 6) speaking of the flora of Mt. Wilson, alludes to the "two forms of *Boronia* which by some are referred to *B. pinnata*."

The late Rev. B. Scortechini says (*Proc. Linn. Soc., N.S.W.*, vi, 159) :—"I observed this first in a somewhat dwarfed state trailing on the ground at Nerang Creek, and met it again in Stradbroke Island in a stately form bordering the edges of swamps."

There is a figure of *Boronia pinnata* (although there are no drawings of details with the plate, I think the drawing was probably made from a spray of *B. floribunda*), in Curtis' *Botanical Magazine*, vol. XLII, tab. 1763. Dr. Sims, in describing the plant, says: "Upon the whole, it appears to us to be one of the most desirable plants that have been as yet introduced from New South Wales." It is, in fact, one of the most beautiful of our indigenous plants. It is sold in enormous quantities in the streets of Sydney during the spring season. In our view, it is a most delightful plant, far exceeding in beauty the more widely known "Native Rose" (*B. serrulata*).

Distribution.—It is found in all the colonies except Western Australia. It occurs mostly in the sandstone country of the coast districts. How far west it occurs in our colony we do not precisely know. It is found on the westerly spurs of the Blue Mountains, and in the ranges in the Mudgee district.

Insect Enemies.—Froggatt (*Proc. Linn. Soc., N.S.W.* [2] viii, 30) states that the beetle *Uracanthus triangularis*, Hope, feeds on the stems of *Boronia pinnata* in a manner which he describes in detail when speaking of its ravages on *Eriostemon lanceolatus*.

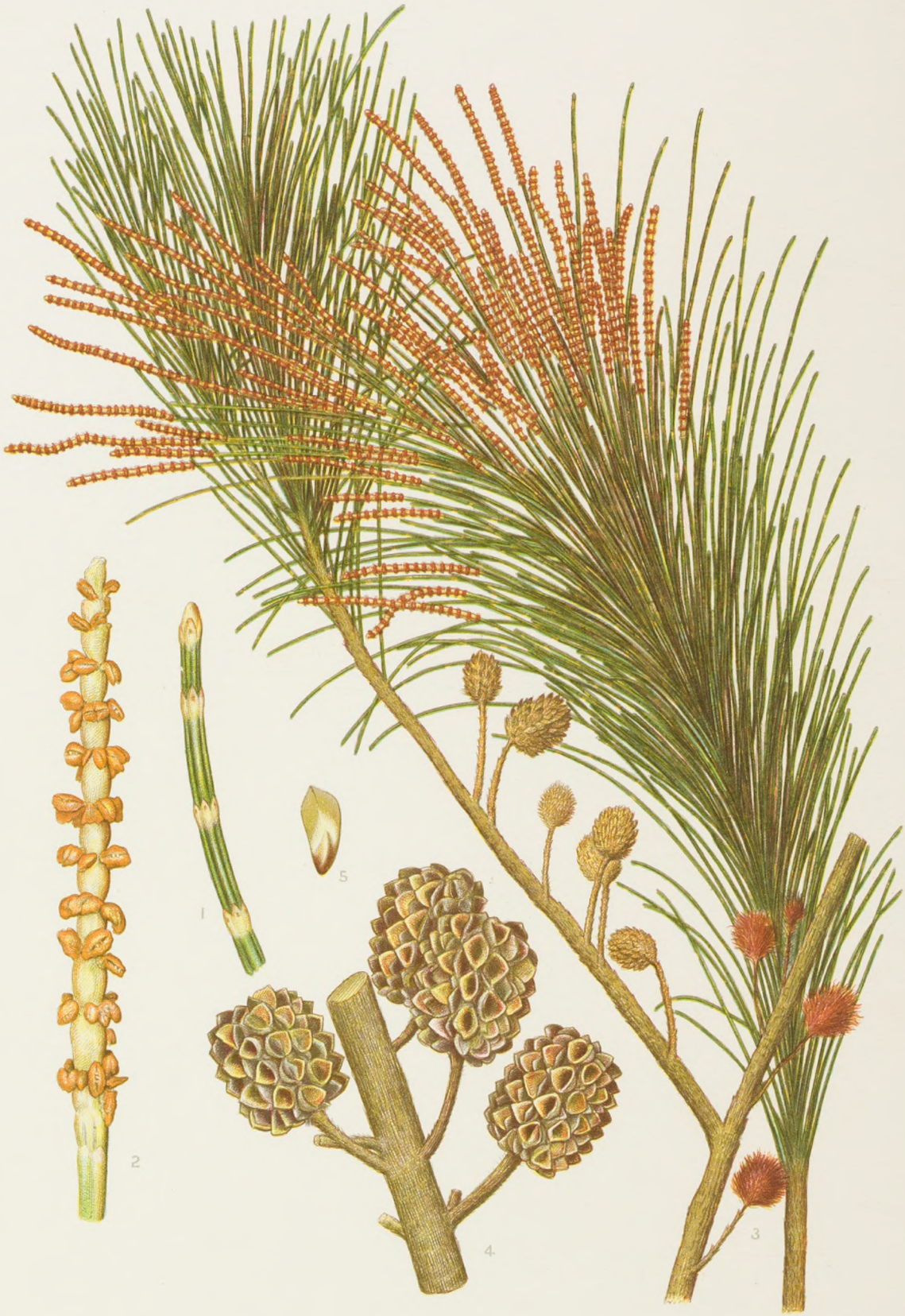
Reference to Plate.

1. Stamens *in situ*.
2. Stamen (enlarged).
3. Anther.
4. Ovary and disc. Four of the stamens removed. Note shape of stigma.
5. Ripe carpels (enlarged).

5a. Do (natural size).

6. Seed.

6a. Do (natural size).



No. 23. ERECT SHE-OAK (Casuarina suberosa, *Otto et Dietr.*)

No. 23.

THE ERECT SHE-OAK.

Casuarina suberosa, Otto et Dietr.

Vernacular Names.— On this tree a number of appellations have been bestowed, *e.g.*, Erect She-oak (a name which refers to the general habit of the tree, and which is perhaps as convenient, for purposes of distinction, as any other); Forest Oak (a name which had perhaps better be left to *C. torulosa*); Shingle-Oak, River Black Oak, and Beef-wood.

In Tasmania it goes by the names of "Swamp Oak" and "Marsh Oak"; other species pass under these names on the mainland.

Aboriginal names. — "Dahl-wah" of the aborigines of the county of Camden, New South Wales. "Wayetuck" of the Yarra (Victoria) aborigines.

Botanical name.— *Casuarina*, the Latinised form of Cassowary, a large bird, whose plumes are supposed to remind one of the weird, nodding branchlets of the genus.

Suberosa, Latin for corky, in allusion to the appearance of the bark. The name is not specially appropriate.

Botanical description.— (*Flora Australiensis*, vol. vi, 197.)

A tree of 30 to 40 feet, the specimens closely resembling those of *C. equisetifolia*, the whorls similarly 7-merous, or the parts varying from 6 to 8, and often monœcious like that species.

Branches seldom if ever corky, the branchlets usually slender and quite glabrous.

Male spikes much more slender and interrupted, the short sheaths not overlapping those next above.

Fruit-cones more frequently tending to become ovoid or oblong, truncate at both ends, the valves more prominent, glabrous or nearly so, with usually a short, broad, thick but almost scale-like transverse dorsal protuberance at the base, rarely extending nearly to the apex of the valve.

It belongs to the natural order *Casuarineæ*.

Leaves.—What are popularly known as such are really branchlets, the true leaves being represented by small scales. The so-called leaves are acidulous to the taste and are often chewed by children

and bushmen, as they stimulate the flow of saliva, and temporarily quench thirst. For stock they are really nutritious. She-oak (not exclusively this species), is most valuable in pastoral country, and it has often saved the lives of large numbers of sheep and cattle in times of drought. Formerly (and even now, we are sorry to say, to some extent), it was the practice to fell the trees for stock, such action being exactly similar in its effects to that of the man who killed the goose with the golden eggs. She-oaks should be simply pollarded, and if the work be done by intelligent and reasonable men the trees suffer no real injury.

Exudation.—An astringent gum has been met with in this species, but its nature has not been carefully inquired into. It is probably analogous in composition to the dried astringent saps which have been found exuding in small quantities from the barks of many of our native trees.

Bark.—The bark of this tree is rugged looking, with hard corky layers. The inner bark is reddish-brown, and displays on its inner surface the lenticular appearance characteristic of the genus. One analysis (*Proc. Roy. Soc. N.S.W.*, 1888, p. 276), of the bark gave 13·5 per cent. of tannin, but many more experiments require to be made before its value as a tanning material can be assessed with certainty.

Timber.—It has the peculiar blotchy markings peculiar to timbers of the Casuarineæ. It is very fissile, and hence is used to some extent for shingles. It is used to some extent for brushbacks and for tunbridge ware generally. It is useful for screws of hand-screws, for marking gauges, rails, &c., of chairs, and for clean turnery. Other uses are for bullock-yokes, mauls, and tool-handles. The Yarra (Victoria) blacks are said to have made boomerangs of it. Its chief drawback is its tendency to warp in drying, hence it is often used in veneers. It makes excellent fuel.

Distribution.—It occurs in all the colonies except Western Australia. It is not found in the centre of Australia; but, although its natural habitat is the coast and coast mountain ranges, it is found in mountainous country many miles west of Sydney.

Insect enemies.—On this tree occur remarkable homopterous galls produced by *Frenchia casuarinæ*, Mask. This Mallee-scrub insect has hitherto only been recorded for Victoria.

From our own colony *Frenchia semiocculta*, Mask, has been described from specimens sent from Thornleigh, near Sydney, by Mr.

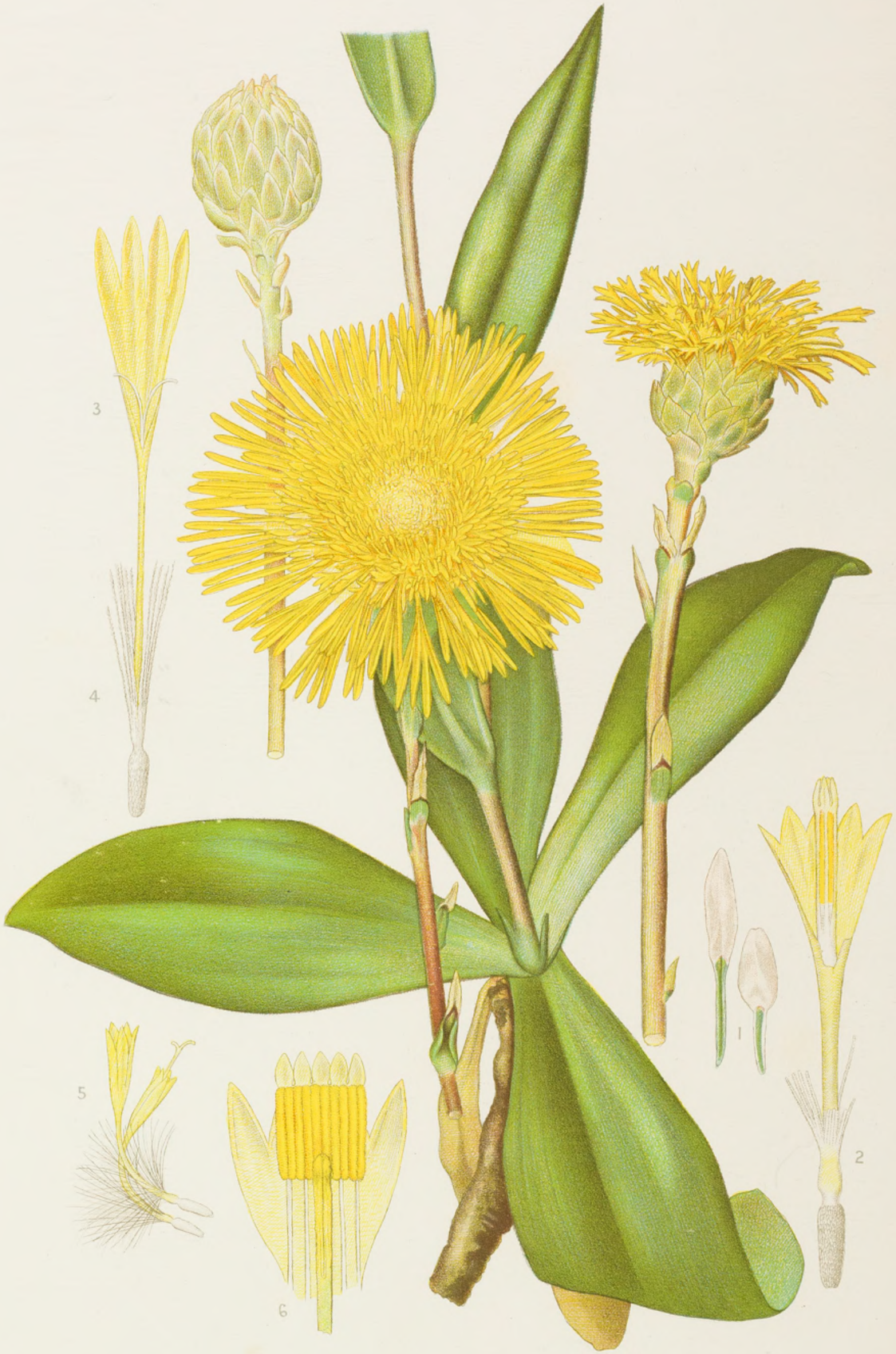
Froggatt. (*Trans. N.Z. Inst.*, 1894, p. 70, pl. VII., fig. 9–19.) The allied *Cylindrococcus spiniferus*, Mask., was described from Victorian specimens, but it is very common upon this She-oak in New South Wales. It is figured in Scott's work on Lepidoptera, evidently under the impression that seed cones were being figured. See *Trans. N.Z. Inst.*, 1891, p. 41.

In *Proc. Linn. Soc., N.S.W.* [2], viii, 165, Dr. T. P. Lucas describes a new lepidopterous insect (*Catoryctis nonolinea*) taken on this species at Brisbane.

Host for fungi.—In Victoria a number of fungi have been found on *Casuarina* of various undefined species. They are *Fomes ignarius* and *Hexagonia decipiens* on the trunks, *Trichopeziza Sphaerula* on the dead bark, *Dasyscypha eucalypti* on the leaves (?branchlets), and *Pestallozia casuarinæ* on the branches.

Reference to Plate.

1. Part of branch.
2. Spike of male flowers.
3. Female flower.
4. Ripe cones.
5. Fruit.



No. 24. (Podolepis acuminata, *R. Br.*)

No. 24.

Podolepis acuminata, R. Br.

Botanical name.—*Podolepis*, from two Greek words, *pous* (*podos*), a foot, and *lepis*, a scale, the involucral bracts being scaly in appearance, and having a comparatively long claw or foot; *acuminata*, a Latin adjective, denoting pointed or sharp (acuminate), in allusion to the shape of the bracts.

Botanical description.—(*Flora Australiensis*, vol. iii, 604.)

Stems from a perennial stock erect, 1 to 2 feet high, simple or corymbosely branched, glabrous or with a few scattered short hairs and sometimes a little deciduous wool about the base.

Radical and lower leaves petiolate, oblong, or lanceolate, often several inches long, the upper ones few, lanceolate, or linear, stem-clasping or rarely slightly decurrent.

Flower-heads large, yellow, pedunculate.

Involucre hemispherical, 1 to 1½ inch diameter, the scarious laminæ of the bracts acute or acuminate, smooth and not rugose, the inner ones on long linear claws.

Florets all longer than the involucre, those of the ray longer than the others, the limb ligulate or irregularly tubular, deeply 3 to 5-lobed.

Pappus-bristles numerous, white, shortly barbellate, united at the base.

It belongs to the natural order Compositæ.

It was figured in plate 956, vol. xxiv, of Curtis' *Botanical Magazine*, under the name of *Scalia jaceoides*, Sims.

Distribution.—Found in all the colonies except Western Australia, extending from the coast districts to the interior, and also occurring at high elevations.

Reference to Plate.

1. Involucral bracts.
2. Bisexual flower.
3. Female flower, with a ligulate corolla.
4. Achene, with capillary pappus bristles.
5. Flowers with tubular corollas.
6. Flower split open, showing stamens and style.

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(FOREST BRANCH),
NEW SOUTH WALES.

THE

FLOWERING PLANTS AND FERNS

OF

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BY

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ASSISTED BY W. S. CAMPBELL, F.L.S.

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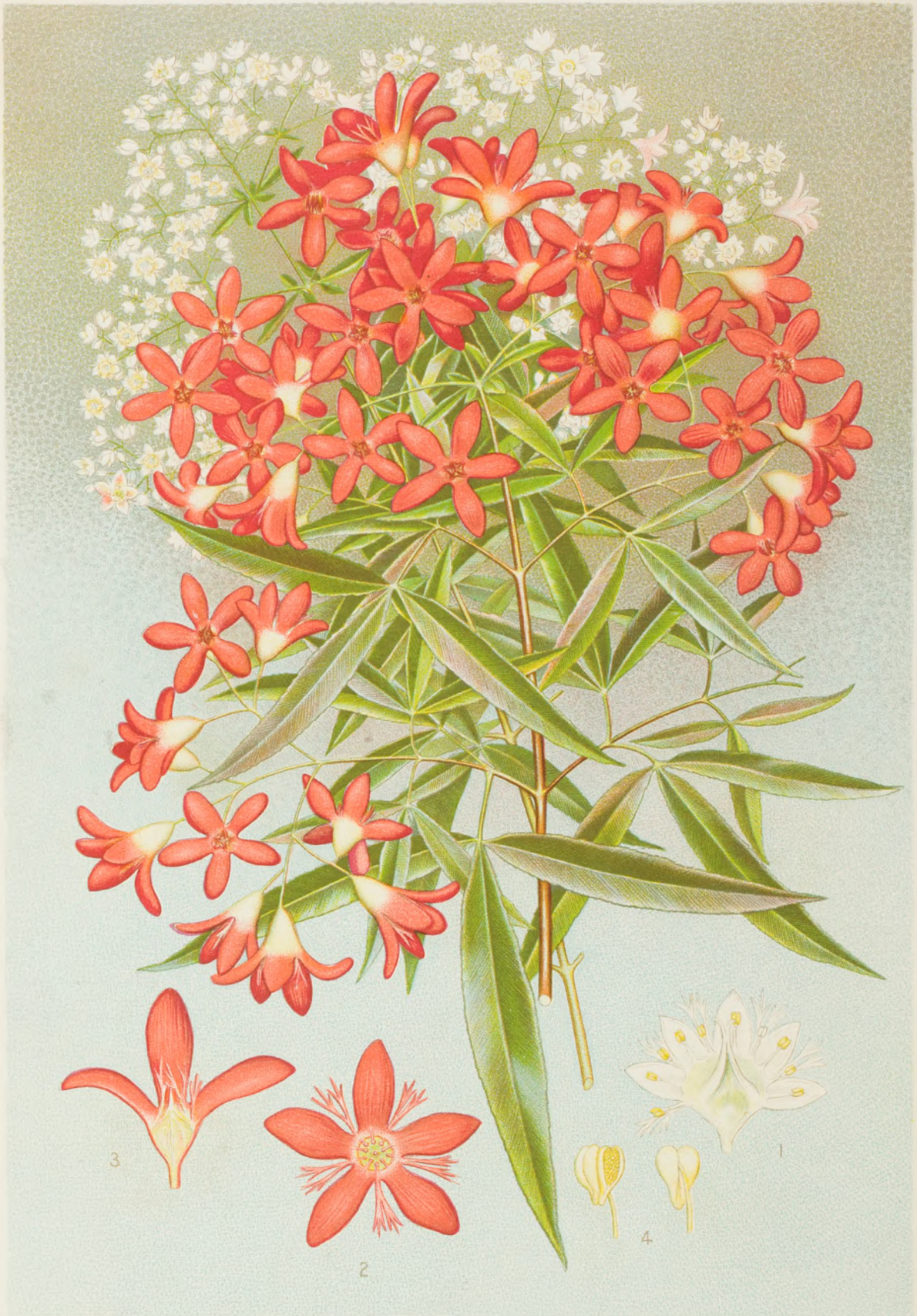


No. 25. THE CHRISTMAS BUSH (Ceratopetalum gummiferum, *Sm.*)

No. 25.

CHRISTMAS-BUSH.

Ceratopetalum gummiferum, Sm.

Vernacular Names.—This is known as "Christmas bush," for the reason that it is much in demand for decorative purposes about Christmas time. Because of the bright red appearance of its inflorescence (or, rather, the enlarged calyx) it was also known as Officer-plant. The late Sir William Macarthur stated that it was also known as "Lightwood."

Botanical Name.—*Ceratopetalum*, from two Greek words, *keras* a horn, and *petalon* a petal, the petals being jagged so as to represent a stag's horn. *Gummiferum*, Latin, gum-bearing. The name is not specially appropriate, but it is not inaccurate ; see "Exudation" below.

Botanical Description (B. Fl., ii, 442) :—A tree attaining 30 to 40 feet.—

A tree attaining 30 to 40 feet.

Leaflets 3, lanceolate, in some specimens all under 1½ inch long, in others mostly twice that size, obtuse or obtusely acuminate, obtusely serrulate, narrowed at the base, coriaceous, shining, penniveined, and strongly reticulate.

Cymes or panicles loosely trichotomous, the common peduncle shorter or longer than the leaves.

Calyx-lobes in flower scarcely above 1 line long, in fruit linear-oblong, fully ½ in. long.

Petals rather shorter than the calyx, deeply cut into three to five very narrow lobes.

Stamens as long as the calyx.

Fruit without the wings above 1½ lines diameter, the adnate calyx-tube strongly ribbed.

This plant belongs to the Saxifrageæ.

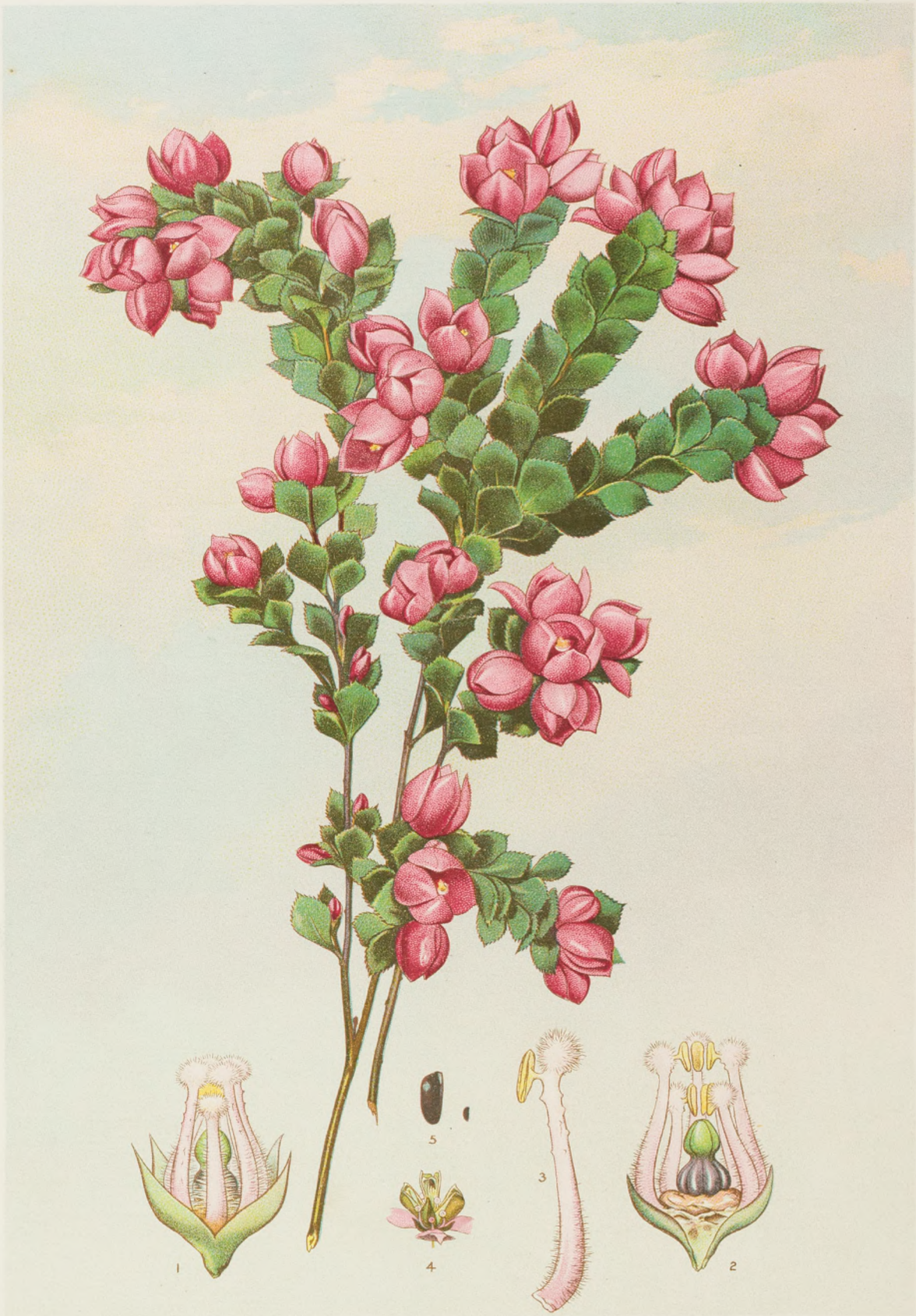
Exudation.—By well wounding the tree, or, better still, by felling a tree and cutting it into logs, there exudes a kino of exceptionally beautiful appearance. It is of a rich ruby colour, perfectly transparent, very tough, though when it has become thoroughly hard it breaks with a bright fracture. It is exceedingly astringent, sticks to the teeth, and obviously contains a large proportion of gummy matter.

Timber.—Fine grained, of a reddish colour, and used occasionally by turners. It is sometimes used for such articles as tool-handles, but never attains a large size.

Distribution.—Confined to the Colony of New South Wales, and at present recorded no further south than the Moruya River, and not north of the Richmond River. It is not confined to the coast districts but extends to the Dividing Range and its spurs. It often grows on the poorest sandstone country, but on better soil, in gullies, or in open forest country, it frequently attains a height of 50 feet and a trunk diameter of 18 inches.

Reference to Plate.

1. Vertical section of flower.
2. Horizontal section of flower (the stamens and pistils removed). (*a*) petals, (*b*) calyx-lobes.
3. Vertical section of ovarium, with enlarged calyx-lobes.
4. Stamens.



No. 26. NATIVE ROSE (Boronia serrulata, *Sm.*)

No. 26.

THE NATIVE ROSE.

Boronia serrulata, Sm.

Vernacular name.—It is called the Native Rose because of the colour* of the flowers. Their perfume is offensive to most people and reminds one of anything but the rose, although Curtis (under *Bot. Mag.* t. 1,763) speaking of this plant says "the *serrulata* seems to be a very ornamental plant, and is said to possess the scent of the rose." This is of course a mere guess. A fair drawing of this plant will be found in *Bot. Reg.* t. 842, under the name "Saw-leaved Boronia."

Botanical name.—*Boronia*, already described under *B. pinnata*; *serrulata*, Latin *serrula*, "a little saw." In botany it is a diminutive of *serrate* and signifies that the teeth of the margin of a leaf are small, as may be seen in the present figure.

Botanical description (B. Fl. i. 323).—A glabrous shrub.

Leaves crowded, simple, almost sessile, broadly ovate or rhomboidal, acute, rarely exceeding ½ in., serrulate, narrowed at the base, coriaceous and nerveless.

Flowers rather large, terminal, nearly sessile or very shortly pedicellate, several together in a leafy compact cyme or head or rarely solitary.

Sepals acute.

Petals two or three times as long as the sepals, attaining four lines, broad, imbricate, mucronate, glabrous.

Filaments more or less hairy, clavate-globular and hispid at the top, anthers minutely apiculate.

Ovary glabrous.

Style short, with a large globular 4-lobed stigma.

Seeds black and shining.

This plant belongs to the Rutaceæ.

Leaves.—If one holds this plant up to the light it will be observed that the leaves are plentifully besprinkled with oil-dots, a characteristic of the natural order (Rutaceæ) to which it belongs. It is the setting free of this oil which gives the plant its unpleasant odour.

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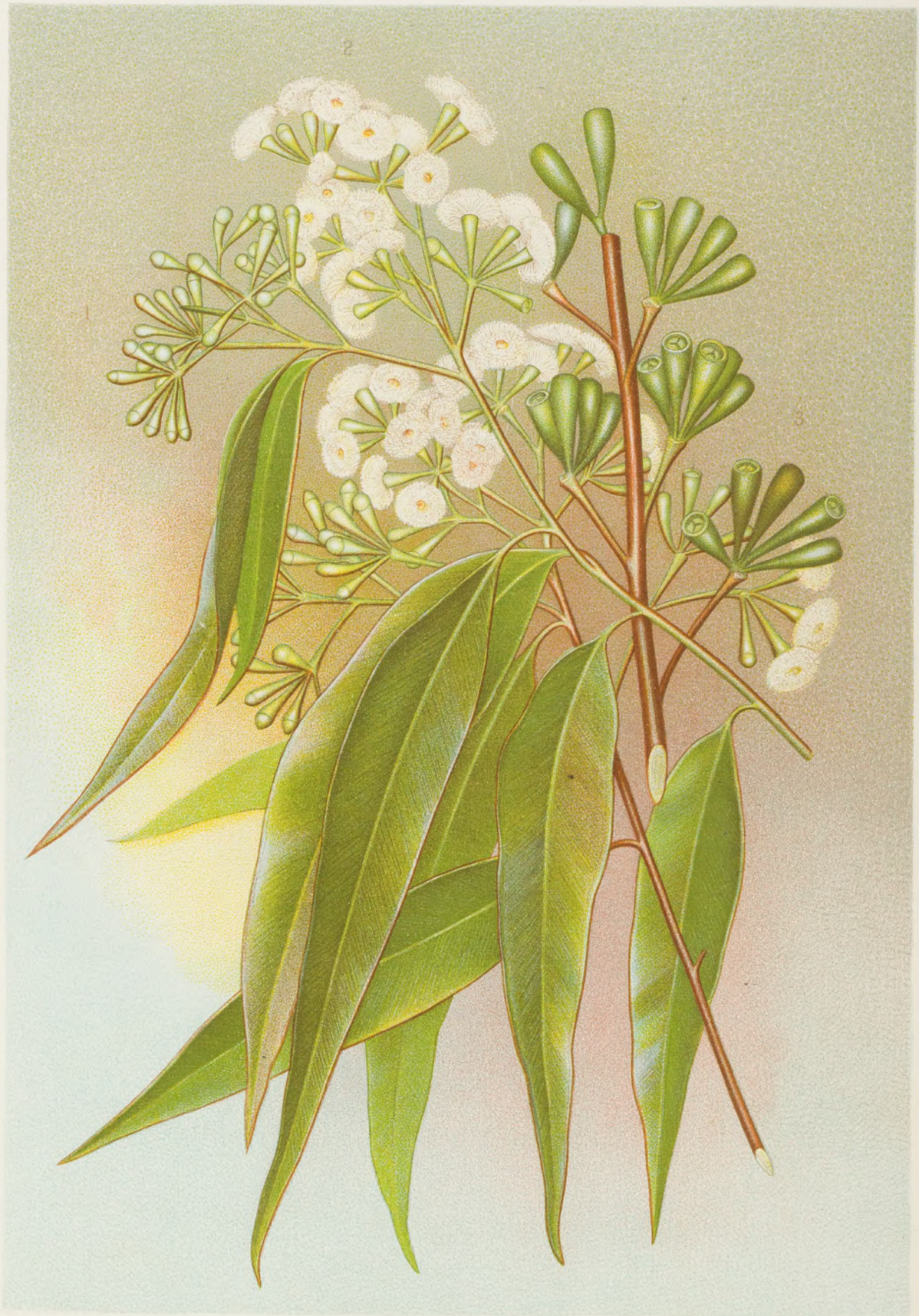
* An albino flower is occasionally observed.

Distribution.—The Native Rose is mainly confined to the Port Jackson district, being found in greatest abundance within 20 miles north and south of Sydney. Baron von Mueller, however, makes the statement (*Proc. Linn. Soc., N.S.W.* [2]., V. 16) that it has been found at Wagga Wagga, over 300 miles to the South. Personally I have never recorded it more than 30 miles to the south, and I should much doubt the Wagga Wagga locality were it not recorded by the Baron. Its northernmost recorded locality appears to be the Gosford district.

Insect Enemies.—Mr. Froggatt states that the fine longicorn beetle, *Uracanthus triangularis*, in the larval state feeds on the stem of *Boronia* in the same way that he has recorded it as occurring on *Eriostemon lanceolatus*. There is also a small, undetermined Gall-wasp that forms small, egg-shaped, pink galls on the small twigs of the Native Rose.

Reference to Plate.

a. Flower, petals removed showing calyx and stamens.
b. Flower, part of calyx, petals and three stamens removed ; showing ovarium and style.
c. Stamen.
d. Ripe carpels.
e. Seed.



No. 27. THE TALLOW WOOD (Eucalyptus microcorys, *F. v. M.*)

No. 27.

THE TALLOW-WOOD.

Eucalyptus microcorys, F.v.M.

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 ballroom 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."

Botanical name.—The name *Eucalyptus* has been already explained. *Microcorys* is made up of two Greek words signifying "a little helmet," and is in allusion to the comparative smallness of the cap (*operculum*) of the flower.

Botanical description (B. Fl., iii, 212).—A tall tree with a persistent furrowed fibrous bark.

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, ½ 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.

Leaves.—The fresh leaves of the Tallow-wood yield 1·960 per cent. of an essential oil of an acid reaction, and a specific gravity of ·896 (*Staiger*). Other figures give 375 oz. to the ton of leaves, which is 1·046 per cent.

Schimmel & Co., of Leipzig, in their October, 1893, *Bericht*, give the specific gravity of this oil at 15° C., at as high as ·935, and give its boiling point at between 160° and 200°. They further state that it contains Cineol (*Eucalyptol*).

The oil is stated to have a not very agreeable odour, but it probably might be found useful in varnish-making. I hardly know, at present, how to reconcile the above statement with the following:—

"The oil of *E. Baileyana* and those of *E. microcorys* and *E. 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 ($C_{10}H_6O$), 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., of Leipzig in Pharm. Journ.* [3] *xviii*, 907.

As regards the oil of *E. citriodora*, I may mention that its composition has since been determined.

The Tallow-wood would appear to be a tree worthy of examination for its essential oil.

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 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.

Bark.—The bark (often of a "corrugated" appearance) is subfibrous, 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.

Timber.—Tallow-wood is one of the most valuable timbers the Colony produces. It is strong and durable under or above ground. 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. It is excellent for the decking of bridges, for wood-paving, for posts, palings, turned work, &c., &c. It would not be possible to enumerate all the uses to which this valuable timber is put in New South Wales and Queensland.

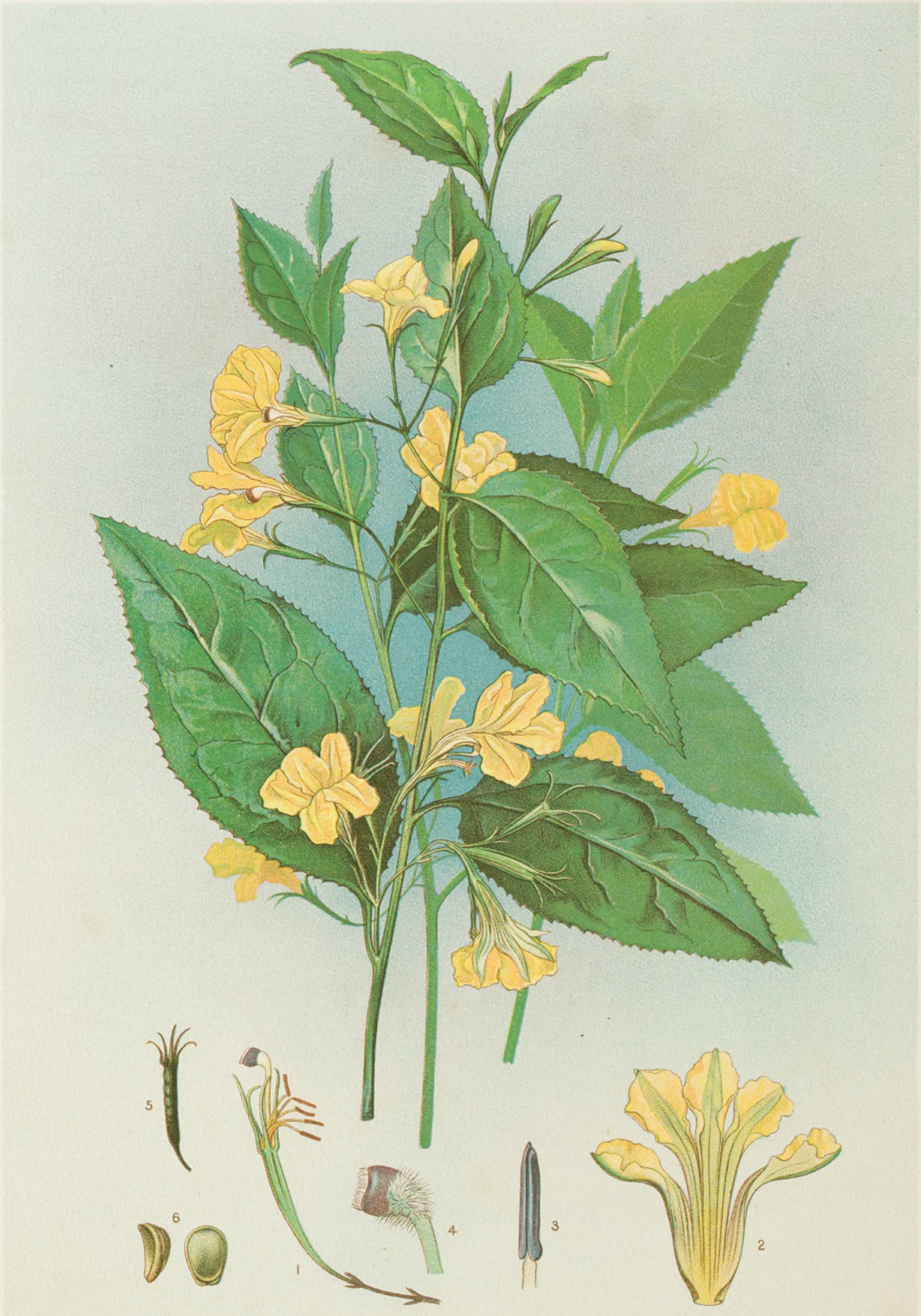
Distribution.—It is confined to New South Wales and Queensland. Its most southerly locality is an area of about 4,000 acres in the neighbourhood of Cooranbong (between Gosford and Newcastle). No Tallow-wood localities are recorded until Port Stephens is reached, and then the timber occurs more or less along the coast and coastal ranges up to South Queensland. It does not usually extend more than 20 or 30 miles inland.

For a detailed statement of the various districts in the Colony in which Tallow-wood occurs, see an article by one of us in the *Agricultural Gazette* for May, 1894, where other particulars are given which would unduly enlarge the account of the tree on the present occasion.

Insect Enemies.—Mr. Froggatt states that he knows of no beetles and other insects that attack this tree other than the different longicorns and moths that attack Eucalyptus timbers in general.

Reference to Plate.

1. Flower-buds showing operculum.
2. Flowers
3. Fruits.



No. 28. Goodenia ovata, *Sm.*

No. 28.

Goodenia ovata, Sm.

Botanical name.—*Goodenia* was named by Sir J. E. Smith in honour of Dr. Goodenough, Bishop of Carlisle; *ovata*, ovate (egg-shaped) in allusion to the shape of the leaves. At the same time the leaves are sometimes so elongated as to be lanceolate (plants from New England, for example).

Botanical description (B. Fl. iv. 59).—An erect, glabrous, often somewhat viscid shrub or undershrub of 2 to 5 feet, and more.

Leaves petiolate, from ovate to broadly lanceolate, or the lower one sometimes almost orbicular-cordate, denticulate, 1 to 2 inches long.
Peduncles axillary, often two together or forked near the base, slender and often several-flowered, but rarely exceeding the leaves.
Bracteoles very small, at a distance from the flower.
Calyx-tube linear, lobes subulate.
Corolla yellow, glabrous outside, about ½ in. long, the upper lobes deeply separate.
Dissepiment reaching high up in the ovary.
Indusium strongly ciliate.
Capsule narrow, 4 to 6 lines long, slightly tapering at the base.
Seeds flat, almost in a single row in each cell.

This plant belongs to the Goodeniaceæ.

Flowers.—The fertilisation of the flowers of this plant is very interesting. I would invite attention to Mr. E. Haviland's paper, "Occasional Notes on Plants indigenous in the immediate neighbourhood of Sydney," No. 7. (*Proc. Linn. Soc., N.S.W.*, ix, 449.) At pp. 450–2 he gives a full account of the structure and fertilisation of the flower of *G. ovata*, which is too lengthy for reproduction here.

Mr. A. G. Hamilton (*Proc. Linn. Soc., N.S.W.*, x, 157) has a paper "On the fertilisation of *Goodenia hederacea*." In this paper he annotates some observations of Mr. Haviland in regard to the fertilisation of *G. ovata*. This results in an interesting reply by Mr. Haviland, "Some remarks on the fertilisation of the genus *Goodenia*" (*op. cit.*, p. 237), and I heartily commend young students desirous of working at the most fascinating study of plant-fertilisation to carefully read these three papers, repeating the observations with the plants so readily available.

The Goodeniaceæ are remarkable for the possession of a somewhat cup-shaped dilatation, called the *indusium*, at the top of the style, and enclosing the stigma. On the plate (at *d*) the indusium is only shown in profile, but it is readily observed in any species of *Goodenia*.

Histology.—I desire, at this place, to invite attention to an important paper by J. Vesque, "Note sur l'anatomie du *Goodenia ovata*" (Ann. des sc. nat. 6e. série. t. iii, p. 312). This paper deals also with other species of *Goodenia*, and has a figure depicting the anatomy of the stem of *Goodenia ovata*.

Exudation.—The leaves are very glossy and exude a considerable quantity of resin, which renders the plant quite sticky. So far as I know, the nature of this resin has not been inquired into, and it promises to furnish an interesting investigation for any chemist willing to inquire into the matter. I believe that no resin belonging to the Goodeniaceæ has hitherto been described.

Mr. Turner records (*Proc. Linn. Soc. N.S.W.* [2], x, 341) that a decoction of this plant has been used as an amateur remedy in two cases of hydatids.

Distribution.—*Goodenia ovata* is found in all the colonies except Western Australia. In our own colony it is found throughout the greater part of the Eastern (coast and mountain range) Division. It attains its greatest luxuriance on the slopes of deep sandstone gullies, where, in a fair amount of soil, it attains a height of 5 or 6 feet, forming a handsome shrub, ablaze with flowers during the month of October.

Insect Enemies.—In *Proc. Linn. Soc. N.S.W.* [2], viii, 534, Mr. Froggatt records the interesting find of the "Egyptian Mealy-bug" (*Icerya ægyptiacum*) on *Goodenia ovata*, this being the first time that this coccid had been found in Australia. It was found at Penshurst, near Sydney. A few months previously it had been found in Madras, never having been previously found out of Egypt, and how it got to Australia is a mystery. I have observed large egg-shaped swellings (galls) on the stems of this species.

Reference to Plate.

a. Flower, corolla removed, showing the inferior ovarium, the calyx-lobes, stamens, and style.
b. Corolla.
c. Anthers with upper part of filament.
d. Upper part of style showing indusium.
e. Ripe fruit.
f. Seeds.

Sydney: William Applegate Gullick, Government Printer.—1898.