Art. VI.—*Contributions to the Flora of Australia.*

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(With Plates X., XI., XII.).

[Read 13th December, 1906].

Aeschynomene aspera, L. var. oligarthra, F. v. M., Herb. (Leguminosae). Port Darwin, M. Holtze, 1891.

This plant was originally considered by von Mueller to be a new species, but was subsequently referred by him to A. aspera, Linn., to which it undoubtedly belongs. It differs in the fruit having only 1 to 3 rather large segments, each usually 1 cm. broad by $1\frac{1}{4}$ cm. long, and with nearly smooth side walls, whereas those of the type species are usually covered with warts or papillae, and are 7 to 8 mm. broad by 8 to 10 mm. long. Fruits of a few segments appear also on the type species, and in such cases the segments tend to become larger than in the longer pods. The variety is, however, a strongly marked one, and apparently hitherto unrecorded. A. aspera is new to Australia. The stems of the plants are used by the Chinese for making paper, and it is just possible that the plant may have been introduced by them.

Albizzia (Archidendron) pentzkeana, F. v. M., Herb. (Leguminosae) = A. vaillantii, F. v. M. Fragm., v. 60, variety Pentzkeana.

A number of specimens of the apparently unpublished species A. pentzkeana were found at the Herbarium. A specimen submitted to Kew was marked by Dr. Stapf "genus correct, species unpublished."

Close comparison with A. vaillantii, however, reveals so many features in common that the plant can only be classed as a variety of that species, differing chiefly in the shape and large

size of the leaves and leaflets. Each leaf has a stout common stalk of about 5 cm. length, forking into two paripinnate branches of 30 cm. or more, and bearing 3 or 4 pairs of large elongated ovate leaflets averaging 30 cm. length by 10 cm. broad, on short thick pulvini of about 1 cm.

Fruits and seeds as in A. vaillantii, but the former with more numerous and minute yellow hairs on the outer surface.

ARENARIA AXILLARIS, Luehm. = Stellaria glauca, With., var. axillaris, Luehm. (Caryophylleae).

From material collected by Mr. Reader on the same locality, there can be no doubt that the plant is to be referred to Stellaria glauca, var. The specimens are identical, and have the cleft petals of Stellaria, a point which can not be satisfactorily determined in Luehmann's original specimens.

ASTER DUMOSUS, L. (Compositae).

A North American weed which appears to be spreading in Victoria, and which has evidently reached this State from New South Wales, where it has long been recorded. Our specimens were identical with those in the Herbarium labelled Tripolium conspicuum, Lindl., from the Paris Museum. As this species apparently stands in the Kew Index in spite of the reference to Aster, specimens were sent to Kew and determined as above. Synonyms for A. dumosus, L., are T. conspicuum, Lindl.; Aster imbricatus, Walp. (but not of L.); A. arenaroides, Eaton.

Bellida, new genus (Compositae).

Annuals or perennials with radical leaves, and inflorescences at the ends of long simple stalks, leafless, or with a small bract on the shaft. Bracts of the involucre imbricate, scarious in a double series, the inner ones larger. Florets all alike, regularly 5-toothed, tubular and yellow, with no scales between them. Anthers with well-marked appendices and with rounded bases. Style and stigma of Asterae. Fruit on a distinct stalk, and obliquely inserted on the head. Pappus of two small, separable, cup-like scales, each bearing a single row of stiff bristles.

Relationships.—The obliquely lateral insertion of the fruit reminds one of the Cynareae-Centaurineae, from which the plant differs widely in other respects. The character of the bracts and the homogamous inflorescences suggest the Gnaphaleae, but the anthers have rounded bases and no tails.

The slight resemblance to a young stage of Bartlettia (Senecionideæ) is of no importance, since this plant has female ray florets and differs in the pappus and unstalked achenes. Among the Asterae-Solidaginae the genus shews a certain degree of relationship to Lessingia, but the florets are all alike, the outer ones not being more deeply slit on the outside. The general habits and leaves are like those of Achnophora tatei, F. v. M., which would bring the plant between Calotis (Asterae-Asterinae) and Brachycome (Asterae-Bellidinae). The plant differs, however, in the pappus, stalked achenes, and absence of ray florets, and among the Asterae-Bellidinae only one species of Greenella has homogamous heads. The general characters agree best with the Asterae-Asterinae, although the genus shewn also approaches to the Solidagineae and Bellidinae sections, and also through the bracts to the Anthemideae.

Bellida graminea, n. sp. Jibberding, W.A., 1905, M. Koch.

A small tufted annual herb, from 6 to 18 cm. high when in fruit, and with a short slender tapering tap root. Leaves radical in a grass-like tuft, unstalked, flat, linear, contracted to an obtuse tip, 2 to 7 cm. long, about 1 mm. broad, glabrous, or occasionally with a few small scattered hairs, chiefly at the margins. All other subaerial parts glabrous excepting the fruit. Flower heads conical with a rounded top, on separate stalks, the outer ones curved, longer than the leaves (6-18 cm.), arising at the top of the root among the leaves. A single linear bract about 2 mm. long with scarious edges is usually, but not always, present an inch or two below the head, but sometimes near the base and then easily overlooked.

Inflorescence of 40 to 50 small yellow tubular hermaphrodite florets (no rays), surrounded by a double set of scarious bracts, the outer series smaller in 2 imbricate rows of 6 or 7 in each, the inner layer with 7 or 8 in each row, and with broad overlapping

scarious margins, and a central dark line usually projecting as a point at the tip. The young flower heads are about ½ cm. diameter, but enlarge to 1½ or 2 cm. diameter in fruit, the bracts, especially of the inner set, doubling in size.

Florets about ½ cm. diameter, with a slender ovary but no stalk and no scales between. Corolla tubular, with 5 regular free points, and the appendices of the anthers projecting beyond them. The slender style is bifid, with conical or truncate ends papillose on the outer side, the stigmatic lines on the edges of the bifid portion within the anther-tube. Pollen grains globular and minutely spiny. Fruits 1 cm. long or more, the achene contracted to a short stalk at its base, which is hollow and has an oblique basal opening below one edge of the flattened achenial part of the fruit. The sides of the achene are finely sculptured with transverse grooves, and bear a pair of small brown scales, whose upper margins are drawn out into a fringe of stiff bristles ½ to 1 cm. long, themselves fringed with minute teeth, the upper two-thirds bright pink, the basal third white.

Burtonia multijuga, F. v. M., Forrest's Expedition = Burtonia polyzyga, Benth., var. multijuga, F. v. M. (Leguminosae).

The specimens are rather larger, coarser and stouter than the type species, which they otherwise closely resemble. The hairs are shorter forming a dense but thin woolly covering. The leaflets average 30 in number, and vary from 3 to 6 mm. in length, and from 2 to 4 mm. in breadth. The common petiole usually averages 6 to 8 cm. in length. The specimens bear no flowers, and from the other characters can only be classed as a variety of B. polyzyga, Benth.

Calothamnus gilesii, F. v. M. Watheroo sandy plains, W.A., M. Koch, 1906.

Of this rare plant described in 1876 (Fragmenta X., p. 31), the Herbarium only possessed two fragmentary specimens without any fruits. These are usually in close sessile clusters of 2 to 5, nearly cylindrical, greyish-brown to buff colour, 2 of the persistent calyx teeth often growing larger than the others in old fruits,

which attain a height and breadth of 1 cm. The fruits open by 3 valves within the cup. The linear seeds are angular without any perceptible wing, usually slightly curved, numerous, light to dark brown, and just exceed 1 mm. in length.

COMMERÇONIA REDUCTA, F. v. M. and Tate, M.S. (Sterculiaceae), (Dec, 1887, Port Lincoln) = C. Tatei, F. v. M., Trans. Royal Society S. Austr., x., 1888.

The description here given is insufficient to identify either plant, but specimens of C. Tatei, obtained from Adelaide, are identical with those named C. reducta in the National Herbarium, the former name standing.

CONOSTYLIS ACULEATA, R. Br., var. bromelioides (C. bromelioides, Endl.). M. Koch, Cowcowing, 1904; Jibberding, W.A., 1905.

Specimens from these localities show all stages of transition between C. aculeata and C. bromelioides, some specimens having the inflorescence of C. aculeata with the leaf of C. bromelioides, others the leaf margin of C. bromelioides, with the number of flower bracts and length of leaf of C. aculeata. The distribution seems to preclude the formation of hybrids, and hence Bentham's suggestion[1] that C. bromelioides might prove to be a variety of C. aculeata is confirmed.

CONOSTYLIS AUREA, var. longiscapa, n. var. M. Koch, Jibberding sand plains, W.A., 1905.

Scapes (14-18 cm.) longer than the leaves (10-14 cm.). Leaves narrow, barely more than 2 mm. diam. (instead of half a cm.). In this respect the specimens approach var. humilis, F. v. M., but the marginal setae are finer and more hair-like. A doubtful specimen from the Murchison R. has the same characteristics as this variety, but the bracts are much longer both on the scape and in the flower head.

CROTALARIA MITCHELLI, Benth, var. tomentosa, new var. (Leguminosae).

Between Finke River and Charlotte Waters, Kempe. Densely covered with fine hairs in every part except the corolla and fruit.

1 Flora australiensis, vol. vi., p. 438.

Smaller leaves and fewer flowers than the type species. Axis of inflorescence 3 to 5 cm. long, instead of 10 to 15, leaves rarely more than $2\frac{1}{2}$ cm. long by $1\frac{1}{2}$ broad, instead of 5 to 10 cm. long. In other respects the specimens resemble C. mitchelli, and differ from C. retusa in the flower, fruit, leaves and number of ovules.

Daviesia mesophylla, n. sp. ?

This plant, of which flowering specimens were obtained from W. and S. W. Australia, is closely allied to D. microphylla, but differs from it in several important respects. It is a small glabrous shrub without thorns, the branches striate with raised lines. The leaves are stout and rigid, vertical, laterally compressed, with thickened edges, usually convex on the lower, and concave on the upper edge, lanceolate or nearly linear, but contracting slightly at base, and converging to a sharp point at the apex, usually 1 cm. long, but varying from 6 to 12 mm., 1 mm. or slightly more broad. In transverse section the two marginal veins are larger and have more prominent bands of sclerenchyma than the median pair, which fuse to one along the basal third of the leaf. The leaf has a complete peripheral double layer of assimilating tissue, of which the inner layer is darker and tanniferous. In respect to their microscopic structure the leaves of D. mesophylla and D. microphylla show a close similarity. The flowers are in lateral leafy racemes, either crowded in rather slowy clusters of 8 to 12 flowers, on short branches, or sparsely scattered on longer, more leafy ones. The flowers are 8 to 10 mm. long and arise in the axils of the phyllodes on pedicels 5 to 7 mm long, usually with 4 minute bracts at the base of the pedicel, of which the uppermost is about 1 mm. long, boat-shaped, curved, and projecting from the pedicel. The three pointed anterior teeth of the calyx are nearly 1 mm. long and about $\frac{1}{3}$ the total length of the calyx, the two posterior are fused, with blunter lobes, the dividing notch being $\frac{1}{3}$ the depth of the others. Petals as in D. polyphylla, fruit not seen.

The plant is distinguished from D. microphylla by the larger leaves, flowers and bracts, by the longer pedicels, the more prominent calyx teeth, by the absence of the spiny

terminations to the branches, and by the occurrence of the flowers in clusters, They may however also be solitary, and one specimen exhibits both characteristics. Bentham in fact suggested that the solitary flowers of D. microphylla might not be a constant feature, and a specimen named by Bentham D. microphylla, but originally named D. incrassata, Sm., has leaves approaching closely to those of D. mesophylla. Unfortunately Bentham's specimen has no flowers, hence it can not at present be definitely determined whether we are dealing with a strongly marked variety D. microphylla or with a recently evolved species, still connected to the parent type by intermediate forms.

Daviesia ulicina, Smith, var. subumbellata (Leguminosae). Victoria desert, Elder Expedition, R. Helms, 1891.

Not previously recorded from W. Australia.

Dodonaea adenophora, Miq., var. ovata, n. var. (Sapindaceae).

Specimens were sent, in 1884, from Adelaide by J. H. Brown to von Mueller, and laid aside for future examination. The specimens have a very different superficial aspect to the type specimen of Miquel with which, however, they agree in all essential features. The leaves differ in having a larger number of leaflets, commonly 11; the leaflets are relatively broader (usually 3 mm. long by 1 broad), more regularly arranged and more ovate, and hence the plant may be distinguished as variety ovata.

Dryandra fraseri, R. Br. Watheroo sand plains. W. Australia. Max Koch, Aug. 1906,

The only specimens previously in the Herbarium were those examined by Bentham.

Eriostemon Brucei, F. v. M. M. Koch, Cowcowing (Victoria district of S. W. Australia), 1904.

Very rare.

Eriostemon tuberculosus, Benth, var. megaphyllus, n. var. Cowcowing, 1904.

Leaves distinctly bi-lobed at their apices, and averaging 15 mm. by 3 mm. (10 to 20 mm. long, and 2 to 4 mm. broad). Short

narrow petioles from 2 mm. to 1 mm., or less in length, but always more distinct than in type species. Other specimens have progressively smaller leaves, some bi-lobed and some not, forming intermediate conditions between this variety, the type species, and even var. microphyllus, which have otherwise very distinct aspects, and of which the latter form was recognised by Bentham as a distinct species (Phebalium microphyllum), but as a variety by Mueller. The variety microphyllus has the leaves shortly stalked, but not bi-lobed at the apex, and smaller and narrower than the variety megaphyllus.

Eriostemon (Phebalium) intermedius, n. sp.

This plant is interesting since it forms a connection between the Leionema section and Eriostemon proper, thus justifying von Mueller's inclusion of Phebalium in Eriostemon.

Leaves 2 or more cm. in length, usually 2, nearly linear, tuberculate with small glands, narrowed at the base to a stalk, pointed at the apex, but the point not curved. Channelled above, rounded below, no midrib shewing, and less than 1 mm. diam. at the broadest part. Sepals very small (about $\frac{1}{2}$ mm. long), spreading, green or brown, rather obtuse or slightly pointed, edges entire or fringed with extremely minute hairs, and bearing a few small, slightly-projecting glands. Petals 5, white, narrowed near their bases, and 3 to 4 mm. long. Stamens 10, with minute white or no appendices, the filaments not hairy or ciliate, with broader flattened bases. Base of the ovary with a thickened disc, and each coccus of the fruit containing one rather large, flat, brown, apparently-winged seed, about 2 mm. in length.

Cowcowing, M. Koch, 1904; W.A., between Upper Blackwood R. and L. Lefroy, Miss Cronin, 1893.

The latter specimens were placed by von Mueller with E. Brucei apparently from superficial examination only, since the plants are readily distinguished from that species by the longer leaves not recurved at their tips, by the smaller sepals not perceptibly broader at their middles, and $\frac{1}{2}$ mm. long instead of 1 mm. or more, by the filaments flattened at their bases and not ciliate, by the less distinct appendix, and by the style being not short but about $\frac{1}{2}$ the length of the petals. The species resemble one

another, however, in general habit, in the flowers solitary in the axils of the leaves, on pedicels of about 2 mm., with the bases surrounded by minute bracts. From E. scaber it is readily distinguished by the absence of any articulation of the pedicel to a peduncle, and from E. linearis by the stigma being entire and not lobed.

Euphorbia hypericifolia, L., var. bracteolaris, Boiss (Euphorbiaceae). Elder Exploring Expedition, 1892, lat. 27 deg. 5 m. S., long. 119 deg. 15 m. E.

This plant was considered by Luehmann to be a new Australian species. Specimens sent to Kew were determined as E. indica, L., from which the plant differs only in the seeds being smooth instead of shallowly pitted. E. indica, L., is probably an error, for E. indica, Lamk., which is placed under E. hypericifolia as var. indica by Hooker; variety bracteolaris has the smooth seeds of our specimens, and agrees in other respects within a varietal range. The species is new to Australia and undoubtedly indigenous.

Lepidopetalum (Bl.) tenax, Benth.

Specimens of Lepidopetalum australis, F. v. M., MS., collected by Hill at Moreton Bay, were sent to Kew and returned marked, "genus correct, species not at Kew." On further examination they were found to be identical with specimens named Ratonia tenax, Benth., by Bentham himself, and from the same locality and collector. The species, therefore, becomes Lepidopetalum tenax, Benth., for which Cupania tenax, A. Cunn., Ratonia tenax, Benth., and Lepidopetalum australis, F. v. M., are synonyms.

Lepyrodia scariosa, R. Br. (Restiaceae). Grampians, H. B. Williamson, 1903.

New to Victoria.

Melaleuca cordata, Benth., var. ovata, F. v. M. M. Koch, Western Australia.

These specimens with almost oblong leaves, all regularly 3-nerved, diverge more strongly from the type species than those

on which von Mueller's variety was founded. The leaves on the latter have mostly 5 nerves, and only a few smaller ones have 3.

Myrsine (Rapanea) benthamiana, Mez. 1884, Port Darwin, M. Holtze.

Named at Kew, and not previously recorded for Australia.

Nephelium becklerii, Benth., var.? (Sapindaceae). Logan R. Scortechini.

The leaflets are smaller than the type, averaging 7 cm. by 2, and the venation finer. New to Queensland.

Persea baileyana, F. v. M. Ined. (Lauraceae), given in Bailey's Flora of Queensland, p. 1310.

The specimens in the National Herbarium are marked "probably Cinnamomum Tamala, Nees," in the handwriting of von Mueller, and queried as Cinnnamomum virens, R. T. Baker, by R. T. Baker. One specimen of C. virens is marked by R. T. Baker as very close to C. propinquum, Bailey, which Bailey considers to be closely allied to C. ovalifolium, Wight, Ic. 125. A type specimen of C. propinquum, Bailey, agrees closely with the figure of C. albiflorum, Nees (Laurus cassia, Roxb.) in Wight, Icones 140, and this species is an accepted synonym for C. Tamala, Nees. This disagreement of experts probably results from the fact that all these "species" are so closely connected with C. Tamala by intervening forms as to render it advisable to extend the boundary of this species so as to include C. virens, Baker, C. propinquum, Bailey, and C. oliveri, Bailey, of which plant we have specimens from the same locality (Lismore) as C. propinquum. In any case there appears to be no justification for the name Persea Baileyana, F. v. M., as a MS. name on the authority of Baron von Mueller.

Petrophila ericifolia. (Proteaceae). Jibberding. M. Koch.

Intermediate forms resembling var. glabriflora in their smaller leaves and smaller cones, but with a hairy not glabrous perianth, in this respect resembling var. scabriuscula.

Richardsonia stellaris, Cham. et Schlect.

Specimens were found in the Herbarium sent in 1885 by Betche from Mossmann's Bay, N. S. Wales, with a letter by von Mueller addressed to Kew but never sent. On reference to Kew the plant was determined as above, the species being from S. America, and evidently an introduced weed to N. S. Wales, where R. humistrata is already recorded as an introduction.

Romulea (Trichonema) cruciata, Ker-Gawl (= R. cruciata, Eckl.).

This widely-spread Irid with rose-lilac flowers, and tough grass-like leaves is commonly known as the Guildford grass or Onion grass, and was originally referred by F. von Mueller as R. bulbocodium, L. It is given in Rodway's Flora of Tasmania as R. rosea, a S. African plant. Both these species, however, have the style longer than the stamens, whereas our plant resembles the R. cruciata, distinguished by Ker-Gawl. (Bot. Mag., 1802, pl. 575) from R. bulbocodium, and R. rosea, by the style shorter than the stamens and the hairy filaments. Baker, in the Flora Capensis, makes this species R. longifolia, Baker, but the three purple stripes on the outer perianth segments given by Baker are absent or very feebly developed, and the spathe segments are smaller ($\frac{1}{2}$ cm. long in flower to 1 cm. in fruit), the inner segment having a broad scarious margin. The leaf, as in the type specimens of R. cruciata, often has a fifth groove on one edge for a portion of its length, giving the appearance in transverse section shown in Plate XII. (a). Otherwise the transverse section (b) resembles that of R. rosea (d) more closely than that of R. bulbocodium (c), whereas the transverse section of the leaf of a type specimen of R. cruciata, closely resembles that of R. bulbocodium This fact and the character of the spathe segments justifies the recognition of an Australian variety of R. cruciata.

There can be no doubt that the short style with its six very short stigmatic arms, which separate as the stamens shed their pollen, is an adaptation for self-pollination. The flowers, which are strongly thermonastic, only open on warm sunny days, and do not seem to have any regular insect visitors. The plant grew

abundantly in the neighbourhood of the Botanic Gardens over 40 years ago, and may date much further back still, for its increase is favoured by the conditions attendant on the presence of civilized man. Probably if specimens had been collected from the early part of last century, we would have received evidence of adaptive modification on the part of this plant, but whether R. cruciata, var. australis, is derived from R. bulbocodium or R. rosea is impossible to say. In any case the whole genus of Romulea is badly in need of revision.

Experiments on the extermination of this weed are in progress at the Herbarium and in the Domain grounds. The use of pigs has been suggested to root out the corms from the ground, and Mr. T. S. Hall has recorded before the Field Naturalists' Club that white cockatoos coming North from the Otways have performed the same office, and by digging out the corms have cleared patches of ground infested by the weed. Mr. C. French, Jun., reports that he has often seen children eating the bulbs, although to the novice the taste is by no means pleasant. A quantity of the corms crushed and washed through a fine sieve yielded on settling an abundance of fine-quality starch, so that, were it not for the expense of collecting the bulbs, they might form a profitable source of starch. The seeds are also highly nutritious, and it is owing to the sparrows and other birds which eat the seeds that the plant is so rapidly and widely spread. Future investigation may show some use for the seeds. The stalk of the fruit capsule is strongly geophilous, and curves down towards the ground during ripening. In loose ground it is sometimes partially or completely covered before the seeds are shed.

Scaevola laciniata, Bailey. Flora of Queensland.

This plant resembles the variety pallida of S. microcarpa in the glabrous style and the corolla nearly glabrous outside, but has the larger flowers of the type species and the leaves somewhat more cut. It can only be classed as a variety laciniata, Bailey, of S. microcarpa, intermediate between the type species and variety pallida.

Scaevola scandens, Bailey, Flora of Queensland, seems to resemble S enantophylla closely in all specific points except