

# OBSERVATIONS ON THE EUCALYPTS OF NEW SOUTH WALES.

## PART VIII.

BY HENRY DEANE, M.A., F.L.S., &c., AND J. H. MAIDEN,  
F.L.S., &c.

*E. STELLULATA*, Sieb.; these Proceedings, 1895, p. 598.

In the highest parts of the Blue Mountains the variety *angustifolia* has the fruits sometimes in dense globular umbels.

*E. CORIACEA*, A. Cunn ; these Proceedings, 1895, p. 598.

Top of Mt. Tabletop, Kiandra district (E. Betcher; February, 1897). The fruits are of unusual form, being nearly hemispherical, and compressed after the fashion of *E. capitellata*, Sm. A tendency to fruits of a similar shape is shown in specimens from other elevated localities in Southern New South Wales.

*E. DIVES*, Schauer.

This is a strong species; at the same time a certain amount of variation is evident when a large series of specimens is examined. Thus the foliage may be both dull and glaucous, the fruits very shiny or very dull; they may be domed and may have the valves slightly exserted, and be more or less pear-shaped. Fruits of this sort undoubtedly show affinity to the pyriform-fruited series of *E. fastigata*.

Mr. A. Murphy, an experienced collector, says that in the Bathurst district, he distinguishes this species from *E. piperita* by the yellowish upper limbs, those of *piperita* being white.



*E. FASTIGATA*, Deane & Maiden.

*E. vitrea*, Baker, is, in our opinion, a form of the above species. The type of *E. fastigata* as figured (these Proceedings, 1896, p. 809), has smaller fruits and the valves somewhat exserted, but the size of the fruits and the amount (or absence) of exsertion varies a good deal. We have specimens from the type locality of *E. fastigata* which precisely match *E. vitrea*. So do the specimens of "Cut Tail" (W. Bäuerlen; Delegate River, May, 1889); while most of the trees from, say, Goulburn to Moss Vale and across to the Western Line about Mount Victoria are of the form figured and described by Mr. Baker. We have from Jenolan Caves a form even more aberrant than that Mr. Baker describes. It would be readily taken for a narrow-leaved form of *E. coriacea* from herbarium specimens alone. Beyond the Blue Mountains the trees of *E. fastigata* more closely approximate to the type, and are sometimes of enormous size.

*Pyriform series*.—The type of *E. fastigata* has fruits somewhat pyriform, but some trees have this character accentuated. We can, however, scarcely call this a variety. The rims of the fruits may be slightly sunk, horizontal, or even domed, with the valves slightly protruding. The red mouth or rim shows resemblance to *E. hæmastoma*. We have what we may term small pyriform fruits. Our specimens all come from northern parts of the Colony, e.g., Upper Williams River, Cobark and the Gloucester district generally. See figs. 5 and 6, pl. lvii. of these Proceedings, 1895, under *E. amygdalina*, var. (*E. dives*). Fruits of a "Peppermint" from The Valley, near Springwood, Blue Mountains, collected by us in April, 1888, are pyriform of intermediate size.

Following have large pyriform fruits :—

(a). Wingello (J. L. Boorman; November, 1899). Collector's note.—"Bark rough, soft, from base up to tips of branches, grey in colour. Leaves not so large as those of *E. Sieberiana*, and the bark differing both in texture and colour. The wood soft, ringy and generally inferior. Known locally as 'Messmate.'"



(b). "Peppermint" or "White Mahogany." Burriel, near Milton; also Pigeon-house Mountain to within 100 feet of top (R. H. Cambage; December, 1899). Has grey, rough bark.

(c). Top of Penang Ranges, 8 miles from Gosford (A. Murphy; February, 1900). Very like a Peppermint in appearance, only the bark is not so stringy,—more flaky. White, smooth limbs.

Nos. (b) and (c) were referred to provisionally as *E. stricta*, var., in these Proceedings, 1900, p. 109.

We take this opportunity of pointing out the considerable amount of variation that occurs in Eucalypts of the Series *Renantheræ*. Thus *E. delegatensis*, Baker, and *E. vitrea*, Baker, possess affinities, on the one hand, with *E. obliqua* and *E. Sieberiana*, while on the other hand they show affinity with what may be termed the Peppermint group, consisting of *E. fastigata*, Deane & Maiden, *E. regnans*, F.v.M., *E. amygdalina*, Labill., and *E. dives*, Schauer, which are connected in a number of ways.

#### *E. OBLIQUA*, L'Hérit.

Head of the Gwydir, Leichhardt, 1843. In leaf only, but there is no doubt as to the identity of the plant.

*E. VIRGATA*, Sieb., var. *ALTIOR*, Deane & Maiden.

*E. oreades*, Baker (these Proceedings, 1900, p. 596), is this variety. Precisely the same form occurs in Tasmania and Victoria. At an elevation of about 1,000 feet in Tasmania it commonly occurs with bark smooth from the base and with all degrees of fibrous bark. In *E. oreades*, Baker, the fruits are immature, and those from Victoria and Tasmania pass through a precisely similar stage.

*E. MUELLERIANA*, Howitt; these Proceedings, 1898, figs. 9-11 of Pl. xxx., under *E. pilularis*; 1899, p. 460.

We have already stated our opinion that *E. dextropinea*, Baker, is this species. We find that *E. laevopinea*, Baker (these Proceedings, 1898, p. 414), is specifically identical with *E. dextropinea*, and consequently with *E. Muelleriana*.



Mr. Jesse Gregson has sent us the species from Warrah, Great Northern Line. It also occurs in the Tenterfield district, Great Dividing Range, and we have now traced it in different localities from the Queensland to the Victorian border. How far west it occurs is a matter for enquiry. It is the *E. pilularis*, with "rims rather broad," of Bentham, and has commonly been confused with that species.

We have received from Mr. A. H. S. Lucas a "Stringybark" from the Kanimbla Valley, March, 1900. It has fruits smaller than those of the type.

*E. Muelleriana* extends into north-western Victoria. We have received from Mr. J. G. Luehmann two specimens from the Wimmera which were formerly referred to *E. capitellata*.

#### E. HÆMASTOMA, Sm.

We draw attention to a shrubby form of this species, only 2-3 feet high as seen, from Mount Victoria. The fruits are in heads (it is worthy of note that other species, *e.g.*, *eugenioides*, *stellulata*, tend to assume capitate-fruited forms in cold mountain localities), and undoubtedly a very extreme form of var. *micrantha*, and we propose for it the name var. *montana*.

#### E. SIEBERIANA, F.v.M.

Trees called (*inter alia*) "Gum-topped Stringybark," from Lake Sorell, Tasmania, Mount St. Bernard and other alpine localities in Victoria, the Mount Kosciusko Range in New South Wales, "Messmate," at Mount Baw Baw, Victoria, and widely distributed in alpine situations in the three colonies, were in years gone by labelled by Mueller *E. obliqua* and finally *E. Sieberiana*. One of us recognised the tree without hesitation, in the field, as *E. Sieberiana* (Victorian Naturalist, 1900, p. 46, vol. xvii.), and there is no doubt as to the correctness of this view, in our opinion. The tree has recently been described in these Proceedings (1900, p. 305) by Mr. R. T. Baker as *E. delegatensis*, which we think regrettable. Examination of *E. Sieberiana* in the field over large areas



shows how variable this species is as regards its bark, glaucousness of its fruit and foliage, shape of its fruit, and thinness and oil-content of its leaves.

E. FASCICULOSA, F.v.M.

This is, in our opinion, *E. intertexta*, Baker (these Proceedings, 1900, p. 308).

E. BOSISTOANA, F.v.M.; these Proceedings, 1900, p. 112.

It is worthy of note that the immature fruits of this species have a marked outer rim such as is a prominent character in *E. melliodora*.

E. CORDATA, Labill.

Rockley Road, near Bathurst (R. H. Cambage; February, 1900).

This species is new for the Colony, having hitherto been only recorded from Tasmania. The leaves of *E. cordata* are more coriaceous and less acute than those of *E. pulverulenta* of similar age.

E. LONGIFOLIA, Link & Otto.

Raymond Terrace, north of the Hunter River (Augustus Rudder). This is the most northerly locality known to us.

E. GONIOCALYX, F.v.M.

Tia, New England (W. Forsyth; October, 1900).

This is the first northern locality recorded for this species.

E. QUADRANGULATA, Deane & Maiden; these Proceedings, 1900, p. 110.

"White Box," Bundanoon (J. L. Boorman; June, 1900). "Exceedingly tall trees growing in the gorge around this district to the depth of from 800-1,000 feet from the level of the surrounding country; 80-100 feet high, stems 3-4 feet in diameter; bark grey, suberous, slightly ribbony at tips of branches; the sap-wood yellow, centre red, darkening with age, interlocked in grain;



fruits tubular, valves decidedly valvate, arranged (mostly) in threes; suckers glaucous, stems round, slightly angled. Used largely for sleepers " (Collector's note).

E. RESINIFERA, Sm.

A.—*Normal or small-fruited form.*

We have this form as far south as Conjola, near Milton. It is not rare in the Sydney district, *e.g.*, Hunter's Hill, Eastwood, Hornsby, Blaxland, Homebush, Cabramatta, Bankstown, Cook's River. It was much more plentiful in this district at one time, but it has been largely cut out, since it yields one of the most valuable of our timbers. Westerly it is less developed; it occurs at least as far as Springwood, Blue Mountains (form with sessile flowers). It attains its best development in the North Coast district, and it is more or less plentiful from Port Jackson to Queensland.

From the Bargo River, Picton district, we have specimens with very narrow leaves. From Cabramatta, and thence northerly to Bulladeelah, and thence to the Tweed, we have a rather common form with a very long subulate operculum, longer even than that of *E. tereticornis*, except in its extreme forms. This form we observe at Maroochie in Queensland.

From near Thirlmere we have a form with fruits of medium size, hemispherical, and the valves but little exerted. We have a smaller-fruited form, hemispherical, and the valves even less exerted, from Auburn and Oatley, both in the Sydney district, south of Port Jackson.

Specimens from Cabramatta show the broadening rim as large in comparison, considering the size of the fruit, as it is in some of the *grandiflora* forms. All these differences amount to but little, for the small-fruited form of *E. resinifera* is really very constant.

B.—*Large-fruited forms.*

Much more variation is undoubtedly presented by *E. resinifera* in its large-fruited than in its small-fruited forms.



1.—Var. *grandiflora*, Benth., B.Fl. iii. 246.

This variety includes *E. pellita*, F.v.M., and *E. spectabilis*, F.v.M., and a series of closely allied forms bearing very near affinity to *E. resinifera*. They are all known as Mahogany, and have the wood and bark of *E. resinifera*. Some of the forms are described with a little detail:—

(a) Buds ovoid to a “long beak and gradually tapering” (all connecting forms). Fruit about 7 lines in diameter, with rather broad, raised rim and exserted valves.

This is the typical var. *grandiflora* referred to by Bentham, who points out its probable affinity to *E. pellita*, F.v.M.; and Baron von Mueller has (Eucalyptographia) himself merged *E. pellita* in *E. resinifera*.

Besides Manly (the B.Fl. locality for this variety), it occurs as far south as Conjola, near Milton (W. Heron), and Currawang Creek (W. Bäuerlen), which are the most southerly localities hitherto recorded, while Springwood, Blue Mountains (J. H. Camfield), with narrower rim and valves less exserted, is the most westerly locality known to us.

(b) Buds not seen. Very broad rim round fruit. Fruits very large (10 lines diam.). Ordinary “Forest Mahogany” bark and timber. “Mountain Mahogany” (Olney, F. R.), Cooranbong; also Wyong.

Clarendon Stuart’s No. 486, Timbarra, near Tenterfield, has a fruit precisely similar to the preceding, though smaller. It bears Mueller’s MS. name “*E. resinifera*, Sm., var. *brachycorys*.”

2.—Var. *Kirtoniana*, var. nov.

(Syn. *E. Kirtoniana*, F.v.M., in Eucalyptographia, Arts. *E. resinifera* and *E. robusta*; *E. patentinervis*, R. T. Baker, these Proceedings, 1899, p. 602).

Buds all with a long beak and gradually tapering. Fruits about 5 lines diameter. Valves usually *very* exserted. Tendency to conical (when dry), but also subcylindrical. Tendency to twinning in the fruits. Rather narrow rim.



Illawarra (Kirton); Concord, Parramatta River (Rev. Dr. Woolls); Cooranbong (J. Martin); Bungwall (A. Rudder); Port Macquarie (G. R. Brown); Ballina (W. Bäuerlen).

In 1879 Mueller wrote of this tree as follows ("Eucalyptographia," under *E. resinifera*):—

"In the Illawarra district occurs a tree which attracted great attention in India\* . . . It was there considered to belong to *E. resinifera*. It differs, however, from that species in having the leaves of equal colour on both sides with more prominent veins, the intramarginal veins more distant from the edge; thus in venation, as also in odour of foliage and fruit, the tree in question approaches *E. robusta*, but its fruit is certainly similar to that of *E. resinifera*, wanting, however, the broadish outer ring around its orifice, characteristic of the typical *E. resinifera*, while the lateral veins of the leaves are not quite so transversely spreading as in either. If really specifically distinct, the tree might be named *E. Kirtoniana* in honour of its discoverer."

In 1889 the late Rev. Dr. Woolls first drew our attention to this plant,—a fine tree growing at Concord, near the Parramatta River. He looked upon it as a possible hybrid between *E. resinifera* and *E. robusta*. The fruits are sub-cylindrical and the valves not much exerted even when quite ripe, the likeness to those of *E. robusta* being thus evident. Its bark is harder than that of normal *resinifera*, and the venation precisely that of *E. Kirtoniana* and *patentinervis*.

In 1893 Mr. W. Bäuerlen, then, as now, collector to the Technological Museum, specially brought the same form from Ballina under the notice of one of us on several occasions. We investigated the plant, made full notes in regard to it, and then, as now, considered it a form of *E. resinifera*. Mr. R. T. Baker takes a different view, and figures and describes the plant under the name of *E. patentinervis* (these Proceedings, 1899, p. 602).

Mr. Bäuerlen drew attention to the fact that the Eucalypt in question did not agree with the figure of *E. resinifera*, Sm., of

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\* It is also cultivated in South Australia.



the "Eucalyptographia," particularly in the venation and in the anthers. Of the venation we will speak presently; the idea that the anthers are dissimilar is founded on a misapprehension. He said, "In every respect I think it approaches nearer to *E. rudis*,"—a view, we observe, which is to some extent adopted by Mr. Baker. We consider this suggested affinity to *E. rudis* ingenious, but unnecessary. Mr. Bäuerlen also drew attention to the fact that the oil-dots in his specimen are not "largely pellucid." Our notes, however, made when the leaves were quite fresh, state "oil-dots very copious, translucent;" the matter is of secondary importance. We have a note in regard to Mr. Bäuerlen's specimen, "timber and bark agree well with *E. resinifera*." This tree came from a dry sandy hill near the sea-shore, an unusual situation for the species; it is not a matter for surprise that it is aberrant.

The fruit-rim, while often flat, is not always so, being sometimes domed, connecting it, in this respect, with other forms of *E. resinifera*.

Mr. Bäuerlen's principal point was in regard to the venation of the leaves, and his specimens certainly do differ in this respect from those of some specimens of *E. resinifera*. But on looking at the matter a little closer, we find that this point has already been brought under notice by Mueller in regard to *E. Kirtoniana*. Then, again, it is a mistake to suppose that the fine transverse veining we are accustomed to look for in *E. resinifera* is an invariable characteristic of that species. In leaves of the following, for example, the venation is not in any way different from the so-called *Kirtoniana* or *patentinervis*:—

1. *E. resinifera*, Cabramatta.
2. A very small-fruited *resinifera* from Auburn, near Parramatta.
3. A specimen of *E. resinifera*, No. 10, from the Port Stephens district (A. Rudder).
4. A large-fruited *E. resinifera* from Springwood.

Leaves of these specimens absolutely match the *tereticornis*-like venation of the variety now under review, or connect it with



that of normal *resinifera*. The transition is as absolute in regard to venation as it is in regard to fruits or opercula. The long operculum of the variety is equalled and even exceeded by some specimens belonging to normal *resinifera*. The specimens from the Richmond to the Hawkesbury are absolutely identical, the Illawarra and Parramatta River specimens exhibiting a little difference from Mr. Baker's figure, as already indicated.

The fruits of this variety occasionally show twinning, which is unusual in Eucalypts. We have specimens from normal *resinifera* from the Sydney district which also show twinning, and in shape are simply reduced models of those in Mr. Baker's figure.

Mr. Rudder's Bungwall specimens were sent to one of us in 1894, and our re-examination of the plant, and correspondence with Mr. Rudder at the time, convinced us that it could not be separated from *E. resinifera*. The Rev. Dr. Woolls labelled similar specimens from Mr. Rudder *E. resinifera*, var. These specimens from Mr. Rudder and Mr. Bäuerlen's Ballina specimens are Mr. Baker's types of *E. patentinervis*.

*E. PUNCTATA*, DC.; these Proceedings, 1900, p. 113.

We offer some notes on this species, which is undoubtedly very close to *E. resinifera*

1.—*Normal or small-fruited form.*

This is one of the species on which one does not often observe young suckers. The leaves are ovate and the stems quadrangular in the young state.

Following are some notes on *E. punctata*, but although we have endeavoured to classify them into three forms for convenience there is no real difference between them, as they are all easily run into each other:—

(a). Operculum intermediate between blunt form and the typical *resinifera*. Fruits hemispherical to sub-cylindrical, diameter 3 or 4 lines; valves exserted. Rim between calyx and operculum often forming a sharply defined edge.



South as far as Goulburn district; north to the Richmond River; west as far as Jenolan Caves, Capertee, and Rylstone. In the northern forms the rim is often flatter, *i.e.*, less domed; near Mittagong the valves are unusually well exserted, but there does not appear to be much variation.

This form (except perhaps as regards the fruits, whose valves are quite exserted) is figured by Baron von Mueller in the *Eucalyptographia*, and it is very near the type, although it differs from De Candolle's original description in the following points, not perhaps of much importance (*note*, fruits not described):—

(a). Lid of calyx *not* longer than the cupula.

We have a small specimen of Sieber's No. 623 (on which DC.'s description was based) before us. As a rule the lid of the calyx is a little longer than the cupula (calyx-tube), but not much, and it varies. It is a small form of *E. punctata*.

(b). Nerve (*e.g.*, in the Wallsend specimens) sometimes quite marginal.

(2). Blunt, nearly hemispherical operculum, and largish fruits. Very thick, leathery leaves.

Manly Beach (Swamps). In these specimens the valves are not much exserted. We have precisely similar specimens, except that the operculum is very pointed, from the Woniora River.

(3). Sub-cylindrical fruits, drying green (?). Valves scarcely exserted. Rather long, conical operculum. Cook's River.

The fruits are precisely those figured for *punctata* in the *Eucalyptographia*, except that the tops of those in the figure are hardly so convex, and the valves should be shown more convex. The fruits figured are not ripe.

Our specimens referred to above satisfy De Candolle's description excellently, except in one little point—the operculum *is* a little constricted in buds fully ripe. Perhaps the original description was penned from buds less far advanced.



2.—*Large-fruited forms.*

*E. punctata*, DC., var. *grandiflora*, var. nov.

Leaves punctate. Buds all ovoid. Double operculum. Rim at junction of calyx and operculum very sharp. Calyx-tube usually angled. Fruits 7 to 8 lines in diameter; valves usually not much exerted.

We have an intermediate form (from Wyee) with valves well exerted.

Shape hemispherical, or nearly so, to conoid. Rather broad rim. Bark and timber not to be distinguished from that of normal *punctata*.

This large-fruited form is well marked, and well worthy of being a named variety. As in *resinifera*, so in *punctata*, there is no line of demarcation between the normal and *grandiflora* forms, the transition being gradual.

Comparing this with the normal or small-fruited form, Mr. Augustus Rudder, a forester of considerable experience, writes in the *Agricultural Gazette*:—"This is one of two trees with the same vernacular (Grey Gum). In general appearance, to the casual observer, the trees are much alike, but the leaves of this are rather broader, and its fruits and blossoms are very much larger than those of the other variety, and the trees generally are not so large, and are more limited in range of habitat, and, as a rule, do not approach so near to the coast, though I have seen it at Raymond Terrace, and near the beach at Charlotte Bay and Wallis Lake in this district; the two trees often grow together. I have mostly observed it on the lower ranges in the counties of Gloucester and Durham. The timber is red in colour, is hard, and very lasting, and is well suited in the round, for heavy timbers in bridges and culverts."

We have collected it within the range stated. Hitherto this form has only been found north of Port Jackson.

This tree has been frequently confused with the *grandiflora* form of *E. resinifera*, where herbarium specimens only are available; in the forest the two trees could not be confused for a



moment, their bark immediately distinguishing them. The smooth bark often of a yellow ochre or pale brown colour; hence might be called "Brown-barked Gum." It is known in the Mudgee district as "Slaty Gum," as well as "Black Box," both descriptive names for certain trees.. The buds also are very different, those of the variety of *punctata* being ovoid,\* and the rim very sharp, with frequently a double operculum, those of the variety of *resinifera* being conical and even rostrate.

The fruits of the variety of *resinifera* have the valves more exserted, and they sometimes have a tendency to be conical.

E. TERMINALIS, F.v.M.

Warialda (H. Deane; May, 1900). The most easterly locality in the colony from which we have obtained this species. Fruits very large.

E. GUNNII, Hook. f.; these Proceedings, 1889, p. 464.

We will allude at length to this species in our remarks under *E. viminalis*. We add some notes on *E. Gunnii*.

Hooker, the author of the species, speaks of it (Fl. Tas.) as "a very common, but singularly variable small tree." No species of *Eucalyptus* known to us is more variable; we will endeavour to make clear some of the various forms it assumes.

Considerable confusion has arisen in regard to *E. Gunnii* and *E. Stuartiana* in early sendings from Australia and Tasmania, as some forms in bud only are extremely difficult to discriminate.

The confusion has even extended to *viminalis* (see remarks on p. 137 a).

There need be no further necessity for confusion if the synonymy given in this paper (the outcome, in part, of personal examinations of the Melbourne and principal European herbaria) be noted.

We would invite attention to a tree, "Hickory" (Lockhart Morton), from Twofold Bay. "One of the largest trees of these

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\* The bud reminds one of an egg in an egg-cup.



parts" is *E. Gunnii*. Bentham's label is *E. viminalis*, var., and it has been variously labelled by eminent botanists *viminalis*, *saligna*, *Gunnii*, and *Stuartiana*, an excellent commentary on the difficulty of dealing with some species of *Eucalyptus* when only imperfect material (as in this case) is available.

Broad suckers, usually (perhaps always) more or less glaucous. In dried specimens this glaucous appearance often disappears.

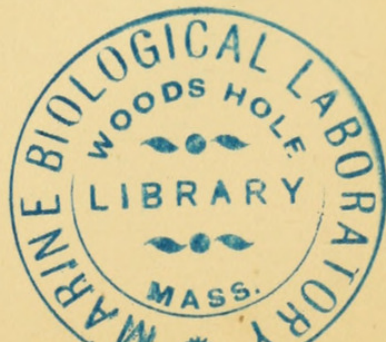
*E. Gunnii* is one of the most widely diffused species. It is very abundant in Tasmania, Victoria and New South Wales, and by no means rare in South Australia and Queensland, though we cannot yet state to what extent it is diffused in those two colonies. The "Yellow Gum" of St. Vincent's Gulf, South Australia, we believe to be a form of *E. Gunnii*. In our own colony, amongst other localities, it is common at Mount Victoria, is widely diffused in New England, the buds being often ovoid, often very multi-flowered, and the venation very marked. We have specimens collected on the Gwydir by Leichhardt, with very broad leaves, and Mrs. Hodgkinson (Herb. Melb.) collected it on the Richmond River.

In our opinion the species includes the following more or less marked varieties:—

1. Var. *glauca* (syn. *E. Perriniana*, F.v.M.).
  2. Var. *acervula* (syn. *E. acervula*, Miq.; *E. paludosa*, Baker).
  3. Var. *ovata* (syn. *E. ovata*, Labill. partly; *E. camphora*, Baker).
- There may be other forms of the species.

*E. GUNNII*, Hook. f., var. *GLAUCA*, Deane & Maiden; these Proceedings, 1899, p. 464.

This is identical with *E. Perriniana*, F.v.M., which is really a "very luxuriant young growth of *E. Gunnii* that maintains the juvenile foliage till many (12-15) feet high, bearing flowers in the upper axils; from this the leaves become alternate and all members typically *E. Gunnii*. It is most interesting that in the young state it is indistinguishable from *E. pulverulenta*" (Rodway). *E. Perriniana* was named from Tasmanian plants, and we are indebted to Mr. L. Rodway for an excellent series.





*E. GUNNII*, Hook. f., var. *ACERVULA*, var. nov.

(Syn. *E. acervula*, Miq.; also *E. paludosa*, Baker, these Proceedings, 1899, p. 464).

This is *E. acervula*, Miq., according to specimens in European herbaria. We have found it as far north as Hill Top. It was called "Yellow Gum" on a label by the late Rev. Dr. Woolls over 40 years ago. It has a yellowish sap-wood, and the buds and general cast of the foliage are often yellow. It is also called "Creek Gum." "Yellow Gum" is the district name (Goulburn to Moss Vale) for *rubida* also.

*E. GUNNII*, Hook. f., var. *OVATA*, var. nov.

(Syn. *E. ovata*, Labill. partly; *E. paludosa*, Baker).

There is a form of *E. Gunnii* found in Tasmania, Victoria and New South Wales, usually in cold and low-lying situations. It is not a large tree, and is usually known as "Swamp Gum" and "Flooded Gum," but also as "Broad-leaved Sally." The leaves are often broad, and sometimes mucronate. Typical and conical-fruited *Gunnii* from both Tasmania and Victoria are, however, not rarely mucronate also. The operculum is often beaked, and the fruits are small, conoid, and with very exserted valves. There exists, however, an absolutely complete series of specimens of *E. Gunnii* fruits from hemispherical to conical, and with sunken valves to those extremely protruded. We have had these extreme forms under observation for many years, and continue to hold the opinion that it is impossible to separate them from *E. Gunnii*. Mr. R. T. Baker has figured and described an extreme form (which we have for many years noted in MS. as *E. Gunnii*, Form 3) in these Proceedings (1899, p. 298) under the name of *E. camphora*, and further field experience only establishes our conviction that it is but a variety of *E. Gunnii*. The tree is very common in North-Eastern Victoria, and was always labelled "*E. Gunnii*" by Mueller.

We have *E. Gunnii* from the Jenolan Caves, with typical fruits and leaves even broader than those of Mr. Baker's *camphora*.



It is identical with the *E. ovata*, Labill., of European herbaria. Labillardière's figure is very crude, but the specimens preserved are identical with Mr. Baker's *E. camphora*, or one of the many forms connecting it with *E. acervula*, Miq., (Mr. Baker's *E. paludosa*).

*E. VIMINALIS*, Labill.

The typical tree is usually called "Manna Gum," but often "White Gum." Peduncles three-flowered. Bark smooth, deciduous, hanging in strips. Leaves of suckers narrow, opposite, glabrous. The species is, however, very variable, as we will indicate in detail.

*Seedling leaves*.—Usually they are narrow but they vary a good

CORRIGENDUM.

Page 136, line 13—For *E. paludosa*, read *E. camphora*.

also.

It must, however, be understood by the term "broadish" that it is comparative as regards the usual narrow sucker-leaves of *E. viminalis*, and that it is far from approximating to broad suckers, *i.e.*, those in which length and breadth tend to become equal.

*Mature leaves*.—The strictly opposite character of the seedling leaves sometimes extends even to the mature foliage. We have seen leaves taken from the tops of trees growing near Melbourne by Mr. J. G. Luehmann still strictly opposite.

In this species width, length, texture and shininess are no absolute criterion, as they all vary. See notes on "buds." The foliage of typical *viminalis* is precisely similar to that of the multiflowered group.



*E. GUNNII*, Hook. f., var. *ACERVULA*, var. nov.

(Syn. *E. acervula*, Miq.; also *E. paludosa*, Baker, these Proceedings, 1899, p. 464).

This is *E. acervula*, Miq., according to specimens in European herbaria. We have found it as far north as Hill Top. It was called "Yellow Gum" on a label by the late Rev. Dr. Woolls over 40 years ago. It has a yellowish sap-wood, and the buds and general cast of the foliage are often yellow. It is also called "Creek Gum." "Yellow Gum" is the district name (Goulburn to Moss Vale) for *rubida* also.

*E. GUNNII*, Hook. f., var. *OVATA*, var. nov.

those extremely protruded. We have had these extreme forms under observation for many years, and continue to hold the opinion that it is impossible to separate them from *E. Gunnii*. Mr. R. T. Baker has figured and described an extreme form (which we have for many years noted in MS. as *E. Gunnii*, Form 3) in these Proceedings (1899, p. 298) under the name of *E. camphora*, and further field experience only establishes our conviction that it is but a variety of *E. Gunnii*. The tree is very common in North-Eastern Victoria, and was always labelled "*E. Gunnii*" by Mueller.

We have *E. Gunnii* from the Jenolan Caves, with typical fruits and leaves even broader than those of Mr. Baker's *camphora*.



It is identical with the *E. ovata*, Labill., of European herbaria. Labillardière's figure is very crude, but the specimens preserved are identical with Mr. Baker's *E. camphora*, or one of the many forms connecting it with *E. acervula*, Miq., (Mr. Baker's *E. paludosa*).

*E. VIMINALIS*, Labill.

The typical tree is usually called "Manna Gum," but often "White Gum." Peduncles three-flowered. Bark smooth, deciduous, hanging in strips. Leaves of suckers narrow, opposite, glabrous. The species is, however, very variable, as we will indicate in detail.

*Seedling leaves*.—Usually they are narrow, but they vary a good deal in size and texture, becoming almost coriaceous in some specimens. As regards the breadth of seedling leaves, we take a few instances almost at random.

(a) Narrow and broadish; multiflowered. (Wando Vale, Vic., A. W. Howitt).

(b) Broadish; in threes. (Sunny Corner, N.S.W., J. L. Boorman).

(c) The broadening of the seedling foliage is very common in northern New South Wales, and Mr. L. Rodway informs us that broadish seedling leaves are common in Tasmania in this species also.

It must, however, be understood by the term "broadish" that it is comparative as regards the usual narrow sucker-leaves of *E. viminalis*, and that it is far from approximating to broad suckers, *i.e.*, those in which length and breadth tend to become equal.

*Mature leaves*.—The strictly opposite character of the seedling leaves sometimes extends even to the mature foliage. We have seen leaves taken from the tops of trees growing near Melbourne by Mr. J. G. Luehmann still strictly opposite.

In this species width, length, texture and shininess are no absolute criterion, as they all vary. See notes on "buds." The foliage of typical *viminalis* is precisely similar to that of the multiflowered group.



*Pedicels*.—Pedicels short (B.Fl.). They, however, vary in length in many localities.

*Buds*.—In New South Wales specimens the buds are usually very smooth and shining (B.Fl.). The words "smooth and shining" apply best to the buds of certain forms of *E. Gunnii* that Bentham included under *viminalis*, but shininess is no absolute criterion.

*Operculum*.—"Conical or hemispherical, blunt or sharp, as long as the calyx" (Hooker's Fl. Tas.). Obtuse or conical, not much longer than the calyx-tube (B.Fl.). The shape varies within very wide limits. The ovoid-budded forms have the opercula rounded, sometimes nearly hemispherical; others are conical and even beaked. In Northern New South Wales, for example, the operculum varies from ovoid to very pointed; this latter form is found in the northern portion and in Victoria and Tasmania. The beaked operculum is found in the three-flowered and multi-flowered series.

Following are notes on two specimens with beaked or very long opercula:—

(a) A specimen from Snowy River in Herb. Melb. in Mueller's handwriting "*E. viminalis*, Labill., var. *pedicellaris*, Mueller." Slightly glaucous; multiflowered. (This is Mr. Baker's *E. Smithii*).

(b) Also from the Snowy River, labelled by Mueller "*E. viminalis*, Labill., var. *rhynchocorys*, Ferd. Mueller (*rhynchos*, a beak) and with the addition, "Regarded by Bentham as a variety of *E. tereticornis*" (a mistake readily made with specimens only in leaf and bud). Three-flowered; slightly glaucous.

*E. viminalis* often multiflowered.

"Peduncles . . . bearing three, rarely four or more flowers. . . . Australian specimens have often more than three flowers on each peduncle" (Hooker's Fl. Tas.). We have a number of multiflowered specimens from Tasmania.

"Peduncles short, axillary or lateral, bearing in some specimens, especially northern ones, always 3 flowers on short pedicels, in



others 6 to 8 flowers more distinctly pedicellate" (B.Fl. iii. 239).

"The species varies very much in the size and number of the flowers, and the shape of the operculum. In the original Tasmanian form, common also in Victoria, the peduncles are mostly 3-flowered, although occasionally many-flowered specimens occur" (*ib.*, p. 240).

*E. mannifera*, Moodie, MSS., in Trans. Med. Bot. Soc. iii., 24 (Walpers, Repert. ii., 163) "4-6 floris." This is stated by Bentham to be *E. viminalis*.

*E. persicifolia*, Lodd., (Bot. Cab. t. 501) referred by Bentham to *E. viminalis*, is multiflowered.

Howitt's "typical form of *E. viminalis*" ("Eucalypts of Gippsland," Trans. R. Soc. Vict. ii., Part i. p. 97, pl. 15, figs. 23-31), includes a form with 5 flowers.

"Umbels generally three-flowered" (Mueller, Eucalyptographia).

"*E. viminalis* rarius 4-7 floris" (Fragm. ii. 64).

We have Hartmann's specimens No. 511 from the Condamine, Queensland, before us. They absolutely match many Victorian *viminalis* specimens, except that they are multiflowered. Mueller labelled them *viminalis*, and Bentham concurred. The species in Northern New South Wales and Queensland is usually, but not always, multiflowered.

At Lidsdale we found trees of the true "Manna or Weeping White Gum," flowers mostly in threes but up to 7's; and in the Kanimbla Valley (road to Lowther) with flowers in 4's.

We have often amused ourselves in searching for 4's and even for 5's in trees that appeared to have the inflorescence entirely in 3's, and usually found them, if sufficient patience be exercised. The variety known as *pedicellaris* is normally multiflowered, but the number of flowers varies.

It is often convenient in practice to divide the species into those which have the flowers in threes and those which have them in more than three. We have multiflowered specimens from every colony in which the species is found.

The word *multiflora* may be used as a convenient term to describe the forms of *viminalis* (otherwise closely related to the



Manna Gum), which have the flowers in more than three (as well as in threes).

*E. viminalis* has been sent to us with red flowers from Mt. Wilson by Mr. Jesse Gregson.

*Fruits*.—"Fruit-rim not very convex and often flat. In the New South Wales specimens the flowers and fruits are usually small" (B.Fl.). The size and shape of the fruits vary a good deal. We have some quite small ones from Tasmania, and the largest ones we have ever seen are from Northern New South Wales. From that part of the colony we have also obtained some smaller than the average, and some with valves protruding further than we have seen from any other locality. Sometimes they are nearly hemispherical; others are longer in proportion to the width.

*Bark*.— . . . "With a rough persistent bark, at least on the trunk and main branches, that of the smaller branches often smooth and deciduous, and sometimes the whole described as deciduous." . . . "In New South Wales specimens the bark sometimes said to be quite smooth, probably when the rough bark has been shed" (B.Fl. iii., 239, 240).

"Bark much persistent on the stem and sometimes also on the main branches, outside rather dark coloured, wrinkled and rough, comparatively solid in texture, though somewhat fragile; through secession leaving the younger bark outside smooth and whitish-grey or almost white, giving off externally, when rubbed, a flour-like bloom, as does also the bark of *E. redunca*" (Eucalyptographia).

"Bark rather solid, extensively deciduous" (Mueller, Key Victorian Plants).

"*E. viminalis* at Wando Vale locally called Blackbutt; bark very rugged and persistent up to the small branches" (A. W. Howitt).

Some specimens from the Grampians, Victoria, bear, in Mueller's handwriting, the words "Rough bark, *not* fibrous bark."

The last two specimens are multiflowered, and are identical with Mr. Baker's *E. Smithii*.



The typical *E. viminalis*, as we know it in New South Wales, is a "Ribbony Gum." The ribbons are best seen on wet, windy days; they then flatten out and are seen to be of great length, like streamers or pennants. In Tasmania (the species was described from Tasmanian specimens), Victoria and Southern New South Wales, the bark is, however, often very rough. We have both in Southern and Western New South Wales and Southern Victoria seen the whole trunk encased in hard, black bark, giving the tree, at first sight, almost the appearance of an Ironbark. Mr. Baker's *E. Smithii* is a rough-barked tree of this kind. It must be distinctly understood that multiflowered *viminalis* has not always a rough bark, *e.g.*, the "White Gum" of Beilsdown Creek and other parts of New England and South Queensland.

The lower part of the stem of *viminalis* has hard, black bark. In var. *pedicellaris* the bark is higher up the stem than usual. *E. saligna* is another species in which the height of the rough bark varies.

*Timber*.—"Said to be durable" (A. W. Howitt, of a rough-barked Wando Vale specimen). We have for some years heard a favourable report of a timber in Southern New South Wales from the same locality as Mr. Baker's *E. Smithii*, and identical with it. We invite attention to the observations, by one of us, as to the durability of *E. viminalis* timber in the Dorriggo Forest Reserve (Agric. Gaz. N.S.W. v. 612, 1894). The timber of *E. viminalis* is usually so inferior that it will surprise many people to hear it spoken of in terms of praise; at the same time the best of it is far from being a first-class timber. We require further evidence in regard to its quality.

#### VARIETIES.

Var. 1. *E. VIMINALIS*, Labill., var. *PEDICELLARIS*, F.v.M. (*ined.*).

Mr. R. T. Baker has described a species (these Proceedings, 1898, p. 292), under the name of *E. Smithii* which, in our opinion, is simply a variety of *E. viminalis* with 6-8 flowers and longish pedicels. It is the *E. viminalis* var. *pedicellaris*, F.v.M., of Herb. Melb. It has rough bark at butt, and notes in regard to it will



be found under "Bark" (*supra*, p. 140). It has narrow suckers like normal *viminalis*.

At Ben Bullen there is a clump of trees growing in a low-lying situation. The timber, bark, foliage and habit are identical, with the exception that the rough bark of var. *pedicellaris* is further up the stem than is the case with the *viminalis* alongside; it is, of course, multiflowered. The trees are all 2-3 feet in diameter, and as regards the rough bark, it varies from three feet to ten feet up the butt in normal *viminalis*, and from 12 or 15 feet up to the first fork and even beyond in var. *pedicellaris*. The most careful examination fails to show any difference in the texture of the rough bark of *E. viminalis* and its variety *pedicellaris*.

Mr. Smith has shown that the leaves of this variety are much richer in eucalyptol than those of the normal form.

Var. 2. *E. VIMINALIS*, var. *BAEUERLENI*, var. nov. (syn. *E. Baeuerleni*, F.v.M. (Victorian Naturalist, October, 1890).

This plant is, in our opinion, a large-fruited form of *E. viminalis*. The seedling leaves partake of the character of those of normal *viminalis*. The leaves in no way differ from those of *E. viminalis*. The operculum shows a peculiar shrunken appearance, more often noticed in *E. Gunnii* than in *E. viminalis*. The calyx at its junction with the operculum expands to form a rim; this is, however, a character which is but an exaggeration of what is sometimes seen in normal *viminalis*. The fruits are very large and in threes. We retain the name *Baeuerleni* for this variety.

Amidst all the variations existing in *E. viminalis*, it seems, perhaps, inexpedient to make an additional variety of the following, but we draw attention to a very narrow-leaved (nearly linear) form. It includes (1) Clarendon Stuart's No. 129; "bark very smooth and white"; New England; venation well marked; buds pointed; in threes and fours in our specimens; named *viminalis* by Bentham. (2) "Silver-top"; bark persistent to 20-30 feet up; smooth bark bluish; Mountain Top, Nimitybelle (W. Bäuerlen); flowers in threes. (3) Similar to (2) except that the veins of (3) are less marked; "Manna Gum"; Cathcart (H. Deane).





Deane, H and Maiden, J. H. 1901. "Observations on the eucalypts of New South Wales. Part VIII." *Proceedings of the Linnean Society of New South Wales* 26, 122–144.

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