

ACACIA SEEDLINGS PART XIII.

By R. H. CAMBAGE, C.B.E., F.L.S.

(With Plates X. to XIII.)

(Read before the Royal Society of New South Wales, Aug. 1st, 1928.)

SYNOPSIS.

VITALITY OF SEEDS IN SEA-WATER.

DESCRIPTION OF SEEDLINGS.

Vitality of Seeds in Sea-Water.

In Part VI of this series* it was mentioned that four pods of *Acacia Farnesiana*, containing seeds, had floated in sea-water for ten to twelve weeks before sinking. At the end of seven and a half years these seeds were examined, when more than half were found to be decaying. From among those which looked to be well preserved, one was placed in boiling water and planted, after which it readily germinated.

Recently a seed of *A. melanoxydon*, collected at Jenolan Caves, and left in sea-water for ten years, germinated after having been placed in boiling water and planted.

In 1856, Charles Darwin tested many seeds of various genera, but not including *Acacia*, in sea-water, but the best result he obtained on that occasion was in the case of *Apium graveolens* (Umbelliferae), six seeds of which germinated after having been immersed for 137 days.†

James Salter records the germination of many seeds of various genera taken from the mud of the Thames in 1843,

*This Journ. 1920, 54, 146.

†Journ. of the Proc. Linn. Soc. London, 1857, I, 130. See also "Observations of a Naturalist in the Pacific between 1896 and 1899" by H. B. Guppy. Plant-Dispersal, 1906, 2, 22.

but although some of these seeds were probably lying in the mud under the salt water for some considerable periods, there is no certainty as to the length of time they were immersed.‡ The genera referred to were *Centaurea*, *Epilobium* and *Lysimachia*, and it is stated that no plants of these species were growing previously within from two to ten miles of the spot where the mud was spread.

Description of Seedlings.

CALAMIFORMES—(Uninerves).

ACACIA ERICIFOLIA Benth. Seeds from Wongan Hills, Western Australia (W. M. Carne). (Plate X, Numbers 1 to 3.)

Seeds dark brown to black, oblong to obovate, 2 to 2.5 mm. long, about 1 mm. broad, 1 mm. thick.

Hypocotyl terete, brownish-red to reddish-brown, 1.3 to 2 cm. long, about 0.6 mm. thick at base, 0.5 mm. at apex.

Cotyledons sessile, oblong, apex rounded, 3 mm. long, about 1.5 mm. broad, upperside green, underside pale green to brownish-green, sometimes with raised line along centre.

Stem terete, greenish-brown, pilose. First internode 0.5 mm.; second and third 0.5 to 1 mm.; fourth to sixth 1 to 3 mm.; seventh to tenth 2 to 5 mm.

Leaves—No. 1. Abruptly pinnate, petiole 2 to 4 mm., glabrous; leaflets two pairs, obovate, 2.5 to 3 mm. long, 1 to 2 mm. broad, upperside green, underside pale green; rachis 1.5 to 2 mm., with terminal seta.

No. 2. Abruptly bipinnate, petiole 4 to 9 mm., glabrous, with terminal seta; leaflets two pairs, obovate, 1.5 to 3 mm. long, 1 to 1.5 mm. broad, upperside green, underside paler; rachis about 2 mm., with terminal seta.

‡“On the Vitality of Seeds after prolonged Submersion in the Sea,” by James Salter, M.D., F.L.S. Journ. of the Proc. Linn. Soc., 1857, I, 140.

Nos. 3 to 5. Abruptly bipinnate, petiole 7 mm. to 1.3 cm., sometimes slightly flattened in the case of No. 5, glabrous; leaflets two to three pairs, oblong-acuminate to obovate; rachis 4 to 5 mm.; stipules acuminate, 1 mm.

Nos. 6 and 7. These may be phyllodes, or abruptly bipinnate, petiole up to 1.1 cm. long, up to 1.5 mm. broad, glabrous; leaflets two to three pairs; rachis 3 to 5 mm.

Nos. 8 to 15. Usually thick phyllodes, cuneate, obtuse or very shortly acuminate, tapering from near the apex to the base, the midrib sometimes showing slightly under pocket lens, 1 to 2 cm. long, up to 5 mm. broad near apex. The terminals of later phyllodes are more tapering.

In this Journal (1926, 60, 85), reference is made to the nocturnal movement of seedling leaves of this species. species.

UNINERVES—(Racemosae).

ACACIA CAESIELLA Maiden and Blakely.* Seeds from Burrinjuck (E. C. Andrews and J. W. Campbell). (Plate X, Numbers 4 to 6.)

Seeds black, oblong-oval to obovate, about 4.5 mm. long, 2 to 3 mm. broad, about 1.5 mm. thick.

Hypocotyl red, constricted above soil, expanding into flange at root, 2 to 3 cm. long, 2 to 2.6 mm. thick at base, 0.7 to 1 mm. at apex.

Cotyledons sessile, auricled, oblong, about 5 to 6 mm. long, 2.5 to 3 mm. broad, upperside at first red, becoming green, underside red, becoming revolute in one day and later cylindrical.

Stem terete, reddish-brown, hirsute to hoary, silky towards the summit. First internode 0.5 mm.; second to fifth 0.5 to 0.8 mm.; sixth to tenth 0.8 to 1.5 mm.

*This Journ., 1926, 60, 180.

Leaves—No. 1. Abruptly pinnate, petiole 3 to 6 mm., glabrous; leaflets three to four pairs, oblong-acuminate, the apical pair often obovate, 5 to 6 mm. long, 1.5 to 2 mm. broad, upperside reddish-green, underside red; rachis 6 to 8 mm., with terminal seta.

No. 2. Abruptly bipinnate, petiole 8 mm. to 1.1 cm., pilose, with terminal seta; leaflets three to five pairs, oblong-acuminate, 3 to 6 mm. long, 1 to 3 mm. broad; rachis 7 mm. to 1 cm., with terminal seta.

Nos. 3 and 4. Abruptly bipinnate, petiole 9 mm. to 1.7 cm., pilose; leaflets three to eight pairs; rachis 7 mm. to 2.1 cm.

Nos. 5 to 7. Abruptly bipinnate, petiole 1.5 to 2.5 cm., No. 7 being sometimes 2 mm. broad, hirsute; leaflets six to eleven pairs; rachis 1.5 to 2.5 cm.

Nos. 8 to 10. These may be phyllodes, or abruptly bipinnate, petiole 1.7 to 2.1 cm. long, 1 to 2 mm. broad, with a strong nerve just below the centre of the lamina, hirsute; leaflets eight to ten pairs, often mucronate; rachis 1.2 to 1.8 cm.

Nos. 11 to 20. Lanceolate, slightly falcate phyllodes, 1.5 to 2.7 cm. long, 4 to 5 mm. broad, the midrib prominent on both sides, with a small gland towards the base on the upper margin, minutely hoary.

PLURINERVES—(Microneuræ).

ACACIA HOMALOPHYLLA A. Cunn. "Yarran". Seeds from Gunnedah (J. H. Maiden). (Plate X, Numbers 7 to 9.)

Seeds dark brown, oblong-oval to almost orbicular, 3 to 5 mm. long, 2.5 to 3 mm. broad, 1 to 1.5 mm. thick.

Hypocotyl terete, green to reddish, 1.5 to 2 cm. long, 1.5 mm. thick at base, 0.8 to 1 mm. at apex.

Cotyledons sessile, auricled, oblong-oval, 6 to 7 mm. long, 4 to 5 mm. broad, upper side green, under side pale green, becoming slightly revolute, and doubling downwards beyond the middle.

Stem terete, greenish-brown, pilose. First internode 0.5 mm.; second 0.5 to 1 mm.; third 1 to 2 mm.; fourth 3 mm. to 1 cm.; fifth to seventh 5 mm. to 1.4 cm.; eighth to tenth 8 mm. to 2 cm.

Leaves—No. 1. Abruptly pinnate, in one case an opposite pair appeared, petiole 3 to 4 mm., glabrous; leaflets three to four pairs, rarely one, oblong-acuminate, the apical pair sometimes obovate, 4 to 7 mm. long, about 2 mm. broad, upper side green, under side pale green; rachis 3 to 9 mm., with terminal seta.

No. 2. Abruptly bipinnate, petiole 7 mm. to 1.1 cm., green, glabrous, with terminal seta; leaflets two to four pairs, oblong-acuminate, the apical pair sometimes obovate, 3 to 5 mm. long, 1 to 2 mm. broad, upper side green; rachis 4 to 7 mm., glabrous, with terminal seta.

Nos. 3 to 5. Abruptly bipinnate, petiole 8 mm. to 3.5 cm., faintly pilose; leaflets three to six pairs; rachis 6 mm. to 1.6 cm.

Nos. 6 to 9. Abruptly bipinnate, petiole 1.2 to 6.6 cm. long, 1 to 5 mm. broad, usually with a very definite midrib and several much finer parallel veins, faintly pilose; leaflets three to six pairs, rarely seven; rachis 6 mm. to 1.5 cm.

Nos. 10 to 17. These may be phyllodes, or abruptly bipinnate, petiole 1.7 to 6.5 cm. long, 3 to 7 mm. broad, with a definite midrib and a vein on each side of it less prominent but more definite than the numerous other parallel veins, faintly pilose or hoary; leaflets four to six pairs; rachis 6 mm. to 1.8 cm.

Nos. 18 to 25. Lanceolate-falcate or linear-lanceolate, very brittle phyllodes, from about 4 to 7 cm. long, obtuse and often with a fine point, venation similar to Nos. 10 to 17.

PLURINERVES—(Nervosae).

ACACIA HARPOPHYLLA F. v. M. "Brigalow." Seeds from Eidsvold, Queensland (Dr. T. L. Bancroft). (Plate XI, Numbers 1 to 3.)

Seeds grey, irregularly oblong to oblong-oval, with raised lines or corrugations on both sides, 1 to 1.5 cm. long, 4 to 6 mm. broad, 1.5 to 2 mm. thick.

These seeds, with their irregular, often shrivelled-looking shape and fairly soft testa, differ from all other Australian *Acacia* seeds so far seen.

Hypocotyl terete, red above soil, 3 to 5 cm. long, about 2 mm. thick at base, 1 to 1.5 mm. at apex.

Cotyledons sessile, deeply auricled, oblong-ovate, about 1.6 cm. long, 7 mm. broad, upperside green, underside yellowish-green to pale green.

Stem terete, greyish-green, glabrous to minutely hoary. First internode 0.5 mm.; second 1 mm.; third 2 to 4 mm.; fourth to eighth 5 mm. to 1.5 cm.

Leaves—No. 1. Abruptly pinnate, forming an opposite pair, petiole 4 to 6 mm., glabrous; leaflets four to six pairs, oblong-acuminate, 4 mm. to 1 cm. long, 1 to 3 mm. broad, upperside green, underside paler; rachis 1 to 1.7 cm. with terminal seta.

No. 2. Linear-lanceolate phyllode, 3 to 7 cm. long, 2 to 5 mm. broad, with a fairly definite central nerve, and many finer parallel ones.

Nos. 3 to 8. Linear-lanceolate falcate phyllodes, sparsely covered with a fine tomentum seen under a pocket lens, but

not so dense as on later phyllodes, 4 to 12 cm. long, 4 mm. to 1.2 cm. broad, with numerous fine longitudinal veins, and one or two more prominent than the rest showing in Nos. 3 to 5.

PLURINERVES—(Nervosae).

ACACIA CONFUSA Merrill.* The species is a native of Formosa. Seeds from Hongkong Botanic Gardens (Cultivated, H. Green). (Plate XI, Numbers 4 to 6.)

Seeds brown, oval to oblong-oval, areola distinct, 5 to 6 mm. long, 3.5 to 4 mm. broad, about 1.5 mm. thick.

Hypocotyl brownish-green, spreading into flange at root, 2 to 3 cm. long, about 2 mm. thick at base, 1 mm. at apex.

Cotyledons sessile, auricled, oblong-oval to almost oval, about 7 mm. long, 4 to 5 mm. broad, upperside green, underside pale green.

Stem terete, greenish-brown, glabrous. First internode 0.5 to 1 mm.; second 1 to 3 mm.; third and fourth 3 mm. to 1 cm.; fifth and sixth 6 mm. to 1.5 cm.

Leaves—No. 1. Abruptly pinnate, in a few cases forming an opposite pair, petiole 4 to 7 mm., brownish-green, glabrous; leaflets one to two pairs, oblong-acuminate, 6 mm. to 1.3 cm. long, 3.5 to 5 mm. broad, upperside green, underside paler, venation distinct on underside.

No. 2. Obovate-lanceolate phyllode, obtuse, often mucronate, 1.5 to 3 cm. long, 3.5 to 9 mm. broad, with a central nerve, and usually a finer one on each side of it not confluent at the apex.

Nos. 3 to 10. Oval-lanceolate to lanceolate phyllodes, obtuse, often mucronate, 2.5 to 7 cm. long, 8 mm. to 1.5 cm. broad, with about five distinct nerves mostly confluent at the apex and with sometimes one or two finer veins not

*Philipp. Journ. Sci., 1910, 5, 27.

reaching the apex. Later phyllodes are lanceolate-falcate and longer.

This is the fourth seedling described in this series where the No. 2 leaf is usually reduced to a phyllode, the previous cases being *A. alata*, *A. Cambagei** and *A. harpophylla* (*supra*).

JULIFLORAE—(Stenophyllae).

ACACIA MERINTHOPHORA Pritzelt.† Seeds from Wongan Hills, Western Australia (W. M. Carne). (Plate XI, Numbers 7 to 9.)

Seeds light brown, oblong-obovate, 2.5 to 3.5 mm. long, 1.5 to 2 mm. broad, 1 mm. thick.

Hypocotyl terete, brownish-red above soil, 1.5 to 2 cm. long, 1 mm. thick at base, about 0.5 mm. at apex.

Cotyledons sessile, auricled, oblong, about 4 mm. long, 2 mm. broad, upperside green, underside brownish-red to greenish-brown.

Stem terete, greyish-green, glabrous. First internode 0.5 mm.; second and third 1 to 2 mm.; fourth to eighth 2 mm. to 1 cm.

Leaves—No. 1. Abruptly pinnate, petiole 2 to 4 mm.; leaflets two pairs, 2 to 4 mm. long, 1 to 2 mm. broad, oblong to obovate, upperside green, underside brownish-green; rachis 1.5 to 2 mm., with terminal seta.

No. 2. Abruptly bipinnate, petiole 2 to 5 mm., glabrous, with terminal seta; leaflets two to three pairs, oblong to obovate, 2 to 4 mm. long, 1 to 2 mm. broad, rachis 2 to 3 mm., with terminal seta.

No. 3. This may be a phyllode, or abruptly bipinnate, petiole 1 to 1.3 cm. long, up to 1 mm. broad; leaflets two to three pairs, rachis 1 to 4 mm.

*This Journ., 1926, 60, 96.

†Engler's Bot. Jahrb., 1905, 35, 307.

Nos. 4 to 6. Linear phyllodes 2 to 7 cm. long, up to 2.5 mm. broad, with central nerve.

Nos. 7 to 9. Linear phyllodes, 5 to 11 cm. long, up to 1.5 mm. broad, with definite central nerve, and one or two finer ones on each side, often with hooked points.

JULIFLORAE—(Stenophyllae).

ACACIA LINOPHYLLA W. V. Fitzgerald.* Seeds from Gascoyne River, Canarvon, Western Australia (E. C. Andrews). (Plate XII, Numbers 1 to 3.)

Seeds brown, irregularly oval to almost quadrangular, areola depressed, 5 to 7 mm. long, 5 to 6 mm. broad, about 3 mm. thick.

Hypocotyl green to brownish-green, 1.5 to 3 cm. long, 3 mm. thick at base, 1.5 to 2 mm. at apex.

Cotyledons oblong to oblong-oval, auricled, about 1 to 1.2 cm. long, 6 to 6.5 mm. broad, upperside green, underside pale green.

Stem terete, brownish-grey, glabrous. First internode 0.5 mm.; second 1 mm.; third to sixth 2 to 5 mm.

Leaves—No. 1. Abruptly pinnate, forming an opposite pair, petiole 4 to 8 mm., green, glabrous; leaflets three pairs, oblong-acuminate to obliquely-ovate, 4 to 6 mm. long, 1.5 to 3 mm. broad, upperside green, underside pale to yellowish-green; rachis 7 to 9 mm., with terminal seta.

No. 2. Abruptly bipinnate, petiole 1.5 to 2.2 cm., with terminal seta; leaflets three pairs, oblong-acuminate, 2 to 4 mm. long, 1 to 2 mm. broad; rachis 4 to 8 mm., with terminal seta.

Nos. 3 and 4. Abruptly bipinnate, or No. 4 may be a phyllode, sometimes with two pairs of pinnae, petiole 2 to

*Journ. W.A. Nat. Hist. Soc., 1904, 16.

3 cm., sometimes up to 1 mm. broad; leaflets two to three pairs; rachis 1 to 2 mm.

Nos. 5 to 15. Linear phyllodes, about 3 to 13 cm. long, flattened, sometimes up to 1.5 mm. broad in the case of Nos. 5 to 8, Nos. 9 to 15 narrower, with a few closely-packed veins seen under pocket lens, stipules up to about 2 mm.

Phyllodes on mature trees are terete.

JULIFLORAE—(Falcatae).

ACACIA ARGENTEA Maiden.* Seeds from Eidsvold, Queensland (Dr. T. L. Bancroft). (Plate XII, Numbers 4 to 6.)

Seeds brown, oblong, 3 to 4 mm. long, 1.5 mm. broad, 1 mm. thick.

Hypocotyl terete, pink to reddish, spreading into flange at root, 2 to 2.5 cm. long, about 1.5 mm. thick at base, 0.5 to 0.7 mm. at apex.

Cotyledons sessile, sagittate, oblong, 5 mm. long, 1.5 to 2 mm. broad, upperside green, underside red.

Stem at first angular, becoming terete, greenish-red, hirsute to pubescent. First internode 0.5 mm.; second and third 1 to 2 mm.; fourth to sixth 2 to 5 mm.; seventh to tenth 4 to 7 mm.

Leaves—No. 1. Abruptly pinnate, petiole 2 to 3 mm.; leaflets two pairs, oblong-acuminate, 4 to 6 mm. long, 1.5 to 2 mm. broad, upperside green, underside pale green; rachis 2 to 3 mm., with terminal seta.

No. 2. Abruptly bipinnate, petiole 3 to 4 mm., glabrous, with terminal seta; leaflets two to three pairs, oblong-obovate to obliquely obovate, 3 to 4 mm. long, 1 to 2 mm. broad, upperside green; rachis 3 to 5 mm., with terminal seta.

*Proc. Roy. Soc. Queensland, 1918, 30, 41.

K—August 1, 1928.

Nos. 3 and 4. Abruptly bipinnate, petiole 5 mm. to 1.2 cm., hirsute; leaflets three to six pairs; rachis 4 mm. to 1.2 cm.

Nos. 5 to 7. Abruptly bipinnate, sometimes with two pairs of pinnae in the case of No. 7, petiole hirsute, 8 mm. to 4.8 cm. long, up to 2 mm., 4 mm., and 7 mm. broad in the cases of Nos. 5, 6 and 7 respectively, usually with a strong nerve along or near the lower margin and several very fine veins above in the cases of Nos. 6 and 7; leaflets five to nine pairs, margins ciliate; rachis 7 mm. to 1.7 cm.

Nos. 8 and 9. These may be phyllodes or abruptly bipinnate, petiole hirsute, 5 to 6 cm. long, 7 to 8 mm. broad, with two fairly distinct nerves, the main one below the centre of the lamina, the other, and sometimes a fainter one from the base to the middle, above, and numerous very fine parallel veins; leaflets seven to eight pairs; rachis about 1 cm.

Nos. 10 to 14. Lanceolate-falcate phyllodes, venation much as described in the cases of the petioles of Nos. 6 and 7, 5 to 7 cm. long, and up to 1 cm. broad, minutely hoary, with a somewhat silvery sheen.

BIPINNATAE—(Botryocephalae).

ACACIA MOLLISSIMA Willd.* Sydney Black Wattle. Seeds from Milton, New South Wales. (Plate XIII, Numbers 1 to 3.)

Seeds dull black, oval to oblong-oval, 4 to 5 mm. long, 2 to 3 mm. broad, 1.5 to 2 mm. thick.

Hypocotyl terete, reddish to red, 1.5 to 5 cm. long, about 1 mm. thick at base, 0.7 mm. at apex.

Cotyledons sessile, auricled, oblong, soon becoming revolute and cylindrical, about 5 mm. long, 2 to 3 mm. broad, upperside green to reddish-green, underside pale green to reddish.

*Enum. Hort. Berol. 1053.

Stem terete, reddish-green, pilose to tomentose. First internode 0.5 mm.; second 0.5 to 1 mm.; third 1 to 5 mm.; fourth and fifth 3 to 9 mm.; sixth and seventh 5 mm. to 3.5 cm.; eighth and ninth 1 to 4.5 cm. The longest internodes were found on natural seedlings.

Leaves—No. 1. Abruptly pinnate, petiole 3 to 5 mm., reddish-brown, glabrous; leaflets three to five pairs, oblong-acuminate, 4 to 7 mm. long, 1 to 2 mm. broad, upperside green, underside reddish-brown, margins reddish; rachis 3 to 9 mm., with terminal seta.

No. 2. Abruptly bipinnate, petiole 3 to 8 mm., with small gland, reddish-brown, glabrous to pilose, with terminal seta; leaflets five to six pairs, oblong-acuminate, the apical pair often obovate, 4 to 5 mm. long, 1 to 2 mm. broad, upperside green, underside reddish-green; rachis 6 mm. to 1 cm., with terminal seta.

Nos. 3 to 5. Abruptly bipinnate, sometimes with two pairs of pinnae, petiole 5 mm. to 2.3 cm., with gland on upper margin, pilose; leaflets seven to ten pairs, similar to those of No. 2; rachis 1 to 3 cm.

Nos. 6 and 7. Abruptly bipinnate, usually with two or three pairs of pinnae, petiole 1.5 to 2.8 cm., with one or sometimes two glands on upper margin, pilose; leaflets about twelve to twenty-two pairs, up to 6 mm. long, about 1 mm. broad; rachis 1.5 to 3.3 cm.

Nos. 8 to 10. Abruptly bipinnate, with from three to six pairs of pinnae, petiole 3.4 to 4.5 cm.; leaflets up to twenty-four pairs, flat, oblong-acuminate, apical pair obovate, margins ciliate, 7 to 8 mm. long in central portion of pinna, about 1.5 mm. broad; rachis 2.7 to 3.5 cm.

This species flowers in about November, and takes twelve months to ripen its pods, whereas *A. decurrens*, of

which *A. mollissima* has been regarded as a variety, flowers in August, and ripens its pods by the end of the following December.

GUMMIFERAE.

ACACIA HORRIDA Willd.* Extratropical South Africa. Seeds from the University Grounds, near Melba Hall, Melbourne. (Cultivated.) (Plate XIII, Numbers 4 to 6.)

Seeds brown, oblong-oval, areola distinct, 5 to 6 mm. long, 3.5 to 5 mm. broad, 1.5 to 2 mm. thick.

Hypocotyl terete, pale green, 1.5 to 3 cm. long, about 1.7 mm. thick at base, 1.5 mm. at apex.

Cotyledons fleshy, deeply auricled, petiolule 2 to 3 mm. long, oblong to ovate-oblong and oblong-oval, 8 mm. to 1 cm. long, 5 to 7 mm. broad, upperside at first yellowish-green, becoming green, underside pale green.

Stem terete, greyish-brown, glabrous. First internode 0.5 mm.; second 2 to 4 mm.; third to sixth 2 to 6 mm.; seventh to tenth 4 to 7 mm.

Leaves—No. 1. Abruptly pinnate, petiole 4 to 6 mm.; glabrous; leaflets four to five pairs, oblong-acuminate, 4 to 8 mm. long, 2 to 3.5 mm. broad, upperside green, underside pale green; rachis about 1 cm., with terminal seta.

No. 2. Abruptly bipinnate, in one case an abnormal leaf was simply pinnate, petiole 4 to 6 mm., with terminal seta; leaflets two to five pairs, oblong-acuminate, 3 to 5 mm. long, 1 to 2 mm. broad; rachis 5 mm. to 1 cm., with terminal seta.

Nos. 3 to 6. Abruptly bipinnate, petiole 5 to 7 mm., glabrous; leaflets five to nine pairs; rachis 1 to 2 cm.; stipules linear, up to 4 mm.

*See "Revision of the Suborder Mimoseae." By George Benthams, F.R.S., Trans. Linn. Soc. London, 1875, 30, Part III, 507.

Nos. 7 to 10. Abruptly bipinnate, petiole 6 to 9 mm.; leaflets six to nine pairs; rachis 1.4 to 2 cm.

Nos. 11 to 16. Abruptly bipinnate, sometimes twice pinnate in the case of No. 13 and upwards, petiole 6 mm. to 1 cm., often with a gland at the base of each pair of pinnae; leaflets eight to ten pairs; rachis 1.3 to 2.1 cm.; stipules spinose, up to 8 mm.

A pot plant about 4 feet high produced leaves with from one to four pairs of pinnae, and from eight to fourteen pairs of leaflets, with usually a gland or nectary at the base of each pair of pinnae, and sometimes with a pair of glands (laterally) at the bases of the second and third pairs of pinnae but not of the basal or apical pairs; the common petiole being up to 4 cm. long and almost square in cross section; spines up to 2.5 cm. A spine on the parent tree measured 6.3 cm. long.

So far I have not seen glands or nectaries occurring in pairs on a phyllodineous *Acacia*, but A. D. Hardy records its occurrence on *A. decurrens* of the Bipinnatae section.*

During the winter months the leaflets of *A. horrida* remain partly closed up even during a sunny day, and show much more evidence of leaf sleep than do those of most species of the Australian subgenus *Botryocephalae*.

EXPLANATION OF PLATES.

Plate X.

Acacia ericifolia Benth.

1. Cotyledons, Wongan Hills, Western Australia (W. M. Carne).
2. Pinnate leaf, bipinnate leaves and phyllodes.
3. Pod and seeds.

*See "The distribution of leaf glands in some Victorian *Acacias*," by A. D. Hardy, F.L.S., *Vict. Nat.*, 1912, 29, 26.

Also "Observation on the function of *Acacia* leaf glands," by Reginald Kelly, *Ib.*, 1913, 30, 121.

Acacia caesiella Maiden and Blakely.

4. Cotyledons, Burrinjuck (E. C. Andrews).
5. Pinnate leaf, bipinnate leaves and phyllodes.
6. Pod and seeds.

Acacia homalophylla A. Cunn.

7. Cotyledons and pinnate leaf, Gunnedah (J. H. Maiden).
8. Pinnate leaf, bipinnate leaves and phyllodes.
9. Pod and seeds.

Plate XI.

Acacia harpophylla F. v. M.

1. Cotyledons, Eidsvold, Queensland (Dr. T. L. Bancroft).
2. Opposite pair of pinnate leaves and phyllodes.
3. Pod and seeds.

Acacia confusa Merrill.

4. Cotyledons and pinnate leaf, Botanic Gardens, Hong-kong (H. Green).
5. Pinnate leaf and phyllodes.
6. Pod and seeds.

Acacia merinthophora Pritzell.

7. Cotyledons, Wongan Hills, Western Australia (W. M. Carne).
8. Pinnate leaf, bipinnate leaves and phyllodes.
9. Portion of pod and seeds.

Plate XII.

Acacia linophylla W. V. Fitzgerald.

1. Cotyledons and pair of pinnate leaves, Gascoyne River, Western Australia (E. C. Andrews).
2. Pinnate leaf, bipinnate leaves and phyllodes.
3. Pod and seeds.

Acacia argentea Maiden.

4. Cotyledons, Eidsvold, Queensland (Dr. T. L. Bancroft).
5. Pinnate leaf, bipinnate leaves and phyllodes.
6. Pod and seeds.



Acacia ericiifolia (1 - 3); *Acacia caesiella* (4 - 6); *Acacia homalophylla* (7 - 9).
Three-fifths Natural Size.



Acacia harpophylla (1-3); *Acacia confusa* (4-6); *Acacia merinthophora* (7-9).
Nearly Three-fourths Natural Size.



Acacia linophylla (1-3) ; *Acacia argentea* (4-6).
Three-fifths Natural Size.



Acacia mollissima (1-3); *Acacia horrida* (4-6).

About Half Natural Size.

Plate XIII.

Acacia mollissima Willd.

1. Cylindrical cotyledons and pinnate leaf, Milton, New South Wales.
2. Pinnate leaf and bipinnate leaves.
3. Pod and seeds.

Acacia horrida Willd.

4. Cotyledons and pinnate leaf, The University Grounds, near Melba Hall, Melbourne (Cultivated).
 5. Pinnate leaf and bipinnate leaves.
 6. Pod and seeds.
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Cambage, Richard Hind. 1928. "Acacia seedlings, Part XIII." *Journal and proceedings of the Royal Society of New South Wales* 62, 152–167.

<https://doi.org/10.5962/p.359966>.

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