

NOTES ON ACACIA, No. II.—TROPICAL WESTERN AUSTRALIA.

(INCLUDING DESCRIPTIONS OF NEW SPECIES.)¹

By J. H. MAIDEN, I.S.O., F.R.S., F.L.S.

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As this paper includes a contribution towards a botanical bibliography of the Nor-West (North West), it is necessary to point out that this short and euphonious title has a technical meaning in Western Australia different to that usually understood in other parts of Australia.

a. The Nor-West of local land administration may be defined as extending from a little south of North West Cape (near Point Cloates) north easterly to, say, Wolla. It lies wholly within the tropics, almost touching the tropic of Capricorn.

b. Jutson² defines a North West physiographic division as extending along the coast from the mouth of the DeGrey River (20° approx.) in the north, to the mouth of the Murchison River (28° approx.) in the south. See Fig. 7, p. 32, where it is called the North West Peneplain. See also Fig. 10, p. 38.

On the north-east it is divided from the Kimberley Division by that portion of the Eastern Division known as the Great Sandy Desert. It is a fairly natural division, and I will refer to it on a future occasion when collectively reviewing the botanical provinces of the continent. The length of the present paper precludes this now.

c. I suggest that for present botanical purposes it will be desirable to add to the previous division (*a*), the Kim-

¹ 3 by W. V. Fitzgerald; 3 by J. H. Maiden.

² Bulletin No. 61, Geological Survey of W.A. (1914), p. 37.

berley Division (technically termed the Northern Division) and the area joining the two. We thus have the continuous coastal tropical districts of Western Australia as far as their junction with the Northern Territory, into which the western State insensibly merges, and there is no line of botanical separation between them. Indeed, the flora of the Nor-West cannot usefully be studied without taking cognizance of that of the coastal tropical portion of the Northern Territory. When more local floras have been worked out, we shall be able to construct botanical provinces irrespective of the political divisions. In the "Flora Australiensis" and Mueller's "Census," the Nor-West is sunk in the general term of North Australia.

So that we have three different Nor-Wests:—

- a. Of local land administration.
- b. From the DeGrey to the Murchison.
- c. The Nor-West in its wide sense.

Jutson styles the Kimberley Division the Kimberley Peneplain, (*op. cit.*, p. 33) contrasts it with the Eastern Division just to the south, and his remarks are well worthy of reference.

The only list of Western Australian plants known to me is based on Mueller's "Second Census of Australian Plants" (1889); it is *Mueller and Morrison's* "List of Extra-tropic West Australian plants" (Vasculares), in the "W. A. Yearbook for 1900-1," by Malcolm A. C. Fraser, Vol. I, p. 308. This list is based on Mueller's compilation for the 1896 Yearbook; Dr. Morrison, then Government Botanist of Western Australia, made a number of additions, and says (p. 308, foot-note):—

"...those recently recorded from within the tropical line have not been excluded from the present list, in spite of the wording of the title; and it is hoped that the next edition will form a complete census of the native plants of the State, including also

many of those tropical species *which have hitherto been recorded as from Northern Australia.*" (The italics are mine.—J.H.M.)

The list was reprinted unaltered in 1903, and not subsequently differentiated, as the late Dr. Morrison hoped. In other words, there is no list of North Western Australian plants published.

Following is a tentative bibliography, arranged in order of date, of the plants of the Nor-West, which will assist in the publication of such a list.

1. *Dampier, William.* He visited Cygnet Bay on the North-west Coast in 1688. He made a second voyage to the west and north-west coast in H.M.S. "Roebuck" in 1699. For some notes on Dampier see my "Records of Western Australian botanists," (Proc. W.A. Nat. Hist. Soc. 1909).

Dampier brought a number of plants back to England, which are the oldest Australian plants known. About a dozen are still in the herbarium of the University of Oxford and figures (and notes) of them by Dr. W. Botting Hemsley, F.R.S., will be found in the "Western Mail," Perth, W.A., Christmas Number, 1898. There is no *Acacia* amongst them.

2. *Baudin's Expedition, 1800-4*¹ went from Van Diemen's Gulf to Cape Leveque. As a rule, the ships kept far from land, and hence few plants were collected. The natural history results were chiefly zoological; Leschenault de la Tour was botanist. Bentham records that the Expedition collected (1)² *A. bivenosa* DC., which appears to be the first Nor-West *Acacia* collected of which we have any record.

¹ See my paper on the "Earlier French Botanists as regards Australian Plants." This Journ. XLIV, p. 132.

² The first of the serial numbers of the *Acacias* enumerated in this paper.

3. *Cunningham, Allan*. "Narrative of a survey of the intertropical and western Coasts of Australia, ... 1818 and 1822," by Captain Phillip P. King, R.N., F.R.S., 2 vols. 1827. At vol. II, 497, are "A few general remarks on the vegetation of certain coasts of Terra Australis, and more especially of its north-western shores," by Allan Cunningham. Cunningham's remarks, which are of course valuable, for the most part consist of general sketches of the various families. The collecting places are stated, (they were all coastal) but it would appear that the plants, as a collection, were not described until Bentham undertook that work for the "Flora Australiensis." See p. 76.

4. "*Beagle*," (H.M.S.). During 1838 - 1841, Captains Wickham and Lort Stokes in H.M.S. "*Beagle*" began and completed an important series of coastal surveys on the North-west coast, discovering the Fitzroy and Adelaide Rivers.

The "Voyage of the *Beagle*" is quoted for a few specimens in the "Flora Australiensis." Captain Lort Stokes' work, "Discoveries in Australia, with an account of the coasts and rivers explored and surveyed during the voyage of H.M.S. "*Beagle*," in the years 1837 - 43." (2 vols. 1846), contains but few references to plants the Gouty-stemmed tree, *Adansonia*, (II, 116) being an important exception.

Dr. Benjamin Bynoe, the Surgeon, (see my "Records of W.A. Botanists") made some valuable collections, which went to Kew and were seen by Bentham for the "Flora Australiensis." Bentham sometimes gives the quotation *Bynoe*.

5. *Grey, George*. "Journals of two Expeditions of discovery in North West and Western Australia, during the years 1837, 38 and 39," (2 vols. 1841), contain few incidental references to plants, but the Natural History Appendices

contain no descriptions of them. See my "Records of W.A. Botanists."

6. *Gregory, F. T.* "Expedition to the North West Coast of Australia." (Proc. Roy. Geog. Soc. 1862, p. 372, with a map). At p. 373, "Mr. P. (Pemberton) Walcott joined as a volunteer for the collection of specimens of natural history and botany." There are a few botanical notes at pages 377, 382, 385, 389, 428. The plants collected are recorded in the "Flora Australiensis" as "F. Gregory's Expedition"; Walcott's name was probably not given to Bentham. For a note on Walcott see my "Records of W.A. Botanists."

Bentham records that Maitland Brown also collected specimens in this expedition. See a brief note in the Records just quoted. See also "A record of the plants collected by Mr. Pemberton Walcott and Mr. Maitland Brown in the year 1861, during Mr. Gregory's Exploratory Expedition into North West Australia," by Ferd. Mueller, Trans. Bot. Soc. Edin., vol. II, pp. 479 - 500 (Paper read February 1863).

See "W. A. Year-book, 1900-1," Vol. I. At page 57 is a brief account of F. Gregory's results, and the whole chapter on "Exploration in Western Australia," beginning at p. 50, is valuable. The chapter should be read for a statement of Nor-West explorations.

A useful account of Tropical West Australian explorations will be found at p. 16 of A. Despeissis' "The Nor-West and Tropical North," being Bulletin No. 13 of the Department of Agriculture, W.A. (1911). Mr. Despeissis refers to Mr. F. T. Gregory's report as the "origin and foundation" of Nor-West settlement, so that special attention to the district has only taken place within the last half-century, and its comparative inaccessibility, and the moisture-laden atmosphere of a portion of it, both explain the delay which has occurred in working out the plants.

7. *Tenison-Woods, Julian E.* "North Australia; its physical geography and natural history," 8vo. pp. 46, Govt. Printer, Adelaide, 1864. Chapter viii, p. 38, Botany, gives a very condensed summary, chiefly of Mueller's then recent Northern Territory results. (A. C. Gregory's expedition of 1856). Father Tenison-Woods' account of geographical explorations to date, includes those of tropical Western Australia, and has been well done.

8. *Bentham, George.* "Flora Australiensis," Vol. II, (1864). This is the work which contains by far the most important account of Nor-West Acacias to date, and of course other plants.

A. BOSSIÆOIDES A. Cunn.

In Cunningham's MS. Journal, Vol. II, p. 60, under date 6th August, 1819, he says, "Liverpool River, North Coast. I gathered specimens, although without flower or fruit of an Acacia (evidently) having the habit of a flat-stemmed *Bossicea*." He then gave a description in Latin.

Bentham (B.Fl. ii, 320) "gives Liverpool River, Northwest Coast"; it is, however, in the Northern Territory, and B. Gulliver, one of Mueller's correspondents, collected it in the same place. It remains to be proved that it is a Nor-West plant.

Seemann, in "Die in Europa eingeführten Acacien" (Hanover, 1852), has a figure of "*A. bossiæoides*" in flower drawn by J. D. Hooker, but it is *A. glaucoptera* Benth.

2.¹ A. PATENS F.v.M.

Stony places, Hammersley Range, Nichol Bay. F. Gregory's Expedition.

3. A. BYNOEANA Benth.

N.W. Coast, *Bynoe*. See a note by myself in this Journal, XLIX, p. 501 (1915). See a note on petals and pod by W. V. Fitzgerald in Journ. W.A. Nat. Hist. Soc., May, 1904, p. 46.

¹The second of the serial numbers of the Acacias enumerated in this paper. Henceforward the numbers can be readily picked up.

4. *A. LYCOPODIFOLIA* A. Cunn.

Cambridge Gulf, N. W. Coast, A. Cunningham; Hammersley Range, Nichol Bay, F. Gregory's Expedition. Cunningham's MS. Journal, Vol. II, p. 75, shows that he collected it on 19th September, 1819. He speaks of it as "a rare shrub of divaricate growth" and gives a Latin description of it.

[Mr. W. V. Fitzgerald thus describes a specimen collected in the Nor-West. "Diffuse, to 3 feet high, and often as much across; phyllodia frequently in whorls of 12, the tips glabrous, usually viscid, otherwise the whole plant slightly to densely hoary with spreading white hairs; corolla lobes short, with incurved callous tips; pod viscid; seeds transverse, shining-black." MSS.]

5. *A. HIPPUROIDES* Heward.

Usborne's Harbour, N.W. Coast, "Voyage of the Beagle."

See also a note "Diffuse, to 4 feet high; phyllodia with yellow setaceous glabrous viscid points which are often as long as the balance of the phyllodia; flower-heads larger than those of *A. lycopodifolia*; calyx at least two-thirds the length of the corolla, the lobes short and broad; corolla lobed to above the middle, the lobes with callous incurved tips; pod viscid, flattened, straight or slightly falcate, to two and a-half inches long by three lines broad; seeds black, shining, oblique." (W. V. Fitzgerald MSS.).

6. *A. GREGORII* F.v.M.

Nickol Bay, N.W. Coast, F. Gregory's Expedition.

7. *A. SPATHULATA* F.v.M.

Bay of Rest, N.W. Coast, A. Cunningham.

8. *A. PYRIFOLIA* DC.

Dampier's Archipelago, A. Cunningham. Nickol Bay, F. Gregory's Expedition.

9. *A. DELTOIDEA* A. Cunn.

Greville Island, Montague Sound and Barren Islands, Regent's Inlet, N.W. Coast, A. Cunningham.

10. *A. SETULIFERA* Benth.

N.W. Coast, Bynoe.

11. *A. TRANSLUCENS* A. Cunn.

Montague Island and Bay of Rest, N.W. Coast, A. Cunningham. "Diffuse, one to two feet high or erect and four to six feet; calyx much less than half the length of the corolla; pod sometimes two inches long by one-third inch broad; seeds greyish, with a white arillus." (W. V. Fitzgerald MSS.).

A. translucens was described and figured in Hooker's "Icones," tab. CLX. The type comes from the North West Coast, and it appears to be the common form there. Bentham observed a form with narrow (curved linear) phyllodes, and it would appear to be commonest in the Northern Territory (Gulf of Carpentaria). From the quartzite ranges on the west side of Blunder Bay, Victoria River, 1913 (R. T. Winters, comm. E. J. Dunn and G. F. Hill) I have received a form with phyllodes much larger than the type.

1. *A. BIVENOSA* DC.

N.W. Coast, Admiralty Bay, Baudin's Expedition; Bay of Rest and Dampier's Archipelago, A. Cunningham. Depuech Island, Bynoe; Hearson Island, Nickol Bay, F. Gregory's Expedition.

"Erect shrub, 5-8 feet; to a tree of 15-30 feet; trunk to 10 feet; diam. to 1 foot; foliage glaucous; bark dark grey, somewhat rough; timber brownish, rather hard and tough." (W. V. Fitzgerald. MSS.).

12. *A. CORIACEA* DC.

Bay of Rest, N.W. Coast, A. Cunningham; Depuech Island, Bynoe; Nickol Bay, F. Gregory's Expedition.

13. *A. HEMIGNOSTA* F.v.M.

Cambridge Gulf, A. Cunningham.

“Tree of 25–30 feet; trunk to 10 feet, diam. 1 foot; bark dark-coloured, rough, longitudinally fissured and often corky; timber brownish, hard and tough.” (W. V. Fitzgerald MSS.). As regards North Queensland trees, see R. H. Cambage, this Journal, XLIX, 389 (1915).

14. *A. SERICATA* A. Cunn.

Montagu and York Sounds, N.W. Coast, A. Cunningham.

“A tall glaucous shrub to a tree of 30 feet; trunk to 10 feet; diam. 9 inches; bark dark-grey, somewhat rough; timber pale and tough; flowers pale-yellow, through leaf-suppression terminally racemose; peduncles 2–3 together, mostly $\frac{1}{2}$ in. long, each bearing a globular head of 20–30 mostly five-merous flowers; sepals free nearly to the base, broadly spatulate, half as long as the petals, finely hirsute; petals free nearly to the base, slightly silky.” (W. V. Fitzgerald, MSS.).

15. *A. WICKHAMI* Benth.

Swan Bay, N.W. Coast, Voyage of the Beagle.

“Sunday Island; May, Lennard and Calder Rivers; Mounts House, Clifton and Brennan. Rigid, diffuse, 3–4 feet high, and often as much across. Among sandstone and quartzite rocks.” (W. V. Fitzgerald, MSS.).

16. *A. STIGMATOPHYLLA* A. Cunn.

Brunswick Bay, N.W. Coast, A. Cunningham.

“Lennard and Isdell Rivers. A spreading shrub of 5–8 feet high to a tree of 15–20 feet; trunk to 5 feet; diam. 6 in.; bark roughish, reddish-grey, sometimes curly; timber dark brown, and moderately hard; the branchlets and phyllodia slightly viscid; pod erect, linear, slightly falcate, 2–3 in. long, 3 lines broad, compressed but thick with obliquely transverse septæ between the seeds; valves rolling

back from the apex on dehiscence, hard, the margins raised and obliquely veined between; seeds obliquely oblong, dark brown; funicle straight or slightly folded, gradually thickened upwards and terminating in a cupular, pale-coloured basilar arillus." (W. V. Fitzgerald MSS.).

17. *A. XYLOCARPA* A. Cunn.

Dampier's Archipelago and Water Island, N.W. Coast, A. Cunningham. Nickol Bay, F. Gregory's Expedition.

Cunningham (MS. Journal, Vol. II, p. 72), collected it at Lacrosse Island on 17th September, 1819, and says, "A depressed bushy plant, and remarkable for the clear stark verdure of the whole shrub; is also abundant among the rocks, having old pods which are woody and cylindrical." He gives a Latin description.

"Varies from a diffuse shrub of 3 feet to a tree of 30 feet; trunk to 10 feet, diam. 8 in.; bark grey, somewhat rough; timber dark brown, and very hard. In sandy soil among sandstone and quartzite rocks." (W. V. Fitzgerald MSS.)

"Var. *planifolia* W. V. F., var. nov. Artesian Range. A diffuse shrub, 3-4 feet high, the young shoots viscid; phyllodia compressed, elliptical to linear-oblongate, straight or falcate, $1\frac{1}{2}$ to $2\frac{1}{2}$ in. long; pod as in type. In sandy soil." (W. V. Fitzgerald MSS.).

18. *A. ARIDA* Benth.

Parched desert shores of Cambridge Gulf, N.W. Coast. A. Cunningham.

19. *A. DELIBRATA* A. Cunn.

So much uncertainty surrounds *A. delibrata* and so much depends on it, that it becomes desirable to examine the evidence.

Cunningham's original description in Benth., Lond. Journ. Bot. I, 374 (1842) may be translated as follows:—

Glabrous, viscid, branchlets angular and finally terete, phyllodes narrowly falcate-lanceolate or linear, narrowed on both sides,

somewhat obtuse at the apex, obliquely mucronate, immarginate, finely striate, many nerved, spikes shortly pedunculate, pod linear, smooth, coriaceous, glabrous, uniform within. Phyllodes 4 – 5 ins., almost like *A. julifera* but less pointed. Flowers not seen. Pod 4 – 5 ins. long, almost 4 lines broad, margin thickened, slightly contracted between the seeds.¹

The type came from York Sound and Port Warrender (North West Australia) Cunningham. The bark of the older branches appears to peel off in small shreds, whence Cunningham's name (*delibratus*, Latin, having the bark peeled off).

Then Mueller in Journ. Linn. Soc., III, 138, (1859) re-described the species in terms that may be translated as follows:—

Arborescent, branchlets angular, glutinous, glabrous or velvet-like, phyllodes somewhat sessile, linear-falcate or sword-shaped or more rarely shortened, narrow-oblong, obliquely acuminate or cuspidate-apiculate, prominently 1 – 3 nerved, glabrous or rarely puberulous, densely parallel-veined, bearing a gland right at the base, spikes short, solitary or two in the axils, dense, shortly pedunculate, the corolla with five-divisions, being half as large again as the dentate-ciliate calyx,² pod stipitate, papery, narrow, oblong, compressed, marginate, pale yellow, with undulate margin, seeds shining-black, compressed-ovate, three times as long as the white cymbiform arillus, (strophiole), distinctly marked on both sides.

¹ Bentham recognised that these specimens were not altogether satisfactory, for in a note in Journ. Linn. Soc. III, 139, referring to *A. delibrata*, he says "Cunningham's (specimens) are out of flower with a loose fruit; but, as far as these materials admit of identification,"...Fortunately the phyllodes and pod are, with our later knowledge, quite sufficient to say what the species is.

In the fuller description by Bentham of *A. delibrata* in B. Fl, II, 405, he supplements the original description as regards the tomentum, saying "Branchlets...silky-pubescent when young. Phyllodia...sprinkled with loose silky hairs." This hairiness is important.

² This does not agree with his figure of *A. delibrata* in "Iconography."

A shrub, six to twelve feet high. Phyllodes six inches long or shorter, seldom only an inch and a half long, $1\frac{1}{2}$ – 3 lines broad. Spikes 1 in. long or shorter, pods 1 – 3 inches long, about 4 lines broad, shining, not undulate at the sutures. Seeds a line and a half long, arillus (“strophiole”) with one fold.

It will be observed that flowers were not available when the type was described, while the specimens available to Mueller were from the Northern Territory and Queensland, and his description has been drawn up from mixed material.

The localities quoted by Mueller are “Arnhem’s Land, No. 28; Head of Seven Emu River, No. 40; Upper Roper, No. 25;¹ Moreton Bay, Moore; Fitzmaurice River, No. 91; Sturt’s Creek, No. 92; Victoria River, No. 93.”¹ Some of these numbers are referred to by Bentham in his footnote to *A. oligoneura* (see p. 110). Mueller’s specimens do not appear to be in Australia, at all events under their numbers, while the specimen “Moreton Bay,” which often meant Queensland, is not available.

When Bentham re-described the species in English in B. Fl. II, 404, he ignored Mueller’s description of the flowers, presumably because he had some doubt about the matching. I do not know of any evidence that Mueller ever saw *A. delibrata*.

At length *A. delibrata* has been rediscovered. Mr. Fitzgerald collected it in North West Australia and wrote out a description of it as a new species. I gave this the most careful scrutiny and concurred, when the portion of the type of *A. delibrata* arrived from Kew, and it was at once seen that here we had the long lost species. Mr. Fitzgerald’s description, which follows, is valuable as an up to date account of *A. delibrata*, including the flowers, which neither Cunningham nor Bentham saw. Some of

¹ Nos. 25 and 93 are not *A. delibrata* at all, but *A. Hammondi* n. sp., see p. 95.

Mr. Fitzgerald's phyllodes are a little narrower than those of the type.

A tree, the branchlets terete, or scarcely angular and along with the foliage and rhachises finely pubescent and slightly viscid; phyllodia linear to linear-lanceolate, straight or slightly falcate, narrowed at both ends and terminating in obtuse or acute curved or straight points, thinly coriaceous, striate with numerous fine parallel nerves, the central one always and usually two lateral ones very evident; spikes solitary or two together, very slender, not dense, pedunculate; flowers small, mostly pentamerous; calyx membranous, silky-pubescent, divided to below the middle, more than half as long as the corolla, the lobes comparatively broad; petals obtuse, not ribbed or striate, connate to the middle, glabrous or scantily pubescent; pod linear, much attenuated and stipes-like at the base, resinous, hard and of a woody texture, the valves with prominent raised longitudinal angles on each side of the sutures, and contracted laterally between the seeds; seeds longitudinal, ovate, dark brown; funicle with few folds and gradually thickened into a pale-coloured turbinate basilar arillus.

Isdell River; eastern base of Mount Rason; Sunday Island (W.V.F.). In stony spots overlying sandstone and quartzite.

Height 25 – 40 feet; trunk to 15 feet; diam. 9 – 12 inches. Bark reddish, rough and curly. Timber dark brown, hard, rather heavy and tough. Phyllodia 2 – 6 inches long, 2 – 4 inches broad. Spikes 1 inch or less. Pod 3 – 4 inches long, $\frac{1}{4}$ inch broad.

Affinity to *A. delibrata* A. Cunn. (End of Mr. Fitzgerald's description).

Following are my notes:—Flowers pentamerous, in spikes, recurving as they get old. Calyx irregularly lobed, a few hairs at the apex, very thin and frail. Petals glabrous, divided partly down. Ovarium hoary.

Affinities.

1. With *A. gonocarpa* F.v.M. The pods of *A. gonocarpa* are six-angled, woody, obliquely divided inside; the seed

long and narrow, suspended by a conoid funicle-arillus. In *A. delibrata* there are two folds in the funicle and it and the arillus are not conoid.

2. With *A. Kimberleyensis* n. sp. A narrow phylloded form of *A. delibrata* is strikingly similar in general appearance to *A. Kimberleyensis*.

The stems of *A. delibrata* are terete nearly the whole way up, and are covered with fine silky hair when young. The phyllodes of *A. delibrata* are generally shorter and broader, more finely striate and clothed in fine white silky hair, especially when young. They have one gland at the base; tips sharply acuminate but not rigid. The phyllodes thin. The calyx is deeply and irregularly lobed sometimes half way down, or nearly to the base; tips hairy. The pod is six-sided, viscid. The seed a short oblong. The funicle twisted, small arillus, while the funicle and arillus of *A. Kimberleyensis* together form a conoid mass.

A. ARMITII F.v.M. (ined.)

(Syn. *A. delibrata* F.v.M., "Iconography of Acacias" non A. Cunn.).

"Shrubby, branchlets glabrous, prominently angular; phyllodes almost straight, narrow-lanceolar, elongated, sessile, blunt or slightly acute at the upper end, without any lustre; their primary venules usually three, the middle one the strongest, secondary venules numerous, all straight and closely approximated; glandule anteriorly basal; spikes axillary, solitary, short-stalked, considerably surpassed in length by the phyllodes; rhachis closely invested with very short spreading hairlets; sepals narrow, disconnected, fully half as long as the corolla, or even longer, as well as the latter beset with a very short somewhat viscid vestiture; tube of the corolla about as long as the semilanceolar-deltoid lobes; fruits broad-linear, much compressed, somewhat flexuous, quite viscid, prominently margined; ovules ellipsoid, on a straight gradually upwards thickened funicle.

"Near the Ennasleigh River. W. Armit."

"Differs from *A. conspersa* already in compressed-angular glabrous branchlets, in obliterated stipules, more than one primary venule of the phyllodes, in very sticky less turgid fruits and in untwisted funicles; from *A. gonoclada* in usually narrower phyllodes, longer spikes, less crowded flowers, more velvet-like vestiture of the rhachis, and unconnate sepals. From both it may further differ in carpologic characteristics, but the ripe fruit remained hitherto unknown." (Mueller, MSS. in Herb. Melb.).

After writing the description, Mueller refused to publish it, marking it "*A. delibrata* aff." A sight of the type shows that *A. delibrata* is a very different plant, and I take the responsibility of reversing Mueller's decision, and publishing his description. Its affinity is to *A. plectocarpa*, and while I admit the material is incomplete, it seems to me that it is in the interests of science to give this figured form a name under the circumstances.

Named in honour of W. E. Armit. Biographical notes on Mr. Armit will be found in Proc. Aust. Assoc. Adv. Science, XII, 374, (1909). Mr. Banfield of Dunk Island, North Queensland, kindly tells me that his name was William Edington Armit. He died in Papua. His son, Mr. L. P. B. Armit is an official of that dependency.

Range. North Queensland only, so far as we know at present.

Armit's label says "Ennasleigh," Sands' Queensland Map of 1886 (New Atlas of Australia) "Einasseigh," and Whitworth's Bailière's "Queensland Gazetteer" (1876) has "Einsleigh." Mr. Allan A. Spowers, Surveyor General of Queensland, says the official spelling is Einasseigh. He says that Frank Jardine named it in remembrance of a lady, Annie, transposing the first two syllables.

"It is a large shallow river, from three quarters to a mile wide, flowing about forty miles east of Georgetown in

to the Gilbert River in about $17^{\circ} 30'$ S. Lat. It rises in the Ironbark ridges to the east of Gilberton, and flows N. and W. through the pastoral and mineral country of the Carpentaria downs. It is fed by the Copperfield, Stockman, Elizabeth, Lagoon, Lee, and other small creeks. Granite and porphyry." (Whitworth, corrected by Mr. Spowers).

I give these particulars in the hope that better specimens may be further searched for in this locality. Twigs bearing ripe pods are particularly desired.

The interesting point about the specimens described is that they prove to be the specimens figured by Mueller in his Iconography as *A. delibrata*, and it throws light on Mueller's view of that, (a very different) species in his later years. Had Mueller stated the locality of the specimens depicted in the Iconography, he would have saved users of the work much trouble as regards some of the plates.

The Einasleigh specimens consist of a few twigs in early fruit, with a few flowers almost in the last stage. Unfortunately Mueller's plate is, in some respects, unreliable. The pods shown on the right hand twig are broader than in the original, and are shaded to give the idea of maturity. These pods, more than any other part of the plate, have caused trouble. The original specimens are so immature that one cannot be certain that the seeds will be oblique at maturity, but the figure of the pods on the twig not only leads one to assume that they are ripe, but figure 7 certainly shows them so. There is no warrant for showing the funicle and arillus as at 7. Ripe seeds are shown at figures 8 etc., but they are the result of pictorial license. The flowering specimen at the left of the plate cannot be found.

Fragments of flowers are persistent on the rhachis until the young pods are as much as two inches long. This is shown in the Einasleigh specimens and also in the Iconography plate.

Affinities.

1. With *A. plectocarpa* A. Cunn. *A. Armitii* appears to be a more rigid plant than *A. plectocarpa*. The flowers of *A. Armitii* have slenderer sepals and a more hairy corolla; it is a matter of surmise whether the unripe pods of *A. Armitii* will develop into a pod identical with that of typical *plectocarpa*, which becomes markedly embossed when fully ripe. The markedly resinous character in the young pods of *A. Armitii* is noticeable, and the only young pods of *A. plectocarpa* I have seen are resinous. The seed of *A. Armitii* as figured is ovoid; that of *A. plectocarpa* is nearly round, with an almost circular depression.

2. With *A. Hemsleyi* Maiden. The flowers of the two species possess a very close resemblance; the rhachis of *A. Hemsleyi* is smoother. The pods of the two species are, however, very different, those of *A. Hemsleyi* being narrow, and having elongated seeds longitudinally arranged.

A. HEMSLEYI n. sp.

Julifloræ (Falcataë)

Frutex altus fere glabrus vel arbor parva, ramulis junioribus angulatis. Phyllodiis lineari-lanceolatis, paullo falcatis, basin versus angustatis, 9 – 12 cm. longis, 10 – 13 mm. latis, tenuibus, 3 – 5 nervis prominentibus. Spicis solitariis vel geminis axillariibus, tenuibus ad 4 cm. longis pedunculis 1 cm. vel longioribus. Floribus dense confertis, calyce profunde lobato. Sepalis angustis ca. dimidio corolla æquilongis, ciliatis. Petalis secundum lineam mediam ciliatis, dimidio longitudinis connatis. Pistillo hirsuto. Legumine lineari, 7 – 11 cm. longo, 5 mm. lato, gracile. Valvis tenuibus, marginibus incrassatis, planatiusculis, paullo moniliformibus, seminibus longitudinaliter dispositis. Funiculo tenue in arillum basilarem terminante.

A tall shrub or small tree, nearly glabrous, with branchlets angular when young, but soon becoming terete.

Phyllodia linear-lanceolate, slightly falcate, with an oblique sharp but not rigid point, the upper part of the phyllode often dark coloured. Narrowed towards the base, 9–12 cm. ($3\frac{1}{2}$ – $4\frac{3}{4}$ inches) long, 10–13 mm. broad, thin, with 3 to 5 prominent nerves, and numerous very fine parallel ones between them. An elongated gland at the base. Stipules acute, brown, scarious.

Spikes solitary or in pairs in the axils, thin, up to 4 cm. long on peduncles up to 1 cm. and more, flowers 5-merous, closely packed on the spike. Floral bracts foliaceous and ciliate. Calyx deeply lobed, the sepals narrow, about half as long as the corolla, ciliate. Petals ciliate down the median line, united to about the middle. Pistil hairy.

Pod linear, 7–11 cm. (or say $2\frac{1}{2}$ – $4\frac{1}{2}$ inches) long, 5 mm. broad, slender and with thin valves, with thickened margins, flattish, slightly moniliform, seeds longitudinally arranged, black, shining, with a thin funicle which soon becomes a ribbon-like mass, in two or more folds, and passes into a small basilar arillus.

In honour of Dr. William Botting Hemsley, F.R.S., late of Kew, who for many years helped Bentham in the elucidation of this genus, and indeed the Australian flora generally, for the "Flora Australiensis," I dedicate this beautiful and interesting species.

Range. A tropical species, extending from North West Australia (Kimberley district) through the northern portions of the Northern Territory, to Northern Queensland (at no great distance from the Gulf of Carpentaria).

The following specimens have been examined by me:—

1. Fitzroy River, 8 miles above Hann River junction. June, 1905. In flower. (W. V. Fitzgerald, No. 1177; this I constitute the type.

2. Isdell River, 10 miles below Grace Knob, July, 1905. In flower (W. V. Fitzgerald, No. 1235; received as *A. torulosa* Benth.).

3. Barker River, Kimberley, W. A., September, 1905. In fruit (W. V. Fitzgerald, No. 1535; received as *A. torulosa* Benth.).

4. In flower, April, 1916. Wandj, Northern Territory (Dr. H. I. Jensen, No. 395). Not quite normal.

5. "Queensland Gulf Country." In fruit. (Dr. T. L. Bancroft). Dr. Bancroft recently informed me that the locality is a scrub on the Gregory Downs, Gregory River, near Burketown. Labelled by the late F. M. Bailey, "Nearly allied to *A. delibrata*." He sent precisely similar specimens to Mueller, with the following result. He wrote to Mueller, "Seed of Acacia near *A. delibrata* A. Cunn., Gulf Country, Queensland. From this shrub Dr. Thomas L. Bancroft has obtained if not a valuable still a curious property, an account of which is being prepared by the doctor.¹ The specimen somewhat agrees with Bentham's description of *A. delibrata* A. Cunn., of which I have never seen specimens."

Mueller endorsed these specimens (bark, phyllodes, ripe pods and an old flower), "Acacia allied to *A. sp.* (from Einasleigh). The bark seems not to peel off in shreds. Bentham (in Hook. Journ.) calls the legumes nearly four lines broad. Stipules present as in *A. conspersa*; funicle different from that species, so absence of toment on the branchlets and absence of strong midnerve."

6. Dugald River, Granada, on bank of river, 10 feet high. 50 miles north of Cloncurry, Northern Queensland. 30th August, 1913. In early fruit and just past flowering. (R. H. Cabbage, No. 4165).

¹ Dr. T. L. Bancroft found saponin in the pods, being led to enquire into their disagreeable, acrid taste. Proc. Roy. Soc. Qld., iv, 10, (1887).

Affinities.

1. With *A. delibrata* A. Cunn. Both Bailey and Mueller remark on the affinity of this species to *A. delibrata*, though Mueller did not endorse the resemblance. As we now know what *A. delibrata* is, we are in a position to make a comparison denied to these two botanists.

The phyllodes of the two species are sharply different, those of *A. delibrata* being much narrower, less numerously veined, and with a fine silky tomentum. The flowers are different, though not markedly so, but the pods are different, those of *A. Hemsleyi* being longer and narrower, less moniliform, and with thicker longitudinal angles at the sutures.

2. With *A. torulosa* F.v.M. It would appear that *A. Hemsleyi* is closely allied to this species, but it is sharply separated from *A. torulosa* by the strongly moniliform pods of the latter (the seeds also are different), and less emphatically by the more spathulate sepals and more coriaceous and longer phyllodes of the same species.

3. With *A. plectocarpa* A. Cunn. In flowers and phyllodes *A. Hemsleyi* closely resembles *A. plectocarpa*, but it is quite distinct in the pod.

4. With *A. julifera* Benth. This species has usually a more falcate phyllode, and it is sharply separated from *A. Hemsleyi* by its elongated, narrow, spirally twisted pod.

5. With *A. leptocarpa* A. Cunn. The two species are much alike in the shape and venation of the phyllodes, but they are quite different in the attachment; those of *A. Hemsleyi* are almost sessile.

20. *A. PLECTOCARPA* A. Cunn.

It is described from Cunningham's MSS. by Bentham in London Journ. of Bot., I, 375 (1842), in words which may be translated as follows:—

“Glabrous, subglaucescent, branchlets angular, subtriquetrous, phyllodes falcate-lanceolate, base and apex tapering, finely striate, many nerved, spikes elongated-cylindrical, interrupted, calyx sinuate-dentate, three or four times shorter than the corolla,¹ pod straight, linear, smooth, marginate, coriaceous, glabrous, valves more often bullate-flexuose. Phyllodes and flowers of *A. leptocarpa*.² Spikes longer, rather interrupted. Pod 3–4 lines broad. Cambridge Gulf and Sims’s Island, N.E. Coast. Cunninghamham.”

(Cambridge Gulf is N.W. Coast, and Sims’s Island is near the Goulburn Islands, Northern Territory).

It is not referred to by Mueller in his paper on Northern Territory Acacias in Journ. Linn. Soc., III, 114 (1859), but Bentham, in B. Fl. II, 408, in quoting some specimens collected by Mueller, obviously refers to those collected at the same time as those described in the Linnean Society paper, although numbers are not quoted. Of course, all of the specimens examined by Bentham may not be typical.

Bentham redescribed the species in B. Fl., II, 408, and what he says has enhanced value, because he edited Cunningham’s original description. He says “Calyx short, minutely toothed. Petals smooth.” Of *A. leptocarpa* he says, (*op. cit.*, 407), “calyx short, sinuate-toothed. Petals smooth, united at the base,” making no reference to the calyx of either species being “three or four times shorter than the corolla.”

Sir David Prain has had the kindness to present to the National Herbarium, Sydney, portions of the co-types, viz.,

¹ This seems to be overstated, as it appears to be always half the length (and therefore twice shorter) of the corolla. See below, p. 92.

² At p. 376, Bentham describes those of *A. leptocarpa* as “Phyllodes... 4–6 inches long, 4–5 lines broad, very much bowed, narrowed into rather a long petiole. Spikes 1–1½ inches long, flowers distinct.” In *A. leptocarpa* the spikes are “somewhat interrupted,” and the calyx “many times shorter than the corolla.”

phyllodes and portion of a valve of the Cambridge Gulf specimen, and phyllodes, a pod and two seeds of the Sims's Island specimen.

The original speaks of the phyllodes as "finely striate and many nerved." Bentham (B. Fl.) speaks of them as with "about three nerves." The phyllodes of *A. plectocarpa* in the "Iconography" are smaller, and have uniformly two nerves. They are, in my opinion, a different species; see p. 96.

Mr. Fitzgerald collected specimens and considered them to belong to a new species. His description follows, and is worthy of publication although his plant is, in my view, conspecific with *A. plectocarpa*.

Mr. Fitzgerald's description begins here:—

A tall shrub to a tree; branchlets angular and along with the phyllodia and rhachises viscid, otherwise glabrous or nearly so; phyllodia lanceolate to narrow-lanceolate, slightly falcate, terminating in a short oblique point, attenuated at the base, of thin texture, with three conspicuous longitudinal nerves and numerous finer ones closely packed between and slightly anastomosing; spikes slender, dense, two together or the uppermost three together, and forming a terminal leafy panicle; flowers small, 4-5-6-merous, the calyx and often the corolla and rhachis closely invested with a short golden-coloured pubescence; calyx lobed almost to the base, the sepals linear, half as long as the corolla; petals broad, connate to above the middle, not ribbed or striate; pod straight, linear,¹ viscid, compressed, the sutures narrow; valves thinly coriaceous, very much undulate; seeds oblique, almost orbicular, dark brown; funicle filiform and straight to near the base of the seed where it forms several dilated folds which constitute an irregular cupular pale coloured basilar arillus.

Lennard, Isdell, Hann, Fitzroy and Charnley Rivers, (W.V.F.)

¹ The word linear is misleading, in view of the further statement that the pod of 4-5 inches long is one-third inch broad. Such an expression as "moderately broad" would be better.—J.H.M.

Among sandstone and quartzite rocks and gravel.

Height 25 – 30 feet; trunk to 10 feet; diam. 9 inches. Bark roughish, dark grey. Timber brown, moderately hard and heavy, tough. Phyllodia 3 – 6 inches long, 5 – 7 lines broad. Spikes $1\frac{1}{2}$ to above $2\frac{1}{2}$ inches long. Pod usually 4 – 5 inches long, by one-third inch broad.

Affinities to *A. plectocarpa* A. Cunn., and *A. pachycarpa* F.v.M. (end of Mr. Fitzgerald's words).

Range. We only know this species from North Western Australia at present, with the single exception of the Sims's Island (Northern Territory) specimen. All Mr. Fitzgerald's specimens are from West Kimberley, roughly about $16^{\circ} 30'$ south latitude, and between the western boundary of the Kimberley Gold-field and Collier Bay.

The following five specimens, all either in flower or early fruit, correspond to Mr. Fitzgerald's description, already given:—

1. Isdell River, near Mount Barnett, West Kimberley, June, 1905 (Type). In flower and early (viscid) fruit. (W. V.F. No. 1015),

2. Base of Mount Rason. In half-grown fruit, viscid. (W.V.F. No. 1293).

3. Six miles north east of Mount Eliza. In flower (W. V.F. No. 743).

4. Pandanus Creek. In flower (W.V.F. No. 1067).

5. Charnley River near F.B. (Camp F. Brockman) 33. In early viscid fruit. (W.V.F. No. 1397).

Mr. Fitzgerald's statement that his new species has affinity with *A. plectocarpa* A. Cunn. and *A. pachycarpa* F.v.M. is explained by the following specimens in fully matured fruit, which, in my opinion, are all *A. plectocarpa*.

1. In ripe fruit. "Erect, 10 feet high." Cambridge Gulf, North of Wyndham; East Kimberley (W.V.F. No.

1589, and labelled by him *A. plectocarpa* A. Cunn. Mr. Fitzgerald "builded better than he knew."

2. Wyndham, in ripe fruit (A. E. V. Woodroffe, September, 1903).

3. Shrub 20 feet high; in ripe fruit. Denham River, East Kimberley. (W.V.F. without number, and labelled by him *A. plectocarpa*).

The seeds of all three specimens are nearly globular, and the almost thread like funicle has two folds, and terminates in a scarcely enlarged basilar arillus.

Specimen No. 3 contains a portion of a flower-spike. The flowers are so resinous that it is difficult to dissect them. The calyx is nearly divided to the base, and the sepals are narrow and tipped with hairs.

Affinities.

1. With *A. Hammondi* n. sp. See p. 95.

2. With *A. pachycarpa* F.v.M., a species that is imperfectly known, but I have certain direct evidence in regard to it. A translation of the original description (Journ. Linn. Soc., III, 139, 1859) is as follows:—

Glabrous, branches angular on the upper side, phyllodes very shortly petiolate, lanceolate or elongate-linear, more or less falcate, recurved-apiculate, inclined to be three-nerved, with numerous very fine parallel veins, having a gland at the base, spikes in short terminal axils, solitary or two, dense and rather shortly pedunculate, calyx five-sinuate, glabrous, three times shorter than the corolla, pod pale yellow, thick, elongated-oblong, flexuose, indehiscent, torulose, marginate, obtuse at the apex, acute at the base, almost straight at the sutures, seeds ovate-globose, opaque, dark, somewhat compressed, with minute whitish strophioles.

At the bank of Sturt's Creek, sub-central Australia, No. 89.

A tall tree, unless I am mistaken. Phyllodes 2 inches or almost a foot long, about 3" broad. Corollas small. Pods $1\frac{1}{2}$ - $2\frac{1}{2}$ " long,

almost $\frac{1}{2}$ inch broad. Seeds about 2'' long, one side very often convex, the other more flattened. The species resembles *Acacias drepanocarpa*, *julifera*, and *delibrata*, in its phyllodes, in the pod however, it is very different. (Description ends here).

The limits of length given for the phyllodes are remarkable, and point to mixed material. They are up to a foot long, and are not near to those of *A. plectocarpa*, but rather resemble those of *A. coriacea* and *stenophylla*, members of the Plurinerves (Microneura). The specimen in fruit in the plate of *A. pachycarpa* in the "Iconography of Acacias" is typical, and the differences between these phyllodes and those of *plectocarpa* are at once observable. The flowering twig of *A. pachycarpa* depicted has certainly different phyllodes, and perhaps it may not be correct. Coming to the fruits, Bentham says those of *A. plectocarpa* may be "almost as broad and thick as in *A. pachycarpa*."

It is desirable that *A. pachycarpa* be re-collected, before we can fully indicate its affinities.

A. HAMMONDI n. sp.

(Julifloræ—Falcataæ.)

(*A. plectocarpa* F.v.M. of the "Iconography of Australian Acacias" non A. Cunn.)

In addition to the type specimens of *A. plectocarpa*, Sir David Prain had the goodness to give me fragments of *A. plectocarpa* A. Cunn., written up by Bentham as var." as follows:—

a. Roper, *Mueller*, No. 25. Phyllodes and pods.

b. Lower Victoria River, *Mueller*, No. 93. Phyllodes and flowers. Both are Northern Territory localities.

Reference to Journ. Linn. Soc., III, 138, shows that *Mueller* himself referred them to *A. delibrata* A. Cunn., which is additional evidence that he had either never seen or had forgotten *A. delibrata*.

The phyllodes are much shorter and narrower than typical *plectocarpa* and have only *two* nerves. It is obvious that (a) and (b) were used by Mueller for the purpose of figuring *A. plectocarpa* in the "Iconography," as regards details in addition to the phyllodes.

The pods have a translucent or waxy lustre, and specimens closely approaching (a) and (b), though with some slight variation in the venation, are available from Etheridge River, North Queensland (W. E. Armit, No. 624), and shrub of 8–10 feet, Cloncurry Road, Normanton, Gulf of Carpentaria (R. H. Cambage, No. 3935).

No. 3935 has scanty remains of flowers which appear to be identical with those of No. 93, about to be described.

We have, in my view, a new species, and it may be described as follows:—

Frutex glabrus præter paucos pilos, ramulis acute angulatis. Foliis lanceolatis v. angusto-lanceolatis, paullo falcatis, 5–7.5 cm. longis et 5–7 mm. latis, venis duabis prominentibus longitudinalibus et numerosis tenuibus parallelibus. Spicis gracilibus non densissimis longitudinem 4 cm. attinentibus. Floribus 5-meris. Calyce latiusculo, semi-truncato, loborum marginibus ciliatis. Petalis basi connatis vel liberis, glabris. Pistillo breve tomento tecto.

Leguminibus tenuibus translucentibus rectis, 5 cm. longis, 6–7 mm. latis, valvarum marginibus incrassatis, valvis bullatis, seminibus fere transverse dispositis.

Funiculo filiforme secundum duas plicas in arillum paullo incrassatum terminante.

A shrub, glabrous except for a few hairs, with acutely angular branchlets. Phyllodia lanceolate or narrow lanceolate, slightly falcate, narrowed at both ends, two to three inches (5–7.5 cm.) long and 5–7 mm. broad, slightly curved at the apex, with a rudimentary gland usually near the apex and one always near the base, with two prominent

longitudinal veins and numerous finer veins parallel thereto, the whole phyllode covered with minute resinous dots.

Spikes slender, not very dense, attaining a length (as measured by an almost glabrous rhachis) of 4 cm. ($1\frac{1}{2}$ inch). Flowers 5-merous. Calyx broadish, semi-truncate, with ciliate edges to the lobes. Petals united a little way up or free, glabrous. Pistil covered with a short tomentum.

Pods (described from No. 25). Thin, translucent, straight, 5 cm. long, width 6–7 mm., abruptly and sharply pointed at apex, somewhat abruptly tapering into a filiform pedicel of about 5 mm. Margins of valves thickened, valves embossed, the seeds arranged almost transversely. Funicle filiform, terminating after two or three folds in a slightly thickened arillus.

Mueller's No. 93, Lower Victoria River, Northern Territory, is taken as the type, while Mueller's No. 25, from the Roper River, is taken as the co-type.

It is named in memory of my only son, Harrie Hammond Maiden, who for years before his untimely death, was my companion in the bush, and an assiduous observer and collector of plants.

Range.—Northern Territory (Arnhem's Land) and Northern Queensland, extending across the tropical portions of both political divisions. The Victoria River embouches close to the Western Australian boundary, hence later I expect to find the plant in tropical Western Australia; the Roper runs into the western portion of the Gulf of Carpentaria. On the other (eastern) side of the Gulf, the Cloncurry Road, Normanton, is towards the south-eastern angle of the Gulf, while the Etheridge River is more to the east. The Etheridge runs into the Einasleigh which runs into the Gilbert, which flows into the eastern side of the Gulf. Georgetown is the chief settlement on the Etheridge.

Affinities.

1. With *A. plectocarpa* A. Cunn. The phyllodes of *A. Hammondi* are much smaller, are usually two-nerved, while those of *A. plectocarpa* are three or many nerved. The flowers are different, those of *A. plectocarpa* having hairy, linear sepals, while the calyx of *A. Hammondi* is broadish and semi-truncate, with cilia. The fruits of *A. plectocarpa* are coarser and more opaque, with the seeds more deeply embossed and differently arranged in the pod.

I know no close relations of *A. Hammondi*, but that is perhaps because our tropical Acacias have been so imperfectly worked out. We have several Acacias with straight, flattish, embossed pods, but none small and of a waxy lustre.

21. *A. TUMIDA* F.v.M.

Isle Lacrosse, N.W. Coast. A. Cunningham.

“A tree to 30 feet; trunk to 10 feet; diam. 9 in.; bark dark coloured, smooth; timber brownish, and rather hard; phyllodia glaucous.” (W. V. Fitzgerald, MSS.)

22. *A. RETINERVIS* Benth.

Cape Pond, N.W. Coast, A. Cunningham.

23. *A. HOLOSERICA* A. Cunn.

Cambridge Gulf, N.W. Coast, A. Cunningham; Nickol Bay, F. Gregory's Expedition. Cunningham (M.S. Journal Vol. II, p. 78) collected it at Cambridge Gulf, 22nd September, 1819.

“Tall shrub to a tree of 30 feet; trunk to 8 feet; diam. 9 in.; bark dark coloured, smooth; timber brown and moderately hard.” (W. V. Fitzgerald, MSS.)

24. *A. DIMIDIATA* Benth.

“Various parts of the N. Coast, A. Cunningham.” Most of Cunningham's collecting in Northern Australia was done in the Nor-West. I admit this from the Nor-West, though with some doubt.

25. *A. FARNESIANA* Willd.

N.W. Coast, A. Cunningham. Nickol Bay, F. Gregory's Expedition.

26. *A. SUBEROSA* A. Cunn.

Vansittart Bay and Careening Bay, A. Cunningham. Glenelg Bay, J. Martin.

"A tree of fir-like aspect, to 40 feet; trunk to 15 feet; diam. 1 foot; bark dark grey, thick, rough and corky; timber pale and rather tough; peduncles thick, bracteate, solitary, axillary, shorter than the leaves; flowers 5-merous, usually about six in a head which is subtended by a prominent lobed cupular bracteole, each flower about 2 lines long, slightly sericeous; calyx infunduliform, lobed to about one-third of its length; corolla exceeding the calyx by $\frac{1}{2}$ line, greenish, very shortly lobed, the lobes scarcely acute; stamens pale yellow, $1\frac{1}{2}$ - 2 lines long; pod to 9 in. long, $\frac{1}{3}$ in. broad. On grassy black soil plains, occasionally in sandy loam. 'Mimosa.' A splendid forage plant." (W. V. Fitzgerald, MSS.).

9. *Mueller*. "Plants of North Western Australia," enumerated by Baron Ferdinand von Mueller. fcp. Govt. Printer, Perth, 1881. (Presented to the Legislative Council 1880). It contains two Parts:—

(1). "Enumerative notes on the plants collected during Mr. John Forrest's Trigonometrical survey of the Nickol Bay district during the year 1878." (pp. 3-13).

(2). "List of the plants collected during Mr. Alexander Forrest's Exploring Expedition in 1879 between Nickol Bay and King's Sound." (14-19).

i. In Part I we have:—

27. *A. sentis* F.v.M. Nickol River, A. Forrest.

13. *A. hemignosta* F.v.M. Yule River, J. Forrest.

28. *A. gonocarpa* F.v.M. var. *lasiocalyx* F.v.M. "A variety (unless a distinct species) with more perceptibly margined phyllodia, the calyces and base of corolla beset with short yellow hair." Yule and Fortescue Rivers, Jones' Creek and George's River. J. Forrest. (Prof. Ewart tells me it is no longer in the Melbourne Herbarium).

In Part II, we have

5. *A. hippuroides* Heward from three localities between 17 and 18° S. Lat. and 121–123° E. Long.

A. sentis and *A. gonocarpa* are new records.

ii. *Mueller*. "Catalogue of plants collected during Mr. Alexander Forrest's geographical exploration of North West Australia in 1879." Proc. Roy. Soc. N.S.W., xiv, 81 (1880). These are King's Sound to Darwin, and are therefore both Northern Territory and Nor-West. More specific localities are, however, given with each species. (In Despeissis, p. 20, there is an account of the results to Nor-West Settlement of A. Forrest's Expedition).

Mueller refers to the circumstance that, when the Parliamentary Report was published, only the Nickol Bay to King's Sound specimens were available, and says that Mr. James C. Carey also assisted in the collection. He also adds some hitherto unrecorded data from the A. C. Gregory Expedition of 1856, of which he was botanist and which mainly traversed the Northern Territory.

The Nor-West Acacias recorded appear to be:—

29. *A. retivenia* F.v.M. Margaret River.

15. *A. Wickhami* Benth. Margaret River.

30. *A. stipulosa* F.v.M. East of the Oscar Ranges, Humbert River.

31. *A. pallida* F.v.M. Margaret River.

So that *retivenia*, *stipulosa* and *pallida* are new records.

32. *A. sclerosperma* F.v.M. in Wing's Southern Science Record, II, 150 (1880), is recorded from the Nickol River, and probably from this Expedition. It is a new record.

10. "Report (s) on the Geology of the Kimberley district" by Edward T. Hardman, Government Geologist, Perth, printed by order of the Legislative Council; 1884, pp. 22, 16 plates and a map; 1885, pp. 38, 26 plates and a map, contain no botany, but the admirable lithographic views are most helpful to the botanist.

11. *King, H. S.* (1885). Mr. F. S. Brockman, Surveyor-General of Western Australia, informs me that "Mr. King conducted a triangulation and feature survey from the North West bend of the Lyons River northward to the Ashburton, and North-westward to the Fortescue Rivers, during the middle six months of the year 1885. This survey covered the country shown by flat blue wash on map attached. (Not reproduced, but filed in the National Herbarium, Sydney).

"This would be the occasion on which the plants referred to by the Government Botanist, Sydney, were collected, these plants though (I understand from Mr. King) having been forwarded for classification to the late Baron von Mueller."

They were described in a paper entitled "Plants collected in Capricornic Western Australia, by H. S. King Esq., and recorded by Baron von Mueller" etc. (Proc. Roy. Soc. Vict., XXIII, 49 - 57 (1886).

12. *Mueller.* "Descriptions of two hitherto unrecorded West Australian plants." Proc. Linn. Soc. N.S.W., XIII, 162 (1888). Although it takes cognizance of some King's Sound plants, there are no *Acacia* records from the North-West.

13. *Mueller.* In Proc. Linn. Soc. N.S.W., XIII, 1256 (1888), Mr. J. J. Fletcher communicated to the Society a list of plants collected by Mr. W. W. Froggatt (employed by Hon. W. Macleay, M.L.C.) at King's Sound. The determinations were by Mueller.

The Acacias amongst them are:—

27. *A. sentis* F.v.M.

33. *A. impressa* F.v.M.

14. *A. flavescens* A. Cunn. (probably = *A. sericata*).

34. *A. drepanocarpa* F.v.M.

A. doratoxylon F.v.M. (probably *A. proxima* n. sp., see No. 58).

A. impressa and *drepanocarpa* are new records.

14. *Mueller*. "Observations on plants collected during Mr. Joseph Bradshaw's Expedition to the Prince Regent's River." Proc. Linn. Soc. N.S.W., xvi, 457 (1891).

This was a private expedition from Cambridge Gulf to Prince Regent's River, and the collection of plants, entrusted to Mr. William Tucker Allen, was well done.

The Acacias collected were:—

11. *A. translucens* A. Cunn. Roe's River.

4. *A. lycopodifolia* A. Cunn. Woodhouse and Pentecost Rivers.

13. *A. hemignosta* F.v.M. Prince Regent's River.

14. *A. sericata* A. Cunn. (recorded as *A. flavescens*—a matter of opinion).

35. *A. Kelleri* n. sp. Durack River.

26. *A. suberosa* A. Cunn. Carson River.

31. *A. pallida* F.v.M. Carson River.

A. Kelleri is a new record.

15. *Tepper, J. G. O.* "The Flora of Roebuck Bay, West Australia." Proc. Roy. Soc. S.A., xvii, 13 (1893).

The collections were made by the writer's son (J. W. O. Tepper) 1889-91, and most of the determinations were made by *Mueller*. The specimens were collected in a very dry season, at four localities. Most of them were collected near the modern Broome.

The Acacias enumerated are (with the original query marks):—

4. *A. lycopodifolia* A. Cunn.
 23. *A. holosericea* A. Cunn. 4–6 feet.
 (?) 21. *A. tumida* F.v.M.
 (?) *A. acuminata* Benth. (This is *A. proxima* n. sp.
 See No. 55).
 1. *A. bivenosa* DC. 4–5 feet.
 (?) *A. signata* F.v.M.
 (?) 32. *A. impressa* F.v.M.

A. signata would be a new record, if confirmed.

Tepper, J. G. O. "Die Flora von Roebuck Bay, Nord-West Australien." Botan. Centralb. No. 22, (1893).

Practically the same as the preceding paper, but the query marks are removed from the Acacias, doubtless through inadvertence.

16. Tate, Prof. Ralph. "A list of plants collected by the Calvert Expedition." Proc. Roy. Soc. S.A., XXI, 69 (1897).

The collection was made by Mr. G. Keartland and is supplemental to the collections abandoned at Joanna Springs owing to the disaster. "It was made . . . while stationed at the junction of the Fitzroy River and Margaret Creek, about 150 miles from Derby; and secondly, whilst on the search for his missing colleagues, embracing 100 miles down the Fitzroy, thence south to near Joanna Springs, and thence to Derby."

"The facies is that of the Eremæan botanical province, largely composed of Indo-Australian species such as prevails over the tableland skirting the littoral tracts of North Western Australia."

The Acacias enumerated are:—

- | | |
|-----------------------------|---------------------------|
| 36. <i>A. dineura</i> | 37. <i>A. stipuligera</i> |
| 21. <i>A. tumida</i> F.v.M. | 26. <i>A. suberosa</i> |

See also "Journal of the Calvert Scientific Exploring Expedition, 1896-7," fcp. pp. 62, maps and plans. Published by the Western Australian Parliament, 1902. See also "The Calvert Scientific Exploring Expedition," by J. G. Hill, sm. 4to. pp. 44 (1905) with map showing the route.

A. dineura and *A. stipuligera* are new records.

17. *Helms, Richard*. "East Kimberley." Journ. Bureau Agric. W.A., 2nd, 16th, and 30th June, 1897. A valuable paper, containing notes on the natural vegetation, absence of forests, reforesting the country and list of trees and other economic plants for introduction.

18. *Brockman, F. S.* "Report on Exploration of North-West Kimberley, 1901, by Fred. S. Brockman, Chief Inspecting Surveyor (Leader), with Appendices by Chas. Crossland (Second in Command) and Dr. F. M. House (Naturalist and Botanist). Fcp. pp. 1 - 19, 51 - 59, with 28 photos, chiefly of ethnographical interest, and a map (Govt. Printer, Perth, W.A., 1902). The botanical references are few. At p. 10 it is stated that specimens of the principal grasses had been forwarded to the Agricultural Department.

"In no part of the country did I find timber or any indigenous product (other than grass) of any commercial value. The Cypress Pine is I believe, the same that is used in Queensland for fencing and building, and, as it grows to a fair size and length, it should be suitable for those purposes locally."

Dr. House (p. 17) states that . . . "the duties of packing horses and attending to all my personal wants left little time for anything else in the intervals of travelling." At p. 18, he notes that the natives stupefy fish by using the "root of a shrub which grows along the banks of all these rivers, and which is known on the Fitzroy River as Majalla." On p. 19 he states, "a number of botanical specimens were

obtained, but the wild flowers of this region are very much less numerous than in the southern part of the State. Ferns of considerable beauty and growing in great profusion, were found in some of the gorges. Unfortunately the grasses of the basalt country were not in flower and the seed had all dropped. The distribution of the curious baobab tree is somewhat remarkable, the area over which it grows being very restricted and apparently dependent to a great extent on the nature of the soil."

The results of this Expedition were briefly described by Mr. Fraser in the W. A. Yearbook for 1900-1, p. 72.

At p. 4 of his report, Mr. Fitzgerald referred to Dr. House's collection as "small," and most, if not all the species were collected later by him (Mr. Fitzgerald). At p. 11 it is stated that Dr. House's collection consists of solitary specimens of less than 100 species, many of them fragmentary.

19. *Pritzel, E.* E. Pritzel in Diels and Pritzel, Engler's Bot., Jahrb. xxxv, (1905) collected

11. *A. translucens* A. Cunn. 39. *A. xiphiophylla* n. sp.
 38. *A. sphærostachya* n. sp. 40. *A. trachycarpa* n. sp.
A. camptoclada n. sp. All at or near Roeburne.

The name *A. camptoclada* being preoccupied, see below, I have suggested No. 55, *A. proxima* for it.

55. *A. proxima* n. sp.

Synonyms (1) *A. camptoclada* E. Pritzel in Engler's Bot. Jahrb., xxxiv, 309 (1905). This name is preoccupied by *A. camptoclada* Andrews, Journ. W. A. Nat. Hist. Soc. 39 (May, 1904), a species aff. *A. undulifolia* A. Cunn.

(2) (?) *A. acuminata* Mueller or Tepper non Benth. in Proc. Roy. S.A., xvii, 17, (1893).

This has been looked upon by some observers as *A. doratoxylon* A. Cunn., but no pods are available in the case of

any Tropical West specimen known to me. We must therefore suspend our judgment. As it has been separately described, and for other reasons, it will be convenient to refer to it by name. I suggest that of *A. proxima*.

Pritzel, comparing it with *A. doratoxylon*, says that it differs in having 1–3 nerved phyllodes, looser spikes, and the slender peduncles longer. There is a gland at the base of the phyllode, consisting of a small circular orifice, which does not appear to be in normal *A. doratoxylon* A. Cunn. Flowers 5-merous on a long spike, somewhat scattered. Calyx roundly lobed, covered in hair. Petals divided partly down, glabrous. Pistil very small, glabrous.

A specimen near to the above, from Meda, (Dr. H. Basedow, No. 7, April, 1916), shows the following variation from typical *A. doratoxylon*—flower spikes in clusters as many as four in one group, not racemose as in *A. doratoxylon*. Gland a circular orifice. Phyllodes somewhat mealy, or less striate than *A. doratoxylon*.

20. Fitzgerald, W. V. "Reports on Portions of the Kimberleys (1905-6)," fcp. pp. 18 with a map. Perth, Government Printer, 1907. The reports are two and were addressed to the Surveyor-General.

(1) "Report on a portion of West Kimberley, (1905)."

Mr. Fitzgerald was attached to Mr. C. Crossland's party, and the report covers pp. 3–14. The first paragraph of p. 3 shows the route traversed. At pp. 11–13 is a useful botanical resumé, and it is to be regretted that the lists of the plants found, and here referred to, were not published.

At p. 11 he makes the statement, "Prior to the determination of my data, within the ordinal limits already mentioned, there were recorded from tropical Western Australia 985 species. These are now augmented by 268, making a total to date of 1253 species, inclusive of 89 which

are new to science. Eleven species indigenous in India are now recorded as Australian." At the same page he speaks of "Mimosa" (*Acacia suberosa* and *A. Bidwilli*) occurring on the richer grassed plains, called "Mimosa plains," and the foliage of both species is readily eaten by stock.

(2). "Report on portions of the Kimberleys (1906)."

This occupies pp. 15–18 (in the second paragraph of p. 15 there is an account of the route), and there is a brief botanical note at p. 16 in which the author says, "The 1905–1906 collections have added 319 species to our tropical flora, which now, from Dilleniaceæ to Filices inclusive, comprise 113 Natural Orders to 1304 species."

These numbers are E. and O. E. as accountants say, and Mr. Fitzgerald's are the only figures, of which I am aware, referring to tropical Western Australia in contradistinction to the "N.A." of Bentham and Mueller, and to which I have referred in my account of the Acacias of the Northern Territory.¹

At p. 16 attention is drawn to small collections by Messrs. Mayo Logue and J. P. Rogers. On the same page is an account of Sunday Island (Eewin)² which really consists of three islands at the entrance of King Sound. Brief notes on the vegetation will be found at p. 18.

Some of Mr. Fitzgerald's specimens came into my care through purchase from a person into whose hands they had passed, and some of the Eucalypts have been described by me.³

¹ The title of the work (in the press) is "The Flora of the Northern Territory," by Alfred J. Ewart, D.Sc., Ph.D., etc., and Olive B. Davies, M.Sc. with the co-operation of J. H. Maiden, E. Cheel, and A. A. Hamilton.

² Sunday Island (Ewenu), King Sound, Kimberley is described by W. D. Campbell and W. H. Bird, in Proc. Roy. Soc. W.A., 1, 55. At p. 58 is an account, with native names, of some of the most important plants, but no botanical names are given.

³ This Journal, XLVII, p. 221; XLIX, 317, 318.

Some of Mr. Fitzgerald's Acacias from the herbarium of the W.A. Department of Agriculture (received by me from Dr. F. Stoward) are published in the present paper. Mr. Fitzgerald's manuscript quoted, was sent by him to me on the eve of his departure on active service in April, 1916, although I did not read the greater part of it until December, I hope that the rest of the manuscript, at all events that which refers to new species, will soon be published. It would appear that some of the corresponding specimens have been very much dispersed, and no complete set of them exists; this is to be regretted as the collection is the most important tropical West Australian one ever made.

In the "Western Mail" (Perth, W.A.), issues of 2nd, 9th and 16th June, 1906, Mr. Fitzgerald figured (small photographs) a number of new or rare species from the Kimberleys, some of the names being still apparently *nomina nuda*. The only Acacia he figured was "The fir-like Acacia" (*A. suberosa* A. Cunn.).

Some of Mr. Fitzgerald's manuscript has already been recorded in this paper as supplementary to the observations of Bentham in the Flora Australiensis; the species Mr. Fitzgerald has recorded as new for the tropical west are as follows:—

41. *A. LUEHMANNI* F.v.M.

Inglis' Gap, King Leopold Ranges; Packhorse Range. Diffuse, 3–4 feet high, and as much across, more or less viscid. In sandy soil (W.V.F.).

42. *A. LYSIPHLŒA* F.v.M.

Inglis' Gap, King Leopold Ranges; Packhorse Range; Hann River. Diffuse, 3–8 feet high; bark reddish, rather rough and curly; phyllodia somewhat viscid; valves of the pod hirsute. In sandy soil (W.V.F.).

43. *A. LINARIOIDES* Benth.

Bold Bluff; Isdell and Denham Rivers; Dillen's Springs. Erect, 6–10 feet; bark reddish, rough and curly; phyllodia

viscid, sometimes above 3 in. long; spikes to 2 in. long, on slender peduncles of above 1 in., usually solitary; sepals very small, slightly ciliate; pod frequently $2\frac{1}{4}$ in. long, 2 lin. broad, very viscid, glabrous or scantily pilose. Among sandstone and quartzite rocks (W.V.F.).

44. *A. LIMBATA* F.v.M.

Dillen's Springs. Erect, 3-4 feet. On stony flats (W.V.F.).

45. *A. CONSPERSA* F.v.M.

Peduncles solitary or several together, $\frac{1}{2}$ in. or more in length, pubescent; spikes slender, about 1 in. long; flowers hirsute, mostly 5-merous; sepals linear, almost free, nearly or quite as long as the corolla; petals connate to above the middle, with scarcely evident midribs, the tips thickened, (no locality quoted). (W.V.F.)

46. *A. OLIGONEURA* F.v.M.

Edkins Range; Calder River. Erect, 6-8 feet. In sandy soil. (W.V.F.)

What is *A. oligoneura* F.v.M.?

It was described by Mueller in Journ. Linn. Soc. III, 139 (1859), in words, of which the following is a translation:—

Glabrous, with graceful angular-compressed branches, with phyllodes chartaceous, subsessile, elongated, narrow-lanceolate, acuminate gradually towards the apex, and narrowed towards the base, slightly falcate, trinerved, reticulately veined, glandular at the base, the veins close to the base confluent with the lower margin, no marginal glands, rhachises axillary, solitary or fasciculate, short, cylindrical, glabrous, peduncles slender, calyx broadish, membranous, dentate, a third of the length of the corolla, pods—(wanting).

In Arnhem Land near MacAdam Range, No. 96; Victoria River, No. 95.

Phyllodes mostly 4-6 inches long, half an inch broad. Flowering spike half an inch long or a little more.

Bentham, who edited Mueller's paper, added,—“*Acacia delibrata* All. Cunn. ex Benth. in Hook. Lond. Journ. Bot. I, 374, var.?” He also made the following note:—

[“The specimens Nos. 95 and 96 are in young seed, and Cunningham's are out of flower with a loose fruit; but, as far as these materials admit of identification, they appear to belong to the same species; the phyllodes are, it is true, longer and not so coriaceous; but so they are in some of Cunningham's specimens. Dr. Mueller's specimen No. 91¹ from Fitzmaurice River, is exactly like one of Cunningham's except with rather more coriaceous phyllodia; it is in good fruit, and the pod similar to Cunningham's. The specimens Nos. 71, 90, and 92¹ came from Sturt's Creek, No. 25¹ from Roper, No. 40¹ from Seven Emu River, and No. 93¹ from Lower Victoria River, have still more coriaceous phyllodia, and, in the case of the two last, considerably shorter; but they probably all belong to one species.”]

In the key in B. Fl. II, 317 Bentham contrasts *A. delibrata* with *A. oligoneura* in the following words (I leave out reference to the pods, as those of *A. oligoneura* are unknown).

Phyllodia sprinkled with a few hairs.....*delibrata*
 Phyllodia very glabrous, the smaller veins
 between the three principal nerves
 scarcely conspicuous.....*oligoneura*

At p. 405 he gives a description of *A. oligoneura* and adds, “possibly the same as *A. delibrata*.” The original descriptions tell us of the phyllodes, the remarkably short spikes, and the calyx. The petals are not described, nor was the pod seen.

¹ *Op. cit.*, p. 138 attributed to *A. delibrata* by Mueller. At p. 139 remarks on these and other numbers, with some doubt, are made by Bentham, Nos. 25 and 93 are, however, *A. plectocarpa* A. Cunn., var. according to specimens in the Kew Herbarium (*A. Hammondi* n. sp., of the present paper). See p. 95.

Mueller's "Iconography of Australian Acacias" does not help us in regard to the position of *A. oligoneura*, for he does not figure it, while his plate of *A. delibrata* is not that species, see p. 86.

The numbered specimens in the original description are not available, and most of them are doubtfully attributed to *A. delibrata*. When discovered, the material must be closely compared with that of *A. delibrata* A. Cunn. I am of opinion that *A. oligoneura* is too uncertain a species to deal with in the present state of our knowledge, and it may perhaps have to be abandoned. I should be very grateful for a sight of material attributed to *A. oligoneura*.

47. *A. AULACOCARPA* A. Cunn.

Goose Hill, near Ord River; Dillen's Springs. Tree to 30-40 feet, trunk 10-15 feet; diam. to above 1 foot; bark dark grey, roughish; timber brown and tough. In sandy loam. (W.V.F.)

48. *A. HUMIFUSA* Benth.

Summits of Mounts Browne and Leake; Bold Bluff. Stems depressed, 1 foot long. Among sandstone and quartzite rocks. (W.V.F.)

49. *A. BIDWILLI* Benth.

Near Wyndham; Ord, Denham, King, Isdell, Adcock, Barnett, Hann and Charnley Rivers. Shrub to tree of 30 feet; trunk to 10 feet, diam. 1 foot; bark dark coloured, rough and corky; timber pale and rather soft; branchlets, leaves and pods finely villous; a conspicuous gland above the base of each petiole; flowers white, scented. In the black soil of grassy plains. "Mimosa," a splendid forage plant. (W.V.F.)

50. *A. SALICINA* Lindl. var. *VARIANS* Benth.

"Isdell, Adcock, Charnley, Fitzroy Rivers; northern base of Mount Brennan. Tree of 30 feet; trunk to 10 feet;

diam. 1 foot; bark dark coloured, roughish; timber pale, tough; flowers almost white, strongly scented. In sandy loam." (W. V. Fitzgerald, MSS. as *A. penninervis* Sieb.). See my "Forest Flora of New South Wales," Part xxxix. It occurs in the Northern Territory and Western Australia.

In addition, we have new species as follows:—

Julifloræ (Stenophyllæ).

51. *A. KIMBERLEYENSIS* W. V. F. n. sp.

Frutex erectus, glaber, paullo tomentosus, viscidus, ramulis gracilibus, angulatis; phyllodiis angustis vel subulato-linearibus, plerumque falcatis, prominenter 3-nervis; spicis in pedunculis brevibus, gracilibus, solitariis vel geminis, gracilissimis, 5-meris; sepalis lineari-spathulatis, liberis, corolla fere æquilongis, tenuibus; petalis medio connatis, obtusis, tenuibus; legumine lineare, compresso sed crasso, glabro, viscido, inter semina oblique partito, obtuse 6-angulato; seminibus paullo obliquis, angusto-oblongis; funiculo breve, a basi densato, breviter plicato; arillo lobato, cupulare. (Mr. Fitzgerald is not responsible for this and other Latin descriptions).

An erect shrub, with slender angular branches, glabrous or slightly tomentose and more or less viscid; phyllodia narrow- to subulate-linear, usually falcate, with a short obtuse hooked point, much flattened, but rigid, prominently 3-nerved, with occasionally a fainter one between; spikes on short slender peduncles, solitary or two together, very slender, the flowers closely approximated, small, mostly 5-merous; sepals linear-spathulate, quite free, nearly or quite as long as the corolla, thin; petals connate to the middle, obtuse, thin; pod linear, compressed but thick, shortly acuminate, glabrous and somewhat viscid, obliquely partitioned between the seeds; valves dehiscing elastically from the apex downwards, firm, with a slightly raised longitudinal angle or rib on each side between the suture and the centre of the valve, striate between, the whole pod

obtusely 6-angled; seeds slightly oblique, narrow-oblong, shining, greenish-black; funicle short, much thickened from the base, shortly folded and terminating in a lobed cupular pale coloured basilar arillus.

Packhorse Range, Kimberley district. Amongst sandstone. (W.V.F.)

Height 3–5 feet. Phyllodia 3–5 in. long, $\frac{3}{4}$ line broad. Spikes 1 in. or less. Pod 3–4 in. long, nearly 2 lines across. Seeds 3 lines long.

Affinities to *A. oncinophylla* Lindl. and *A. gonocarpa* F.v.M.

Mr. Fitzgerald has written thus far; following are my observations.

A graceful species. The young stems flattened and strongly nerved on each side from the place of the insertion of the phyllode, giving them the appearance, under a lens, of phyllodes, especially when very young. Sometimes they have three nerves, making them 3-sided (triquetrous).

Phyllodes up to 16 cm. ($6\frac{1}{4}$ inches) long, with one main nerve, two less strongly marked, and others less distinct still giving the whole a deeply grooved appearance. The attachment of the phyllodes short.

Flowers in spikes, usually in pairs. Flower 5-merous, quite glabrous. Calyx very narrow (linear), about half the length of the corolla, united at the extreme base. (Mr. Fitzgerald speaks of the sepals nearly or quite as long as the corolla, but this is not the case in any specimen of this species I have examined, nor have I seen this in any other *Acacia*).

Petals divided about half way down and spreading.

Seed with an arillus as broad as the seed, and tapering to the attachment to the funicle, thus forming a wrinkled,

conoid mass; the length of the seed equal to that of the funicle and its arillus.

Affinities.

1. With *A. gonocarpa* F.v.M. I think the closest affinity of this species is with *A. gonocarpa*. *A. Kimberleyensis* can be separated from *A. gonocarpa* by the more numerous and strongly nerved phyllodia, the shape and position of the gland. The flowers are very much alike. The seed of *A. Kimberleyensis* presents close resemblance to that of *A. gonocarpa*, but the funicle of the former (from the material available) appears to be a little more wrinkled than that of the latter. The pod of *A. Kimberleyensis* is narrower and less woody.

2. With *A. arida* Benth. This is another species with somewhat similar flowers, but those of *A. arida* are rather broader in the calyx-lobes, and the petals do not appear to be recurved. The original description says that the calyx is shortly lobed. According to a specimen seen by Bentham and presented by Kew to Sydney, the lobes are divided to the base. The phyllodes and stems of *A. Kimberleyensis* and *A. arida* are quite different; the phyllodes are shorter, scarcely veined, and are covered with resinous dots (as seen under a lens). The stems are terete, spotted and hoary in appearance.

3. With *A. oncinophylla* Lindl. *A. oncinophylla* Lindl. quoted by Mr. Fitzgerald, is a "heavier" looking plant with pods of a different shape, covered with a vestiture of golden hair, and is in other respects very much more remote from *A. Kimberleyensis* than *A. gonocarpa* is.

Julifloræ (Rigidulæ).

52. *A. CURVICARPA* W. V. F. n. sp.

Frutex diffusus, pruinosis, plus minus resinosis; phyllodiis oblongis vel lanceolato-falcatis, obtusis, apicibus glandulosis sub-

prominentibus, coriaceis; venis parallelis numerosissimis, 3 – 5 prominentioribus; spicis solitariis, densis, brevissime pedunculatis, 5-meris; calyce truncato, viscido-pubescente, corolla fere æquilongo, petalis medio connatis; nervis mediis conspicuis, apicibus incurvatis; legumine curvato annulum formante, lineare, viscido-piloso; seminibus longitudinalibus angusto-oblongis; funiculo breve, plicis pluribus incrassatis, arillo cupulare.

A diffuse shrub, hoary and more or less resinous, the branchlets rather stout and angular; phyllodia from oblong to lanceolate-falcate, obtuse with rather prominent glandular tips, of a leathery texture, the parallel veins very numerous and closely packed, 3 – 5 more prominent than the others, several confluent with the lower margin; spikes solitary, very shortly pedunculate, dense; flowers mostly 5-merous; calyx viscid-pubescent, shortly and broadly lobed, but little shorter or quite as long as the corolla; petals connate to the middle, viscid, with conspicuous midribs and incurved tips; pod curved so as to form one or more rings, linear, viscid-pilose, the valves convex and coriaceous; seeds longitudinal, narrow-oblong, shining-black; funicle short, with several thickened folds and terminating in a cupular basilar arillus.

Near the junction of the Hann and Barnett Rivers (W. V.F.). On quartzite hills.

Height 3 – 4 feet. Phyllodia mostly 3 – 4 in. long, $\frac{3}{4}$ in. or less broad. Spikes 1 in. or less. Pod 2 – 3 in. long, about 2 lines broad. Affinity to *A. acradenia* F.v.M.

The above description is by Mr. Fitzgerald; the following notes are by myself.

Calyx truncate-lobed, two thirds of length of corolla, thick, covered in coarse short hair. The calyx is a bright lemon yellow, the petals a pale yellowish salmon. Petals united half way up but easily separating, thickened tips

with a few scattered hairs. Pistil glabrous except at the top where it is crowned with a few hairs.

Affinity.—With *A. umbellata* A. Cunn. (*A. acradenia* F.v.M.)

The phyllodes of *A. umbellata* are of a finer texture than those of *A. curvicarpa*; the striate lines are edged with short hairs and the gland at the base does not project; it does project in *A. curvicarpa*. Very resinous; glabrous in *A. curvicarpa*. The flowers are very similar to those of *A. umbellata*; pistil hoary.

The seeds of *A. curvicarpa* are placed longitudinally in the thin, curved pods, filling them, are attached to the outer curve; the broad arillus suddenly tapers off into a thread-like funicle. The pod of *A. umbellata* is slightly falcate, thick, and so resinous that it is very difficult to open it. The seeds resemble those of *A. curvicarpa*, and are disposed the same way in the pod, but are smaller.

Bipinnatæ (Botryocephalæ).

53. *A. PACHYPHLOIA* W.V.F. n. sp.

Frutex altus vel arbor, ramulis fere teretibus, glabris. Foliis bipinnatis, pinnis 2 v. 3 paribus petiolo commune æquilongis. Foliolis 10 – 15 paribus, ovato-lanceolatis ad oblongis, cinereis, venis ascendentibus. Floribus in capitulis globosis, racemosis foliis breviores formantibus. Legumine breviter stipitato, lato-lineare, glabro, compresso. Valvis coriaceis, irregulariter striatis. Seminibus longitudinalibus, ovatis, brunneis. Funiculo crasso, arillo clavato sub basi.

A tall shrub or tree; branchlets almost or quite terete, glabrous; leaves bipinnate, the pinnæ in 2 – 3 distant pairs, at least as long as the common petiole; leaflets 10 – 15 pairs, ovate-lanceolate to oblong, callous-pointed, somewhat coriaceous, of a greyish hue, the veins ascending; flowers in globular heads and forming racemes shorter than the

leaves; pod shortly stipitate, broad-linear, glabrous, compressed; valves coriaceous, slightly convex and irregularly striate; seeds longitudinal, ovate, brown; funicle thick and terminating in almost clavate sub-basilar arillus.

Slopes of Bold Bluff; hills near C. 92, in proximity to the Synnot Range; hills by the Charnley and Calder Rivers (W.V.F.). Always on andesite.

Height to 30 feet; trunk to 10 feet, diam. 6–9 in.; bark dark or iron-grey, very thick, rugose, deeply longitudinally fissured and corky. Timber pale, and not very hard. Pinnæ 3–5 in. long, the common petiole 3–5 in. Leaflets $\frac{1}{2}$ – $\frac{3}{4}$ inch long. Pod 3–5 inch long, $\frac{1}{2}$ inch broad. Seeds fully 5 lines long. Affinity to *A. elata* A. Cunn.

(Its closer affinity is, however, with *A. pruinosa* A. Cunn. an eastern Australian species, closely resembling that species in the leaflets. The resemblance to *A. elata* is more remote. Its pods resemble those of *A. Bidwilli* Benth. Its affinities cannot usefully be further investigated in the absence of flowers. Mr. Fitzgerald apparently saw some, for he describes them “in globular heads,” but he does not describe their structure. I have only seen leaves and old pods.—J.H.M.).

21. *Domin, K.* “Additions to the Flora of Western and North-western Australia.” Journ. Linn. Soc. Bot. xli, 245 (1912). This paper takes cognizance of some plants collected by Dr. E. Clement between the Ashburton and De Gray (Grey) Rivers. These are the “North-western” plants. The paper includes only Monocotyledons, Ferns, and a *Casuarina*.

22. *Cheel, E.* “Records of West Kimberley Plants collected by Dr. E. Mjöberg’s Scientific Expeditions to Australia (1910–1913). K.Svenska Ventensk. Akad. Handl. Bd. 52, No. 10, Stockholm, 1916. I have not seen the paper. It is quoted in “Contributions to West Australian Botany”

by C. H. Ostenfeld (Dansk. Botanisk Arkiv. 1916). Following are the Acacias:—

4. *A. lycopodifolia* A. Cunn. (a form near var. *glabrescens*), Broome.
 32. *A. impressa* F.v.M., Broome; West Kimberley.
 21. *A. tumida* F.v.M., Broome; West Kimberley.
 23. *A. holosericea* A. Cunn. "Silver Wattle," Broome; West Kimberley; St. George's River.

23. *Basedow, Dr. H.* In 1916 Dr. Basedow collected plants in North West Australia between King Island and Exmouth Gulf, and he has placed them in my hands.

The Acacias are:—

32. *A. impressa* F.v.M., Emmanuel Yards (No. 8).
 45. *A. oligoneura* F.v.M., perhaps, in fruit only, Sunday Island (No. 116).
 5. *A. hippuroides* Hew., Raft Point (No. 140).
 54. *A. Simsii* A. Cunn., Glenelg River District. Known from Northern Territory; apparently new from Nor-West (No. 143).
 19. *A. delibrata* A. Cunn., (No. 130).
 15. *A. Wickhami* Benth. Glenelg River District, (No. 152).
 4. *A. lycopodifolia* A. Cunn. var. *glabrescens* Benth., (No. 122). Yampi.

A. Simsii is a new record.

Following is a list of Nor-West species referred to in the foregoing:—

- | | |
|-------------------------|-----------------------|
| 1. <i>bivenosa</i> | 6. <i>Gregorii</i> |
| 2. <i>patens</i> | 7. <i>spathulata</i> |
| 3. <i>Bynoeana</i> | 8. <i>pyrifolia</i> |
| 4. <i>lycopodifolia</i> | 9. <i>deltoidea</i> |
| 5. <i>hippuroides</i> | 10. <i>setulifera</i> |

- | | |
|--|----------------------------------|
| 11. <i>translucens</i> | 33. <i>impressa</i> |
| 12. <i>coriacea</i> | 34. <i>drepanocarpa</i> |
| 13. <i>hemignosta</i> | 35. <i>Kelleri</i> |
| 14. <i>sericata</i> | 36. <i>dineura</i> |
| 15. <i>Wickhami</i> | 37. <i>stipuligera</i> |
| 16. <i>stigmatophylla</i> | 38. <i>sphærostachya</i> |
| 17. <i>xylocarpa</i> , and var.
<i>planifolia</i> | 39. <i>xiphiophylla</i> |
| 18. <i>arida</i> | 40. <i>trachycarpa</i> |
| 19. <i>delibrata</i> | 41. <i>Luehmanni</i> |
| 20. <i>plectocarpa</i> | 42. <i>lysophlœa</i> |
| 21. <i>tumida</i> | 43. <i>linarioides</i> |
| 22. <i>retinervis</i> | 44. <i>limbata</i> |
| 23. <i>holosericea</i> | 45. <i>conspersa</i> |
| 24. <i>dimidiata</i> (?) | 46. <i>oligoneura</i> (?) |
| 25. <i>Farnesiana</i> | 47. <i>aulacocarpa</i> |
| 26. <i>suberosa</i> | 48. <i>humifusa</i> |
| 27. <i>sentis</i> | 49. <i>Bidwilli</i> |
| 28. <i>gonocarpa</i> | 50. <i>salicina</i> |
| 29. <i>retivenia</i> | 51. <i>Kimberleyensis</i> n. sp. |
| 30. <i>stipulosa</i> | 52. <i>curvicarpa</i> n. sp. |
| 31. <i>pallida</i> | 53. <i>pachyphloia</i> n. sp. |
| 32. <i>sclerosperma</i> | 54. <i>Simsii</i> |
| | 55. <i>proxima</i> n. sp. |

In addition, it has been found necessary to describe *A. Armitii*, *Hammondi*, *Hemsleyi* although not yet recorded from the Nor-West.

Classification of the Species.

PUNGENTES (UNINERVES).	UNINERVES (ARMATÆ).
<i>patens</i>	<i>Gregorii</i>
CALAMIFORMES (PLURINERVES).	UNINERVES (BREVIFOLIÆ).
<i>Bynoeana</i>	<i>spathulata</i>
BRUNONIOIDÆ.	UNINERVES (ANGUSTIFOLIA)
<i>lycopodifolia</i>	<i>sentis</i>
<i>hippuroides</i>	

UNINERVES (RACEMOSÆ).

pyrifolia
salicina
sclerosperma

PLURINERVES (TRIANGULARIES).

deltoidea
stipulosa
Luehmanni

PLURINERVES (BREVIFOLIÆ).

setulifera
translucens
impressa

PLURINERVES (OLIGONEURÆ).

bivenosa
Simsii

PLURINERVES (MICRONEURA).

coriacea

PLURINERVES (NERVOSÆ).

hemignosta

PLURINERVES (DIMIDIATÆ).

sericata
retivenia
dineura

JULIFLORÆ (RIGIDULÆ).

Wickhami
stigmatophylla
Kelleri
stipuligera
sphærostachya
xiphiophylla
lysophlœa

JULIFLORÆ (RIGIDULÆ).

linarioides
curvicarpa n. sp.

JULIFLORÆ (STENOPHYLLÆ).

xylocarpa
arida
gonocarpa
drepanocarpa
trachycarpa
Kimberleyensis n. sp.

JULIFLORÆ (FALCATÆ).

delibrata
Hemsleyi n. sp.

plectocarpa
tumida

retinervis
conspersa

oligoneura
aulacocarpa

proxima n. sp.

JULIFLORÆ (DIMIDIATÆ).

holosericea
dimidiata
humifusa

BIPINNATÆ (BOTRYOCEPHALÆ).

pachyphloia n. sp.

BIPINNATÆ (GUMMIFERÆ).

Farnesiana
suberosa
pallida
Bidwilli

**Northern Territory Species not yet recorded from
 Nor-West.**

aneura
amentifera

auriculiformis
brevifolia

<i>Cambagei</i>	<i>minutifolia</i>
<i>conjunctifolia</i>	<i>notabilis</i>
<i>continua</i>	<i>oncinocarpa</i>
<i>Cowleana</i>	<i>Oswaldi</i>
<i>crassicarpa</i>	<i>pachycarpa</i>
<i>Cuthbertsoni</i>	<i>phlebocarpa</i>
<i>cyperophylla</i>	<i>pityoides</i>
<i>dictyophleba</i>	<i>polystachya</i>
<i>difficilis</i>	<i>prælongata</i>
<i>doratoxylon</i> (?)	<i>ptychophylla</i>
<i>estrophiolata</i>	<i>sessiliceps</i>
<i>frumentacea</i>	<i>sibirica</i>
<i>galiioides</i>	<i>spondylophylla</i>
<i>Gilesiana</i>	<i>stenophylla</i>
<i>gonoclada</i>	<i>subternata</i>
<i>Hammondi</i>	<i>Sutherlandi</i>
<i>Kempeana</i>	<i>Tanumbirinense</i>
<i>latescens</i>	<i>tetragonophylla</i>
<i>latifolia</i>	<i>ulicina</i>
<i>leptophleba</i>	<i>umbellata</i>
<i>megalantha</i>	

List of Nor-West Species in Alphabetical Order.

N.T = Northern Territory; Q. = Queensland; W.A. = Western Australia; S.A. = South Australia; O.S. = Other States.

<i>arida</i> N.T. (?)	<i>dineura</i> N.T.
<i>aulacocarpa</i> N.T. (?), Q.	<i>drepanocarpa</i> N.T.
<i>Bidwilli</i> N.T. (?), Q.	<i>Farnesiana</i> N.T., O. S.
<i>bivenosa</i> N.T.(?) , W.A.	<i>gonocarpa</i> N.T.
<i>Bynoeana</i> N.T., S.A.	<i>Gregorii</i> N.T. (?)
<i>conspersa</i> N.T.	<i>hemignosta</i> N.T., Q.
<i>coriacea</i> N.T., Q.	<i>hippuroides</i> N.T.
<i>curvicarpa</i> n. sp.	<i>holosericea</i> N.T.
<i>delibrata</i> N.T., Q.	<i>humifusa</i> N.T.
<i>deltoidea</i> N.T. (?)	<i>impressa</i> N.T.
<i>dimidiata</i> N.T.	<i>Kelleri</i> N.T.

<i>Kimberleyensis</i> n. sp.	<i>sentis</i> N.T., O.S.
<i>limbata</i> N.T.	<i>sericata</i> N.T., Q.
<i>linarioides</i> N.T.	<i>setulifera</i> N.T. (?)
<i>Luehmanni</i> N.T.	<i>Simsii</i> N.T., Q.
<i>lycopodifolia</i> N.T.	<i>spathulata</i> N.T. (?), W.A.
<i>lysiphlaea</i> N.T.	<i>sphaerostachya</i> W.A.
<i>oligoneura</i> (?) N.T.	<i>stigmatophylla</i> N.T.
<i>pachyphloia</i> n. sp.	<i>stipuligera</i> N.T., Q, O.S.
<i>pallida</i> N.T.	<i>stipulosa</i> N.T., W.A.
<i>patens</i> N.T.	<i>suberosa</i> N.T.
<i>plectocarpa</i> N.T.	<i>trachycarpa</i> W.A.
<i>proxima</i> n. sp.	<i>translucens</i> N.T.
<i>pyrifolia</i> N.T.	<i>tumida</i> N.T.
<i>retinervis</i> N.T.	<i>Wickhami</i> N.T.
<i>retivenia</i> N.T.	<i>xiphiophylla</i> W.A.
<i>salicina</i> N.T., O.S.	<i>xylocarpa</i> N.T.
<i>sclerosperma</i> W.A.	Total 55.

EXPLANATION OF PLATES.

ACACIA DELIBRATA A. Cunn.

Plate I.

1. Phyllodes, covered with a fine silky tomentum; gland at base. Dries a dull olive green.
2. Pod, with short hairs on the raised parts. 1 and 2 from the type, Port Warrender, North West Australia, Allan Cunningham, No. 486, October, 1819. Presented by Kew.
3. Twig, showing phyllodes and flowering spikes.
- 4 and 5. Flowers, showing minor differences, the latter with recurved petals.
6. Pistil.
7. Portion of pod, showing seed, funicle and arillus *in situ*. 3 to 7 from Sunday Island, West Kimberley, (W. V. Fitzgerald).

ACACIA HEMSLEYI Maiden, n. sp.

Plate II.

1. Flowering twig from Fitzroy River, 8 miles above Hann River Junction, West Kimberley, Nor-West. (W. V. Fitzgerald, No. 1177, June, 1905).
2. Flower.
3. Pistil.
4. Floral bract.
5. Pods.
6. Seed, *in situ*.

Nos. 2 – 6 from a scrub on the Gregory River, Gregory Downs near Burketown, North Queensland (Dr. T. L. Bancroft). Note the thickened margins of the valves.

ACACIA PLECTOCARPA A. Cunn.

Plate III.

1. Phyllode (with three main nerves) from type, Cambridge Gulf, North West Australia. Allan Cunningham, No. 482, September 1819.
2. Phyllode, with three main nerves.
3. Valve of pod.
4. Seed, with arillus, natural size.
5. Seed with arillus, enlarged. 2 to 5 from co-type, Sims' Island, Northern Territory, Allan Cunningham, No. 122, 1820. Presented by Kew.
6. An exceptionally long and rather narrow phyllode. Denham River, East Kimberley, North West Australia (W. V. Fitzgerald).
7. Three spikes of flowers.
8. Single flower, showing calyx and petals.
9. Single flower, showing petals and pistil.

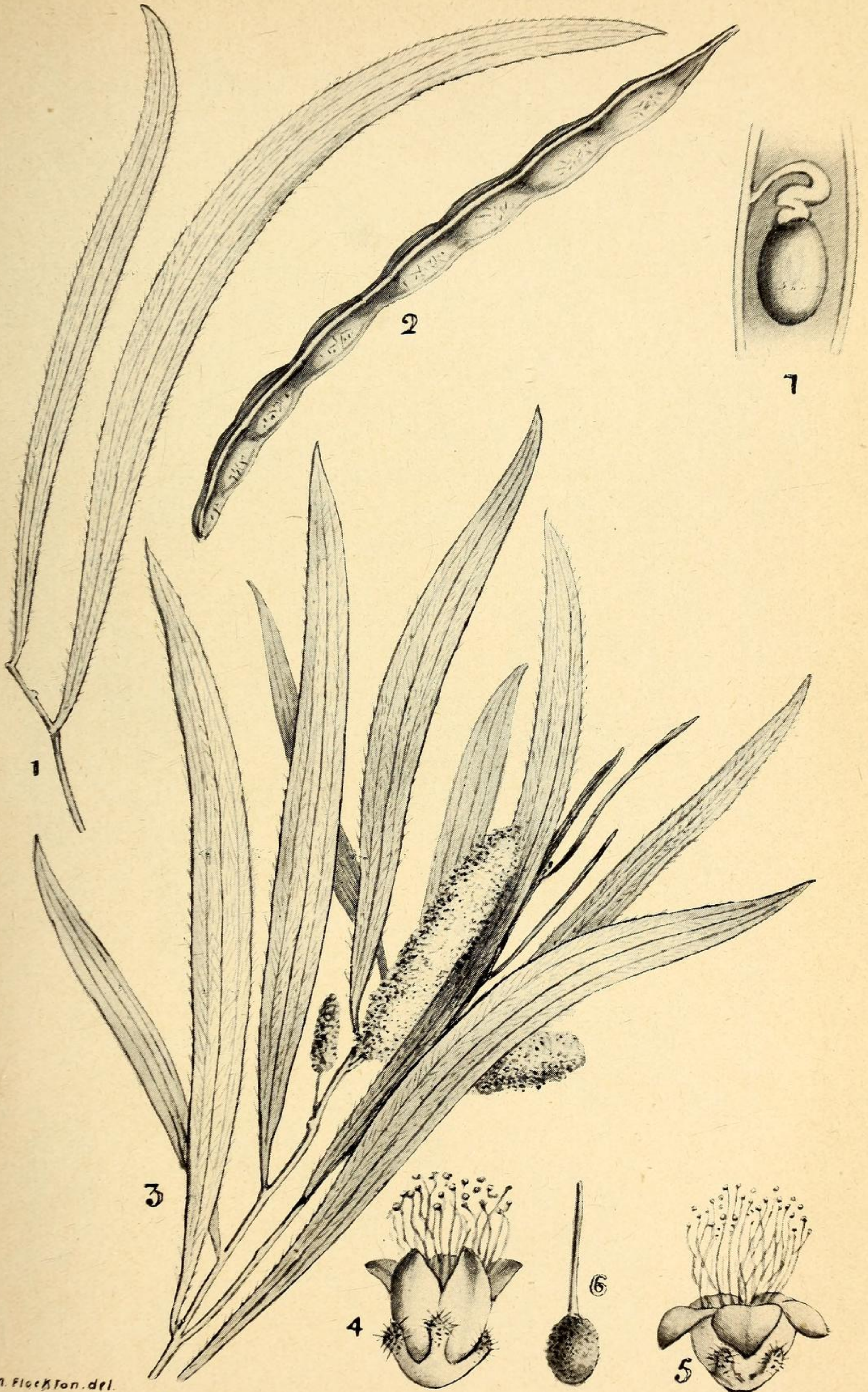
10. Floral bract. 7 to 10 from Isdell River, Mount Barnett homestead, West Kimberley, North West Australia. (W. V. Fitzgerald).
11. Pod.
12. Seed, with funicle and arillus. 11 and 12 from same locality as 6.

ACACIA HAMMONDI Maiden, n. sp.

Plate IV.

1. Twig, showing two veined phyllodes, an interrupted flowering spike and a rhachis after flowering.
2. Flower.
3. Pistil. 1 to 3, Lower Victoria River, Northern Territory (Mueller, No. 93).
4. Twig, showing phyllode and pods.
5. Larger phyllode. 4 and 5, Roper River, Northern Territory (Mueller, No. 25). Bentham, when doing *Acacia* for the *Flora Australiensis*, wrote up Mueller's 93 and 25 as "*A. plectocarpa* var." Presented by Kew.
6. Twig with phyllodes and pods.
7. Portion of pod, greatly enlarged, showing seed with funicle and arillus. 6 and 7 from Etheridge River, Northern Queensland, W. E. Armit, No. 624.

I desire to acknowledge most valuable assistance I have received from Miss Margaret Flockton and Mr. W. F. Blakely, my assistants, in the preparation of this paper.



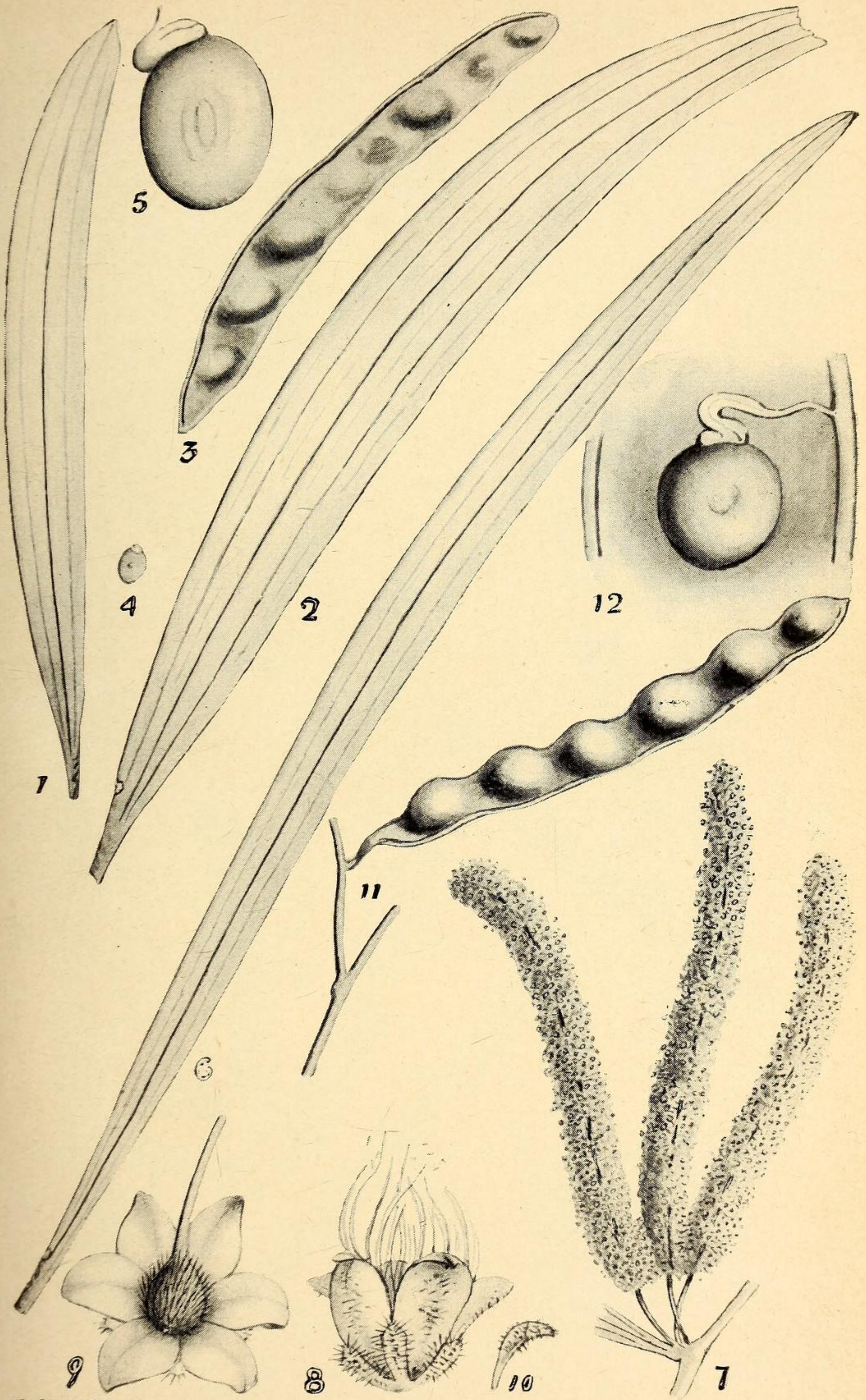
M. Fleckton. del.

Acacia delibrata A. Cunn.



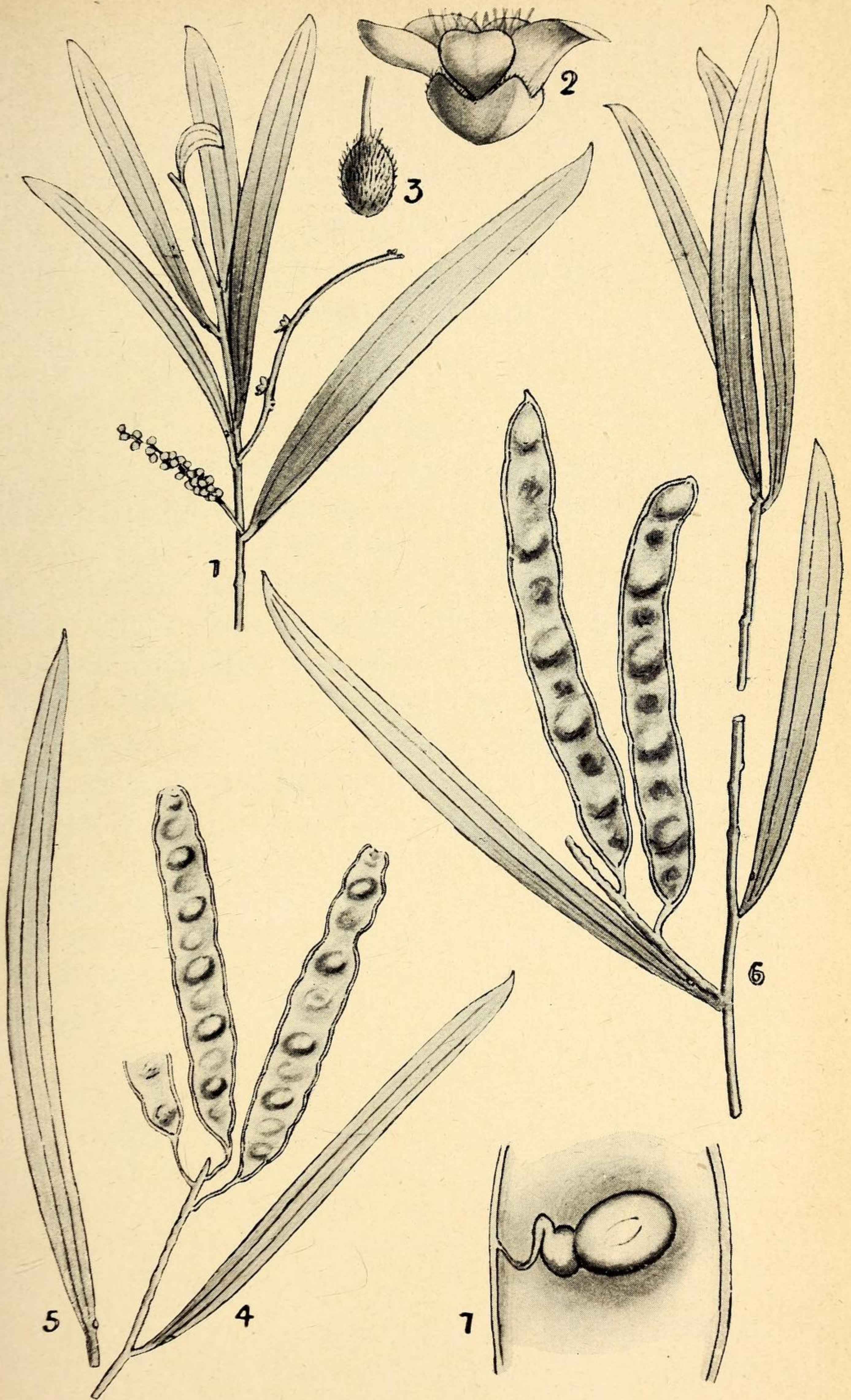
M. Flockton, del.

Acacia Hemsleyi Maiden, n.sp.



M. Flockton, del.

Acacia plectocarpa A. Cunn.



M. Floerke del.

Acacia Hammondi Maiden, n.sp.