Det Kgl. Danske Videnskabernes Selskab.
Biologiske Meddelelser. III, 2.

CONTRIBUTIONS TO WEST AUSTRALIAN BOTANY

BY

C. H. OSTENFELD

PART III

C. H. OSTENFELD: ADDITIONS AND NOTES TO THE FLORA OF EXTRA-TROPICAL W. AUSTRALIA

(WITH XII PLATES AND 19 FIGURES IN THE TEXT)

KØBENHAVN
HOVEDKOMMISSIONÆR: ANDR. FRED. HØST & SØN, KGL. HOF-BOGHANDEL
BIANCO LUNOS BOGTRYKKERI
1921

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PREFACE

In two earlier publications[1] I have dealt with some of the plants which I collected during my visit to Western Australia in 1914.

The bulk of my collection came from the extra-tropical south-western part of the state, and as this part is comparatively well explored with regard to its flora, my collection contains mostly well-known plants. Therefore, I do not find it worth while to publish a full list of all the plants which I brought home.

On identifying the plants it appeared, nevertheless, that the flora in many respects needs a more modern treatment and, in some cases, a revision of the old statements. Also several plants were present which seemed to me to have remained undescribed hitherto; this is not surprising when we take into account the vast area and the richness of its flora. I found it, therefore, necessary to take down notes on distribution, alterations of names, descriptions of new forms, critical remarks etc., successively as the identification of the collection went on. In this manner the following enumeration came into existence.

It contains what I have found worth publishing of my notes, both additions to the geographical distribution of the

[1] Contributions to West Australian Botany, Part I (Dansk Botanisk Arkiv, Bd. 2, no. 6, 1916) and Part II (ibidem, no. 8, 1918).

species and notes of a more systematical nature. But it is far from a thorough revision. If it might encourage other botanists, especially botanists who are residents of W. A., to study their peculiar and beautiful flora more than has hitherto been the case, my object would have been amply achieved.

The main part of my work has been done in Copenhagen, but as the collection of W. Australian plants in the Botanical Museum there is not extensive, it soon became evident to me that it was necessary to consult larger herbaria, and by the aid of a grant from the Carlsberg Fund I was able to work about 3 weeks in 1919 at Kew where the richest Australian collections are, — at any rate richer than in any other place in Europe. Besides the collections at Kew I have consulted those in the British Museum (Natural History) and have further had some specimens sent on loan from the Berlin Museum. I take this opportunity of thanking the directors of these museums for their kindness, more especially I wish to mention Sir David Prain, the director of Kew Gardens where I worked for a considerable time.

When I began my work I was myself the keeper of the Botanical Museum at Copenhagen, but since then I have moved into another office. Therefore I wish to thank Professor C. Raunkiær, the director of the Botanical Gardens, for the kind permission to continue my studies at the museum.

It has taken some years to bring the naming of the plants to an end, and if I had not obtained assistance from many sides it would have taken still longer. I wish to express my thanks to Mr. Carl Christensen, the present keeper of the Botanical Museum of Copenhagen, for his

valuable assistance in the naming of my material of the plant families *Proteaceæ*, *Dilleniaceæ*, *Epacridaceæ*, *Lobeliaceæ*, *Goodeniaceæ* and *Stylidiaceæ*. The families *Gramineæ*, *Leguminosæ* and *Myrtaceæ* (excl. *Eucalyptus*) have been identified by Professors R. PILGER, E. PRITZEL and L. DIELS of Berlin; the latter has further named some few other plants and has assisted me in many other respects. I take this opportunity of offering these gentlemen my best thanks. The paper published by L. DIELS and E. PRITZEL in 1904 is by far the most important paper on the W. Australian flora which has appeared since BENTHAM's Flora.

While working at Kew I had the good fortune to receive advice and help from Dr. O. STAPF, Mr. J. HUTCHINSON and others of the herbarium staff. To them also I owe my best thanks.

Lastly I cannot omit mentioning the valuable assistance rendered to me by Mr. J. H. MAIDEN, director of the Botanical Garden of Melbourne, who also identified my *Eucalypti*, by Professor A. J. EWART, director of the Botanical Garden of Sydney, and by Mr. J. M. BLACK of Adelaide.

In the introduction to my first paper on W. Australian botany (1916) I mentioned the places where I had the opportunity of collecting my material. There also I emphasised the great kindness with which I was treated both by the Government of Western Australia and by several persons. Most of my plants were collected by myself, but my countryman Mr. E. DORPH-PETERSEN brought me numerous specimens from the neighbourhood of Perth, and my friend Mrs. M. DAVIS, proprietress of the St. Omer Hospital, Perth, assisted me in collecting and has later sent me several small collections of herbarium plants. My

best thanks are due to both and to the many others, here unnamed, who in one way or another did their share in helping me.

In the following enumeration the sequence of the plant families follows Engler's system (Syllabus der Pflanzenfamilien, 8. ed., 1919), while the species have mostly been arranged according to Bentham's *Flora Australiensis*. The latter work is quoted under each species throughout the whole enumeration, while otherwise I quote only the place where the name of the plant in question was published, and synonyms only where it was found to be of any use.

After the species name and the quotations the localities are given with collection no. and date in brackets. Then follow remarks of different kinds, mostly systematical and critical, but in some cases also biological notes, partly from my observations on the spot.

I. Pteridophyta.

Polypodiaceæ.

Asplenium trichomanes L. sp. pl. (1753) 1080; Benth. Fl. Austr. VII (1878) 745; C. Christensen, Index Filic. (1906) 135.

Yallingup Cave, in fissures of rocks (No. 6; 27. Sept. 1914).

Anogramma leptophylla (L.) Lk., Fil. sp. (1841) 137; C. Christensen, Index Fil. (1906) 58; *Grammitis leptophylla* Sw.; Benth. Fl. Austr. VII (1878) 776.

Yallingup Cave, in rock fissures of the Jarrah forest (No. 3; 27. Sept. 1914).

Notolæna distans R. Br., Prodr. Fl. Nov. Holl. (1810) 146; Benth. Fl. Austr. VII (1878) 774; C. Christensen, Index Fil. (1906) 460; Diels u. Pritzel, Bot. Jahrb. 35 (1904) 60.

Kalgoorlie, in rock fissures (3. Aug. 1914, Gunnar Andersson).

II. Monocotyledones.

Potamogetonaceæ.

Cymodocea and **Posidonia.**

The species of these two genera have been treated in the I. Part of my »Contr. W. Austr. Bot.«, 1916.

Scheuchzeriaceæ.

Triglochin.

A revision of the W. Australian species of *Triglochin* has appeared in the II. Part of my »Contr. W. Austr. Bot.«, 1918.

Hydrocharitaceæ.

Halophila.

The species of this genus have been treated in the I. Part of my »Contr. W. Austr. Bot.«, 1916.

Gramineæ (Determ. by Dr. R. Pilger).

Sorghum halepense (L.) Pers., Syn. I (1805) 101; Benth. Fl. Austr. VII (1878) 540.

York (No. 1399; 25. Nov. 1915, Mrs. M. Davis).

Introduced from the Mediterranean region.

Themeda triandra Forsk. Fl. Aegyp.-Arab. (1775) 178; *Anthistiria ciliata* L. fil. gram. gen. (1779) 35; Benth. Fl. Austr. VII (1878) 542.

Darlington near Perth (No. 28; 28. Aug. 1914, Cecil Andrews).

Ehrharta longiflora Sm. Plant. icon. ined. (1789—91) tab. 32; Stapf, in Fl. Cap. VII (1900) 664; Benth. Fl. Austr. VII (1878) 551; Diels u. Pritzel, Bot. Jahrb. 35 (1904) 69.

York (No. 1404; 25. Nov. 1915, Mrs. M. Davis).

Ehrharta brevifolia Schrad., in Goett. Gelert. Anzeig. III (1821) 2077, et in Schult. f., Syst. VII (1830) 1371; Stapf, in Fl. Cap. VII (1900) 673; Benth. Fl. Austr. VII (1878) 551.

Bayswater (No. 21; 18. Oct. 1914).

Both this and the foregoing species have been introduced from South Africa.

Oryzopsis miliacea (L.) Aschers. et Schweinf., Mém. Inst. Egypt. II (1889) 169; Aschers. u. Graebn. Syn. Mittel-Europ. Fl. II. 1 (1899) 96.

York (No. 1398; 25. Nov. 1915, Mrs. M. Davis).

Introduced from the Mediterranean region.

Stipa elegantissima Labill. Pl. Nov. Holl. I (1804) 23, tab. 29; Benth. Fl. Austr. VII (1878) 565; Diels u. Pritzel, Bot. Jahrb. 35 (1904) 69.

Kalgoorlie (No. 34; 7. Oct. 1914); York (No. 1400, 25. Nov. 1915, Mrs. M. Davis).

Stipa Tuckeri F. v. Müll. Fragm. Phytogr. Austr. XI (1881) 128.

Kalgoorlie (No. 35; 7. Oct. 1914).

Hitherto only known from Victoria and N. S. Wales.

Stipa compressa R. Br. Prodr. Fl. Nov. Holl. (1810) 175; Benth. Fl. Austr. VII (1878) 567.

Perth, King's Park (Nos. 19 and 24; 13. Oct. 1914).

Stipa aff. St. pubescentis R. Br.

Perth, King's Park (No. 23; 13. Oct. 1914).

Stipa trichophylla Benth. Fl. Austr. VII (1878) 570.

Kalgoorlie (Nos. 36 and 37; 7. Oct. 1914).

Calamagrostis filiformis (Forst.) Pilger, comb. nov.; *Avena filif.* Forster fil. Prodr. (1786) 9; *Deyeuxia Forsteri* Kunth, Enum. I (1833) 244; Benth. Fl. Austr. VII (1878) 579.

var. **Preissii** (Nees) Pilger, comb. nov.; *Lachnagrostis Pr.* Nees, in Pl. Preiss. II (1846) 97; *Deyeuxia Forsteri*, var. *Preissii* Benth. l. c.

Kalgoorlie (No. 32; 7. Oct. 1914).

Aira caryophyllea L. sp. pl. (1753) 66; Benth. Fl. Austr. VII (1878) 585; Diels u. Pritzel, Bot. Jahrb. 35 (1904).

Mundaring Weir (No. 16; 13. Sept. 1914); Perth, King's Park (Nos. 17 and 18; 10. Sept. and 13. Oct. 1914).

Aira capillaris Host, Gram. Austr. VI (1809) 20, tab. 35.

York (No. 1396; 25. Nov. 1915, Mrs. M. Davis).

Introduced from Europe.

Danthonia setacea R. Br., Prodr. Fl. Nov. Holl. (1810) 177; Benth. Fl. Austr. VII (1878) 595.

Kalgoorlie (Nos. 33 and 31; 7. Oct. 1914).

Amphipogon turbinatus R. Br., Prodr. Fl. Nov. Holl. (1810) 177; Benth. Fl. Austr. VII (1878) 599, partim; Pilger, apud Diels u. Pritzel, Bot. Jahrb. 35 (1904) 72.

Perth, King's Park (No. 25; 13. Oct. 1914).

Eragrostis setifolia Nees, in Hook. Lond. Journ. II (1843) 419; *E. chætophylla* Steud. Syn. Glum. I (1855) 279; Benth. Fl. Austr. VII (1878) 648.

Kalgoorlie (No. 30; 7. Oct. 1914).

Bromus madritensis L. Amoen. acad. IV (1755) 265; Sp. pl. ed. 2 (1762) 114.

York (No. 1402; 25. Nov. 1915, Mrs. Davis).

Introduced from Europe.

Hordeum murinum L. sp. pl. (1753) 85; Benth. Fl. Austr. VII (1878) 669.

York (No. 1401; 25. Nov. 1915, Mrs. M. Davis).

Introduced from Europe.

Cyperaceæ.

Cyperus tenellus L. fil. Suppl. (1781) 103; Benth. Fl. Austr. VII (1878) 265; Diels u. Pritzel, Bot. Jahrb. 35 (1904) 79.

Armadale, wet and clayey places (Nos. 186 and 193; 20. Sept. 1914); Bayswater, wet places (No. 186 bis; 18. Oct. 1914).

Scirpus cartilagineus (R. Br.) Spreng. Syst. I (1825) 208; Benth. Fl. Austr. VII (1878) 328.

Mundaring Weir, Darling Range (No. 192, 13. Sept. 1914); Armadale, bare and wet soil (No. 188, 20. Sept.

1914); Yallingup Cave, open sandy places in forest (Nos. 190 and 191, 27. Sept, 1914).

The specimens from Yallingup and Mundaring Weir agree well with Preiss' Nos. 1741 and 1742, while those from Armadale represent a much coarser plant which comes near to the fig. B on pl. 143 in Hooker f., Fl. Tasman.

Schoenus cygneus (Nees) Benth. Fl. Austr. VII (1878) 363; *Chætospora cygnea* Nees, in Ann. Nat. Hist. ser. 1, VI (1841) 49; vix *Schoenus cygneus* Nees in Pl. Preiss. II (1846) 81.

Tammin, heath (No. 180; 6. Oct. 1914).

A densely tufted plant with more or less curved slender stems.

Schoenus nanus (Nees) Benth. Fl. Austr. VII (1878) 364; *Chætospora nana* Nees, in Pl. Preiss. II (1846) 85.

Armadale, bare, clayey soil (No. 187; 20. Sept. 1914).

A dwarf, tufted annual (2—3 cm. high).

Evandra aristata R. Br. Prodr. Fl. Nov. Holl. (1810) 239; Benth. Fl. Austr. VII (1878) 424; Benth. in Hook. Icon. pl. pl. 1212; F. v. Müll., Fragm. Phytogr. IX (1875) 18.

I have collected this tall and beautiful plant in the classical place, Albany (No. 184, 20. Oct. 1914), where it was common in turfy swamps.

Bentham (l. c.) and, following him, Pax in Engler u. Prantl., Nat. Pflanzenfam., give the filiform stigmatic branches as 8 in number, but my specimens have always 10, and F. v. Müller (l. c.) says »7—10«. I think it better to alter the diagnosis of the genus to »stigmatic branches 8—10«.

Carex appressa R. Br., Prodr. Fl. Nov. Holl. (1810) 242; Kükenthal, Caricoideæ, in Engler, Das Pflanzenreich (1909)

178, fig. 29 E—J; *C. paniculata* Benth. Fl. Austr. VIII (1878) 440, saltem ex parte.

Yallingup Cave, along rivulets, forming big tufts (No. 197, 28. Sept, 1914).

Restionaceæ.

Anarthria gracilis R. Br. Prodr. Fl. Nov. Holl. (1810) 249; Benth. Fl. Austr. VII (1878) 213.

Palgarup, south of Bridgetown (No. 174; 2. Oct. 1914), male plant, in flower.

Centrolepidaceæ.

Aphelia cyperoides R. Br. Prodr. Fl. Nov. Holl. (1810) 252; Benth. Fl. Austr. VII (1878) 200; Diels u. Pritzel, Bot. Jahrb. 35 (1904) 93.

Bayswater, near Swan River, in a swamp (No. 13; 18. Oct. 1914); Albany, in wet sandy places (No. 12; 20. Oct. 1914).

This species is common at King George's Sound, and Diels (l. c.) says that it reaches as far as the district Stirling. Hence the record of it at Bayswater extends the range considerably.

The Bayswater specimens are taller and more slender than those from Albany; further, the number of bracts in each spike is higher (15—17), but otherwise they agree with them.

Centrolepis Drummondii (Nees) Hieron., in Abhandl. Naturf. Ges. Halle XII (1873) 98; Benth. Fl. Austr. VII (1878) 206.

Yallingup Cave, on sandy soil (No. 14; 26. Sept. 1914).

The specimens are 3—7 cm. high and more or less tinged with purple; the scapes are about 3—4 times as long as the leaves, and the specimens agree well with the description

of *C. brevifolia* (Nees) Hieron., but this is said by BENTHAM (l. c.) to be only a synonym for *C. Drummondii.*

Centrolepis polygyna (R. Br.) Hieron., l. c. 96; Bentham, Fl. Austr. VII (1878) 203.

Near Armadale (No. 7; 22. Sept. 1914, E. Dorph-Petersen).

The floral bracts are of a dark chestnut-brown colour with the exception of the long awn; many carpels in the flower.

Amongst the *Triglochin* specimens of Plant. Preiss. No. 2409 (»in arenosis aquosis planitiei prope Perth«, 1839) I have found, in the Copenhagen Herbarium, a single plant of this species.

Centrolepis basiflora nov. sp. Fig. 1.

Plantula minuta annua. Radix fasciculato-fibrillosa. Folia 3 basalia bifaria filiformia, usque ad 15—20 mm. longa, basi vaginantia. Scapus nullus, spicula sessilis. Bracteæ florales 2 bifariæ, foliis simillimæ sed breviores, 7—10 mm. longæ, fere æquilongæ, parte basali in vaginam membranaceam amplificata. Flores 2—3 hermaphroditici, in axilla bractearum bibracteolati; stamina stigmataque e bractearum vaginis eminentia. Filamentum staminis ca. 4 mm. longum, majori parte a bracteola inferiore tectum. Carpidia duo (rarius unum); styli basi connati, stigmata 2 longa capillacea.

Ex affinitate *C. aristatæ* var. *pygmææ* F. v. Müll.

Hab. Austr. occid. ad Armadale prope Perth, solo subhumido, argilloso, subnudo (No. 11; 20. Sept. 1914, florens).

This little plant was very puzzling. It has the habit of DIELS's new genus *Hydatella,* but on closer examination it was found that the floral characters show much affinity to *Centrolepis aristata,* especially to the var. *pygmæa* F. Müll.

(in Benth., Fl. Austr. VII (1878) 207) from Tasmania which was pointed out to me by Dr. O. Stapf of Kew. Nevertheless it is quite distinct from *C. aristata* which grew together

Fig. 1. *Centrolepis basiflora* Ostf. To the left a whole plant, to the right the inflorescence alone. Photo. from specimens preserved in alcohol. ($^3/_1$ nat. size).

with it. The quite sessile spikelet and the rather hyaline vaginal parts of the leafy floral bracts make it easily recognisable. Its minute size explains why it has been overlooked hitherto.

Philydraceæ.

Pritzelia pygmæa (R. Br.) F. v. Müll., Descript. Papuan Pl. I (1875) 13; Bentham, Fl. Austr. VII (1878) 74.

This small plant seems to be common in damp places of the south-western part of the state, at least in the coastal region. I have it from Albany (No. 1128; 20. Oct. 1914), Armadale (No. 1129; 20. Sept. 1914) and Bayswater (No. 1130; 18. Oct. 1914) in full flower. The perianth is yellow.

Juncaceæ.

Juncus planifolius R. Br. Prodr. (1810) 259; Benth. Fl. Austr. VII (1878) 125; Buchenau, Juncaceæ, in Das Pflanzenreich IV, 36 (1906) 249, ubi synom.

var. **humilis** nov. var. (Pl. III, Fig. 5). Differt a specie: caulis humilis (10—13 cm.), sat robustus; præter caulem principalem complures caules 2di ordinis minores gracilioresque; folia lata (usque ad 7 mm.) fere ad basin inflorescentiæ attingentia, præcipue basin versus fusco-purpurata; flores atrobrunnei; capitula plerumque 3—4-flora; semina majora.

Albany, on wet sandy soil (No. 148, 20 Oct. 1914).

It is only after much hesitation that I have chosen to place a broad-leaved *Juncus* from Albany (King George's Sound) under *J. planifolius;* its habit is very different from that of typical *J. planifolius*, but the characters point to that species.

Juncus maritimus Lam. var. **australiensis** Buchenau, Monogr. Juncac., in Engler, Bot. Jahrb. XII (1890) 257; Juncaceæ, in Das Pflanzenreich (1906) 155; *J. maritimus* Benth. Fl. Austr. VII (1878) 130.

Swan River near Bayswater (No. 149; 18. Oct. 1914).

Juncus pygmæus Thuill., Fl. envir. Paris (1799) 178; Buchenau, l. c. (1906) 164.

Perth, creeks (J. H. Maiden, 1909, acc. to specimens distributed by Nat. Herbarium of N. S. Wales), introduced.

Juncus capitatus Weig. Obs. bot. (1772), 28; Buchenau, l. c. (1906) 256.

Bayswater (No. 152; 18. Oct. 1914), Armadale (No. 150 a; 20. Sept. 1914) and Albany (No. 151; 20. Oct. 1914), introduced. Seems to be spreading rapidly in the foot-steps of man, as *J. bufonius* has done before it.

Luzula migrata (Buchenau) comb. nov.; *L. campestris*, var. *migrata* Buchenau, in Oesterr. bot. Zeitsch. (1898) 242, et l. c. (1906) 94; *L. campestris* Benth. Fl. Austr. VII (1878) 123.

Perth: King's Park, on sandy soil in open forest (No. 147; 18. Sept. 1914).

The Australian *Luzula* of the species-aggregate *L. campestris* is well defined by the bulbous bases of the stems and the long-stalked flower-clusters, and deserves species rank.

Liliaceæ.

Burchardia umbellata R. Br., Prodr. Fl. Nov. Holl. (1810) 273; Endl. in Pl. Preiss. II (1846) 44; Benth. Fl. Austr. VII (1878) 33 pro max. parte; *B. umb.* β Domin, in Journ. Linn. Soc. XLI (1912) 259; *B. congesta* Lindl. Swan Riv. App. Bot. Reg. (1839) 58; Endl. l. c.; *B. monantha* Domin, l. c., et in Beitr. Fl. u. Pflanzengeogr. Austr. I (1915) 518, tab. X, fig. 1.

Common around Perth (Nos. 104, 106, 1438; flow. in August—September 1914; No. 102, fruiting in Oct. 1914).

Bentham (l. c.) includes all the forms of *Burchardia* under one species reducing Lindley's two species (l. c. 1839) to synonyms; but I agree with Diels (Botan. Jahrb. 35

(1904) 98) who writes: »Per Australiam occidentalem *B. multiflora* Lindl. et *B. congesta* Lindl. fere semper facillime discriminari possunt«. Therefore I do not think it convenient to follow DOMIN (1912, pp. 258—260) who unites them under *B. umbellata* as α and β and adds a number of varieties under each of them. DOMIN points out that LINDLEY's *B. congesta* is the same as R. BROWN's original *B. umbellata*; consequently we must drop LINDLEY's name and use BROWN's earlier one. Thus we have two species, viz. *B. umbellata* R. Br. and *B. multiflora* Lindl. They differ from each other both in habit and habitat. The true *B. umbellata* (= Domin's β) has »foliis caulinis basi haud manifeste dilatatis, sed basi plus minusve amplectente vix latiore insertis«, and the inflorescence is usually rather few-flowered, the flowers on comparatively short stalks, and the anthers before opening yellow or orange-yellow. It prefers rather dry and sandy places and is more slender and taller than *B. multiflora*.

As far as I can judge from the description and drawing, DOMIN's *B. monantha* is nothing but a single- and large-flowered specimen of *B. umbellata*, while his var. *composita* is a luxuriant form.

Burchardia multiflora Lindl. Swan Riv. App. Bot. Reg. (1839) 58; Endl. in Pl. Preiss. II (1846) 44; *B. umbellata* α, Domin (1912) l. c. 259 (var. *multiflora*, var. *ornithogaloides* and var. *strictiflora*).

Common around Perth and Armadale (Nos. 103, 105, 107; Aug.—Sept. 1914).

B. multiflora Lindl. seems to be restricted to W. A. while *B. umbellata* is fairly distributed over the whole of temperate Australia, extending from N. S. Wales to W. A.

Domin (l. c.) characterizes it excellently as follows: "foliis caulinis basi (vagina) manifeste dilatatis, supremis vel bracteis ad vaginas latas reductis, pedicellis plerumque elongatis". He has 3 varieties under it, but I do not think it necessary to use these names as I suppose they indicate mere modifications. To his description I may add that *B. multiflora* has usually more rich-flowered inflorescences and long-stalked flowers, and the anthers are orange-red before opening.

It prefers rather wet and more humous places and is coarser and lower than the true *B. umbellata*.

From Diels's statements (l. c., 98) it seems as if he has used the names *B. congesta* and *B. multiflora* in a sense opposite to that used here, which is in accordance with the fact that R. Brown's *B. umbellata* is the same as Lindley's *B. congesta*.

Asphodelus fistulosus L. sp. pl. (1753) 309.

Geraldton, among the dunes along a road, in flower and fruit (No. 76; 29. Oct. 1914).

This common Mediterranean plant was not before recorded from W. Australia; and I must admit that my specimens at first gave me some trouble, as I did not expect to have to do with an introduced plant, as it grew freely among the dunes at some distance from Geraldton, although along a road.

I have grown it in Copenhagen from seeds from Geraldton, and have made some notes on the cultivated specimens. The flower is only open one day and is self-fertilizing. The perianth is white with a redbrown (CC 43[1]) midvein, the outer segments oblong-ovate, the inner ovate.

[1] CC = Klincksieck et Valette, Code des Couleurs. Paris, 1908.

Filaments white with hairy basal parts hiding the ovary, otherwise glabrous, dilated above, but narrowed again under the anther. Pollen orange-red (CC 126). Style as long as the stamens; 3 globose, papillose, pink stigmas. Fruit nearly globose with emarginate apex, somewhat transversally rugose. Seeds triangular, black, not shining, transversally rugose. Fruiting pedicel double as long as the fruit, somewhat thickened.

Bulbine semibarbata (R. Br.) Haw. Rev. Pl. Succ. (1821) 33; Benth. Fl. Austr. VII (1878) 35; *Anthericum semibarbatum* R. Br. Prodr. Fl. Nov. Holl. (1810) 275.

Yallingup Cave, under shrubs, in flower (No. 112; 26. Sept. 1914).

Thysanotus tuberosus R. Br., Prodr. Nov. Holl. (1810) 282; Benth. Fl. Austr. VII (1878) 41.

Albany, in full flower (No. 84; 21. Oct. 1914).

Some specimens collected at Albany agree well with *T. tuberosus*, which is mainly an Eastern species; but BENTHAM (l. c., p. 42) says that he has seen specimens from W. A. "not distinguishable from some eastern forms of *T. tuberosus*", and in Kew Herb. W. A.-specimens from Westbourne, Dwalgarup (presd. by F. D. GODMAN 1915) are present.

On the whole the species of the genus *Thysanotus* are not well defined and require further observations; probably too many species have been created.

Thysanotus tenellus Endl. in Pl. Preiss. II. 1 (1846) 37; Benth. Fl. Austr. VII (1878) 40; *T. tenuis* Lindl. Bot. Reg. 24, 1838, tab. 50.

Armadale, in open forest (No. 82; 20. Sept. 1914).

Perhaps this species is not specifically different from

T. isantherus R. Br., the only distinction being the inequality of the anthers.

Chamæscilla corymbosa (R. Br.) F. v. Müll., Fragm. Phytogr. Austr. VII (1869—71) 68; Benth. Fl. Austr. VII (1878) 48; *Cæsia corymbosa* R. Br. Prodr. Fl. Nov. Holl. (1810) 277.

Near Perth (No. 79; 23. Aug. 1914, flowering, leg. E. Dorph-Petersen); Armadale, low-lying clayey soil (No. 77; 20. Sept. 1914, in fruit); Yallingup Cave, sandy soil in open forest (No. 78; 26. Sept. 1914, in flower).

This species is doubtless a common plant in the whole southwestern corner of the State.

Chamæscilla versicolor (Lindl.) comb. nov.; *Ch. corymbosa* var. *versicolor* Domin, Journ. Linn. Soc. XLI (1912) 263; *Cæsia versicolor* Lindl. Swan Riv. App. Bot. Reg. (1839) 57; *C. corymbosa* var. *versicolor* Baker, Journ. Linn. Soc. XV (1877) 361.

Greenmount (Darling Range) near Perth (No. 80; 13. Sept. 1914, in full flower).

This plant is mostly considered as a form or variety of *Ch. corymbosa*, but I think it is sufficiently distinct to be taken as a species. To Domin's diagnosis (l. c.): "Planta elata plus 3 dm alta, scapis foliis duplo longioribus, inflorescentia magna composita, floribus plerumque majoribus plus 8 mm latis" (errore calami "longis"), I may add the following distinctive marks from the flowers: in *Ch. corymbosa* the anthers are small and short (1—1,2 mm long) and the filaments more than double as long (2—4 mm), while in *Ch. versicolor* the anthers are larger (1,8—2 mm long) and the filaments not much longer than the anthers (2—3 mm long).

This character and the larger and broader leaves (only

2—3 in number) are, together with other minor differences, so valuable that the plant deserves specific range.

Tricoryne humilis Endl. in Pl. Preiss. II 1 (1846) 36; Benth. Fl. Austr. VII (1878) 53.

Armadale, on low-lying ground, in full flower (No. 114; 20. Sept. 1914).

The grass-like stem-leaves and outer bracts characterize this species.

Tricoryne elatior R. Br. Prodr. Fl. Nov. Holl. (1810) 278; Benth. Fl. Austr. VII (1878) 52.

A very variable species. I have what I call the typical form with the stem-leaves reduced, from several places near Perth (No. 115, near Armadale, 20. Sept., and No. 113, near Perth, 13. Sept. 1914, E. Dorph-Petersen).

A somewhat luxuriant form has better developed stem-leaves. It agrees with Kew Herb.'s specimens of *T. scabra* R. Br. (foliis caulinis gramineis, præcique inferioribus) and seems fairly common in W. Australia. My specimens were collected in Perth, King's Park (No. 117; 26. Oct. 1914). The variety seems to flower a little later than the main form.

Quite the opposite of this variety is a depauperate specimen from Albany (No. 116; 20. Oct. 1914) with reduced stem-leaves and single flowers; perhaps it is identical with *T. tenella* R. Br. l. c.

Agrostocrinum scabrum (R. Br.) comb. nov.; *A. stypandroides* F. v. Müll., Fragm. Phytogr. Austr. II (1860) 95, VII (1869—71) 65; Benth. Fl. Austr. VII (1878) 36, et aliis; *Stypandra scabra* R. Br. Prodr. (1810) 279; Endl. in Pl. Preiss. II (1846) 35.

Armadale, on low-lying ground, common (Nos. 89—91; 4. and 20. Sept. 1914).

It is necessary, according to the rules of nomenclature, to use R. Brown's species name instead of F. v. Müller's.

Cæsia parviflora R. Br. Prodr. Fl. Nov. Holl. (1810) 277; Benth, Fl. Austr. VII (1878) 47; *C. occidentalis* R. Br. l. c.; Endl. in Pl. Preiss II. 1 (1846) 33; Baker in Journ. Linn. Soc. XV (1877) 358.

Albany, in flower and with young fruit (No. 111; 21. Oct. 1914).

Some specimens (Pl. II, Fig. 3) with unbranched stems and whitish-green flowers collected on sandy soil at Albany agree very well with specimens of *C. parviflora* from Victoria and Tasmania, and I think this species (including what has been named *C. occidentalis*) occurs along the whole southern part of Australia from east to west.

Bentham (l. c.) suggests that it is "perhaps the only species in West Australia", but this suggestion is evidently wrong as I have brought home one other species, viz.:

Cæsia micrantha Lindl. Swan Riv. App. Bot. Reg. (1839) 57; Endl. in Pl. Preiss. II 1 (1846) 34.

Yallingup Cave (No. 110; 27. Sept. 1914, flowering); Perth, Kings Park (No. 108; 9. Sept. 1914, in full flower; No. 109; 13. Oct. 1914, with ripe fruit).

It is with some doubt that I use Lindley's name for this species, as his diagnosis is very brief, but especially on taking also Endlicher's short description (l. c.) into consideration and on comparison with his description of *C. occidentalis*, I think it allowable to revive an old name instead of creating a new one.

The plant in question (Pl. II, Fig. 4) approaches the

Eastern *C. vittata*, but it differs by the leaves reaching the top of the stem, and by the much smaller flowers on longer stalks; the perianth is dull purplish-brownish or whitish-brownish and inconspicuous.

The stems are 30—50 cm high with few long branches, leaves long linear, grass-like (up to 7 mm broad); flowers numerous, perianth only ca. 4 mm long, on pedicels several times longer. It is a much higher and more robust plant than the preceding species, the leaves of which are only 1—2 mm broad and the pedicels shorter than the whitish-green perianth.

BENTHAM (l. c.) has taken *C. micrantha* Lindl. as a synonym for *C. parviflora* R. Br., but I think he is wrong in doing so, at least as regards *C. micrantha*, a, *major* Endlicher (l. c.), which is undoubtedly our species.

Corynotheca micrantha (Lindl.) Macbride, Contr. Gray Herb. Harvard Univ. LVI (1918) 3; *C. dichotoma* F. v. Müll. Fragm. Phytogr. Austr. VII (1870) 68; Benth. Fl. Austr. VII (1878) 50; *Asparagus micranthus* Lindl. Swan Riv. App. Bot. Reg. (1839) 58; *Thysanotus micranthus* Endl. in Pl. Preiss. II. 1 (1846) 36; *Cæsia dichotoma* F. v. Müll. Fragm. Phytogr. Austr. I (1859) 215.

Perth, King's Park, on dry and sandy soil (No. 118; 13. Oct. 1914).

The changing of the species name is necessary according to the rules of nomenclature. This plant (Pl. I, Fig. 2) is one of the most singular Liliaceæ of W. A. by its many times repeated and regular dichotomy; the leaves are reduced to small scarious bracts.

It seems to have a wide range towards the north as E. CHEEL (K. Svenska Vet. Akad. Handl. Bd. 52, No. 10,

1916, p. 5) records it from "near Broome, Dampiers Land", collected by the Swedish zoologist Dr. E. Mjöberg in 1911.

Stypandra glauca R. Br., Prodr. Fl. Nov. Holl. (1810) 279; Benth. Fl. Austr. VII (1878) 53.

Besides the main form which was collected at Albany (No. 95; 21. Oct. 1914), a large-flowered and tall and robust form was brought home from Darlington near Perth (No. 94; 28. Aug. 1914, C. Andrews). It answers to the var. *grandiflora* (Lindl.) Baker (in Journ. Linn. Soc. XV (1877) 356; *S. grandiflora* Lindl. Swan Riv. App. Bot. Reg. (1839) 57).

Dianella revoluta R. Br. Prodr. Fl. Nov. Holl. (1810) 280; Endl. in Pl. Preiss. II. 1 (1846) 39; Benth. Fl. Austr. VII (1878) 15; *D. longifolia* Bot. Reg. tab. 734, not of R. Br.

Perth, King's Park, on sandy soil (No. 93; 15. Oct. 1914, flowers not yet open; No. 1311; 20. Nov. 1914, in full flower, Mrs. M. Davis).

The *Dianella*'s of Australia have been much confused with regard to their species names. The plant from King's Park is coarse and vigorous (70—80 cm high) with richly branched divaricate inflorescence, about as high as the leaves; pedicels a little longer than the flowers (10—15 mm); perianth leaves ovate-oblong (7—8 mm long), 7-nerved; anthers dark, shorter than the filament; upper part of filament much swollen, yellow, lower part somewhat twisted. I identify it with *D. revoluta* of R. Brown; it is the same form which Endlicher (l. c.) mentions from Freemantle observing that it differs from the eastern form only in "statura multo robustiore paniculisque magis divisis".

var. **brevicaulis** nov. var. (Pl. I, Fig. 1). Caulis foliis duplo vel ultra brevior, 20—25 cm alta; folia usque ad 65 cm longa, revoluta; pedicelli ca. 20 mm longi; flores tenues;

folia perianthii oblongo-linearia, 7—8 mm longa, indistincte 5-nervia, staminibus distincte longiora; filamenta antheris breviora, parte incrassata parva, parte basali non plicata. Ceterum ut *D. revoluta*.

Yallingup Cave, along a rivulet, in flower (No. 92; 27. Sept. 1914).

It appears from the above descriptions that my *Dianella* from Yallingup Cave is rather different from the typical *D. revoluta* as I have it from Perth; but as I have not much material at my disposal, and no fruiting specimens, I prefer to leave it as a variety under the said species. It seems to flower earlier.

Bartlingia grandiflora (Lindl.) F. v. Müll. Cens. (1882) 118; *Laxmannia grandiflora* Lindl. Swan Riv. App. Bot. Reg. (1839) 56, tab. 7; Benth. Fl. Austr. VII (1878) 64; *L. squarrosa* Endl. in Pl. Preiss. II. 1 (1846) 42, ex parte, non Lindl.

Vicinity of Perth (No. 1346; 1915, Mrs. Davis).

As pointed out by F. v. MÜLLER (Fragm. Phytogr. VII (1870) 88) the name *Laxmannia* R. Br. is preoccupied by *Laxmannia* Forst. (*Petrobium* R. Br.), a genus of Compositæ, and Baron v. MÜLLER has later (l. c. 1882) made the necessary changes using the name *Bartlingia* proposed by himself in 1870.

As far as my material allows of any judgment the genus needs a thorough revision, and I think too many species have been created, especially by ENDLICHER (l. c.).

Bartlingia paleacea (F. v. Müll.) comb. nov.; *Laxmannia paleacea* F. v. Müll. Fragm. Phytog. Austr. I (1859) 159; *L. grandiflora*, var. *paleacea* Benth. Fl. Austr. VII (1878) 64, ex max. parte.

Tammin, heath on sandy soil (No. 100 b; 6. Oct. 1914).

I think that the plant from Tammin (Pl. III, Fig. 2), which agrees exactly with specimens in the Kew Herb. "from between Esperance Bay and Fraser's Range" (leg. Dumpter), is sufficiently different from *B. grandiflora* to be kept as a separate species, not as a variety as Bentham (l. c.) has done. As I have not seen Müller's type specimens from Philip's River, I am not quite sure that the name is correct. The species in question differs from *B. grandiflora* by the very numerous empty outer bracts which are of a light chestnut-brown colour, and by the hairiness of the long bristles of the leaf-sheaths (they are smooth in *B. grandiflora*). It seems to be a species which occurs more inland than the others.

Bentham quotes Preiss' No. 1588 under his var. *paleacea*, but the Copenhagen set of Preiss's plants contains both typical *B. grandiflora* and *B. squarrosa* under No. 1588 and no *B. paleacea*.

Bartlingia squarrosa (Lindl.) F. v. Müll. Cens. (1882) 118; *Laxmannia squarrosa* Lindl. Swan Riv. App. Bot. Reg. (1839) 56; Benth. Fl. Austr. VII (1878) 64; *L. grandiflora* Endl. in Pl. Preiss. II (1846) 42, non Lindl.

Armadale, on sandy soil (No. 100 a; 4. Sept. 1914); Perth, King's Park, sandy soil (No. 98; 13. Oct. 1914).

Bartlingia minor (R. Br.) F. v. Müll. Cens. (1882) 118; *Laxmannia minor* R. Br. Prodr. Fl. Nov. Holl. (1810) 286; Benth. Fl. Austr. VII (1878) 65; *L. Roei* Endl., in Pl. Preiss. II (1846) 42.

Albany (No. 99; 21. Oct. 1914).

Johnsonia hirta Lindl. Swan Riv. App. Bot. Reg. (1839) 57, tab. 7; F. v. Müll. Fragm. Phytogr. VII (1870) 87; *J.*

pubescens Lindl. l. c.; Benth. Fl. Austr. VII (1878) 68; Domin, in Journ. Linn. Soc., vol. 41 (1912) 265.

Environs of Perth (Nr. 121; 23. Aug. 1914, E. Dorph-Petersen).

As *J. hirta* and *J. pubescens* have been described on the same page by LINDLEY (l. c.), but are only forms of the same species, F. v. MÜLLER (l. c.) has correctly taken the name first printed of the two as the valid one, while BENTHAM, DOMIN, and others wrongly use the second name. It seems to be a very variable species, as I quite agree with DOMIN (l. c.) in including ENDLICHER's three species under it.

We have at present only two well-distinguished species of the genus, viz. *J. hirta* and *J. lupulina* R. Br., the latter a dominant feature in the vegetation of the southernmost corner of the state. I have it from Albany (No. 120; 21. Oct. 1914) and Palgarup near Bridgetown (No. 119; 2. Oct. 1914).

Borya nitida Labill. Pl. Nov., Holl. I (1804) 81, tab. 107; Benth. Fl. Austr. VII (1878) 71.

Of this variable species I have collected a somewhat aberrant form (Pl. III, Fig. 6) with densely placed, short and broad leaves with long pungent points; it formed dense cushions on low-lying heath at Tammin (No. 101; 6. Oct. 1914), and was completely killed by the exceptional draught.

Typical specimens were collected at Mundaring Weir (No. 98; 13. Sept.) and Armadale (No. 97; 20. Sept. 1914), growing in clayey soil, in full flower.

Dasypogon Hookeri Drummond, in Hook. Lond. Journ. Bot. II (1843) 168; Benth. Fl. Austr. VII (1878) 119; Diels, Pflanzenwelt v. West-Austr. (1906) 116.

Near Yallingup Cave (No. 134; 30. Sept. 1914).

In the Jarrah forest somewhat north of the Yallingup

Cave I met with this singular "grass-tree". As pointed out by L. DIELS (l. c.) it has a very restricted area of distribution, being confined to the southernmost corner of the west coast of the state.

Acanthocarpus Preissii Lehm. in Pl. Preiss. II (1848) 274; Benth. Fl. Austr. VII (1878) 111; Diels in Engl. Bot. Jahrb. vol. 35 (1904) 102; *A. mucronatus* Macbride, Contr. Gray Herb. Harvard Univ. LVI (1918) 4; an *Xerotes mucronata* R. Br. Prodr. Fl. Nov. Holl. (1810) 260?

Yallingup Cave, amongst shrubs near the shore (No. 127; 26. Sept. 1914); Geraldton, among the dunes (No. 138; 29. Oct. 1914).

This species seems to be widely distributed along the west coast of the State. It had ripe fruits in October at Geraldton.

Lomandra Endlicheri (F. v. Müll.) Ewart, Proc. Roy. Soc. Victoria 28 (N. S.) II (1916) 219; *Xerotes Endlicheri* F. v. Müll., Fragm. Phytogr. Austr. VIII (1874) 205; Benth. Fl. Austr. VII (1878) 101.

Environs of Perth (No. 123; 9. Aug. 1914, E. Dorph-Petersen; No. 122; 30. Aug., idem); Big Brook, South of Bridgetown, in the Karri forest (No. 126; 2. Oct. 1914; imperfect specimens).

Lomandra cæspitosa (Benth.) Ewart, l. c. 220; *Xerotes cæspitosa* Benth. Fl. Austr. VII (1878) 104.

Cottesloe (No. 125; 23. Aug. 1914, Cecil Andrews).

Lomandra Sonderi (F. v. Müll.) Ewart, l. c. 219; *Xerotes Sonderi* F. v. Müll. Fragm. Phytogr. Austr. VIII (1874) 206; Benth. Fl. Austr. VII (1878) 99.

Yallingup Cave, in forest (No. 124; 29. Sept. 1914, in fruit).

Hæmodoraceæ.

Hæmodorum sparsiflorum F. v. Müll. Fragm. Phytogr. Austr. VII (1870) 117; Benth. Fl. Austr. VI (1873) 420; Diels u. Pritzel, Engl. Botan. Jahrb. **35** (1904) 106.

Bayswater, in sandy swamp (No. 72; 18. Oct. 1914, in flower).

Hæmodorum spicatum R. Br. Prodr. Fl. Nov. Holl. (1810) 300; Benth. Fl. Austr. VI (1873) 420.

Perth, King's Park (No. 75; 15. Oct. 1914, flowering just begun); same locality (No. 1313; 20. Nov. 1914, Mrs. M. Davis, flowering over, only very few of the flowers have set fruit).

Hæmodorum laxum R. Br. Prodr. Fl. Nov. Holl. (1810) 300; Benth. Fl. Austr. VI (1873) 421; Diels u. Pritzel, Engl. Bot. Jahrb. **35** (1904) 106.

I agree with DIELS (l. c.) in referring PREISS' No. 1629 to this species, not as BENTHAM (l. c.) has done to *H. paniculatum*. Also PREISS' No. 1422 which is not specifically identified in *Pl. Preiss.* belongs to *H. laxum* as far as the specimens in the Botan. Mus. of Copenhagen go. Localities are not given for any of these Nos.

Hæmodorum paniculatum Lindl. Swan River, App. Botan. Reg. (1839) 44; Benth. Fl. Austr. VI (1873) 420.

To this species which is, as BENTHAM says, very near *H. laxum*, I refer some flowering specimens from Perth, King's Park (No. 74; 15. Oct. 1914).

Hæmodorum simplex Lindl. Swan River, App. Botan. Reg. (1839) 44; Benth. Fl. Austr. VI (1873) 421.

Bayswater, sandy soil near Swan River, with young fruits (No. 73; 18. Oct. 1914).

This species seems to flower earlier than the others. It differs from these in the shape of the anthers: they are small and elliptic.

Amaryllidaceæ.

Phlebocarya ciliata R. Br. Prodr. Fl. Nov. Holl. (1810) 301; Benth. Fl. Austr. VI (1873) 424.

var. *lævis* (Lindl.) Benth. l. c. 425; *Ph. lævis* Lindl., Swan River App. Botan. Reg. (1839) 43.

Perth, King's Park, common on sandy soil in the open forest, in full flower (No. 38; 4. Oct. 1914). Flowers whitish.

The plant agrees well with Lindley's description and with specimens in Kew Herbarium and Preiss' No. 1558; therefore I refer it to var. *lævis* Benth; but I am not sure that the type of *Ph. ciliata* of R. Br. is at all different from var. *lævis* (Lindl.).

Hypoxis occidentalis Benth. Fl. Austr. VI (1873) 451.

Environs of Perth (No. 71; 16. Aug. 1914, E. Dorph-Petersen).

Bentham (l. c, 450) refers Preiss' No. 1601 with some doubt to the eastern and southern *H. glabella,* but I think it better to refer it to *H. occidentalis* which is characterized by the long (oblong-linear) ovary, but varies as regards the base of the anthers and the length of the stigmas.

H. leptantha Benth. (l. c., 451) must be included under *H. occidentalis,* as suggested already by Bentham himself. F. v. Müller (Sec. Census, 1889, 195—96) has omitted it.

Tribonanthes Endl.

The species *T. brachypetala* Lindl. and *T. longipetala*

Lindl. seem to be common on humous-sandy and wet soil in the Swan River region, while *T. australis* Endl. takes their place around King George's Sound. They flower in July—August and have fruits in October (November). As BENTHAM (Fl. Austr. VI, 426) remarks, "the species appear to be very variable and difficult to distinguish".

Conostylis R. Br.

What has been said about *Tribonanthes* as regards the polymorphism, is even more appropriate in the case of the genus *Conostylis*; the definition of the species and the limits between them are very arbitrary. In the following I have used the definitions given by BENTHAM (Fl. Austr.) and shall restrict myself to a few remarks, as this genus requires a thorough revision based upon ampler material and studies in nature.

Conostylis setosa Lindl. Swan River, App. Bot. Reg. (1839) 44, tab. VI A; Benth. Fl. Austr. VI (1873) 431.

Greenmount, Darling Range near Perth (No. 58; 13. Sept. 1914).

My plant agrees very well with *C. setosa* as represented by PREISS' No. 1408, but it differs from LINDLEY's fig. (l. c.) in the colour. LINDLEY gives to his *C. setosa* the usual yellow colour of the perianth, but the perianth colour in my specimen was of a pale dull-pink or purple. In this respect it comes near to *C. discolor* Endl., but it has the much larger flowers of *C. setosa*. In the Kew Herb. there are specimens collected by CECIL ANDREWS at Armadale (19. Oct. 1901, No. 959), they have the same colour, and Mr. Andrews has remarked on the label: "Differs in colour from rest of the genus. Fl. white, often tipped with pink or purple". Also the many specimens collected by DRUMMOND

seem to have the same pale colour. It is therefore probable that this character is special for *C. setosa* and that the colouring of the plate in Lindley's paper is erroneous.

Conostylis aurea Lindl. Swan River, App. Bot. Reg. (1839) 44; Benth. Fl. Austr. VI (1873) 432.

Bayswater, sandy heath (No. 56; 18. Oct. 1914).

Conostylis setigera R. Br. Prodr. Fl. Nov. Holl. (1810) 300; Benth. Fl. Austr. VI (1873) 432.

Common around Perth (Nos. 54, 60, 64) and also collected at Albany (No. 65; 21. Oct. 1914).

Conostylis psyllium Endl. in Pl. Preiss. II, 1 (1846) 21; Benth. Fl. Austr. VI (1873) 433; Domin, Journ. Linn. Soc. XLI (1912) 256.

Greenbushes, north of Bridgetown, on gravels (No. 52; 30. Sept. 1914).

A very striking little plant forming dense tufts.

Conostylis juncea Endl. Nov. Stirp. dec. (1839) 19; Plantæ Preiss. II, 1 (1846) 23; Benth. Fl. Austr. VI (1873) 434; *C. involucrata* Endl., Pl. Preiss. II, 1 (1846) 23; Benth l. c.

Bayswater, sandy heath (No. 57; 18. Oct. 1914), leaves subterete, very narrow; environs of Perth (No. 63; 16. Aug. 1914, E. Dorph-Petersen), leaves subterete, very narrow.

Var. *involucrata* (Endl.) comb. nov.: Perth, Victoria Park (No. 62; 18. Sept. 1914, E. Dorph-Petersen), leaves flat, striate.

F. v. Müller has (Fragm. Phytogeogr. Austr. VIII, 1872, 19) united *C. juncea* and *C. involucrata* into one species, and I quite agree with him. The only point of difference is the shape of the leaves, those of *C. juncea* (see Pl. II, Fig. 2) being terete and obscurely striate, those of *C. involucrata*

(Pl. II, Fig. 1) being linear, flat and striate. In my material I have specimens with flat and striate, others with terete or subterete and faintly striate leaves. Also the specimens in the Kew Herb. are rather variable as regards the leaves. Therefore I find it correct to have only one species of which we may take the flat-leaved form as var. *involucrata* (Endl.).

Conostylis candicans Endl. Nov. Stirp. Dec. (1839) 20; Pl. Preiss. II, 1 (1846) 16; Benth. Fl. Austr. VI (1873) 436.

Environs of Perth (No. 66; 11. Aug. 1914, Cecil Andrews).

As the material at hand is very scanty, the identification is somewhat doubtful.

Conostylis bracteata Endl. Pl. Preiss. II, 1 (1846) 16; Benth. Fl. Austr. VI (1873) 437 (an *C. bracteata* Lindl.?).

Environs of Perth (No. 61; 23. Aug. 1914, E. Dorph-Petersen); King's Park (No. 55; 13. Oct. 1914), a more slender plant.

Conostylis aculeata R. Br. Prodr. Fl. Nov. Holl. (1810) 300; Bot. Magaz. tab. 2989; Endl., in Pl. Preiss. II, 1 (1846) 18; Benth. Fl. Austr. VI (1873) 438.

Yallingup Cave, on sandy places in open forest (No. 59; 26. Sept. 1914).

My specimens are somewhat proliferous, the floral scapes about as long as the leaves, and the leaves rather narrow; they seem to be in some respects intermediate between *C. Preissii* and *C. aculeata.*

Conostylis cymosa F. v. Müll., in Benth. Fl. Austr. VI (1873) 439.

Yornup, south of Bridgetown (No. 53; 2. Oct. 1914).

A distinct species which is related to *C. aculeata.*

Macropodia fuliginosa (Hook.) comb. nov.; *Anigozanthos fuliginosus* Hook., Botan. Magaz. tab. 4291 (1847); F. v. Müller, Sec. Census (1889) 195; *Macropidia fumosa* J. Drumm. in Hook., Journ. of Bot. VII (1855) 57; *Macropodia fumosa* Benth. Fl. Austr. VI (1873) 447.

Moora (No. 39; 27. Oct. 1914, comm. by Mrs. M. Davis).

The changing of species name seems necessary according to the rule of priority. The peculiar "Black Kangoroo Paw" does not occur in the neighbourhood of Perth; it has a rather restricted area of occurrence and seems to avoid the more rainy districts.

Anigozanthos humilis Lindl., Swan Riv. App. Bot. Reg. (1839) 46, tab. 63 (colore florum male picto); Benth. Fl. Austr. VI (1873) 444; Domin, Beitr. z. Flora u. Pflanzengeogr. Austr. I (1915) 528, tab. X, fig. 2 (bona).

Common around Perth in sandy places (Nos. 45, 47, 48, 49, 1362, 1448); Moora (No. 1417; 25. Sept. 1915, Miss G. Davis).

Anigozanthos viridis Endl., in Pl. Preiss. II 1 (1846) 25; Benth. Fl. Austr. VII (1873) 445.

Vicinity of Perth: Cannington, in wet places (No. 41; 22. Sept. 1914, E. Dorph-Petersen).

As given by Bentham (l. c.) the filaments are nearly as long as the anthers.

Anigozanthos Manglesii D. Don, in Sweet, Brit. Flow. Gard., Sec. ser., tab. 265 (1836); Benth. Fl. Austr. VI (1873) 445.

Common around Perth in sandy places (Nos. 50, 51, 1361).

Besides the type two colour varieties were found, the latter perhaps a hybrid:

var. **flavescens** Ostf. nov. var. Lanugine in parte inferiore florum (ovario) pallide flavescente, in parte superiore viridescente.

Perth, King's Park (No. 42; 13. Oct. 1914), a few specimens growing together with the typical form.

This variety is mentioned by BENTHAM (l. c.).

var. **virescens** Ostf. nov. var. Lanugine in parte inferiore florum (ovario) sordide viride, ceterum ut in typo viridissimo, sed in pedunculis scapoque sordide erubescente; filamentis antheris duplo brevioribus.

Environs of Perth (No. 46; 16. Aug. 1914, E. Dorph-Petersen).

This variety was brought to me by Mr. E. DORPH-PETERSEN; it looks rather like *A. viridis*, but differs in the dull red wool of the scape and peduncles and in the filaments being at least twice as short as the anthers. Unfortunately no basal leaves are present; the scape leaves are narrower than in the typical *A. Manglesii*. All the distinguishing marks point to the plant being an intermediate (hybrid?) between *A. Manglesii* and *A. viridis*, but further observations on this point are necessary.

Anigozanthos bicolor Endl., in Pl. Preiss. II 1 (1846) 26; Benth. Fl. Austr. VI (1773) 446.

Yornup, south of Bridgetown (No. 40; 2. Oct. 1914).

The specimens agree well with BENTHAM's var. *major* (l. c.). It has much resemblance to *A. Manglesii*, but differs in the following: Leaves shorter and narrower, their back-keel with ciliate hairs (present also in Endlicher's type, Preiss' No. 1417, but wanting in *A. Manglesii*); flowers about 25—26 mm long; filaments shorter than the anthers, but much longer than in *A. Manglesii*.

Perhaps this is the same plant as that which K. Domin (Journ. Linn. Soc. XLI, 1912, 257) has named *A. Manglesii* var. *leptophylla* Domin, and which came from the same area (Bridgetown to Kojonup and Slab Hut Gully).

Anigozanthos flavida Redouté, Les Liliacées, no. et tab. 176 (1807); Benth. Fl. Austr. VI (1873) 443.

Palgarup, south of Bridgetown (No. 44; 2. Oct. 1914), not yet flowering; Albany, common in wet places (No. 43; 20. Oct. 1914), flowering hardly yet begun.

This large and tall plant flowers much later than the other species.

Iridaceæ.

Romulea rosea (L.) Eckl., Topogr. Verzeichn., 1. Lief. (1827) 19; Beguinot, Revis. monogr. Romulea, in Malpighia vol. 23 (1909) 65; *R. cruciata* A. J. Ewart in Proc. Roy. Soc. Victoria, vol. 19, N.S. (1906) 43, pl. XII, and vol. 22, N.S. (1909) 325; *R. bulbocodium* C. H. Wright in Kew Bull. (1908) 307.

Environs of Perth, common (Nos. 174, 175, 176, 177).

The so-called "Guilford Grass" is a very common and troublesome weed in the surroundings of Perth and adjacent places. The grass-like leaves often cover the ground completely and look like fine grass, but they are of no use at all as the cattle does not eat them. The nice rose-coloured flowers are only open in the forenoon; they appear in the spring (August—September) and the seeds are ripe at the end of October. There seems to be some variability as regards the size and the intensity of the colour of the flower.

As to the name of this plant which has no doubt come from South Africa and has now spread widely over Australia (cfr. Ewart, l. c.), I follow the monographer of the genus

Dr. A. BEGUINOT, who (l. c. p. 65) refers the Australian plant to *R. rosea*. A. J. EWART (l. c. 1906) has referred it to *R. cruciata*, but, according to BEGUINOT, this name is often misinterpreted and ought to be omitted. EWART shows that transverse sections of the leaves of the Australian plant come very near to those of *R. rosea*, and so there is in reality not much difference of opinion between him and Beguinot. In an additional note (l. c. 1909) he refers to BEGUINOT's preliminary survey of the genus, but the monograph itself was as that time not available to him.

In a note on "Romulea as a pest in Australia" C. H. WRIGHT (l. c.) has referred the species to *R. bulbocodium*, but this is only because he includes *R. rosea* under that species. Taking all things together I think we may safely name the Australian plant *R. rosea*, as BEGUINOT has done.

Homeria collina (Thunb.) Vent. Dec. Gen. Nov. (1808) 5.

Bayswater, on low ground along a road-side near Swan River, in fruit (No. 168; 18. Oct. 1914).

A South African species which has escaped from cultivation.

Babiana plicata (Thunb.) Ker. Gawl., Bot. Magaz., tab. 576 (1802).

Armadale, on low ground along a road-side, in flower (No. 166; 20. Sept. 1914).

Also a South African species which has escaped from cultivation.

Patersonia R. Br.

F. v. MÜLLER (Fragm. Phytogr. Austr. VII (1869) 31) has taken up LABILLARDIÈRE's earlier name *Genosiris* (1804) instead of R. BROWN's name *Patersonia* (Botan. Magaz., 1807), and he is quite right in doing so. When nevertheless I

continue to use the commonly accepted *Patersonia*, it is because it is in the list of *nomina conservanda*, adopted by the International Congress of Vienna, 1905; but I admit that there is no other real reason for doing so, as Labillardière's planche and description (Nov. Holl. Pl. spec. I, p. 13, pl. 9) cannot possibly be mistaken.

The species of this genus are difficult to identify and a thorough revision is much needed, but it must be carried out upon living specimens as the flowers are very delicate.

Patersonia occidentalis R. Br. Prodr. Fl. Nov. Holl. (1810) 304; Benth. Fl. Austr. VI (1873) 403.

This species seems very variable; I have specimens (No. 173) which I refer hereto, in which the leaves are 6—8 mm broad. It was common on sandy soil (heaths) around Perth (Nos. 173 and 1446) and flowered in Sept.—Octob.

Patersonia xanthina Oldfield et F. v. Müll., in Fragm. Phytogr. Austr. I (1859) 214; Benth. Fl. Austr. VI (1873) 404; *P. umbrosa*, var. *xanthina* Domin, Journ. Linn. Soc. XLI (1912) 254.

Jarnadup, south of Bridgetown (No. 169; 1. Oct. 1914).

This species is characterized by the very long and slender spathe-leaves besides the yellow flowers. There is no reason to reduce it to a variety of *P. umbrosa* which is a much stouter species.

Patersonia longiscapa Sweet, Fl. Austr. t. 39 (1828); Benth. Fl. Austr. VI (1873) 402.

Big Brook, south of Bridgetown, in a swamp

(No. 172; 2. Oct. 1914); Albany, swamp (No. 171; 22. Oct. 1914).

With some doubt I refer my plants from Albany and from Big Brook State Saw-mill (Pl. III, Fig. 4) to the Eastern and Southern *P. longiscapa*, as understood by BENTHAM and MÜLLER, but I cannot find any difference at all between my specimens and specimens of *P. longiscapa* from Grampians, Victoria, leg. C. Walter, communicated to the Botanical Museum of Copenhagen by the late F. v. Müller; neither do the Kew specimens disagree. My specimens agree with *P. longiscapa* in all essential parts as well as in habit, only the leaves are somewhat longer and narrower (ab. 2 mm broad).

Perhaps this is *P. Roei* Endl. in Pl. Preiss. II. 1 (1846) 31, of which I have not seen any specimens.

Patersonia pygmæa Lindl. Swan River App. Bot. Reg. (1839) 58; Benth. Fl. Austr. VI (1873) 405.

Wilgarup, south of Bridgetown (No. 170; 1. Oct. 1914).

The specimens (Pl. III, Fig. 3) differ from the description in having the floral scapes glabrous; but this is also the case in several specimens in the Kew Herb.

Orthrosanthus laxus (Endl.) Benth. Fl. Austr. VI (1873) 411; *Libertia laxa* Endl. in Pl. Preiss. II, 1 (1846) 32.

Mundaring Weir, Darling Range (No. 167; 13. Sept. 1914); Perth, King's Park.

Orthrosanthus polystachyus Benth. Fl. Austr. VI (1873) 411.

Big Brook, south of Bridgetown, in a swamp (No. 165; 2. Oct. 1914).

A tall species with sky-blue flowers, smaller than in *O. laxus*.

Orchidaceæ.

Calochilus Robertsonii Benth., Fl. Austr. VI (1873) 315; F. v. Müll. Sec. Census (1889) 189.

Albany, in a swamp (No. 218; 20. Oct. 1914).

In Bentham's Flora this species is only recorded from Victoria, but in F. v. Müller, Sec. Census, also W. A. is given.

Thelymitra fasciculata R. Fitzgerald, Austral. Orch. vol. II, part 5 (1895).

Bayswater, in a swamp (No. 248; 18. Oct. 1914).

My specimens agree very well with this species both according to the plate and the description. The author says that it is very near *T. ixioides* and has been overlooked, or confounded with it.

Thelymitra flexuosa Endl. Nov. Stirp. Dec. (1839) 23; Benth. Fl. Austr. VI (1873) 322.

Yornup, south of Bridgetown (No. 209; 2. Oct. 1914).

Diuris Purdiei Diels, Journ. Muell. Bot. Soc. W. Austr. No. II (1903) 79; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 117.

Cannington, near Perth (No. 246; 22. Sept. 1914, E. Dorph-Petersen).

The specimens agree with the description given by L. Diels (l. c.); also the locality is nearly the same as that given by him.

Prasophyllum hians Rchb. f., Beitr. system. Pflanzenk. (1871) 61; Benth. Fl. Austr. VI (1873) 338.

Near Perth (Nos. 204 and 206; 23. Aug. 1914, E. Dorph-Petersen; 18. Sept. 1914, Cecil Andrews); Moora (No. 1418; 25. Sept. 1915, Miss G. Davis).

Microtis atrata Lindl. Swan Riv. App. Bot. Reg. (1839) 54; Benth. Fl. Austr. VI (1873) 349.

Bayswater, in a swamp (No. 201; 18. Oct. 1914).

Pterostylis nana R. Br., var. **pyramidalis** (Ldl.) Ewart, Proc. R. Soc. Victoria 24 (1911) 72; *P. pyramidalis* Lindl. Swan Riv. App. Bot. Reg. (1839) 53; Benth. Fl. Austr. VI (1873) 357; Diels u. Pritzel, Bot. Jahrb. 35 (1905) 119.

Yallingup Cave, in fissures of rocks (No. 241; 27. Sept. 1914).

Already F. v. MÜLLER has united *P. nana* R. Br. and *P. pyramidalis* Lindl. into one species (e. g. F. v. MÜLLER and A. MORRISON, List of Extra-tropic W. Austr. Plants, in Yearbook for W. A., Perth 1902, 335), and K. DOMIN (Journ. Linn. Soc. 1912, 250) follows him.

I find it most convenient to follow EWART (l. c.) who treats *P. pyramidalis* as a variety of *P. nana*.

Pterostylis Sargenti C. Andrews, Journ. W. Austr. Nat. Hist. Soc. II (1905) 57.

The discoverer of this interesting species Mr. O. H. SARGENT has kindly sent me some specimens from York (No. 242; 25. Aug. 1914).

Caladenia R. Br.

The species of this genus are rather difficult to treat. Some authors (e. g. BENTHAM and F. v. MÜLLER) unite several forms into one species, while others (e. g. R. FITZGERALD) split them into numerous species.

I have compared my specimens with the ample material in the Kew Herbarium and named them in accordance with the result of my comparison, also making use of

R. Fitzgerald's coloured figures in his large work on Australian Orchids.

Under the popular name of "Spider Orchids" several species with much elongated petals and sepals are comprised.

The two species *C. filamentosa* R. Br. and *C. longicauda* Lindl. seem to be very common, but besides them I have two others:

Caladenia reticulata R. Fitzgerald, in Gardener's Chronicle 1882 I, 462.

Barrabupp, south-east of Busselton (No. 257; 20. Sept. 1914, Miss E. Brooks).

The specimens are rather incomplete, but the flowers agree exactly with flowers of *C. reticulata* in the Kew Herbarium.

Caladenia macrostylis R. Fitzgerald, in Gardener's Chronicle 1882 I, 462.

Yornup, south of Bridgetown (No. 233; 2. Oct. 1914).

Only one specimen (Pl. III, Fig. 1) was collected, but it agrees very well with specimens and description of *C. macrostylis.*

Caladenia discoidea Lindl. Swan Riv. App. Bot. Reg. (1839) 52; Benth. Fl. Austr. VI (1873) 380.

Near Perth, one specimen (No. 224; 23. Aug. 1914, E. Dorph-Petersen).

Caladenia unita R. Fitzgerald, in Gardener's Chronicle 1882 I, 461.

Albany, sandy and damp soil (No. 220; 21. Oct. 1914).

This species stands near *C. reptans* Ldl., but is larger,

and the flowers are easily distinguished by the more or less united lateral sepals.

Caladenia Purdieana C. Andrews, Journ. Muell. Soc. W. Austr., I, No. 10 (1902) 39.

Albany, sandy and damp soil (No. 219; 21. Oct. 1914).

My specimens agree well with authentic specimens of this species preserved in the Kew Herbarium.

Caladenia Gertrudæ nov. sp. (Fig. 2).

E sect. *Eucaladenia*. Caulis 10—12 cm altus, biflorus, pilis longis albis patentibus villosus, e tubere ovoideo subterraneo natus. Folium basilare unicum, 3—3,5 cm longum, ovato-cordatum, amplectens, subacutum, supra pilis albis longis, ad margines pilis brevioribus ciliatum, subtus epilosum. Bracteæ foliosæ tres, oblongæ, acutæ, subtus et ad margines pilis longis villosæ, supra epilosæ. Ovarium ± striatum villosissimum, petiolo subæquilongum. Sepala petalaque subæqualia, ovata, subacuta, 15—18 mm longa, multinervia, sparse hirsuta, pallide roseo-lilacina, labello columnaque subduplo longiora. Labellum indivisum, late ovatum, 6 mm latum, 10 mm longum, acuminatum, acumine reflexo; calli parvi numerosi, longitu-

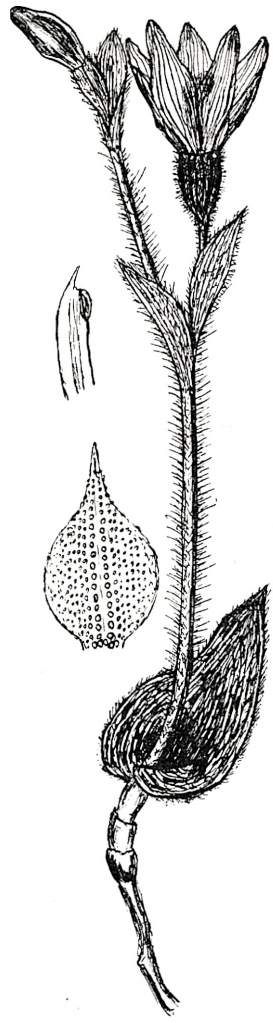


Fig. 2. *Caladenia Gertrudæ* Ostf. A whole plant in nat. size. Columna and labellum enlarged (2 : 1).

dinaliter multiseriati, mediani maximi, ad margines graduatim minores; columna leviter curvata, apice mucronata.

Yallingup Cave, in open forest (No. 225; 26. Sept. 1914).

This new species comes near to *C. gemmata* as regards the undivided, broadly ovate labellum and the broad basal leaf, but the sepals and petals are subacute and the labellum half as long as the sepals; therefore I have placed it in the section *Eucaladenia* where it is easily recognised by the ovate-cordate, clasping leaf. It is very hairy like *C. sericea*, but has not the 3-lobed labellum of the latter. The calli are small, but numerous, arranged in longitudinal rows, the median ones largest, then gradually diminishing towards the margins. The apex of the labellum is reflexed (in fig. 2 drawn in an artificially erect position).

As far as the literature and material at my disposal go, this species seems to be undescribed, although very distinct from all the others.

I have named it after my daughter Miss Gertrud H. Ostenfeld who has assisted me by drawing several of my specimens of W. Australian plants.

III. Dicotyledones, Choripetalæ.

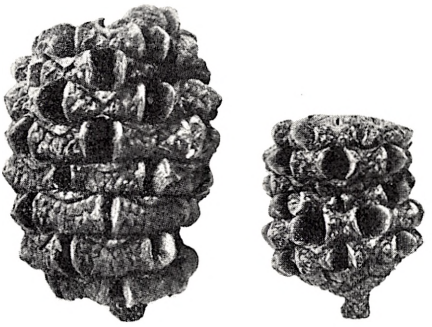
Casuarinaceæ.

Casuarina Fraseriana Miq., in Verhandl. K. Nederlandsch. Inst., 1. Kl. XIII (1848) 59, tab. 6 D; Benth. Fl. Austr. VI (1873) 199; Diels u. Pritzel, Bot. Jahrb. 35 (1904) 121.

Perth, King's Park (No. 321; 15. Oct. 1914); Yallingup Cave, in the forest (No. 320; 27. Sept. 1914).

This species is easily recognisable by its cones, but they are not sessile, as Diels (l. c.) describes them, but borne on short stalks.

The specimens from Yallingup Cave (Fig. 3a) have much larger cones than those from King's Park (Fig. 3b), but otherwise the plants seem to be identical.



a *b*

Fig. 3. *Casuarina Fraseriana* Miq., cones. *a*, from Yallingup Cave, *b*, from Perth, King's Park. (Nat. size).

Casuarina desussata Benth., in Fl. Austr. VI (1873) 200.

Big Brook State Mill, S. of Bridgetown, in the Karri forest (No. 319; 2. Oct. 1914).

This rare species is very distinct from all others. It is a small tree with acutely quadrangular branchlets, and 4-merous whorls. In my specimens (Pl. IV, Fig. 1) there are young male inflorescences on the same branches which bear ripe cones; the species is thus monoecious. The cones (Fig. 4) have numerous small tubercles between the hardly protruding valves. Achenes are broadly obovate with the lower half black and the upper half transparent with the exception of a dark midrib. The male spikes (1—2 cm long) are terminal on the branchlets and their leaf-whorls are 4-merous, the scales are acute with convex backs, greenish with pale-brownish tips and ciliolate margins.

Fig. 4. *Casuarina desussata* Benth., cone. (Nat. size).

I have compared my specimens with the rather poor type specimens in Kew Herb. (from Cape Riche) and they agree exactly.

Casuarina lepidophloia F. v. Müll., Fragm. Phytogr. Austr. X (1877) 115.

Kalgoorlie (No. 323; 7. Oct. 1914).

Near Kalgoorlie I collected a *Casuarina* with immature cones (Pl. IV, Fig. 2), which I identify with *C. lepidophloia* described by F. v. Müller upon specimens from the interior of S. Austr. and N. S. Wales. His description is not complete owing to the absence of any flowers, but it fits my plant so well that I think it allowable to use his name for it. It is near *C. glauca* Sieb., and several so-labelled specimens in the Kew Herb. from the Eremæan (interior) part of Australia belong to the same species, which seems to have a wide range.

From *C. glauca* it differs in the 9—11-merous sheath-whorls, in the puberulous young branchlets and the light grayish colour of the older branchlets. The small cones are covered with a very short and adpressed clothing of light-brown hairs, the bracts are much thickened towards the apex and with a small prolongated point between the thickened parts; the valves are very prominent, not much thickened (resembling in shape the valves of *C. equisetifolia* Forst.). Male flowers are unknown.

Casuarina Huegeliana Miq., in Pl. Preiss. I. 4 (1845) 640; Benth. Fl. Austr. VI (1873) 196; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 125.

Tammin (No. 316; 6. Oct. 1914).

In spite of the statements in Pl. Preiss. and by Diels (l. c.) that *C. Huegeliana* is a tree, I refer to this species a medium-sized shrub which grew amongst "mallee shrubs" at Tammin. It agrees in all essential characters with *C. Huegeliana*. The cone (Fig. 5) is cylindrical, longer than that figured by Diels, but answering well to Bentham's description.

Casuarina acutivalvis F. v. Müll., Fragm. Phytogr. Austr. X (1876) 61.

Tammin (No. 322; 6. Oct. 1914), a tall shrub.

In the Kew. Herb. there are some specimens of a *Casuarina* named *C. acutivalvis* and collected by R. HELMS in the Victoria Desert (Camp 59), 28. Sept. 1891. They agree well with a plant (Pl. V) which I collected at Tammin. The most striking marks are found in the large cones with their very prominent, long-pointed valves.

Fig. 5. *Casuarina Huegeliana* Miq., nearly ripe cone. (Nat. size).

F. v. MÜLLER's description (l. c.) is rather incomplete. The branchlets and their leaf-whorls are much like those of *C. glauca;* the whorls are usually 11-merous. The male plant (Pl. V, to the left) which was hitherto undescribed, has terminal male spikes (2—4 cm long) with 12—15 internodes; the sheaths are subcampanulate, pale-brownish with dense white clothing towards the base, and brown, long, deciduous, subulate teeth. The cones (Fig. 6) are rather large (ca. 2—3 cm), ovoid or cylindrical, the bracts rather small, apiculate, the valves very prominent, ending in a long point, the surface is brown-purple and more or less hairy. Achenes black with as transparent wing with a dark midrib and dark margins (or at least one of the margins dark).

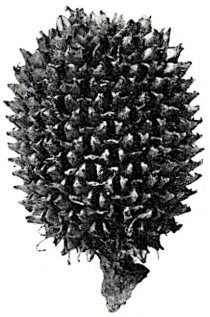


Fig. 6. *Casuarina acutivalvis* F. v. Müll., cone. (Nat. size).

Urticaceæ.

Parietaria debilis G. Forst., Fl. ins. Austr. prodr. (1786) 73; Benth. Fl. Austr. VI (1873) 188.

Yallingup Cave (no. 1257; 26. Sept. 1914); on naked soil, a small annual plant.

Proteaceæ (determ. by C. Christensen and C. H. Ostenfeld).

Petrophila longifolia R. Br., Proteac. nov. (1830) 5; Benth. Fl. Austr. V (1870) 322.

Cannington, damp heath, in flower (No. 656; 4. Sept. 1914).

Petrophila ericifolia R. Br., Proteac. nov. (1830) 5; Benth. Fl. Austr. (1870) 331; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 133, Fig. 12.

Tammin, heath (No. 690; 6. Oct. 1914); Meckering (No. 691; 20. Sept. 1914, O. H. Sargent).

Petrophila conifera Meissn., in Hook. Kew. Journ. VII (1855) 67; Benth. Fl. Austr. (1870) 335.

Tammin, heath (No. 692; 6. Oct. 1914).

Adenanthos cygnorum Diels, in Bot. Jahrb. 35 (1904) 138; *A. apiculata* Meissn. in Pl. Preiss. I (1845) 514, non R. Br.; *A. sericea* Benth. Fl. Austr. V (1870) 354 ex parte, non Labill.

Perth, common (No. 683; 26. Oct. 1914, and No. 1323; 17. Dec. 1914, Mrs. Davis).

Diels (l. c.) has pointed out that already Meissner (l. c.) had distinguished between the *A. sericea* Labill. of King George's Sound and the similar plant from Swan River district which he referred to R. Brown's *A. apiculata*. This reference was wrong, but the distinction between the two species is real. They differ greatly in the different kind of hairiness on the leaf-segments. In *A. sericea* the segments are silky-hairy, while in *A. cygnorum* (= *A. apiculata* Meissn.) they are hairy by distant long hairs and more densely set short hairs, without any silky aspect; also the apex of the

segments is different, in *A. sericea* with a tuft of white hairs, in *A. cygnorum* more or less callous and with no hairs or a few hairs.

A. J. EWART (Proc. Roy. Soc. Victoria 20, N. S. II, 1907, 127) does not believe in keeping the two forms distinct and says that if DIELS "had seen No. 788 as well as No. 787 (of Pl. Preiss.) he would probably not have made this error". PREISS' No. 787 is from Perth (and is Meissner's *A. apiculata*), while his No. 788 is from Princess Royal Harbour (and is Meissner's *A. sericea*). I do not know if DIELS has seen both, but in the herb. of Copenhagen they are present, and after having examined them carefully I must agree with DIELS, not with EWART. These two numbers show that the two forms are distinct, although of course closely related. Therefore I find it better to keep DIELS's name for the plant from the Swan River district; all the more so after I have had occasion to examine the rich material of the said plants in Kew Herbarium.

Adenanthos intermedius Ostf. nov. sp. (Pl. VI, Fig. 2).

Sect. *Eurylæma*. Frutex 35—50 cm altus; caules erecti, pilis patentibus longis et pubescentia curta densa tecti. Folia obovata, 2,5—3 cm longa, ca. 1 cm lata, obtusa, apice callosa, in petiolo brevissimo sensim attenuata, in sicco distincte 3-nervosa, juniorum marginibus pilis longis sparse instructis, veteriorum marginibus pilis destitutis, sed cicatricibus minimis pilorum indistincte erosis. Pedunculi ca. 0,5 cm longi, patenti-villosi; bracteæ acutæ, extus villosæ. Florum forma et structura fere ut in *A. barbigera*, sed stigmate minore crassioreque. *A. barbigerae* arcte affinis, sed faciliter foliorum characteribus distinguendus.

Hab. Austr. occ. prope Yallingup Cave (No. 674; 30.

Sept. 1914), typus. In herb. Kew. etiam ex "Hill m. Cooginup, Oldfield" et "Yallingup and Cape Naturaliste, A. Dorrien-Smith, 1910" (partim; *A. obovatus* etiam adest).

This new species has more the habit of *A. obovatus* Labill., but the characters of *A. barbigera* Lindl. It seems that *A. obovatus* is distributed over the whole south-western area, while *A. barbigera* is confined to the Swan River district, and the new species comes in south of it, in the extreme south-western corner.

Both *A. barbigera* (Pl. VI, Fig. 1) and *A. obovatus* (Pl. VI, Figs. 3 and 4) are rather variable with regard to the shape of the leaves, but although intermediate between them the new species seems fairly distinct.

Simsia latifolia R. Br. Proteac. nov. (1830) 9; *Stirlingia latif.* Steud. Nomencl. Bot. ed. 2 (1841); Benth. Fl. Austr. V (1870) 358. *St. paniculata* Lindl. Swan Riv. App. Bot. Reg. (1839) 30.

var. **gracilis** Ostf. nov. var.; Syn. *Stirl. latifolia* Meissn. in Pl. Preiss. I 4 (1845) 517. Differt a typo foliorum laciniis anguste-linearibus, statura graciliore paniculaque simpliciore, floribus minoribus. (Pl. VII, Fig. 1).

Hab. ad flum. Cygnorum: Swan River Colony (1842, Herb. Kew); In arenosis sylvæ ad ripam flum. Cygnorum prope peninsulam, 30. Sept. 1839, Herb. Preiss. no. 767; Guildford, near Perth ("narrow-leaved form"), Cecil Andrews 1st. Coll. No. 751, 22. 9. 1901; Perth, King's Park (Ostenfeld, No. 681, 13. Oct. 1914), typus.

Already Bentham (l. c.) mentions that *S. latifolia* varies much with regard to the leaves etc. and points out that Preiss' no. 767 represents a narrow-leaved form. Meissner in Pl. Preiss. (l. c.) has two species, viz. *S. latifolia* Steud.,

to which he refers no. 767, and *S. paniculata* Lindl. with Preiss' no. 769. The latter is the common broad-leaved form, which, I suppose, answers to the type of *Simsia latifolia* R. Br. (Pl. II. Fig. 2). If we think the narrow-leaved form worth naming, we must give it a new name.

It (Pl. VII, Fig. 1) looks very different from the ordinary *S. latifolia*, and my specimens flowered about 3 weeks later than the typical plant. It seems as if we have to do with a late-flowering race, perhaps a kind of season-dimorphism, and in such cases we often find morphological differences as well.

Isopogon sphærocephalus Lindl. Swan Riv. App. Bot. Reg. (1839) 34; Benth. Fl. Austr. V (1870) 340.

Greenmount, Darling Range, flowering begun (No. 705; 13. Sept. 1914); Kalamunda (29. July 1914, Gunnar Andersson).

Synaphea dilatata R. Br., Transact. Linn. Soc. X (1809) 156; Benth. Fl. Austr. V (1870) 360.

Yallingup Cave, sandy soil in open forest, flowering (No. 657; 26. Sept. 1914).

Synaphea petiolaris R. Br., Transact. Linn. Soc. X (1809) 156; Benth. Fl. Austr. V (1870) 361.

Armadale, sandy places (No. 661; 4. Sept. 1914); vicinity of Perth (No. 1377; 1915, Mrs. Davis).

Synaphea acutiloba Meissn. in Pl. Preiss. I (1845) 528; Benth. Fl. Austr. V (1870) 361.

Cannington, on damp heath (No. 660; 4. Sept. 1914, E. Dorph-Petersen).

This species seems to be quite distinct from *S. petiolaris*, not a mere variety, as suggested by Bentham (l. c.).

Conospermum teretifolium R. Br., Transact. Linn. Soc. X (1809) 155; Benth. Fl. Austr. V (1870) 365.

Perth, King's Park (No. 682; 26. Oct. 1914).

Conospermum crassinervium Meissn., in Hook. Kew Journ. IV (1852) 184; Benth. Fl. Austr. V (1870) 375.

Moora (No. 684; 24. Oct. 1914, comm. Mrs. Davis).

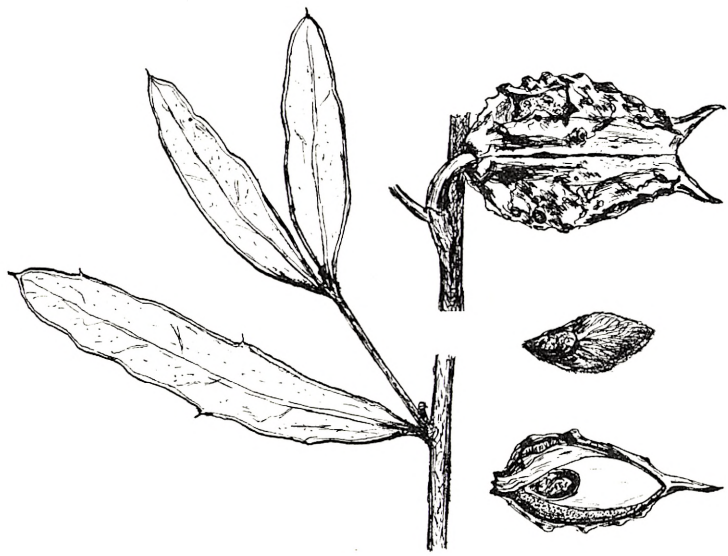


Fig. 7. *Hakea oleifolia* R. Br. (Nat. size).

Hakea platysperma Hook. Icon. pl., tab. 433 (1842); Benth. Fl. Austr. V (1870) 505.

Tammin, in Mallee shrub, a tall shrub with ripe fruits (No. 716; 6. Oct. 1914).

Hakea oleifolia R. Br., Transact. Linn. Soc. X (1809) 185; Benth. Fl. Austr. V (1876) 527.

Yallingup Cave, a small tree in the forest (No. 699; 28. Sept. 1914, with ripe fruits). Fig. 7.

Hakea multilineata Meissn. in Pl. Preiss. II (1847) 261; Benth. Fl. Austr. V (1870) 518.

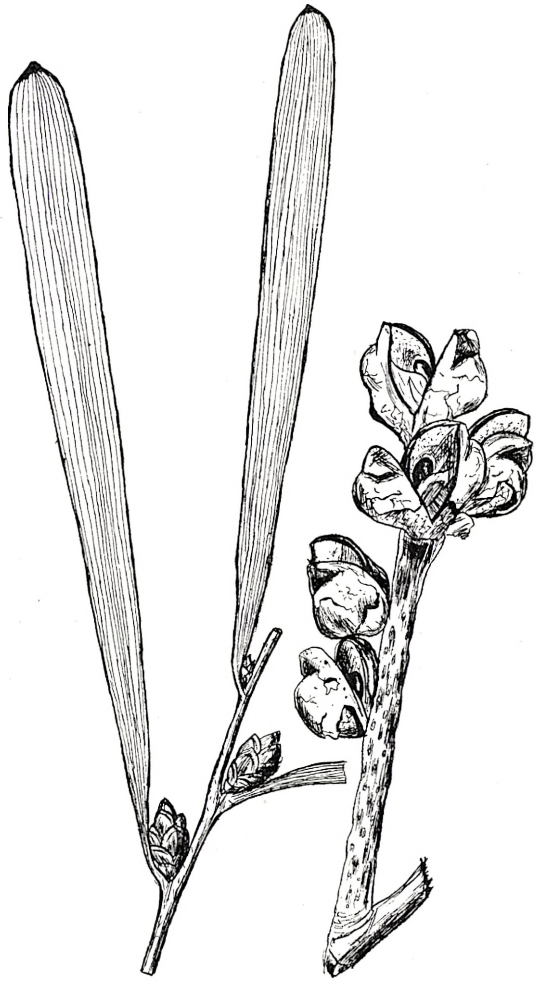


Fig. 8. *Hakea multilineata* Meissn. To the left a branch with leaves and floral buds, to the right ripe capsules. (About $^{2}/_{3}$ nat. size).

Tammin, a small tree in the Mallee shrub (No. 700; 6. Oct. 1914, with ripe fruits). Fig. 8.

Loranthaceæ.

Loranthus linophyllus Fenzl, var. **Preissii** (Miq.) comb. nov.; *L. Preissii* Miq., in Pl. Preiss I (1844) 280; *L. linophyllus* Benth. Fl. Austr. III (1866) 393 ex parte.

It seems to me that the glabrous form of *L. linophyllus* which was described by Miquel as *L. Preissii*, deserves to be maintained as a variety. It grows on *Acacia* in the coastal area (on the dunes) and is rather common: Geraldton (No. 558; 28. Oct. 1914) and Carnarvon (No. 557; 31. Oct. 1914).

Polygonaceæ.

Polygonum aviculare L. sp. pl. (1753) 362; Benth. Fl. Austr. V (1870) 267.

York (No. 1391; 25. Nov. 1915, Mrs. Davis); introduced.

Rumex acetosella L. sp. pl. (1753) 338; Benth. Fl. Austr. V (1870) 265.

York (No. 1395; 25. Nov. 1915, Mrs. Davis); introduced.

The specimens belong to the more southern subspecies *angiocarpus* Murb. of this widely distributed weed.

Chenopodiaceæ.

My material of this family has been worked out by Dr. O. Paulsen, in my »Contrib. W. Austr. Bot.« II (1918).

Amarantaceæ.

Trichinium spathulatum R. Br. Prodr. Fl. Nov. Holl. (1810) 415; Benth. Fl. Austr. V (1870) 236.

Vicinity of Perth (No. 1365; Mrs. Davis 1915); York (No. 285; 30. Aug. 1914, O. H. Sargent); Kalgoorlie (No. 286; 7. Oct. 1914).

Trichinium sericostachyum Nees, in Pl. Preiss. I (1845) 627; Benth. Fl. Austr. V (1870) 234 ex parte; *T. roseum* Benth. l. c. ex parte; vix *T. floribundum* Moq.

Yallingup Cave, sandy soil (No. 284; 26. Sept. 1914).

My plant agrees well with the Copenhagen specimen of Pl. Preiss. no. 1372, upon which number *T. sericostachyum* Nees is based; on the other hand it agrees with the Kew specimens of *T. roseum* Moq. It has only two perfect anthers.

It seems to me that *T. sericostachyum* Nees is the same as BENTHAM's *T. roseum*, perhaps also as MOQUIN's *T. roseum*, while *T. floribundum* Moq., based on DRUMMOND's plant No. 149 and quoted by BENTHAM as synonymous with *T. sericostachyum* Nees., is another plant. The Kew specimens of DRUMMOND's plant are rather different from PREISS' plant.

Ptilotus villosiflorus F. v. Müll. Fragm. Phytogr. Austr. III (1863); Benth. Fl. Austr. V (1870) 245; Ostenfeld, Contr. W. Austr. Bot. II (1918) 15; *Alternanthera polycephala* Benth. Fl. Austr. V (1870) 251.

Geraldton (No. 281; 28. Oct. 1914), in dune depressions; Carnarvon, common on dunes (No. 354; 31. Oct. 1914).

This plant seems to be widely distributed along the more arid part of the coast of W. Austr. In the Kew Herb. there are specimens which I refer to it, from the following places: Between Ashburton and de Gray Rivers, E. Clement, purchased Aug. 1900; Carnarvon, Mouth of Gascoyne River, A. Morrison, 24. IX. 1905; N. W. New Holland, Bynoe (sub. nom. *Alternanthera angustifolia*, determ. Moquin); Greville Island, Reports Harbour, N. W., Bynoe (type of *Alternanthera polycephala*, Benth., which name therefore should be dropped); Between Moore and Murchison Rivers, Drummond 1853 (sub. nom *Ptil. macrostachys*, determ. Bentham).

When we add to these localities my records quoted in Part II (1918) of »Contr. W. Austr. Bot.«, we get a distribution from Port Hedland in the north to Moore River in the south.

Perhaps *Ptil. chamæcladus* Diels (Bot. Jahrb. 35, 1904, 193) of which I have not seen the specimens, is a procumbent form of this species.

Aizoaceæ.

Macarthuria australis Hueg., in Endl. Enum. pl. Hüg, (1837) 11; Hook. Icon. pl. tab. 408; Pl. Preiss. I (1844) 229 et II (1848) 360; Benth. Fl. Austr. III (1866) 332.

Common on sandy soil in King's Park, Perth (Nos. 275, 28. Aug. 1914; 276, 26. Oct. 1914; No. 1337, 28. July 1915, Mrs. M. Davis). Flowering in the spring (August) and with young fruit in October.

While collecting this interesting plant in King's Park I had the opportunity of making some observations on its ecology and on the structure of the flowers.

Fig. 9 shows a plant taken in the spring. From the short erect rhizome several shoots appear: (I) one is an old dead erect branched stem, (II) two (one of which, to the left, has been broken of) are leafless flowering branched stems, and (III) two are young leaf-bearing shoots. The dead branched stem has undoubtedly had flowers and fruits the year before. The now flowering branched stems have thickened bases formed by a somewhat swollen and burnt bark, a feature which is characteristic of many plants growing in sandy soil in W. A. and mentioned by L. Diels.[1] He suggests that it may be a protection against the strong heat of the sun-baked soil.

[1] L. Diels: Über Wurzelkork bei Pflanzen stark erwärmter Böden. Flora, N. F., Bd. XI, 1918, pp. 490—502.

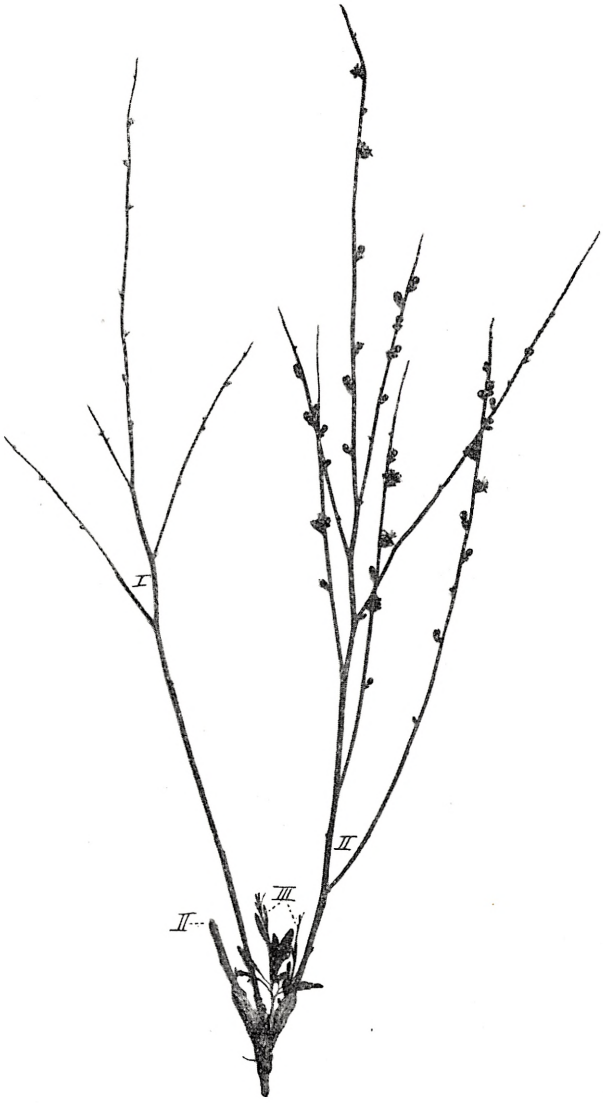


Fig. 9. *Macarthuria australis* Hueg., I—III, three successive years' growth. (About $^{2}/_{5}$ nat. size.)

The stems are green and assimilating, and the flowers appear in clusters in the axils of leaf-bases the blades of which have disappeared. The flower clusters have no foliage leaves, only small scaly bracts. These stems are about one year old. The short young shoots with well-developed oblong-lanceolate foliage leaves have just begun to grow and are only a few weeks old. I suppose that these shoots in the course of the vegetation period grow out to erect branched stems with foliage leaves, and then, when the dry summer-heat sets in, shed their leaves, and stand with naked green axes until next spring when flower clusters appear in axils of the leaf-bases.

The plant figured thus shows three years' growth; each stem has a duration of two vegetation periods, one in which it is purely vegetative and assimilating, and the second in which it is mainly flowering, but still is capable of some assimilation by means of the green tissue of the stem itself. The mode of growth has consequently a strong likeness to that which we know in *Rubus* species, e. g. *R. idæus*.

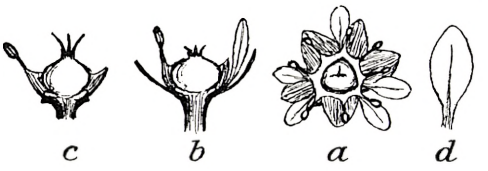


Fig. 10. *Macarthuria australis* Hueg. Flower biology. *a*. A flower seen from above. *b*. Longitudinal section of a flower in the male stage. *c*, the same of a flower in the female stage. *d*. A petal. (Enlarged).

The white flowers (Fig. 10) have a strong honey-smell and are visited by dipterous insects. The honey is secreted by a glandular disc situated around the base of the ovary and is kept in the cup formed by the basal parts of the stamens. The flowers are somewhat proterandrous; in the male stage the stamens stand erect in the flowers and the pistils are small; in the female stage the stamens bend outwards and

the pistils have grown to a larger size. In all the flowers I observed 5 green sepals, 5 stalked white petals, slightly longer than the sepals, and 8 stamens and 3 free pistils. The fruit (not seen ripe) is a few-seeded capsule.

Tetragonia eremæa Ostf. nov. sp. (Pl. VIII).

Annua, ± prostrata; caules complures rosulati vel singuli, usque ad 7 cm longi. Planta tota, præcipue in partibus junioribus et in floribus, pilis pellucidis vesiculosis, sat longis acutisque ± dense instructa ("pruinosa"). Folia petiolata obovato-oblonga, obtusa. Flores parvi subsessiles axillares, plerumque solitarii. Sepala 4 oblongo-deltoidea, fere duplo quam latiora longiora, obtusa, extus pilis pellucidis dense ornata. Stamina 4, antheris didymis. Stigmata 4—6 (plerumque 4). Fructus compresso-quadrangulati, sub-quadrialati, alis duabus oppositis majoribus, duabus vel pluribus minoribus, quam longiores latiores, apice intra sepala dentibus 4—6 obtusis a putamine emerso formatis; semina 4—6.

Ex affinitate *T. dipteræ*, sed pilis fructibusque faciliter cognoscitur.

Kalgoorlie (No. 640; 7. Oct. 1914).

This rather small and inconspicuous plant is undoubtedly near to *T. diptera* F. v. Müll. (Fragm. Phytogr. Austr. XI (1878) 8) which has been described from specimens from Shark's Bay, where also Diels and Pritzel (Engl. Bot. Jahrb. 35 (1904) 197) have found it again. But my plant differs from it by the peculiar pellucid unicellular hairs, which are present more or less sparsely, over the whole plant, more numerously on the upper (younger) parts and on the flowers. Further the fruits are irregularly 4-winged with two larger and two or several smaller wings.

Tetragonia implexicoma Hook. f., Fl. Tasman. I (1855) 148; Benth. Fl. Austr. I (1866) 326; F. v. Müller, Key to Vict. Pl. fig. 40.

Yallingup Cave (No. 1114; 26. Sept. 1914).

This well-defined species is a perennial undershrub with decumbent woody stems from which herbaceous short shoots and also elongated shoots appear, both kinds bearing the inconspicuous yellow flowers in the axils of the leaves.

Pax (in Engler u. Prantl, Natürl. Pflanzenfam. III. 1 b, 1889, 44) places it together with *T. expansa* Mur. and others in a section *Tetragonoides* D. C. of annual and biennial herbs. This is hardly correct as regards the species in question.

It has its home in the littoral shrub vegetation of extra-tropical Australia.

Mesembryanthemum tumidulum Haw., Syn. pl. succul. (1812) 286; Rev. 129; Salm-Dyck, Mesemb. § 37, Fig. 3; Sonder, Fl. Cap. II (1861—62) 426; A. Berger, Mesembryanth. (1908) 114.

Albany (No. 277; 21. Oct. 1914).

West of Albany, growing on the coast cliffs, I found a *Mesembryanthemum* in the fruiting stage. By its many-flowered inflorescences it differed much from the two Australian species and doubtless represents an introduction from South Africa. As far as the somewhat incomplete material permits one to judge, it agrees better with *M. tumidulum* Haw. than with the allied species *M. umbellatum* L. and *M. multiflorum* Haw.

M. æquilaterale Haw., misc. nat. (1803) 77; Bentham Fl. Austr. III (1866) 324.

Yallingup Cave, near the coast (No. 279; 26. Sept. 1914); Kalgoorlie (No. 278; 7. Oct. 1914).

A plant which I refer to this common species was col-

lected at Kalgoorlie. It differed from the typical coastal plant by the rather blunt apex of the leaves and a more connate leaf-base. The specimens are too incomplete for closer examination.

Portulacaceæ.

Calandrinia polyandra (Hook.) Benth. Fl. Austr. I (1863) 172.

Carnarvon, in dune depressions (No. 633, 31. Oct. 1914).

Calandrinia calyptrata Hook. f., in Hook. Icon. pl. (1840) tab. 296; Benth. Fl. Austr. I (1863) 174.

Yallingup Cave, on naked soil (No. 637; 27. Sept. 1914).

Calandrinia corrigioloides F. v. Müll., in Benth. Fl. Austr. I (1863) 175; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 200.

Perth, King's Park, open sandy soil (No. 634; 10. Sept. 1914).

Diels (l. c.) gives the stems as "humifusi," in my species they are erect or ascending.

Calandrinia brevipedata F. v. Müll,, Fragm. Phytogr. Austr. X (1876) 69.

Yallingup Cave, open sandy soil (No. 639; 26. Sept. 1914).

In this species the stems are prostrate, often until 35 cm long. The small flowers are white as in the preceding species.

Caryophyllaceæ.

All the *Caryoaphyllaceæ* reported below are European species which have been introduced by man and have now more or less established themselves as weeds.

Silene gallica L. sp. pl. (1753) 417; Benth. Fl. Austr. I (1863) 155.

York (No. 1387; 25. Nov. 1915, Mrs. Davis).

Tunica prolifera (L.) Scop. Fl. Carn. (1772) 299.

Busselton, on a grassy lawn (No. 289; 30. Sept. 1914).

Cerastium glomeratum Thuill. Fl. Par. ed. 2 (1799) 226; *C. vulgatum* Benth. Fl. Austr. I (1863) 157, ex parte.

Perth, garden weed in St. Omer Hospital (No. 290; 31. Aug. 1914); Armadale, in a yard (20. Sept. 1914).

The specimens belong to the apetalous variety: var. *apetalum* Mert. et Koch, Deutsch. Fl. III (1831) 339.

Sagina apetala Arduino, Animadv. bot. spec. II (1764) tab. 8, 22; *S. procumbens* Benth. Fl. Austr. I (1863) 160, ex parte.

Armadale, weed in a yard (No. 293; 20. Sept. 1914); Vicinity of Perth (1915, Mrs. Davis); York (1915, Mrs. Davis).

Spergula arvensis L. Sp. pl. (1753) 440; Benth. Fl. Austr. I (1863) 161.

York (No. 1394; 25. Nov. 1915, Mrs. Davis).

The specimens belong to var. *vulgaris* (Boenn.) Mert. et Koch, with seeds with small whitish papillæ.

Spergularia campestris (L.) Aschers. Fl. Prov. Brandenb. II (1859) 25; *S. rubra* (L.) Pers.; Benth. Fl. Austr. I (1863) 161.

Yallingup Cave, on open sandy soil (Nos. 291 and 292; 27. Sept. 1914).

Spergularia Bocconei (Soleirol) Steud. Nomencl. ed. 2. I (1840) 123, 125; Ascherson u. Graebner, Syn. Mitteleurop. Fl., vol. V (1919) 849.

York (No. 1450; 25. Nov. 1915, Mrs. Davis).

Polycarpon tetraphyllum L. Syst. ed. 10 (1759) 881; Benth. Fl. Austr. I (1863) 163.

Yallingup Cave house, a weed (No. 294; 28. Sept. 1914).

Ranunculaceæ.

Clematis pubescens Hueg. Enum. pl. (1837) 1; *C. aristata* R. Br., c. *occidentalis* Benth. Fl. Austr. I (1863) 6.

Jarnadup, south of Bridgetown, in forest (No. 728; 1. Oct. 1914).

Clematis microphylla D. C. var. **linearifolia** (Steud.) comb. nov.; *C. microphylla*, var. *occidentalis* Benth. Fl. Austr. I (1863) 8; *C. linearifolia* Steud. in Pl. Preiss. II (1848) 262.

Yallingup Cave, on coastal shrubs (No. 727; 26. Sept. 1914); Geraldton, on dune shrubs (No. 1193; 28. Oct. 1914).

Ranunculus lappaceus Sm., in Rees' Cyclopædia (1815) XXIX; Benth. Fl. Austr. I (1863) 12.

Yallingup Cave, in forest and along a rivulet (Nos. 725 and 726; 26. Sept. 1914).

Ranunculus parviflorus L. var. **australis** Benth. Fl. Austr. I (1863) 14.

Yallingup Cave, on damp soil along a rivulet (No. 724; 27. Sept. 1914).

The Australian plant is perhaps a distinct species; as BENTHAM (l. c. 15) has mentioned, the achenes are smaller than in the European form; besides the tubercles on their sides are not so closely set and the short beak of the style is not so curved.

Ranunculus muricatus L. Sp. pl. (1753) 555; Benth. Fl. Austr. I (1863) 15.

Bayswater, in a swamp near Swan River (No. 723;

18. Oct. 1914); Yallingup Cave, on damp soil along a rivulet (No. 722; 27. Sept. 1914).

This introduced species seems to spread widely in W. Australia as in the other Australian States.

Lauraceæ.

Cassytha.

As Diels and Pritzel (Bot. Jahrb. 35, 1904, 202) remark, this genus requires a thorough revision.

Cassytha pubescens R. Br. Prodr. Fl. Nov. Holl. (1810) 404; Benth. Fl. Austr. V (1870) 310.

Geraldton, on shrubs in the dune area (No. 414; 28. Oct. 1914).

I am not quite sure that the W. A. plant is the same as that from the Eastern States and Tasmania.

Cassytha racemosa Nees, in Pl. Preiss. I (1845) 621; Benth. Fl. Austr. V (1870) 312.

Perth, King's Park (No. 415; 10. Sept. 1914); Geraldton, common in the dune area (No. 413; 28. Oct. 1914).

Cassytha pomiformis Nees, in Pl. Preiss. I (1845) 620; Benth. Fl. Austr. V (1870) 313.

Yallingup Cave, in the forest (No. 416; 26. Sept. 1914).

This species has thickened pedicels on fruiting specimens, hence the species name, as the fruit and the thickened pedicel together are "pomiform". As Diels and Pritzel (l. c.) point out the true species is pubescent, not glabrous as said by Bentham (l. c.).

Cruciferæ.

Heliophila pusilla L. fil. Suppl. pl. (1781) 297; *H. pumila* (sic!) Benth. Fl. Austr. I (1863) 65; Diels u. Pritzel, Bot. Jahrb. 35 (1904) 203.

Perth, King's Park, common (Nos. 364, 365; 10. Sept. and 13. Oct. 1914).

This South-African plant has been growing as a weed in the Swan River area for a long time.

Coronopus didymus (L.) Sm. Fl. Brit. II (1800) 691; *Senebiera d.* Benth. Fl. Austr. I (1863) 83.

York (No. 1390; 25. Nov. 1915, Mrs. Davis), introduced.

Stenopetalum lineare R. Br., in D. C. Syst. Veg. I (1821) 513; Benth. Fl. Austr. I (1863); Sp. Moore, Journ. Linn. Soc. vol. 34 (1899) 177; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 202.

Kalgoorlie, in fruit (No. 367; 7. Oct. 1914).

Stenopetalum robustum Endl. var. **gracile** (Bunge) comb. nov.; *S. gracile* Bunge, in Pl. Preiss. I (1844) 257.

Near Perth (No. 366; 13. Sept. 1914, E. Dorph-Petersen).

Alyssum linifolium Steph., in Willd. sp. pl. III (1800) 467; Benth. Fl. Austr. I (1863) 71; Sp. Moore, l. c. 177.

Kalgoorlie, in fruit (No. 368; 7. Oct. 1914).

Blennodia brevipes F. v. Müll., in Trans. Phil. Soc. Vict. I (1860) 100, ex Benth. Fl. Austr. I (1863) 75; Sp. Moore, Journ. Linn. Soc. vol. 34 (1899) 177; *Erysimum br.* F. v. Müll., in Linnæa 25 (1852) 367.

Kalgoorlie, in fruit (No. 369; 7. Oct. 1914).

Droseraceæ.

Drosera bulbigena A. Morrison, in Transact. & Proc. Bot. Soc. Edinburgh XXII (1904) 417; Diels, Droseraceæ, in Das Pflanzenreich, IV, 112 (1906) 116.

Armadale, damp naked soil (No. 384; 20. Sept. 1914).

This little *Drosera* seems to be very rare. My specimens agree exactly with the type specimens present in Kew. Herb. (Cannington, Lower Canning River, 26. Sept. 1903, A. Morrison).

Drosera Mensiesii R. Br. var. **penicillaris** (Benth.) Diels, in Das Pflanzenreich, IV, 112 (1906) 117; *D. penicillaris* Benth. Fl. Austr. II (1864) 467.

Perth, King's Park (No. 1443; 1. Sept. 1915, Mrs. Davis); Armadale (No. 379; 4. Sept. 1914); Albany (No. 378; 20. Oct. 1914).

Drosera rosulata Lehm. Pugill. VIII (1844) 36; Benth. Fl. Austr. II (1864) 462; Diels, in Das Pflanzenreich (1906) 125.

Albany (No. 383; 20. Oct. 1914).

Some sterile leaf-rosettes from Albany agree with *D. rosulata* which has hitherto only been known from the Swan River area.

Crassulaceæ.

Crassula (*Tillæa*). The W. Australian species of this genus are dealt with in my »Contr. to W. Austr. Bot.«, II (1918).

Pittosporaceæ.

Marianthus erubescens Putterlick, in Nov. Stirp. Mus. Vind. decad. VII (1839) 60; Pl. Preiss. I, 2 (1844) 197; Benth. Fl. Austr. I (1863) 120, ex parte.

Yallingup Cave, in a rich and damp cleft (No. 1015; 28. Sept. 1914).

My specimens (Pl. IX, Fig. 1) have broadly elliptic leaves, as Putterlick (Pl. Preiss. p. 197) says about his species (foliis inferioribus late ellipticis; superioribus oblongo-ellipticis), and specimens answering to this description and agreeing with my plant are in Kew Herb. from: Kalgan

River, Oldfield; King George's Sound (Herb. Hook.); N.W. Plantagenet, E. Pritzel, no. 955; Bridgetown to Kojonup and Slab Hut Gully, A. Dorrien-Smith 1910. I think this plant is the true *M. erubescens* Putterl.

BENTHAM's description ("leaves narrow, oblong-lanceolate or linear") seems to cover another plant and is probably drawn from DRUMMOND's specimens (1848), which are rather different. Granted that *M. purpureus* Turcz. (Bull. Moscou, 1854, 364) are based upon Drummond's plant, we have here a name for it; it no doubt deserves a specific name.

Marianthus gracilis Ostf. nov. sp. (Pl. IX, Fig. 2).

Sect. *Normales*. Species volubilis gracilis caulibus novellis sericeo-pilosis mox glabratis. Folia glabra (juvenalia sparse pilis longis albis instructa), 2—4 cm longa, cuneato-oblonga vel elliptica, in petiolo brevissimo sensim attenuata, distante et grosse dentata dentibus 1—2, ± patentibus, acuta, coriacea, margine revoluta. Cyma 3—5-flora, pedunculata, 1—5 cm longa, gracilis, ± pilosa, bracteis pluribus linearibus, pilosis. Pedicelli, 2—6 mm longi, dense pilosi. Flores desunt. Fructus immaturi, glabri, fusiformi-cylindrici, utrinque attenuati, stylo filiformi stigmateque haud incrassato instructi.

Yallingup Cave, a twiner in the forest (No. 1018; 26. Sept. 1914).

Although I have no flowers, only young fruits in my specimens, and therefore cannot say anything about the sepals, petals and stamens, I think the present plant is sufficiently distinct from the other species of *Marianthus* to be described as new. Its slenderness and the shape of the leaves resemble *M. tenuis* Benth., but its inflorescence is that of *M. candidus* Hueg. and *M. coeruleo-punctatus* Klotsch from which it is otherwise different.

Sollya fusiformis (Labill.) comb. nov.; *Sollya heterophylla* Lindl. Bot. Regist. XVII (1831), tab. 1460; Benth. Fl. Austr. I (1863) 126; *Billardiera fusiformis* Labill. Pl. Nov. Holl. I. (1804) 65, tab. 90.

Perth, King's Park (No. 1017; 25. Oct. 1914); Albany (No. 1016; 21. Oct. 1914).

I cannot see any obstacle to using Labillardière's much earlier species name. His description is usable and the plate is very good. I admit that he gives "Van Diemen" as "habitatio", but this is evidently a "lapsus calami" instead of King George's Sound.

Leguminosæ (determ. by Dr. E. Pritzel).

Oxylobium lanceolatum (Vent.) Ostf. comb. nov.; *O. callistachys* Benth. Fl. Austr. II (1864) 16; Diels u. Pritzel, in Engl. Bot. Jahrb. 35 (1904) 223; *Callistachys lanceolata* Vent. Jard. Malm. (1803) 115, tab. 115.

Yallingup Cave, along a rivulet (No. 490; 27. Sept. 1914); Albany (No. 435; 20. Oct. 1914, a broad-leaved, silky-haired form; No. 442; 20. Oct. 1914, a narrow-leaved, glabrous form).

No doubt several species are included under the name *O. callistachys* Bth.

Oxylobium Drummondii Meissn., in Pl. Preiss. I (1844) 30; *O. cuneatum* Bth. Fl. Austr. II (1864) 24, ex parte.

Darlington (No. 471; 28. Aug. 1914, Cecil Andrews).

Chorizema cordatum Ldl. Bot. Reg. (1838) tab. 10; Benth. Fl. Austr. II (1864) 28.

Bridgetown, in the forest (No. 480; 1. Oct. 1914).

Chorizema diversifolium A. DC., Pl. rar. Jard. Gen. 7e. note (1836) 44, tab. 8; Benth. Fl. Austr. II (1864) 29.

Yallingup Cave, in the forest (No. 478; 27. Sept. 1914).

Gompholobium ovatum Meissn., in Pl. Preiss. I (1844) 35; Benth. Fl. Austr. II (1864) 42; Diels u. Pritzel, in Engl. Bot. Jahrb. 35 (1904) 233.

Jarnadup, south of Bridgetown (No. 484; 2. Oct. 1914).

Sphærolobium lineare (Benth.) Ostf. comb. nov.; *S. euchilus* Benth. Fl. Austr. II (1864) 67; *Euchilus linearis* Benth., in Hueg. Enum. pl. (1837) 35.

York (No. 463; 25. Aug. 1914, O. H. Sargent); near Perth (No. 455; 9. Aug. 1914, E. Dorph-Petersen).

Bossiæa linophylla R. Br., in Ait. Hort. Kew. ed. 2. IV (1812) 268; Benth. Fl. Austr. II (1864) 162; Diels u. Pritzel, Engl. Bot. Jahrb. 35 (1904) 263.

Yallingup Cave, in the forest (No. 485; 26. Sept. 1914); Jarnadup, south of Bridgetown (No. 486; 2. Oct. 1914).

Templetonia egena (F. v. Müll.) Benth. Fl. Austr. II (1864) 170; Diels u. Pritzel, in Engl. Bot. Jahrb. 35 (1904) 265.

Kalgoorlie (No. 492; 8. Oct. 1914).

Medicago denticulata Willd. Sp. pl. III (1800) 1415; Benth. Fl. Austr. II (1864) 186.

York, introduced (No. 1392, 25. Nov. 1915, Mrs. M. Davis).

Trifolium procumbens L. Fl. Suec. (1755) 261; Benth. Fl. Austr. II (1864) 186.

York, introduced (No. 1386, 25. Nov. 1914, Mrs. M. Davis).

Trifolium parviflorum Ehrh. Beitr. VII (1792) 167.

Albany, damp soil, introduced (No. 445; 20. Oct. 1914).

Trifolium tomentosum L. Sp. pl. (1753) 771; Diels u. Pritzel, in Engl. Bot. Jahrb. 35 (1904) 267.

Perth, introduced, road in King's Park (No. 448; 12. Sept. 1914); York, introduced (No. 1449; 25. Nov. 1915, Mrs. Davis).

Cassia sophera L., var. **pubescens** Benth., Fl. Austr. II (1864) 283.

York, prob. introduced or cultivated (No. 1385; 25. Nov. 1915, Mrs. M. Davis).

Acacia colletioides A. Cunn., var. **nyssophylla** (F. v. Müll.) Benth. Fl. Austr. II (1864) 326; Pritzel, in Engler, Bot. Jahrb. 35 (1904) 290.

Tammin, in open forest (No. 548; Oct. 1914).

Acacia genistoides A. Cunn., in Benth. Fl. Austr. II (1864) 330; Pritzel, in Engl. Bot. Jahrb. 35 (1904) 292.

Kalgoorlie (No. 1111; 7. Oct. 1914).

Acacia erinacea Benth., var. **microphylla** E. Pritzel, in Engl. Bot. Jahrb. 35 (1904) 299.

Tammin, in open forest (No. 534; 6. Oct. 1914.)

Acacia Merrallii F. v. Müll., var. **tamminensis** E. Pritzel, in Engl. Bot. Jahrb. 35 (1904) 299.

Tammin, in open forest (No. 547; 6. Oct. 1914).

Acacia spodiosperma F. v. Müll., in Proc. Linn. Soc. N. S. Wales, vol. 3 (1868) 164; Ewart, in Proc. R. Soc. Victoria 22 (N. S.), I (1909) 91; *A. leucosperma* (F. v. Müll.) E. Pritzel, in Eng. Bot. Jahrb. 35 (1904) 302.

Carnarvon, on dunes (No. 553; 31. Oct. 1914).

According to A. J. Ewart (l. c.) the name *A. leucosperma*

given by E. PRITZEL (l. c.) to this characteristic species must be dropped for F. v. MÜLLER's much earlier name.

Acacia rostellifera Benth., in Hook, Lond. Journ. I (1842) 356; Fl. Austr. II (1864) 368; Pritzel, in Engl. Bot. Jahrb. 35 (1904) 302.

Yallingup Cave, in shrub near the shore (No. 537; 26. Sept. 1914); Geraldton, on dunes (No. 552; 28. Oct. 1914).

Acacia heteroclita Meissn., in Pl. Preiss. I (1844) 18; Benth. Fl. Austr. II (1864) 381; Pritzel, in Engl. Bot. Jahrb. 35 (1904) 304.

Yallingup Cave, in forest (No. 545; 27. Sept. 1914).

Acacia coriacea D. C., Mém. Legum. (1825) 446; Benth. Fl. Austr. II (1864) 385.

Carnarvon, on dunes (No. 550; 31. Oct. 1914).

Acacia cyperophylla F. v. Müll., in Benth. Fl. Austr. II (1864) 400; Pritzel, in Engl. Bot. Jahrb. 35 (1904) 307.

Kalgoorlie (No. 1112; 7. Oct. 1914).

Geraniaceæ.

Geranium molle L. Sp. pl. (1753) 682.

Perth (F. Stoward, No. 324, in Herb. Kew). Introduced.

Geranium pilosum Forst. Prodr. (1786) 91; Nees, in Pl. Preiss. I, 2 (1844) 162; Knuth, Geraniaceæ, in Das Pflanzenreich (1912) 75; *G. dissectum* Benth. Fl. Austr. I (1863) 296 pro max. parte, non L.

Yallingup Cave, open forest (No. 403; 28. Sept. 1914).

My specimens represent a more hairy form of *G. pilosum* Forst. than the true New Zealand plant, but the differences are too small to keep them distinct.

In Kew Herb. I have seen the same plant — with patent white, rather long hairs on the stems, pedicels, petioles and ± on the leaf-lamina — from the following W. A. localities: Avon, F. v. Müller; Swan River, Drummond, both in fruit and flower; Yallingup and Cape Naturaliste, A. Dorrien-Smith, 1910.

Besides this plant W. Australia has another form with shorter, adpressed (not patent) hairs, which has been described as *G. australe* Nees, in Pl. Preiss. I (1844) 162. I think it is hardly distinct enough to be kept as a species, but it deserves at least a varietal name: *G. pilosum* Forst., var. *australe* (Nees) comb. nov.

In Kew Herb. it is present from two W. Australian localities, viz. Bridgetown to Kojonup and Slab Hut Gully, A. Dorrien-Smith 1910, and Westbourne, Dwarganup, C. B. Carter, no. 22, Febr. 1915. In the other Australian States it seems more common.

R. Knuth (l. c. 52) has *G. australe* Nees as a variety of *G. dissectum* L., but this is evidently wrong, and is perhaps caused by the unhappy treatment of the Australian *Geranium's* by Bentham. The true *G. dissectum* L. with shortly and softly haired capsule-lobes, judging by the rich Australian *Geranium* material at Kew, has only been found in Australia around Melbourne, most probably introduced from Europe. All the other specimens in the herbaria belong to quite another section (*Chilensia* R. Knuth) of the genus and are distinguished by the stiff and coarse hairs on the back of the capsule lobes and by the ± tuberous root.

Erodium cygnorum Nees, in Plant. Preiss. I (1844) 162; Benth. Fl. Austr. I (1863) 297; R. Knuth, Geraniaceæ in Das Pflanzenreich (1912) 249.

Kalgoorlie (No. 410, 7. Oct. 1914), low fruiting specimens.

From seeds taken from the wild specimens I have had this species in culture. It is an annual which rises to the height of until 50 cm, erect or ascending. The umbels are usually 3-flowered, the peduncle about as long as the leaf, the pedicels about three times as long as the sepals. Sepals pointed (with a short mucro), ca. 5 mm long, green, distantly and sparingly hairy on the back. Petals blue-violet (C C[1] 481), faintly 3-veined, with white-bearded base, obovate, ca. 6 mm long. Filaments white, lower half broad; anthers orange-yellow. Fruit carpels hispid, beak 3—4 cm long.

Erodium cicutarium (L.) L. Hérit. ex Ait. Hort. Kew. ed. II (1789) 414; Benth. Fl. Austr. I (1863) 298; R. Knuth, Geraniaceæ, l. c. 274.

This species has established itself widely in the State. I collected it at Perth (No. 408, 23. Aug.), at Kalgoorlie (No. 407, 7. Oct.) and at Yallingup Cave House (No. 409, 26. Sept. 1914).

Pelargonium australe Willd. Spec. pl. III (1800) 675; Sweet, Geran. I (1820—22) tab. 68; R. Knuth, Geraniaceæ in Das Pflanzenreich (1912) 409; Benth. Fl. Austr. I (1863) 298 ex parte; non Jacq. Eclog. Plant.; *P. glomeratum* Jacq. Eclog. Plant. var. 1 (1816) 146, tab. 98; *P. crinitum* Nees, et var. *congestum* Nees in Plant. Preiss. I (1844) 163 (?); *P. littorale* Huegel in Enum. Pl. Hueg. (1837) 44; *P. Drummondii* Turcz. Bull. Mosc. 1858, 421.

To this species I, with some doubt, refer a *Pelargonium*, which was common on sandy soil in King's Park, Perth (No. 404, 13. Oct. 1914) and which I also saw at Cottesloe and near Fremantle. It is the same species which L. Diels

[1] C C = Klincksieck et Valette, Code des Couleurs, Paris 1908.

(Pflanzenwelt West Australiens (1906) 207) mentions as common in the coastal dune area.

The *Pelargonium* forms of Australia are rather confused; Bentham (l. c.) reduces them to only two species. But to judge from the herbarium material available, I think there are several more species. The recent monograph by R. Knuth (l. c.) allows three species, and I agree with him that *P. australe* and *P. inodorum* are distinct from each other, but whether the West-Australian *P. australe* is the same as the East-Australian I dare not decide; perhaps it would be better to take it as a separate species and then name it: *P. littorale* Hueg.

Pelargonium inodorum Willd. Hort. Berol. I (1806) tab. 34; Enum. II (1809) 702; Sweet, Geran. I (1820—22) tab. 56; R. Knuth, Geraniaceæ l. c. 409; *P. australe* Jacq. Eclog. plant. var. 1 (1816) tab. 100; non Willd.; *P. australe* var. *erodioides* (Hook.) Benth. Fl. Austr. I (1863) 299; *P. stenanthum* Turcz. Bull. Mosc. 1858, 149.

This species is more slender than the foregoing and the hairiness not nearly so dense, consisting only of long spreading hairs (no short and dense pubescence); the flowers are smaller and the petals hardly exceed the sepals.

The identification of this species is not so doubtful as that of the former, but I am not sure to which of them Nees' *P. crinitum* belongs.

Jacquin (l. c.) has evidently made a mistake in calling the small-flowered Australian *Pelargonium* by Willdenows's name *P. australe* and creating the new name *P. glomeratum* Jacq. for the real *P. australe* Willd.

I found *P. inodorum* in the open forest on sandy soil near Yallingup Cave house in the first flowering stage (Nos. 405 and 406; 26. Sept. 1914).

Oxalidaceæ.

Oxalis cernua Thunb., Diss. Oxalis (1781) 14 (tab. 2); Harwey and Sonder, Fl. Cap. I (1859—60) 348.

Perth, found in the suburban area near Swan River (No. 630; 13. Sept. 1914, E. Dorph-Petersen).

As far as I am aware this Cape plant has not been recorded before from W. A. From its home it has spread to the Mediterranean region, the Canaries, Madeira etc.

O. corniculata L. Sp. pl. (1753) 435; Benth. Fl. Austr. I (1863) 301.

Perth: in the environs (No. 631; 16. Aug. 1914, E. Dorph-Petersen).

Linaceæ.

Linum gallicum L. Sp. pl. ed. 2 (1762) 401.

Bridgetown (No. 417; 1. Oct. 1914); Armadale, on open clayey soil (No. 1120, 20. Sept. 1914), an introduced weed.

Zygophyllaceæ.

Nitraria Schoberi L. sp. pl. ed. 2 (1762) 639; Benth. Fl. Austr. I (1863) 291.

Carnarvon, an erect shrub with unripe fruits (No. 833; 31. Oct. 1914).

Zygophyllum fruticulosum D. C. Prodr. I (1824) 705; Benth. Fl. Austr. I (1863) 294; Diels u. Pritzel, in Botan. Jahrb. 35 (1904) 315.

Geraldton, a scandent undershrub, common in the dune area (No. 831; 28. Oct. 1914). The ripe fruits are about 20 mm long and broad (Fig. 11, a).

Zygophyllum eremæum (Diels pro. var.) Ostf. n. sp.; *Z. fruticulosum* var. *eremœum* Diels, in Diels u. Pritzel, Botan. Jahrb. 35 (1904) 315.

Differt a *Z. fruticuloso* praeter charactera a clar. Diels indicata nervatura et magnitudine multo minore fructus alorum. Certe est species propria.

Kalgoorlie (No. 832; 8. Oct. 1914).

a b

Fig. 11. *a*, *Zygophyllum fruticulosum* DC., from Geraldton. *b*, *Zygophyllum eremœum* (Diels) Ostf., from Kalgoorlie. (Nat. size).

As given by Diels (l. c.) this species occurs in the arid interior. It has straight, not scandent branches; the leaflets are linear, and the winged fruit is smaller than in *Z. fruticulosum* (nearly ripe fruits are only 10 mm long and ca. 8 mm broad). The nervature of the fruit-wings is also quite different. (Fig. 11 b).

In Kew herbarium specimens of this plant are present from: Victoria desert, camp 54 (Elder Expl. Exp., coll. R. Helms, 17. 9. 91); Boulder, W. D. Campbell, 21. 9. 1900; Coolgardie, E. Kelso, Oct. 1900; W. Australia, coll. Dr. W. H. Ince;

Z. frutic. var. floribus parvis albis, West Australian Goldfields, Spencer Moore 1895.

Rutaceæ.

Boronia heterophylla F. v. Müll. Fragm. Phytogr. Austr. II (1861) 98; Benth. Fl. Austr. I (1863) 315.

This beautiful species with large pink flowers was sent me from the environs of Albany (No. 739; 27. Aug. 1914; No. 1405; 29. Aug. 1915, in full flower, E. Douglas).

Boronia alata Sm., Transact. Linn. Soc. VIII (1807) 283; Benth. Fl. Austr. I (1863) 312.

Yallingup Cave, near a rivulet, a strongly scented shrub with pink flowers (No. 745; 27. Sept. 1914, in flower and with fruit).

Boronia spathulata Lindl. Swan Riv. App. Bot. Reg. (1839) 17; Benth. Fl. Austr. I (1863) 327.

Wilgarup, south of Bridgetown (No. 744; 1. Oct. 1914); Albany (No. 746; 20. Oct. 1914).

BENTHAM (l. c.) considers *B. dichotoma* Lindl. (Bot. Reg. (1841) under no. 47) as a tall variety of *B. spathulata* (var. *elatior*), but this is evidently erroneous. *B. dichotoma* Lindl. is a distinct species which is easily distinguished by the characters given by LINDLEY and BENTHAM. Another character is that it has glandular hairs on the pedicels (while *B. spathulata* is glabrous).

B. dichotoma Lindl. is present in the Kew Herb. from the following localities: Vasse River, Mrs. Molly; Swan River, Drummond coll. 1843, no. 38; Preston River, Oldfield; W. Austr., Miss K. F. Logue of Udoe, Apr. 1888; Distr. Wellington, Pritzel no. 95, 1900.

Asterolasia grandiflora (Hook.) Benth. Fl. Austr. I (1863) 352; *Phebalium gr.* Hook. Icon. Pl. (1848) tab. 724.

This rare plant was sent me by Mr. O. H. Sargent of York (No. 743; 30. Aug. 1914).

Diplolæna R. Br. The species of this W. Australian genus are rather difficult to separate from each other. Desfontaines (1817) originally described two species. Bartling (in Pl. Preiss. 1844) had two more, one of which was previously described by Hooker in his text to the plate of *D. Dampieri* Desf. (1844). Bentham in Fl. Austr. (1863) kept all four species separate, adding a variety to one of them. F. von Müller (Fragm. Phytogr. Austr. IX, 106) on the other hand united all into one species *D. Dampieri*, saying: "Discrimina specifica inter hanc et D. grandifloram, D. angustifoliam et D. microcephalam non detexi".

After a careful examination of a fairly ample material containing specimens sent from Desfontaines to Hornemann in Copenhagen, Preiss's specimens, and the collections in Kew and the British Museum I feel convinced that the genus comprises several closely related, but distinguishable forms[1].

A key mainly based upon the tomentum of the leaves will elucidate some of the distinguishing characters.

A. Leaves linear, glabrous above, tomentose underneath, tomentum consisting of both coarser and smaller (shorter) stellate hairs D. angustifolia Hook.

B. Leaves broader, oblong to obovate.

a. Upperside of the leaves ± tomentose, underside with a dense tomentum of uniform short stellate hairs.

1. Flower-heads and leaves large; outer floral bracts broadly ovate, inner ones broadly elliptical .. D. grandiflora Desf.

[1] I have not had access to the descriptions of two species (and have not seen the specimens): viz. *D. Huegelii* hort. in Hamb. Gartenz. II (1846) 8, and *D. speciosa* Brongn. in Rev. Hortic. Ser. II. IV (1845—46) 133. They are not quoted by Bentham in 1863.

2. Flower-heads and leaves small; bracts lanceolate.
D. microcephala Bartl.

b. Upperside of the leaves glabrous or only slightly tomentose, underside tomentose, tomentum consisting of both coarser and smaller (shorter) stellate hairs.
1. Flower-heads and leaves large; outer floral bracts oblong-triangular, inner ones oblong..... D. Dampieri Desf.
2. Flower-heads and leaves small; outer floral bracts rather narrow, inner ones narrow-lanceolate.
D. Drummondii (Benth.) comb. nov.

c. Upperside of the leaves with coarse black stellate hairs; the same black hairs rather densely placed along the nerves on the underside, more scattered on the other parts.
D. Andrewsii n. sp.

Diplolæna grandiflora Desf., in Mém. Mus. de Paris III (1817) 45, tab. 19; Benth. Fl. Austr. I (1863) 358.

Of this species I have seen DESFONTAINES' specimens in the Herbarium of Copenhagen. In Kew Herb. there are specimens, probably from the same source, viz. "Nouv. Holl. côte occ., îles stériles, Voy. aux Terres australes, Capt. Baudin. 1801"; further the following: Dick Hartog's Isl., Voy, of H. M. S. Herald, Milne, and Shark's Bay, Capt. Denham. In the Herb. of the British Museum there are specimens from Shark's Bay (M. Leschenault); Houtmanns Abrolhos (Wickham & Stokes, 1840) and Dick Hartog's Island (A. Cunningham, Jan. 1822). Some specimens from Champion Bay (Burges) differ in the nearly glabrous upperside of the leaves and are perhaps better placed under *D. Dampieri.*

From these data it appears that *D. grandiflora* inhabits the more tropical parts of the west coast of W. A.

Diplolæna Dampieri Desf., in Mém. Mus. de Paris III (1817) 452, tab. 20; Hooker, Botan. Magaz. (1844) tab. 4059; Benth. Fl. Austr. I (1863) 358.

This species seems to be distributed along the whole

west coast from Cape Leeuwin to Murchison River. I have seen the following specimens: Yallingup Cave, near the sea (Ostenfeld, No. 736, 26. Sept. 1914); Yallingup and Cape Naturaliste (A. Dorrien-Smith, 1910); Fremantle (Oldfield); Busselton (F. Stoward, 1917, Nr. 926); Between Perth and K. Georges' Sound (Harvey, 1854); Swan River (Drummond; Mr. Mylne); Geraldton, on dunes (Ostenfeld, No. 735, 28. Oct. 1914); Nouv. Holl. (ded. Desfontaines); Rottnest Island (Gould, from Gilbert, Aug. 1839); Shark's Bay (M. Leschenault).

Diplolæna Drummondii (Benth.) Ostf. nov. comb.; *D. microcephala*, var. *Drummondii* Benth., Fl. Austr. I (1863) 358.

I consider Bentham's variety of *D. microcephala* to be a separate species. The tomentum of the leaves consists of a dense clothing of coarser and smaller hairs on the underside and a ± dense clothing of smaller hairs on the upper side, as well as on the outer side of all bracts. The bracts are rather narrow, lanceolate and subacute. The flower heads are small.

Of this species I have seen the following specimens (all in the British Museum and Kew Herb.): Swan River (Drummond, 1839, no. 91); Vicinity of Fremantle (Gilbert, 1842, no. 180); Gravelly and rocky places in Darling Range, Smith Mill, 17 miles E. of Perth (Cecil Andrews, 8. Nov. 1902, 1st coll. no. 110, sub. nom. *D. Dampieri*); Between Perth and K. George's Sound (Harvey 1854, sub nom. *D. microcephala*); Mittlers Creek (Maxwell); Darling Range (Collie); Distr. Wellington, in silvis subumbrosis mont. Darling Range (E. Pritzel, X. 1901, no. 799, sub nom. *D. microcephala*).

This species seems to be distributed from Swan River southwards, but not along the coast, more on the slopes of the mountains.

Diplolæna microcephala Bartl. in Pl. Preiss. I (1844) 173; Benth. Fl. Austr. I (1863) 358.

Of this species, which has the same uniform and dense tomentum as *D. grandiflora*, I have seen OLDFIELD's specimens from Murchison R. (in Kew. Herb.) and (in the British Museum) specimens from Wangoa Hills (Gilbert, 1842, No. 229), from Fenterden (Aug. 1916, F. Stoward, No. 927), Kellerberrin (July 1914, F. Stoward, No. 928), and Dowerin (July 1917, F. Stoward, No. 929).

Diplolæna angustifolia Hook. in Bot. Magaz. (1844) under No. 4059; Benth. Fl. Austr. I (1863) 358; *D. salicifolia* Bartl. in Pl. Preiss. I (1844) 173.

Seems to be a very distinct species, easily recognisable by its linear leaves. I have seen Preiss' No. 2020 upon which BARTLING described his *D. salicifolia*. Further (in Herb. Kew. and British Museum) specimens from Swan River (Drummond), from near Fremantle (Gilbert, Aug. 1839), and from S. W. Australia (I. S. Roe). They probably all came from the Swan River district.

Diplolæna Andrewsii Ostf. nov. sp. Folia oblongo-obovata, obtusa, supra pilis stellatis nigris numerosis, subtus pilis stellatis nigris præcipue ad nervos dense tecta; capitula admodum parva, bracteæ exteriores late ovatæ pilis stellatis tectæ, interiores longiores, obtusæ, ellipticæ, brunneæ marginibus angustis membranaceis.

This new species is easily distinguished by the peculiar tomentum of coarse black stellate hairs. It is in the Kew Herb. and in the British Museum with the following notes: "*Diplolæna* sp., Among granite rocks in Darling Range, Swan View, 14 m. NE. of Perth, 10. Oct. 1901 (Cecil Andrews, Fl. of W. Austr., 1st Coll. No. 109). Probably a var. of *D.*

microcephala Bartl., but the bracts are more like those of *D. grandiflora* Desf. Shrub of 2—3 feet."

I have named it in honour of the discoverer Mr. Cecil Andrews, Director of Education, Perth, who has contributed much to our knowledge of the flora of W. Australia.

Tremandraceæ.

Tetratheca platycaula (Benth.) comb. nov.; *T. affinis* var. *platycaula* Benth. Fl. Austr. I (1863) 133; Diels u. Pritzel, Bot. Jahrb. 35 (1904) 330.

Differt a *T. affini* caulibus alatis usque ad 8 mm latis, florumque dimensionibus majoribus etc. (Fig. 12, 2).

Jarnadup, south of Bridgetown (No. 1092; 3. Oct. 1914); common along the Bridgetown railway line.

As Bentham (l. c.) has pointed out, his var. *platycaula* differs from *T. affinis* in broader winged branches, larger flowers, and 4 ovules in each cell of the ovary. I feel convinced that it is an independent species which is well separated from the true *T. affinis* Endl. (which I have collected at Albany, No. 1096, 21. Oct. 1914; see Fig. 12, 1).

T. platycaula inhabits the rich forest country of the Blackwood district, while *T. affinis* has its home in the coastal area of the south.

Tetratheca hirsuta Lindl. Swan Riv. App. Bot. Reg. (1839) 38; Bot. Reg. (1844), tab. 67; Benth. Fl. Austr. I (1863) 134; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 330.

Mundaring Weir, Darling Range (No. 1093; 13. Sept. 1914); Vicinity of Perth (No. 1356; Mrs. Davis, 1915).

var. **epilobioides** (Steetz) Diels u. Pritzel, Botan. Jahrb. 35 (1904) 330; *T. epilobioides* Steetz, in Pl. Preiss. I, 2 (1844) 218.

Fig. 12. *1. Tetratheca affinis* Endl. *2. Tetratheca platycaula* (Benth.) Ostf. ($^7/_{12}$ nat. size).

Vicinity of Perth (No. 1355; Mrs. Davis, 1915).

Differs from the main species in smaller and narrower leaves and smaller flowers.

Tremandra diffusa R. Br., in D. C. Prodrom. I (1824) 344; Benth. Fl. Austr. I (1863) 137.

Jarnadup, south of Bridgetown (No. 1130; 2. Oct. 1914).

A decumbent diffuse shrub with dull-red sepals and white petals. The specimens collected are more stellate-hairy than usual, according to the description by Bentham (l. c.).

Euphorbiaceæ.

Euphorbia terracina L. Sp. pl. ed. 2 (1762) 654.

Geraldton, on the dunes, an erect annual (No. 402; 28. Oct. 1914).

This Mediterranean species was found in numbers in the same dune area where also *Asphodolus fistulosus* L. (see p. 18) was present.

Celastraceæ.

Psammomya chorethroides (F. v. Müll.) Diels et Loesener, in Botan. Jahrb. 35 (1904) 340, fig. 41; *Logania ch.* F. v. Müll., in Vict. Naturalist VI (1889) 118.

Tammin, heath (No. 295; 6. Oct. 1914).

This interesting aphyllous shrub was rediscovered by me in the same locality where Diels and Pritzel collected it.

Stackhousiaceæ.

The recent monograph by R. Pampanini and G. Bargagli-Petrucci (Bull. l'Herb. Boissier, 2. ser., vol. V, 1905) has been consulted.

Stackhousia Brunonis (Endl.) Benth. seems to be a very variable species or, more probably, an aggregate of species, but the forms in my collection do not fit in with the varieties given by Pampanini (l. c. pp. 1152—1153).

Rhamnaceæ.

Trymalium spathulatum (Labill.) comb. nov.; *T. Billardieri* Fenzl, in Huegel, Enum. pl. (1837) 75; Benth. Fl. Austr. I (1863) 423; *Ceanothus spathulatus* Labill., Pl. Nov. Holl. I (1804) 60, tab. 84.

Yallingup Cave (No. 733; 28. Sept. 1914).

According to the rules of nomenclature it is necessary to take up LABILLARDIÈRE's earlier species name for this well-known shrub.

var. **tomentosum** Reissek, in Pl. Preiss. II (1848) 282; *T. Bill.*, var. *hirsutum* Benth., Fl. Austr. I (1863) 424; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 352.

Darlington (No. 732; 28. Aug. 1914, Cecil Andrews).

This variety seems well separated from the main species.

Cryptandra arbutiflora Fenzl, in Huegel, Enum. pl. (1837) 26; Benth. Fl. Austr. I (1863) 444.

Vicinity of Perth (No. 729; Aug. 1914); Kalamunda (29. July 1914, Gunnar Andersson).

Cryptandra tubulosa Fenzl, in Huegel, Enum. pl. (1837) 26; *C. arbutiflora*, var. *tubulosa* Benth. Fl. Austr. I (1863) 444.

Perth, King's Park (No. 943; 10. Sept. 1914).

I think this plant ought to be considered a separate species (se Fig. 13, 2) which differs from *C. arbutiflora* (Fig. 13, 1) in the longer and more slender calyx tube and the narrower and longer leaves etc.

Malvaceæ.

Modiola caroliniana (L.) G. Don, Gen. Syst. I (1831) 466.

Yallingup Cave, damp places along a rivulet, flowers redbrown (No. 562; 27. Sept. 1914).

Fig. 13. *1. Cryptandra arbutiflora* Fenzl. (Preiss' No. 465). 2. *Cryptandra tubulosa* Fenzl. (7/12 nat. size).

This American species has spread as a weed to many foreign countries, but has not before been recorded from W. Austr.

Plagianthus repens Sp. Moore, in Journ. Linn., Soc. vol. 34 (1899) 179.

Kalgoorlie (No. 560; 7. Oct. 1914).

Sida intricata F. v. Müll., in Trans. Phil. Soc. Vict. I (1860) 19, ex Benth. Fl. Austr. I (1863) 193.

Kalgoorlie (No. 565; 7. Oct. 1914).

A plant which answers well to this species as represented in the Kew Herb., but rather coarser than usual, was collected in the arid area near Kalgoorlie.

Sida spinosa L. Sp. pl. (1753) 683; Benth. Fl. Austr. I (1863) 196; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 363.

Carnarvon, on the dunes near the jetty (No. 559; 31. Oct. 1914); Onslow, Mouth of Ashburton River (Alex. Morrison, 13. Oct. 1905; Kew Herb.).

This is a further southward extension of the geographical range of this common tropical weed.

Sida Hookeriana Miq., in Pl. Preiss. I (1844) 242; Benth. Fl. Austr. I (1863) 197.

Yallingup Cave, on open soil in the forest (Nos. 563 and 564; 26. Sept. 1914).

It occurs both in an erect and in a prostrate form; the flowers are white, the corolla slightly longer than the calyx.

Cienfugosia hakeifolia (Giord.) Hochreutiner, in Ann. Conserv. et Jard. bot. Genève VI (1902) 56; *Fugosia h.* Hook.; Benth. Fl. Austr. I (1863) 220.

Geraldton, common on the dunes (No. 561; 28. Oct. 1914).

HOCHREUTINER (l. c.) has transferred the pretty *Fugosia hakeifolia*, a dominant feature of the dune area, to the genus *Cienfugosia* Cav.

Sterculiaceæ.

Guichenotia ledifolia J. Gay, in Mém. Mus. Paris VII (1821) 449; Benth. Fl. Austr. I (1863) 258; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 377.

Yallingup Cave, among shrubs (No. 768; 28. Sept. 1914).

This locality forms a link between the area of occurrence farther north and that in the district of Eyre.

Thomasia cognata Steud., in Pl. Preiss. I (1844) 232; Benth. Fl. Austr. I (1863) 254; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 375.

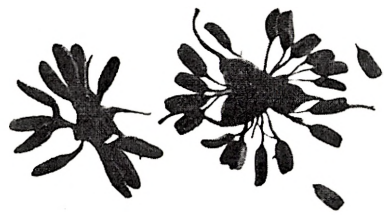
Yallingup Cave, among shrubs near the sea (No. 767; 26. Sept. 1914).

Dilleniaceæ (determ. by Carl Christensen and C. H. Ostenfeld).

Hibbertia inconspicua Ostf. nov. sp. (Pl. X, Fig. c, and Textfig. 14, b).

Sect. *Cyclandra*. Fruticulus erectus vel adscendens, 30—

35 cm altus, omnino papillis minutis acutis vel pilis minutis brevissimis densissimisque tectus; præter papillas pili longi villosi patentes in caulibus, pedunculis et sepalorum partibus exterioribus obsiti. Folia oblongo-obovata, usque ad 15 mm longa, basin versus angustata, subsessilia, subcoriacea, intergerrima, obtusa, supra (matura saltem) epilosa, subtus et ad margines pilis longis albis subappressis ornata. Flores singuli in axillis, et foliis et bracteis brunneis membranaceis instructi, pedunculati (pedunculi ca. 5—10 mm longi). Sepala 5 ovata, exteriora acuminata vel acuta, interiora subobtusa. Petala obovato-obcordata, emarginata, dimidio sepalis longiora. Stamina libera, ca. 20, staminodia non observata; carpelli 3 glabri; styli filiformes, staminibus paullo longiores. Fructus ignoti.



a *b*

Fig. 14. Stamens and carpels of *a*, *Hibbertia pulchra* Ostf. and *b*, *Hibbertia inconspicua* Ostf. (photo.; about $^{8}/_{1}$ nat. size).

Ex affinitate *H. potentilliflorœ* F. v. Müll., sed differt: planta in omnibus partibus minor, tomentum diversum, pedunculi breviores, carpellorum numerus diversus etc.

Jarnadup, south of Bridgetown (No. 310; 2. Oct. 1914).

After having compared this plant with the rich material of *Hibbertia* at Kew I find it a hitherto undescribed species which is nearest to the much coarser *H. potentilliflora* F. v. Müll.

Hibbertia pulchra Ostf. nov. sp. (Pl. X, Fig. a and Textfig. 14 a).

Sect. *Candollea*. Fruticulus gracilis multiramosus erectus

vel adscendens, 25—30 cm altus, glaber, ramis virgatis. Folia subcoriacea, oblongo-linearia vel spathulata, obtusa, ad 15 mm longa, subtus (saltem in sicco) nervo mediano crasso instructa, superficie punctis minimis ornata. Flores singuli, in axillis sessiles, foliis 3 minoribus et bracteis 3 ovato-cordatis acuminatis brunneo-membranaceis ciliolatisque instructi. Sepala 5 glabra vel apicem versus parce ciliolata, late ovata, acuminata, brunneo-membranacea parte mediana atrobrunnea. Petala late obovata, quam sepala longiora. Stamina 2 libera, reliqua in 3 fasciculis trigeminis posita. Carpella 3, ad basin paullo cohærentes, glabri, styli filiformes staminibus sub-æquilongi.

Ex affinitate *H. teretifoliæ* Turcz., sed differt: folia sparsiora, majora et latiora, flores majores, etc.

Palgarup, south of Bridgetown (No. 309; 2. Oct. 1914).

This little pretty and richly flowering shrub has perhaps been confused with *H. teretifolia* from which it seems well distinguishable. It was met with in several places on the railway in the Bridgetown district.

Hibbertia teretifolia (Turcz.) F. v. Müll. Fragm. Phytogr. Austr. IV (1864) 117; *Candollea t.* Turcz. in Bull. Moscou (1849) 7; Benth. Fl. Austr. I (1863) 43.

Vicinity of Perth (No. 1360, 1915, Mrs. Davis). (Pl. X, fig. b).

From the rich material present in Kew Herb. it seems as if two species are hidden under the name of *H. teretifolia;* and a revision of the whole material and comparison with the species of *Pleurandra* described by Steetz in Pl. Preiss. I (1844, pp. 264—265) will probably result in the revival of some of Steetz's species. Perhaps also the new species described above is to be found under one of Steetz's

names; but I have no access to the nos. of Pl. Preiss. in question.

Hibbertia grossulariifolia Salisb. Parad. Lond. t. 73 (1806); Botan. Magaz. tab. 1218; Benth. Fl. Austr. I (1863) 37.

Yallingup Cave (No. 313; 26. Sept. 1914), a prostrate undershrub (sometimes creeping); in the open forest, on sandy soil.

Hibbertia Cunninghamii Aiton, in Hook. Bot. Magaz., tab. 318 (1832); Benth. Fl. Austr. I (1863) 39.

Yallingup Cave (No. 312; 26. Sept. 1914), in the open forest; a slender undershrub, partly decumbent.

Hibbertia stellaris Endl., in Huegel, Enum. pl. (1837) 3; Benth. Fl. Austr. I (1863) 41.

Palgarup, south of Bridgetown (No. 311; 1. Oct. 1914), in damp places, common.

Hibbertia tetrandra (Lindl.) Gilg, in Engler u. Prantl, Natürl. Pflanzenfam. III, 6 (1895) 118; *Candollea tetrandra* Lindl. Bot. Reg. (1842) misc. 39, and (1843) tab. 50; Benth. Fl. Austr. I (1863) 42.

Yallingup Cave (No. 308; 26. Sept. 1914), an erect shrub.

Hibbertia subvaginata (Steud.) comb. nov.; *H. polygonoides* F. v. Müll. Fragm. Phytogr. Austr. IV (1864) 116; *H. glaberrima* (Steud.) Gilg, in Engler u. Prantl. Natürl. Pflanzenfam. III, 6 (1895) 118; *Candollea subvaginata* Steud., in Pl. Preiss. I (1844) 275; *C. glaberrima* Steud, ibid. 274; Benth. Fl. Austr. I (1863) 45; non *Hibbertia glaberrima* F. v. Müll., l. c. III (1862) 1.

Environs of Perth (No. 304; 9. Aug. 1914, leg. E. Dorph-Petersen).

The synonymy of this species is rather confused, but it seems to us that according to the rules of international nomenclature it must bear the name *H. subvaginata* (Steud.).

Hibbertia montana Steud., var. **major** Benth. Fl. Austr. I (1863) 35; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 384.

Darlington (No. 302; 28. Aug. 1914, Cecil Andrews).

This variety is very different from the true *H. montana*, and ought perhaps be taken as a separate species.

Frankeniaceæ, see »Contr. W. Austr. Bot. II« (1918), where I have given a revision of the W. Australian species of the genus **Frankenia.**

Violaceæ.

Jonidium calycinum (D. C.) Steud. Nomencl. bot. II (1840) 813; Benth. Fl. Austr. I (1863) 104; *Hybanthus calycinus* F. v. Müll., Fragm. Phytogr. Austr. X (1877) 81.

This species is common around Perth, growing in sandy places of the open forest. It extends southwards in the coastal region, e. g. found at Yallingup Cave (No. 828; 29. Sept. 1914).

By Bentham (l. c.) it is given as "a glabrous perennial", but in several specimens examined by me, the leaves are covered (more or less sparingly) with short and thick white hair-papillæ, especially along the margins (No. 826, Vicinity of Perth, Cecil Andrews, Aug. 1914; No. 828 (partly), Yallingup Cave, Sept. 1914); otherwise these specimens do not differ from the typical form.

Jonidium debilissimum F. v. Müll., Fragm. Phytogr. Austr. XI (1878) 4, ut syn. sub *Hybantho;* Diels u. Pritzel, in Botan. Jahrb. 35 (1904) 391.

Jarnadup, south of Bridgetown (No. 429; 2. Oct. 1914).

This species seems to be restricted to the most rainy region (the south coast and adjoining districts). Kew Herb. has it from Lowden (Max Koch, No. 2003, 1910, in silvis umbrosis).

Thymelæaceæ.

Pimelea spectabilis Lindl. Bot. Reg. (1841) tab. 33; Benth. Fl. Austr. VI (1873) 9.

Yallingup Cave, in forest (No. 784; 27. Sept. 1914, flowers white); Mundaring Weir (No. 782; 13. Sept. 1914, flowers pale-rose).

Pimelea rosea R. Br. Prodr. Fl. Nov. Holl. (1810) 360; Benth. Fl. Austr. VI (1873) 10; Botan. Magaz. tab. 1458; *P. Hendersonii* Graham in Botan. Magaz. tab. 3721.

The white flowered form is present in the Swan district (No. 783; 13. Sept. 1914, Mundaring Weir); rose-coloured flowers are found farther towards the south: Yallingup Cave (Nos. 786 (light pink) and 788 (dark pink); 26. Sept. 1914).

var. **calocephala** Meissn. in Pl. Preiss. I (1845) 602.

This pretty variety ought perhaps to be elevated to specific range, but I leave it for closer examination.

Vicinity of Perth (No. 1369; 1915, leg. Mrs. M. Davis).

It seems to be restricted to the Swan district.

Pimelea angustifolia R. Br. Prodr. Fl. Nov. Holl. (1810) 360; Benth. Fl. Austr. VI (1873) 13; Diels u. Pritzel, in Botan. Jahrb. 35 (1904) 394.

Tammin; heath (No. 790; 6. Oct. 1914).

The specimens are very interesting by the much thickened corky bark of the stem-bases (see p. 56).

Pimelea physodes Hook. Icon. pl. tab. 865 (1852); Benth. Fl. Austr. VI (1873) 5; Diels u. Pritzel, l. c. 395.

Qualup, a railway station between Katanning and Donnybrook (No. 1336; 20. July 1915, leg. E. Douglas).

This extraordinary species was sent me under the name of "Qualup Bells".

Pimelea imbricata R. Br. var. **nana** (Grah.) comb. nov.; *P. imbr.* var. 3, *piligera* Benth. Fl. Austr. VI (1873) 21; *P. nana* Graham, in Edinb. New. Phil. Journ. 29 (1840) 174.

Near Cannington (No. 787; 22. Sept. 1914, E. Dorph-Petersen); Tammin (No. 780; 6. Oct. 1914).

It seems necessary to change BENTHAM's varietal name for the much earlier *P. nana* Graham.

Pimelea Gilgiana E. Pritzel, in Botan. Jahrb. 35 (1904) 396, fig. 46. (Determ. by Dr. L. Diels).

Geraldton, amongst the dunes (No. 775; 28. Oct. 1914), in fruit.

This species was described by E. PRITZEL (l. c.) from flowering specimens from the same area.

Pimelea longiflora R. Br. Prodr. Fl. Nov. Holl. (1810) 361; Benth. Fl. Austr. VI (1873) 34.

Palgarup, south of Bridgetown, swampy ground (No. 789; 2. Oct. 1914).

Lythraceæ.

Lythrum hyssopifolia L. Sp. pl. (1753) 447; Benth. Fl. Austr. III (1866) 299; F. v. Müller and A. Morrison, in W. Austr. Yearbook (1902) 319.

Near Bayswater, in a damp place not far from Swan River (No. 1122; 18. Oct. 1914).

The species is usually an annual, but my specimens show that under favourable conditions it may become a perennial.

Nyctaginiaceæ.

Boerhaavia plumbaginea Cavanil. Icon. et descript. pl., II (1793) 7, tab. 112; *B. repanda* Willd. sp. pl. I (1797) 22; Benth. Fl. Austr. V (1870) 228.

A plant which agrees with this species was collected at Geraldton (No. 628; 28. Oct. 1914).

Oenotheraceæ.

Epilobium junceum Soland., in Forst. Prodr. app. (1786) 90; Haussknecht, Monogr. Epilob. (1884) 238; *E. glabellum* F. v. Müller, 2. Cens. Austr. Pl. (1889) 84.

A plant collected at Albany, King George's Sound (No. 629; 21. Oct. 1914) belongs to var. **canescens** (Huegel) Hausskn. l. c. (p. 240) (= *E. canescens* Huegel, in Enum. pl. Hueg. (1837) 44).

Myrtaceæ (determ. by Dr. L. Diels; *Eucalyptus* by I. H. Maiden).

Verticordia stylotricha Diels, in Engler, Bot. Jahrb. 35 (1904) 403.

Tammin, sandy heath (No. 568; 6. Oct. 1914).

Chamæleucium megalopetalum F. v. Müll., in Benth. Fl. Austr. III (1866) 38.

Albany (No. 1408; 29. Aug. 1915, Mr. E. Douglas).

Calythrix breviseta Lindl. Swan Riv. App. Bot. Reg. (1839) 5; Benth. Fl. Austr. III (1866) 43.

Tammin (No. 595; 6 Oct. 1914, "forma microphylla").

Calythrix brevifolia Meissn., in Journ. Linn. Soc. I (1857) 46; Benth. Fl. Austr. III (1866) 45.

Moora (No. 1430; 25. Sept. 1915, Miss G. Davis).

Thryptomene Davisiæ Diels nov. sp.

Frutex gracilis, multiramosus ramulis ultimis tenuibus gracilibus cortice pallide cinereo vel albido obtectis. Folia brevissime petiolata, crassa, oblongo-obovata, ± erecta, apice extrorsum patentia, 2.8—4 mm longa, 1.2—1.5 mm lata. Flores sessiles, bracteolis 2 præter medianam scarioso-petaloideis tubo longioribus præditi. Calycis tubus turbinatus, circ. 15-costatus, omnino adnatus, 1.5 mm longus, lobi subreniformes, scarioso-petaloidei, persistentes, 1.5 mm longi, 2.5 mm lati. Petala roseo-albida, 2.5 mm longa, 3 mm lata, persistentia. Stamina 10, incurva, filamentis quam antheræ atro-purpureæ duplo longioribus. Ovula 4.

Species nova *Th. proliferæ* Turcz. affinis, sed floribus sessilibus, bracteolis majoribus, tubo conspicue multicostato, petalis quam lobi calycini majoribus distincta est. A *Th. Johnsonii* foliis angustioribus, longioribus, petalis majoribus, ovulis 4 distat.

Moora (No. 1429; 25. Sept. 1915, Miss G. Davis).

Scholtzia oligandra F. v. Müll., in Benth., Fl. Austr. III (1866) 70.

Moora (No. 1428; 25. Sept. 1915, Miss G. Davis).

Bæckea pulchella D. C. Prodr. III (1828) 230; Benth. Fl. Austr. III (1866) 86.

Tammin (No. 597; 6. Oct. 1914).

The specimens agree with the specimens preserved in the Kew Herb. under the name of *B. pulchella* D. C. (note by C. H. O.).

?Bæckea pachyphylla Benth. Fl. Austr. III (1866) 85.

Tammin (No. 598; 6. Oct. 1914).

I refer some sterile specimens of a *Bæckea* with doubt to this little known species. The leaves agree well with the leaves of *B. pachyphylla* in the Kew Herb. (note by C. H. O.).

Agonis linearifolia Schauer, in Pl. Preiss. I (1844) 118; Benth. Fl. Austr. III (1866) 98.

Seems to vary rather much with regard to the hairiness of the shoots (note by C. H. O.).

Kunzea micrantha Schauer, in Pl. Preiss. I (1844) 125; Benth. Fl. Austr. III (1866) 112.

Armadale, damp soil (No. 599; 20. Sept. 1914).

Kunzea sericea Turcz., Bull. Mosc. (1847) 162; Benth. Fl. Austr. III (1866) 117.

Waddouring (No. 591; Oct. 1914, Mr. Drummond).

Melaleuca radula Lindl. Swan Riv. App. Bot. Reg. (1839) 8; Benth. Fl. Austr. III (1866) 141; Diels, in Engl. Bot. Jahrb. 35 (1904) 427.

Tammin, heath (No. 627; 6. Oct. 1914), "sed spicis sublateralibus a typo diversa" (Diels scrips.).

Melaleuca hamulosa Turcz., Bull. Mosc. (1847) 165; Benth. Fl. Austr. III (1866) 146; Diels, in Engl. Botan. Jahrb. 35 (1904) 428.

Tammin, heath (No. 1116; 6. Oct. 1914). The specimens are sterile and bear numerous globose galls of the size of a small pea (note by C. H. O.).

Melaleuca uncinata R. Br., in Ait. Hort. Kew. ed. 2, IV (1812) 414; Benth. Fl. Austr. III (1866) 150; Diels, in Engl. Bot. Jahrb. 35 (1904) 428.

Tammin (No. 586; 6. Oct. 1914).

Melaleuca depressa Diels, in Engl. Botan. Jahrb. 35 (1904) 428.

Geraldton, on the dunes (No. 613; 28. Oct. 1914).

Eucalyptus. The best authority on this difficult genus Mr. I. H. MAIDEN, F. R. S., has been kind enough to name my Eucalypts of which I sent him duplicate specimens. Some of my Nos. are referred to in the recently published parts of his large work on *Eucalyptus*. Only the rarer and more critical species are mentioned here.

Eucalyptus gracilis F. v. Müll., var. **yilgarnensis** (Diels) Maid. Crit. Revis. Eucalyptus vol. IV. 9 (XXXIX) (1919) 265; *E. calycogona* Turcz. var. *gracilis* Maid., ibid. III (1903) 81, pl. 12.

Tammin, a "Morrel Gum" (No. 511; 6. Oct. 1914, with ripe fruits and big flower buds).

Eucalyptus Le Souefii Maid., Crit. Revis. Eucalyptus XVI (1912) 187, pl. 69, figs. 5—7.

Kalgoorlie (No. 515; 7. Oct. 1914, with big flower buds).

This recently described species is only known from Kalgoorlie, Coolgardie and Kurrawang (Maiden, l. c.).

Eucalyptus megacarpa F. v. Müll. Fragm. Phytog. Austr. II (1860) 70; Benth. Fl. Austr. III (1866) 232; F. v. Müll., Eucalyptographia 6 (1880); Maiden, Crit. Revis. Eucalyptus XVIII (1913) 246, pl. 78 figs. 4—8.

Yallingup Cave, a tree with whitish bark (No. 508; 27. Sept. 1914, with old fruits).

Eucalyptus Oldfieldii F. v. Müll. Fragm. Phytogr. Austr. II (1860) 37; Benth. Fl. Austr. III (1866) 237; F. v. Müll., Eucalyptographia 7 (1880); Maiden, Crit. Revis. Eucalyptus XVII (1912) 223, pl. 73, fig. 11, pl. 74, figs. 1—11; vol. V. I (= XLI) (1920) 21.

Tammin, a "Mallee Gum" (No. 512; 6. Oct. 1914, with ripe fruits).

Eucalyptus transcontinentalis Maiden, in Journ. R. Soc. N. S. Wales, 53 (1919) 58; *E. oleosa* F. v. Müll. var. *glauca* Maiden, Journ. W. Austr. Nat. Hist. Soc. III (1911) 171; Crit. Revis. Eucalyptus XV (1912) 167, pl. 66, figs. 6—15.

Kalgoorlie (No. 514; 8. Oct. 1914, with ripe fruits; No. 521; 8. Oct. 1914, with yellow flowers).

Eucalyptus erythronema Turcz., in Bull. Phys. Math. Acad. Petersbourg, 10 (1852) 337; F. v. Müll., Eucalyptographia 8 (1882); Maiden, Crit. Revis. Eucalyptus XXII (1914) 23, pl. 93, figs. 1—3; *E. conoidea* Benth. Fl. Austr. III (1866) 227.

Tammin, a tall shrub (No. 517; 6. Oct. 1914, in full flower).

Eucalyptus cladocalyx F. v. Müll., in Linnæa 25 (1852) 388; Maiden, Crit. Revis. Eucalypt. vol. IV. 6 (= XXXVI) (1919) 161, pl. 151; *E. corynocalyx* F. v. Müll. Fragm. Phytogr. Austr. II (1860) 43; Benth. Fl. Austr. III (1866) 218.

Armadale, a tree with white and smooth bark; planted (No. 502; 20. Sept. 1914, with ripe fruits).

Eucalyptus rudis Endl., in Huegel, Enum. Pl. (1837) 49; Benth. Fl. Austr. III (1866); Maiden, Crit. Revis. Eucalypt. vol. IV, 3 (XXXIII) (1917) 75, pl. 138.

Bridgetown (No. 509; 1. Oct. 1914); Armadale (No. 505; 20. Sept. 1914).

Halorrhagaceæ.

Halorrhagis pithyroides (Nees) Benth. Fl. Austr. II (1864) 476; Schindler, in Engler, Das Pflanzenreich IV, 225 (1905) 37.

Bayswater, sandy heath (No. 641; 18. Oct. 1914).

Halorrhagis tenuifolia Benth. Fl. Austr. II (1864) 477; Schindler, l. c. 54.

Vicinity of Perth (No. 643; 25. Oct. 1914, E. Dorph-Petersen).

Umbelliferæ.

Hydrocotyle callicarpa Bunge, in Pl. Preiss. I. 2 (1844) 283; Benth. Fl. Austr. III (1866) 343; *H. tripartita* Hook. f., Icon. pl. tab. 312, non R. Br.

Bayswater, in a swamp (No. 809; 18. Oct. 1914); Yallingup Cave, open place in the forest (No. 810; 26. Sept. 1914).

The specimens collected differ from the description by the erect and hairy stems, but not otherwise.

Hydrocotyle hispidula Bunge, in Pl. Preiss. I. 2 (1844) 283; Benth. Fl. Austr. III (1866) 343.

Yallingup Cave, sandy and open places in the forest (No. 807; 27. Sept. 1914).

Seems to be a rather rare species. Kew has specimens from Cottesloe near Perth (Cecil Andrews; 10. 9. 1902).

Hydrocotyle diantha D. C. Prodr. IV (1830) 63; Benth. Fl. Austr. III (1866) 345.

Bayswater, damp places (No. 805; 18. Oct. 1914); Yallingup Cave, wet places along a rivulet (No. 806; 27. Sept. 1914).

Hydrocotyle blepharocarpa F. v. Müll., Wing's Science Record for July 1883, Sep. p. 1 (seen in the Kew Herb.);

Diels u. Pritzel, Bot. Jahrb. 35 (1904) 451; Domin, Beih. Bot. Centralbl. XXIII Abt. 2 (1908) 293.

Yallingup Cave (No. 808; 26. Sept. 1914).

This is a true *Hydrocotyle*, and Domin (l. c.) is right when he leaves it under this genus and does not transfer it to the genus *Neosciadium* Dom.

Homalosciadium verticillatum (Turcz.) Domin, in Beih. Botan. Centralbl. XXIII, Abt. 2 (1908) 294; *Hydrocotyle verticillata* Turcz. in Bull. Soc. Nat. Mosc. XXII (1849) II, 28; Benth. Fl. Austr. III (1866) 346; *H. homolocarpa* F. v. Müll. Fragm. Phyt. Austr. II (1861) 129.

Yallingup Cave (No. 802; 26. Sept. 1914); Albany (No. 803; 21. Oct. 1914), and Armadale (23. Sept. 1914).

This little plant seems to be fairly common in open places in the sandy forest of the coast region.

Didiscus pilosus (Sm.) Domin, in Sitz.ber. k. Böhm. Gesellsch. d. Wiss. Prag (1908) 31; *Trachymene pilosa* Sm., in Rees' Cyclop. Suppl. XXXIX (1819); Benth. Fl. Austr. III (1866) 348.

In the treatment of the genus *Didiscus* D. C. (*Trachymene* Rudge, ex parte) I have followed K. Domin's monograph quoted above.

This is a common species.

At Geraldton (No. 796; 28. Oct. 1914) I collected a low form of it, which seems to correspond well with var. **Preissii** (Bunge) Domin l. c. (*Dimetopia P.* Bunge, in Pl. Preiss. I (1844) 284).

Didiscus cyanopetalus (Benth.) F. v. Müll., Fragm. Phyt. Austr. IX (1875) 46; Domin, l. c. 33; *Trachymene c.* Benth. Fl. Austr. III (1866) 348.

Vicinity of Perth (No. 1353; Mrs. M. Davis, 1915).

The specimens agree with the description of var. *ciliatulus* Dom. (l. c. 34).

Didiscus ornatus (Endl.) Domin, l. c. 35; *Cesatia ornata* Endl. in Ann. Mus. Wien II (1838) 200; *Trachymene eriocarpa* Benth. Fl. Austr. III (1866) 348.

Vicinity of Perth (No. 1351; Mrs. Davis, 1915).

Didiscus Benthamii Domin l. c. 39; *D. pilosus* Benth., in Hueg. Enum. Pl. (1837) 54, in nota; *Trachymene australis* Benth. Fl. Austr. III (1866) 349, pro parte minori.

Northam (Febr. 1900, Hancock).

To this species I refer with some doubt some specimens collected at Northam and distributed by the Nat. Herb. of N. S. Wales as *D. glaucifolius* Sm.

Trachymene compressa (Labill.) Rudge, in Transact. Linn. Soc. X (1810) 300; Diels u. Pritzel, in Engler, Botan. Jahrb. 35 (1904) 453; *Siebera compressa* Benth. Fl. Austr. III (1866) 352, ex parte.

Albany, sandy soil (No. 818; 21. Oct. 1914).

Trachymene tenuissima (Benth.) F. v. Müll. Cens. (1882) 62; *Siebera tenuissima* Benth. Fl. Austr. III (1866) 354.

Jarnadup, south of Bridgetown (No. 817; 2. Oct. 1914).

Xanthosia tasmanica Domin, in Fedde, Repert. nov. spec. IV (1907) 298; *X. pusilla* β, Hook. fil. Fl. Tasman. I (1860) 156; *X. pusilla* Benth. Fl. Austr. III (1866) 361, ex parte minore.

Jarnadup, south of Bridgetown (No. 814; 2. Oct. 1914).

It is rather unexpected to find this Tasmanian species,

recently described by Domin, in W. Australia, but my plant agrees exactly with the specimens in the Kew Herb. from Tasmania (Georgetown, 21. Oct. 1842, Gunn, and Circular Head, 1837, Gunn), upon which Domin has founded the new species.

As far as I am able to judge Domin is quite right in creating a separate species upon this plant. As it appears from his description and remarks (l. c.), *X. tasmanica* differs in many respects from its nearest ally *X. pusilla*, e. g. in the much broader and glabrescent leaflets and the shape and size of the fruit.

Xanthosia candida Steud., var. **subtrilobata** nov. var. (Pl. XI, fig. 1).

Differt a typo foliis (infimis supremisque exceptis) trilobatis lobis integris acuminatis ± divaricatis.

Yallingup Cave, in open forest (No. 812; 26. Sept. 1914).

This variety which is perhaps an independent species, differs distinctly from the typical *X. candida* Steud. in the much shorter and trilobate leaves with more or less diverging side-lobes.

Daucus glochidiatus (Labill.) Fisch., Mey. et Avé-Lall. Ind. Sem. Hort. Petr. IX Suppl. 11, ex Hayward and Druce, Advent. Fl. of Tweedside (1919) 78; *D. brachiatus* Sieb. in D. C. Prodr. IV (1830) 214; Benth. Fl. Austr. III (1866) 376; *Scandix gloch.* Labill. Pl. Nov. Holl. I (1804) 75, tab. 102; *Caucalis gloch.* Poir.; D. C. Prodr. l. c. 216.

The species is widely distributed all over Australia. As to W. Austr. I have seen it both in the arid interior, Kalgoorlie (No. 821; 7. Oct. 1914), and near the coast of the S. W. corner, Yallingup Cave (No. 820; 27. Sept. 1914).

Petroselinum sativum Hoffm. Gen. Umbell. I (1814) 177.

Yallingup Cave, in open forest on rather naked soil (No. 819; 26. Sept. 1914).

A curious looking little plant, which grew amongst many other annuals near the Yallingup Cave in a place rather distant from houses, has puzzled me much. But I cannot find that it agrees with other Umbellifers than with the common garden plant *P. sativum*. As is evident from the figure (Pl. XI, Fig. 2) it has a rather unusual habit, the umbels being more or less axillary or rather very few-rayed. All the specimens had the same abnormal aspect.

IV. Dicotyledones, Sympetalæ.

Epacridaceæ (determ. by C. Christensen and C. H. Ostenfeld).

Astroloma stomarrhena Sond., in Pl. Preiss. I (1844) 301; Benth. Fl. Austr. IV (1869) 152; Diels u. Pritzel, in Botan. Jahrb. 35 (1904) 463.

Of this large-flowered species which is said to be rather rare (Diels u. Pritzei, l. c.), I have two Nos. (939, 940) from the neighbourhood of Perth.

Leucopogon verticillatus R. Br. Prodr. Fl. Nov. Holl. (1810) 541; Benth. Fl. Austr. IV (1869) 184.

Manginup, south of Bridgetown (No. 932; 1. Oct. 1914), flowers pink.

Leucopogon polymorphus Sond., in Pl. Preiss. I (1844) 309; Benth. Fl. Austr. IV (1869) 202; Diels u. Pritzel, in Bot. Jahrb. 35 (1904) 475.

This species is common around Perth on the low-lying sandy heaths. It varies much with regard to hairiness,

some specimens being glabrous or nearly so (Nos. 919, 923), some hairy (f. *hirsutus*) (No. 920; 23. Aug. 1914; E. Dorph-Petersen).

Leucopogon australis R. Br. Prodr. Fl. Nov. Holl. (1810) 541; Benth. Fl. Austr. IV (1869) 187.

Palgarup, south of Bridgetown (No. 931; 2. Oct. 1914); Collie (No. 929; 18. Sept. 1914, Cecil Andrews).

Leucopogon amplectens Ostf. sp. nov. (Fig. 15, 1).

1. 2.

Fig. 15. *1. Leucopogon amplectens* Ostf. *2. Leucopogon cucullatus* R. Br. (King George's Sound, leg. Harvey). (Nat. size).

Ex affinitate *L. cucullati* R. Br. et *L. sprengelioidis* Sond. Frutex erectus ramosissimus, ramulis glabris. Folia imbricata concavaque, adpressa, late suborbiculata, inferiora ca. 6 mm longa, 4—5 mm lata, superiora breviora 4—5 mm longa, 5—6 mm lata, brevissime subacuminata, carnosulo-coriacea, opaca, supra enervosa, subtus ± distincte nervosa, margine hyalino-cartilaginea, apice callosa. Spicæ in apicibus ramulorum plerumque simplices, paucifloræ; rachis puberula. Bracteæ late ovatæ, obtusæ, subecarinatæ, sepalis dimidio breviores, 1.2—2.4 mm longæ, brunnescentes. Sepala obtusa, margine ciliata, brunnescentia. Lobi corollæ ca. 1.5 mm longi, angusti, supra pilis albis dense hirsuti. Ceterum ut species affines.

Tammin, on sandy heath (No. 925; 6. Oct. 1914).

This new species differs from *L. cucullatus* (Fig. 15, 2) in the much broader, suborbiculate and subacute leaves and in smaller flowers, and from *L. sprengelioides* in much larger and broader leaves.

Lysinema ciliatum R. Br. var. **ericoides** Ostf. nov. var.

Differt a typo foliis brevissimis, ca. 3 mm longis, ca. 1 mm latis, adpressis, in ramulis brevioribus imbricatis, obtusis, oblongo-ovatis, dorso obtuse carinatis, supra concavis.

Tammin, on sandy heath (No. 937; 6. Oct. 1914).

This new variety is easily recognisable by its smaller leaves both on the main branches and on the shorter leafy sterile branches. It seems to take the place of the type when one comes somewhat farther in from the coastal region where the type is very common.

Besides the locality quoted above I have seen the variety in the Kew Herb. from the following places: Mount Churchman, R. Helms, 11. 1891 (Elder Explor. Exp.); Northam, Avon R., I. H. Gregory, 10. 2. 1900; Cowcowing, VIII, 1914. Max Koch, No. 1177; Interior S.W. Austr., I. S. Roe; S.W. Austr., Mr. Sarford, 1860.

Andersonia sprengelioides R. Br. Prodr. Fl. Nov. Holl. (1810) 554; Benth. Fl. Austr. IV (1869) 253; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 485.

I think it well worth keeping SONDER's species (in Plant. Preiss.) as varieties, as PRITZEL (l. c.) has done. Both their differences in characters and their different area of occurrence point that way. I have var. *Lehmanniana* (Sond.) Pritzel (l. c.) from Darlington (No. 915; 28. Aug. 1914, C. Andrews) and from Kalamunda (29. July 1914, Gunnar

Andersson), and var. *patens* (Sond.) Pritzel (l. c.) from Albany, wet soil (No. 917; 20. Oct. 1914).

Dracophyllum gracile R. Br. Prodr. Fl. Nov. Holl. (1810) 556; Benth. Fl. Austr. IV (1869) 264.

Palgarup, south of Bridgetown (No. 911; 2. Oct. 1914).

Dracophyllum capitatum R. Br. Prodr. Fl. Nov. Holl. (1810) 556; Benth. Fl. Austr. IV (1869) 264.

Collie (No. 913; 18. Aug. 1914, leg. Cecil Andrews).

Dracophyllum parviflorum F. v. Müll. in Benth. Fl. Austr. IV (1869) 265.

Albany, in a turfy swamp (No. 912; 20. Oct. 1914).

The specimens agree well with the description and also with specimens of *D. parviflorum* in the Kew Herb. But perhaps the plants are only slender and small flowered *D. capitatum* (certainly not *D. gracile* as suggested by F. v. Müller).

Primulaceæ.

Anagallis arvensis L. sp. pl. (1753) 148; Benth. Fl. Austr. (1869) 270, ex parte.

This weed was not rare in several places, e. g. Yallingup Cave (Nos. 1021—1022; 27.—29. Sept. 1914).

Anagallis foemina Mill. Gard. Dict. VIII ed. (1768); *A. arvensis* var. *foemina* Schinz et Thellung, Bull. Herb. Boiss. 2. ser. (1907) 497; *A. coerulea* Schreb. Spicil. fl. Lips. (1771) 5; *A. arvensis* Benth. Fl. Austr. IV (1869) 270, ex parte.

Much more common than the foregoing and always well distinguished from it when the two grew together.

Perth, St. Omer Hospital, Garden weed (No. 1024; 10.

Sept. 1914); Yallingup Cave (No. 1023; 29. Sept. 1914, very common); York (No. 1388; 25. Nov. 1915, Mrs. M. Davis).

Samolus repens (Forst.) Pers. Syn. I (1805) 171; Benth. Fl. Austr. IV (1869) 271; *Sheffieldia repens* Forster, Char. Gen. (1776) 18; *Sheff. incana* Labill. Pl. Nov. Holl. I (1804) 40, tab. 54.

As BENTHAM (l. c.) says, this species is " exceedingly variable", and I am inclined to believe that several species are to be found under what is now considered *S. repens.*

Specimens which are very much like LABILLARDIÈRE'S figure (l. c.) and which must be taken as true *S. repens*, although erect, were collected at Swan River near Bayswater (No. 1027; 18. Oct. 1914).

Very different from this form is: var. **floribundes** Benth. l. c. It has the leaves reduced nearly to scales and numerous flowers in panicles. A character which points to its independence as a species, is that the anthers bear pointed apical appendices (in *S. repens* and *S. junceus* this character does not occur or is very faintly developed). I have found this distinctive mark both in the specimens from Murchison River which BENTHAM (l. c.) quotes for his variety, and in specimens collected at Carnarvon in dune depressions (No. 1026; 31. Oct. 1914; Pl. XII, fig. 4). It seems to be a more northern xerophytic form than the true *S. repens.*

I have not had the opportunity to examine the whole group of *S. repens* and *S. junceus* thoroughly, therefore, provisionally, I leave var. *floribundus* under *S. repens*, but I think that closer examination will result in its separation as a distinct species.

S. junceus R. Br. Prodr. Fl. Nov. Holl. (1810) 429; Benth. Fl. Austr. IV (1869) 272.

Environs af Perth (No. 1025; 25. Oct. 1914, E. Dorph-Petersen).

Plumbaginaceæ.

Statice salicorniacea F. v. Müll., Fragm. Phytog. Austr. XI (1878) 7.

A very striking plant, common in wet dune depressions (pans) at Carnarvon (No. 1103; 31. Oct. 1914).

Loganiaceæ.

Logania vaginalis (Labill.) F. v. Müll. Fragm. VI (1868) 132; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 489; Diels, Pflanzenw. W. Austr. (1906) 192; *L. longifolia* R. Br. et *L. latifolia* R. Br. Prodr. Fl. Nov. Holl. (1810) 456, 455; Benth. Fl. Austr. IV (1869) 361.

I follow F. v. Müller and Diels in uniting *L. longifolia* and *L. latifolia* into one species.

Specimens with broadly lanceolate leaves (var. *longifolia* (R. Br.) Diels l. c., Fig. 49 B) were collected at Cottesloe near Fremantle (No. 996; 23. Aug. 1914, Cecil Andrews) and in a rich and damp valley near Yallingup Cave (No. 997; 28. Sept. 1914). This form seems to follow the southern part of the west coast.

Logania serpyllifolia R. Br. Prodr. Fl. Nov. Holl. (1810) 456; Benth. Fl. Austr. IV (1869) 366.

Yornup, south of Bridgetown (No. 999; 2. Oct. 1914) and Yallingup Cave, in the forest (No. 998; 26. Sept. 1914).

Flowers white and fragrant. Bentham's statement (l. c.) "Flowers usually 3—5 together" is incorrect, as the flowers are usually more numerous.

Logania flaviflora F. v. Müll., in Vict. Naturalist V (1889) 165; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 490.

This interesting species was found again at Tammin (No. 962; 6. Oct. 1914), where DIELS collected it in 1903.

Gentianaceæ.

Centaurium australe (R. Br.) comb. nov.; *Erythræa a.* R. Br. Prodr. Fl. Nov. Holl. (1810) 451; Benth. Fl. Austr. IV (1869) 371.

Vicinity of Perth (No. 945; 25. Oct. 1914, E. Dorph-Petersen).

Villarsia capitata Nees, in Pl. Preiss. 1 (1845) 365; Benth. Fl. Austr. IV (1869) 375; *V. involucrata* Hook. Icon. Pl. tab. 725.

Vicinity of Perth (No. 1118; 25. Oct. 1914; E. Dorph-Petersen).

Villarsia albiflora F. v. Müll. Fragm. Phytog. Austr. II (1860) 21; Benth. Fl. Austr. IV (1869) 377; *V. reniformis* Nees, in Pl. Preiss. I (1845) 364, non R. Br.

Perth, near Cannington (No. 946; 22. Sept. 1914, E. Dorph-Petersen).

Convolvulaceæ.

Dichondra repens Forster, Char. gen. (1776) 39, tab. 20; Benth. Fl. Austr, IV (1869) 438.

Specimens in flower of this ubiquitous tropical herb were collected near a rivulet at Yallingup Cave (No. 1131; 27. Sept. 1914).

Ipomæa Muelleri Benth., Fl. Austr. IV (1869) 423.

An *Ipomœa* answering well to the description of *I. Muelleri* by BENTHAM (l. c.) was found on the dunes near the railway jetty at Carnarvon (No. 1102; 31. Oct. 1914). The author gives it as a twiner, but the specimens seen

by me were prostrate (but not rooting) for the simple reason that there were no shrubs present on the spot. The petioles and peduncles are somewhat pubescent; the pedicels short and thick, about as long as the calyx. Corolla pink; seed villous, grey-violet or brown, two in each cell of the two-celled globose capsule.

The species has not been found as far southward as Carnarvon; the nearest locality being Nichol Bay, near Cossacks (117° Long E.), from where it extends eastwards both along the coast and into the interior.

Cuscuta australis R. Br. Prodr. Fl. Nov. Holl. (1810) 491; Benth. Fl. Austr. IV (1869) 441.

Near Perth (No. 811; 15. Oct. 1914; leg. E. Dorph-Petersen), on *Eryngium rostratum* Cav.

Borraginaceæ.

Halgania rigida Sp. Moore, in Journ. Linn. Soc. XXXIV (1899) 204; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 492.

Kalgoorlie, a very vernicose shrub with blue flowers (No. 1042; 8. Oct. 1914).

Myosotis australis R. Br. Prodr. Fl. Nov. Holl. (1810) 495; Benth. Fl. Austr. IV (1869) 405.

Yallingup Cave, in open forest; flowers white (No. 836; 29. Sept. 1914).

Eritrichium australasicum DC. Prodr. X (1846) 134; Benth. Fl. Austr. IV (1869) 406.

Kalgoorlie (No. 1117; 7. Oct. 1914).

Lappula concava F. v. Müll. Census Austr. Pl. (1882) 100; *Echinospermum c.* F. v. Müll. Fragm. Phytogr. Austr. II (1861) 139; Benth. Fl. Austr. IV (1869) 407.

Kalgoorlie (No. 837; 7. Oct. 1914).

Verbenaceæ.

Dicrastylis panifolia F. v. Müll. Fragm. Phytogr. Austr. II (1861) 160; Benth. Fl. Austr. V (1870) 43; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 499.

Tammin, heath (No. 1115; 6. Oct. 1914). Determ. by Dr. L. Diels.

Labiatæ.

Hemiandra pungens R. Br. Prodr. Fl. Nov. Holl. (1810) 502; Benth. Fl. Austr. V (1870) 109.

BENTHAM (l. c.) has enumerated the more marked forms of this very variable and common species, but he has created a good deal of new names instead of using already existing names. In following his delimitation of the forms I find the following combinations correct:

var. 1. **linearis** (Benth.); *H. linearis* Benth., in Huegel, Enum. pl. (1837) 79; *H. pungens, α, grandiflora* Benth. Fl. Austr. l. c.

Bayswater, sandy heath (No. 981; 18. Oct. 1914).

var. 2. **glabra** Benth., Fl. Austr. l. c.; *H. glabra* Benth., in Huegel, Enum. pl. (1837) 79.

Perth: near Cannington (No. 1034; 22. Sept. 1914, E. Dorph-Petersen).

var. 3. **brevifolia** (Benth.); *H. brevifolia* Benth., in Huegel, Enum. pl. (1837) 79; *H. pungens*, c, *diffusa* Benth. Fl. Austr. l. c.

var. 4. **rupestris** (Hueg.); *H. rupestris* Hueg. Bot. Arch. (1837) tab. 4; Benth., in Huegel, Enum. pl. (1837) 78; *H. pungens*, d, *hispida* Benth. Fl. Austr. l. c.

Cottesloe (No. 978; 11. Aug. 1914, Cecil Andrews); vicinity of Perth (No. 979; 18. Sept. 1914, E. Dorph-Petersen; No. 1382, 1915, Mrs. M. Davis).

var. 5. **incana** Benth. Fl. Austr. V (1870) 110.

Perth: King's Park (No. 980; 21. Oct. 1914).

Microcorys ericifolia Benth., in D. C. Prodr. XII (1848) 569; Fl. Austr. V (1870) 123.

Tammin, heath (No. 1113; 6. Oct. 1114).

Westringia rigida R. Br. Prodr. Fl. Nov. Holl. (1810) 501; Benth. Fl. Austr. V (1870) 129; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 530.

1 2

Fig. 16. *Westringia rigida* R. Br. *1*, var. *dolichophylla* Ostf., from Geraldton. *2*, var. *brachyphylla* Ostf., from Kalgoorlie. (Nat. size.)

Diels (l. c.) has shown that in W. A. this species has two rather different forms, one occurring in the arid interior, the other in the calcareous coast-belt. I find that they differ so much from each other that they deserve at least varietal names:

var. **brachyphylla** nov. var. (Diels, l. c. forma 1). Folia brevia, 5—10 mm longa, apice spinosa plus minus recurvata. Fig. 16, 2.

Kalgoorlie (No. 982; 7. Oct. 1914).

var. **dolichophylla** nov. var. (Diels, l. c. forma 2).

Folia longiora, usque ad 30 mm longa, apice subespinosa, non recurvata. Fig. 16, 1.

Geraldton, on dunes (No. 977; 29. Oct. 1914).

Solanaceæ.

Lycium australe F. v. Müll., in Transact. Phil. Soc. Vict. I (1854) 20, ex Fragm. Phytogr. Austr. I (1858) 83; Benth.

Fl. Austr. IV (1869) 467; F. v. Müller and A. Morrison, in W. Austr. Yearbook for 1900—1901 (1902) 331.

Kalgoorlie (No. 1045; 7. Oct. 1914).

A low strongly spinescent shrub with divaricate branches. Berries orange-red, ovoid.

The same species is in the Kew Herb. from two other W. Australian localities, viz.: W. Austr., leg. Dr. W. H. Ince, and Boulder, W. D. Campbell, 28. July 1900. It seems to be distributed over the arid interior of Australia, but not very common.

Lycium ferocissimum Miers, in Ann. & Mag. Nat. Hist. XIV (1854) 187, and Ill. South Americ. Plants, tab. 70, fig. D; *L. campanulatum* E. Meyer, in Drege, Zwei Pflanzengeogr. Docum. 109 (nom. nud.); Wright, in Flora Cap. IV 2 (1904) 111, ex parte; J. M. Black, in Trans. R. Soc. S. Austr. XLII (1918) 54; *L. chinense* J. M. Black, in Naturalis. Fl. S. Austr. 114, fide J. M. Black in Herb. Kew.

Geraldton, on dunes (No. 1047; 28. Oct. 1914).

A rather low shrub with divaricate spinescent branches, campanulate calyx and large orange-red berries.

This species of *Lycium* is evidently an immigrant from South Africa as also recognized by Mr. J. M. Black who records it from South Australia (l. c.).

As to its name it must be called *L. ferocissimum* Miers, not *L. campanulatum* E. Meyer, and that for several reasons:

1. *L. campanulatum* E. Meyer is a *nomen nudum* until Wright's description in Fl. Cap.

2. Wright's *L. campanulatum* covers two different plants: (1) the same plant upon which *L. ferocissimum* Miers (l. c.) is based, and (2) another plant with much larger flowers and more erect-campanulate corolla. If *L. campanulatum*

is still to be used, it must be restricted to the latter plant.

My specimens (and those from S. Australia sent to Kew Herb. by Mr. J. M. Black) agree exactly with ZEYHER'S No. 105 from Uitenhage, upon which number MIERS'S description and figure is based.

The species has a good deal of resemblance to *L. chinense*, but is easily distinguished by its larger and more campanulate calyx and the large ovoid-globose berries (until 1.5 cm long and 1 cm broad).

Anthotroche pannosa Endl. Nov. Stirp. Dec. (1839); Benth. Fl. Austr. IV (1869) 467; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 533.

Meckering (No. 1119; Sept. 1914, O. H. Sargent).

Scrophulariaceæ.

Gratiola peruviana L. Sp. pl. (1753) 17; Benth. Fl. Austr. IV (1869) 493; *G. pubescens* R. Br. Prodr. Fl. Nov. Holl. (1810) 435.

Besides specimens from Albany (No. 1035; 20. Oct. 1914) which come under the main species, the var. **pumila** (F. v. Müll.) Benth., l. c., which has not been given as W. Australian before, was collected near Perth (No. 1036; 25. Oct. 1914, E. Dorph-Petersen).

Limosella aquatica L. Sp. pl. (1753) 631; Benth. Fl. Austr. IV (1869) 502.

Armadale, in dried-up ditches (No. 1030; 20. Sept. 1914).

Small specimens answering to var. *tenuifolia* (Wolf.) Nutt., with linear leaves.

Parentucellia latifolia (L.) Caruel, in Parlat. Fl. ital. VI (1885) 480; Diels u. Pritzel, in Bot. Jahrb. 35 (1904) 534;

Euphrasia l. L. Sp. pl. (1753) 604; *Eufragia l.* Griseb. spicil. Fl. rumel. II (1844) 14; *Bartschia l.* Sm. fl. graec. VI (1827) 69.

This introduced plant was recorded for W. A. by DIELS and PRITZEL (l. c.). I found it both at Perth, King's Park (No. 1031; 10. Sept. 1914) and at Busselton, grassy ground (No. 1032; 30. Sept. 1914).

Parentucellia viscosa (L.) Caruel, l. c.; *Bartschia viscosa* L. Sp. pl. (1753) 602.

This is another introduced plant which comes from the Mediterranean or West European countries. I found it in flower (fl. yellow) at Albany on damp grassy ground (No. 1033; 21. Oct. 1914).

Veronica calycina R. Br. Prodr. Fl. Nov. Holl. (1810) 435; Benth. Fl. Austr. IV (1869) 509; *V. stolonifera* Lehm. Ind. sem. Hort. Hamburg 1820, et in Pl. Preiss. I (1845) 342; *V. cygnorum* Miq., in Pl. Preiss. l. c.

Yallingup Cave, in the forest under shrubs (Nos. 1037 and 1038; 26. and 28. Sept. 1914, flow. and fruiting).

My specimens are very different from those collected by DRUMMOND and they represent a rather deviating form of this variable species. I should like to call them var. **stolonifera** (Lehm.) comb. nov., as they are like the plant described by LEHMANN under that species name. The variety differs from the true *V. calycina* in acute calyx lobes, shorter and curved hairs etc. Besides my specimens I have seen the same form in Kew Herb. from Swan River district, J. A. Brewer, 1874; and Claremount near Perth, Cecil Andrews, 1902, and Albany, Cecil Andrews, 1903.

Selaginaceæ.

Dischisma arenarium E. Mey., Comm. Pl. Afr. Austr. (1837) 251; Rolfe, in Flora Cap. vol. V, pt. I (1910?) 112.

Near Yallingup Cave House, on naked soil (No. 834, 26. Sept. 1914).

This little annual which is naturalized from S. Africa, was found in full flower and fruit. It has not been recorded before from W. A.

Dischisma capitatum (Thunb.) Choisy, Mém. Soc. Phys. Genève II. 2 (1823) 94; Benth. Fl. Austr. V (1870) 31; Rolfe, in Fl. Cap. vol. V, pt. 1 (1910?) 112.

Perth: King's Park, on naked sandy soil, small erect and unbranched specimens (No. 835; 11. Sept. 1914). The minute corolla is whitish.

This is also a South African species, but it has been found in the Swan River district already by Drummond (Bentham, l. c.)

Orobanchaceæ.

Orobanche cernua Loefl., var. **australiana** (F. v. Müll.) Beck, Monogr. Orobanche, Bibliotheca Botan. Heft 19 (1890) 144; *O. cernua* Benth. Fl. Austr. IV (1869) 533; *O. australiana* F. v. Müll., Cens. Austr. Pl. (1882) 98.

Near Perth (No. 1039; 13. Sept. 1914, in flower; E. Dorph-Petersen).

Lentibulariaceæ.

Utricularia simplex R. Br. Prodr. Fl. Nov. Holl. (1810) 431; Benth. Fl. Austr. IV (1869) 528.

Albany, on damp peat (No. 983; 20. Oct. 1914, flow. purple-violet).

Polypompholyx multifida (R. Br.) F. v. Müll. Fragm. Phytogr. Austr. VI (1868) 162; Benth. Fl. Austr. IV (1869) 532; Hooker, Icon. pl. tab. 3063 (1916).

Albany, in a swamp (No. 984; 20. Oct. 1914).

When I mention this beautiful plant which is well known

from King George's Sound, the reason is that the text to the otherwise excellent plate in HOOKER's *Icones* says that the corolla is "purpureo-lilacina vel punicea", which shows that the description was drawn from herbarium material. In the living plant the corolla is pink (or rose), as also mentioned by BENTHAM (l. c.) and F. v. MÜLLER ("amoene rosea").

Myoporaceæ.

Myoporum acuminatum R. Br. Prodr. Fl. Nov. Holl. (1810) 515; Benth. Fl. Austr. V (1870) 3.

Carnarvon, at the shore (No. 1013; 31. Oct. 1914), with red fruits.

The specimens are narrow-leaved, answering to BENTHAM's var. *angustifolium*, which must be renamed var. **montanum** (R. Br. pro. sp.) comb. nov.

Myoporum deserti A. Cunn.; Benth. in Huegel, Enum. pl. (1837) 78; Fl. Austr. V (1870) 5.

Tammin, in open forest (No. 1014; 6. Oct. 1914).

Myoporum oppositifolium R. Br. Prodr. Fl. Nov. Holl. (1810) 516; Benth. Fl. Austr. V (1870) 7.

Yallingup Cave, at the shore (No. 1012; 26. Sept. 1914).

This record extends the area of this species somewhat farther to the north.

Eremophila R. Br.

In my treatment of this difficult genus I follow F. v. MÜLLER, Myoporinous Plants of Australia II (1886); SPENCER MOORE, in Journ. Linn. Soc. XXXIV (1899), and DIELS, in Botan. Jahrb. 35 (1904). MÜLLER and DIELS include *Pholidia* R. Br. in *Eremophila*, while R. WETTSTEIN (Natürl. Pflanzenfam., 1889) follows BAILLON in using the name

Pholidia with *Eremophila* as a synonym. Both names were published simultaneously by R. Brown (1810), and although *Pholidia* is found on p. 517 and *Eremophila* on p. 518, I find it more convenient to follow F. v. Müller who already in 1858 (Transact. R. Soc. Tasmania III) united them into *Eremophila*, than to transfer the numerous species published under *Eremophila* to *Pholidia*.

Eremophila Paisleyi F. v. Müll., Rep. Babbage Exp. (1858) 17, ex Benth. Fl. Austr. V (1870) 20; Diels, Botan. Jahrb. 35 (1904) 538.

Kalgoorlie (No. 1001; 7. Oct. 1914). Flowers pink or pale-lilac, a medium-sized shrub.

Eremophila Drummondii F. v. Müll., Fragm. Phytogr. Austr. VI (1868) 147; Benth. Fl. Austr. V (1870) 24; Diels, Botan. Jahrb. 35 (1904) 540.

Tammin, heath (No. 1010; 6. Oct. 1914), a very vernicose shrub.

Eremophila ionantha Diels, Botan. Jahrb. 35 (1904) 540, fig. 61, C, D.

Kalgoorlie (No. 1003; 7. Oct. 1914). Flowers pale-violet, a medium-sized shrub.

Eremophila interstans (Sp. Moore) Morrison, in W. Austr. Yearbook for 1900—1901, Perth (1902) 333; Diels, Botan. Jahrb. 35 (1904) 540; *Pholidia i.* Spencer Moore, Journ. Linn. Soc. XXXIV (1899) 210.

Kalgoorlie (No. 1009; 8. Oct. 1914). Flowers small and whitish.

Eremophila scoparia (R. Br.) F. v. Müll., in Proceed. R. Soc. Tasm. III (1858) 296; *Pholidia s.* R. Br. Prodr. Fl. Nov. Holl. (1810) 517; Benth. Fl. Austr. V (1870) 10.

Kalgoorlie (No. 1002; 7. Oct. 1914). Flowers pale-violet, a tall shrub.

Eremophila Weldii F. v. Müll., Fragm. Phytogr. Austr. VII (1870) 109; Diels, Botan. Jahrb. 35 (1904) 542.

Kalgoorlie (No. 1008; 8. Oct. 1914). Flowers violet; a low shrub.

Eremophila granitica Sp. Moore, Journ. Linn. Soc. XXXIV (1899) 214; Diels, Botan. Jahrb. 35 (1904) 545.

Kalgoorlie (No. 1004; 7. Oct. 1914). Flowers violet; a rather small shrub.

Eremophila glabra (R. Br.) comb. nov.; *Stenochilus glaber* R. Br. Prodr. Fl. Nov. Holl. (1810) 517; *Eremophila Brownii* F. v. Müll., Proc. R. Soc. Tasm. III (1858) 297; Benth. Fl. Austr. V (1870) 27; Diels, Botan. Jahrb. 35 (1904) 545.

Kalgoorlie (No. 1006; 8. Oct. 1914). Flowers red; a medium-sized shrub.

The change of the species name is necessary according to the international rules of nomenclature.

Eremophila angustifolia (Sp. Moore) comb. nov.; *E. Oldfieldii*, var. *angustifolia* Spencer Moore, Journ. Linn. Soc. XXXIV (1899) 215; Diels, Botan. Jahrb. 35 (1904) 546.

Ex aff. *E. Oldfieldii*. Differt: foliis anguste-linearibus, carnosulis (in sicco rugosis), acutissimis, et calycis lobis angustioribus lanceolatis, distincte acutis vel acuminatis. (Pl. XII, fig. 1).

Kalgoorlie (No. 1005; 7. Oct. 1914). Flowers orange-red; a tall shrub. 5 km south of Kalgoorlie (Gunnar Andersson, 2. Aug. 1914).

On comparing the typical specimens of *E. Oldfieldii* F.

v. Müll. from Murchison River and Shark's Bay — as seen in the Kew Herb. — with the plant which seems to be common in the interior of S. W. Australia (cfr. Sp. Moore and Diels), I find the latter quite distinct and do not doubt it being an independent species. The left habit figure on pl. XXXVII in F. v. Müller's Myopor. Pl. of Austr., represents the new species, while the right one is true *E. Oldfieldii*.

Eremophila decipiens nov. sp. Pl. XII, fig. 2.

Ex aff. *E. maculatæ*. Frutex non altus; rami adscendentes, juniores præcique apicem versus pilis stellatis minimis plus minus densis vestiti; folia oblongo-linearia, subacuta, 2—3 cm longa, 2—4 mm lata, juniora pilis stellatis minimis vestita. Flores solitarii, pedicelli graciles reflexi. Calycis parvi lobi imbricati, ovati, acuti, 4—5 mm longi, extus glabri, intus stellato-pilosi. Corolla coccinea, clavato- tubulosa, usque ad 2,5 cm longa, fundo extumescente, labium superius lobis 4 parvis angustis acutissimis, labium inferius a medio corollæ tubi reflexum, lineari-oblongum. Stamina exserta, glabra; stylus exsertus, parum hirsutus. Ovarium glabrum.

Kalgoorlie (No. 1007; 7. Oct. 1914).

This new species comes near to *E. maculata* (Ker.) F. v. Müll. and has been confounded with it. It differs in the quite different tomentum, which in *E. maculata* consists of rather short and recurved single hairs forming a dense clothing on the young branches (the leaves are quite glabrous), while in the new species both the young branches and the young leaves bear a minute stellate pubescence. Further differences are found in the smaller calyx-lobes (in *E. maculata* longer and acuminate) and in the glabrous innerside of the corolla (in *E. maculata* with some long hairs), etc.

The present species seems to be mostly a West Australian representative of *E. maculata* and is probably much distributed in the interior of the State, as far as I am able to judge from numerous specimens in the Kew Herb. The true *E. maculata* F. v. Müll. (*Stenochilus maculatus* Ker, in Bot. Regist. tab. 647, 1822) seems to be mostly Eastern, but I do not know if it also occurs in W. A.

To my species perhaps belongs *E. maculata* var. *brevifolia* Benth. (Fl. Austr. V, 1870, 29), but the few words of the diagnosis do not say anything about the different kind of hairiness.

Stenochilus racemosus Endl. (Nov. Stirp. dec. (1839) 50) is — as far as can be judged from DECANDOLLE's description (Prodr. XI, 715), as I have no access to the actual plant — quite another form, as it is said to have "ramuli glaberrimi".

S. curvipes Benth. in Mitch. Trop. Austr. 221 is unknown to me.

Eremophila alternifolia R. Br. Prodr. Fl. Nov. Holl. (1810) 518; Benth. Fl. Austr. V (1870) 30; Diels, Botan. Jahrb. 35 (1904) 546.

Kalgoorlie (No. 1000; 7. Oct. 1914). Flowers red, a medium-sized shrub.

Rubiaceæ.

Galium australe DC. Prodr. IV (1830) 608; Benth. Fl. Austr. III (1866) 446; F. v. Müller, Sec. Census (1889) 128; *G. parisiense* L. var. *australe* Ewart and White, in Proc. R. Soc. Victoria 21 (1908) 541.

Yallingup Cave, in a shadowy cleft (No. 1029; 28. Sept. 1914).

Lobeliaceæ (determ. by C. Christensen and C. H. Ostenfeld).

Wahlenbergia capensis (L.) A. DC., Monogr. Campan. (1830) 138, tab. 18.

Bayswater, in fruit (No. 989; 18. Oct. 1914); introduced and now subspontaneous.

Lobelia tenuior R. Br. Prodr. Fl. Nov. Holl. (1810) 564; Benth. Fl. Austr. IV (1869) 126.

Perth, King's Park, sparingly in the open forest (No. 986; 13. Oct. 1914, in flower).

Lobelia heterophylla Labill. Pl. Nov. Holl. I (1804) 52, tab. 74; Benth. Fl. Austr. IV (1869) 124.

Geraldton, on dunes (small specimen; No. 955, 28. Oct. 1914).

Monopsis debilis (L. fil.) Presl, Prodr. Monogr. Lobel. (1836) 11; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 550.

This is an introduced species which seems to spread widely in W. A., preferring damp, sandy places.

Diels and Pritzel have found it at Bayswater, where I have also collected it (No. 990; 18. Oct. 1914); and further I have it from Yallingup Cave (No. 991; 28. Sept. 1914) and from Albany (No. 992; 20. Oct. 1914); in all localities in flower.

Goodeniaceæ (determ. by C. Christensen and C. H. Ostenfeld).

Velleia pilosella (De Vriese) comb. nov.; *V. trinervis* var. *villosa* Benth. Fl. Austr. IV (1869) 47; K. Krause, Goodeniaceæ, in Das Pflanzenreich IV 277 (1912) 39; *V. trin.* var. *lanuginosa* Pritzel, in Botan. Jahrb. 35 (1904) 556; *Euthale pilosella* De Vriese in Pl. Preiss. I. 3 (1845) 414.

Palgarup (No. 955; 2. Oct. 1914) and Yornup, south of Bridgetown (No. 954; 2. Oct. 1914).

We think this hairy *Velleia* is sufficiently distinct from *V. trinervis* Labill. to be maintained as a proper species, as given by DE VRIESE (l. c.). It seems to be restricted to the most S. W. part of the State.

Goodenia calogynoides E. Pritzel, in Botan. Jahrb. **35** (1904) 560, Fig. 64 A—D; Krause, Goodeniaceæ, l. c. 81.

Kalgoorlie, a single specimen in fruit (No. 947; 7. Oct. 1914).

Goodenia coerulea R. Br. Prodr. Fl. Nov. Holl. (1810) 578; Benth. Fl. Austr. IV (1869) 67; Krause, Goodeniaceæ, l. c. 68.

Tammin, sandy places (No. 959; 6. Oct. 1914).

Goodenia coronopifolia R. Br. Prodr. Fl. Nov. Holl. (1810) 576; Benth. Fl. Austr. IV (1869) 75; Krause, Goodeniaceæ, l. c. 81.

With some doubt we refer a few small specimens of a *Goodenia* to this rare species which is known only from the northwestern coast at Cambridge Gulf (CUNNINGHAM) and from islands of the Gulf of Carpentaria (R. BROWN). The specimens are smaller and more slender than R. Brown's type specimens in the Kew Herb., besides they are somewhat more hairy. The indusium is undivided and shortly ciliate.

Armadale, on naked, clayey soil (No. 1121; 20. Sept. 1914).

Goodenia pulchella Benth., in Huegel, Enum. pl. (1837) 71; *G. filiformis* var. *pulchella* Benth. Fl. Austr. IV (1869) 77; Krause, Goodeniaceæ, l. c. (1912) 86; *Velleja lanceolata* Lindl. Swan Riv. App. Bot. Reg. (1839) 26.

Bayswater, near the Swan River (No. 952; 18. Oct. 1914).

After having examined the ample material in the Kew Herb. of *G. filiformis* and related forms, we feel convinced that the so-called var. *pulchella* is a distinct species. It differs from *G. filiformis* in the characters given by BENTHAM and KRAUSE, further, as mentioned by LINDLEY, the leaves are distantly, but distinctly toothed.

Also the var. *minutiflora* F. v. Müll. (Fragm. Phytogr. Austr. VIII (1874) 245) is — from the specimens in Kew Herb. — a separate species (*G. micrantha* Hemsl. ined. in Kew Herb.).

Anthotium rubriflorum F. v. Müll., in Benth. Fl. Austr. IV (1869) 45; Krause, Goodeniaceæ, l. c. (1912) 111, Fig. 21 C—H.

Tammin, on sandy soil (No. 960; 6. Oct. 1914); in full flower; corolla red ("coccinea").

Scævola holosericea De Vriese, in Pl. Preiss. I (1845) 408; Benth. Fl. Austr. IV (1869) 95; Krause, Goodeniaceæ, l. c. (1912) 153.

Perth, King's Park, common (No. 971, 18. Sept. 1914; No. 969, 13. Oct. 1914).

The size of the corolla and of the floral leaves varies much in specimens growing at the same spot (male and female plants?).

Scævola auriculata Benth. Fl. Austr. IV (1869) 99; Krause, Goodeniaceæ, l. c. (1912) 158.

Jarnadup and Manginup, south of Bridgetown (Nos. 972 and 973; 1. Oct. 1914). Specimens less hairy than the type.

Scævola paludosa R. Br. var. **repens** (De Vriese) comb. nov.; *S. p.* var. *prostrata* Benth. Fl. Austr. IV (1869) 102; Krause, Goodeniaceæ, l. c. (1912) 163; *S. repens* De Vriese, in Pl. Preiss. I (1845) 406.

Perth, King's Park, a decumbent shrub with long prostrate stems, flowers whitish (No. 949; 18. Oct. 1914). Perhaps a distinct species.

Scævola Helmsii E. Pritzel, in Botan. Jahrb. **35** (1904) 572; Krause, Goodeniaceæ, l. c. (1912) 168, Fig. 29 A—F.

This very distinct species was collected in the same locality where DIELS and PRITZEL (l. c.) found it: Tammin (No. 964; 6. Oct. 1914, flowering).

Stylidiaceæ (determ. by C. Christensen and C. H. Ostenfeld).

Levenhookia pusilla R. Br. Prodr. Fl. Nov. Holl. (1810) 573; Benth. Fl. Austr. IV (1869) 34; Mildbraed, Stylidiaceæ, in Das Pflanzenreich IV 278 (1908) 28; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 598.

Yallingup Cave, sandy damp places (No. 1091; 26. Sept. 1914).

The flowering of this species is stated by DIELS and PRITZEL to occur in November and December, but my specimens taken at the end of September were in full flower.

Stylidium brachyphyllum Sond., in Pl. Preiss. I. 3 (1845) 386; Benth. Fl. Austr. IV (1869) 24; Mildbraed, Stylidiaceæ, l. c. 42.

Armadale, on naked, damp soil (No. 1080; 20. Sept. 1914).

Stylidium despectum R. Br. Prodr. Fl. Nov. Holl. (1810) 571; Benth. Fl. Austr. IV (1869) 22; Mildbraed, Stylidiaceæ, l. c. 42.

Besides from Albany from where this species is well known, I have it from Bayswater near Perth (No. 1078; 18. Oct. 1914).

S. despectum and *S. brachyphyllum* are very near each other, and *S. brachyphyllum* does not perhaps deserve to be maintained as a species.

Stylidium pulchellum Sond., in Pl. Preiss. I. 3 (1845) 381; Benth. Fl. Austr. IV (1869) 26; Diels u. Pritzel, in Botan. Jahrb. 35 (1904) 594; Mildbraed, Stylidiaceæ, l. c. 44.

Albany, on damp and sandy soil (No. 1069; 21. Oct. 1914); in full flower; corolla white with pink or purple stripes.

Stylidium emarginatum Sond., in Pl. Preiss I. 3 (1845) 383; Benth. Fl. Austr. IV (1869) 27; Mildbraed, Stylidiaceæ, l. c. 44.

Armadale, on naked, clayey soil (No. 1067; 20. Sept. 1914). In full flower; corolla cream-coloured.

Stylidium spathulatum R. Br. Prodr. Fl. Nov. Holl. (1810) 569; Benth. Fl. Austr. IV (1869) 17; Mildbraed, Stylidiaceæ, l. c. 57.

Albany, in a swamp (No. 1066; 20. Oct. 1914). In full flower; corolla cream-coloured.

var. **obovatum** Ostf., nov. var. Planta quam typo robustior altiorque (20—25 cm alta); folia longe petiolata, obovata. Pl. XII, fig. 3.

Wilgarup, south of Bridgetown (No. 1071; 1. Oct. 1914).

This variety is very different from typical *S. spathulatum*

and ought perhaps be taken as a separate species. The flowers are cream-coloured.

Stylidium striatum Lindl. Swan Riv. App. Bot. Reg. (1839) 28; Benth. Fl. Austr. IV (1869) 18; Diel u. Pritzel, in Botan. Jahrb. 35 (1904) 593; Mildbraed, Stylidiaceæ, l. c. 62.

The typical form with rose-coloured flower was collected near Cannington, vicinity of Perth (No. 1060; 22. Sept. 1914, E. Dorph-Petersen).

A somewhat aberrant tall form with white flowers was found in the forest near Yallingup Cave (No. 1058; 29. Sept. 1914).

Stylidium diuroides Lindl. Swan Riv. App. Bot. Reg. (1839) 29; Benth. Fl. Austr. IV (1869) 20; Mildbraed, Stylidiaceæ, l. c. 66.

Armadale, in the forest on damp soil (Nos. 1053 and 1054; 20. and 23. Sept. 1914). Flowering has just begun, flowers cream-coloured (No. 1053) or white (No. 1054); seems to be a rather rare species.

Stylidium hispidum Lindl. Swan Riv. App. Bot. Reg. (1839) 29; Mildbraed, Stylidiaceæ, l. c. 70; *S. ciliatum* Benth. Fl. Austr. IV (1869) 13, ex parte minori.

Armadale, sandy soil in the forest (No. 1065; 23. Sept. 1914); flowers white. Gooseberry Hill (10. Oct. 1899, R. Helms, ex Nat. Herb. of N. S. Wales).

There seems to be some confusion as to the group of species around *S. piliferum*; I have followed the delimitation used by the monographer J. MILDBRAED (l. c.).

Stylidium piliferum R. Br. Prodr. Fl. Nov. Holl. (1810) 569; Benth. Fl. Austr. IV (1869) 12; Mildbraed, Stylidiaceæ,

l. c. 70; *S. saxifragioides*, *S. bicolor* et *S. ciliatum* Lindl. Swan Riv. App. Bot. Reg. (1839).

This species is common on sandy places in the forest around Perth (Nos. 1062—1064; 1445). The flowers are white or somewhat cream-coloured.

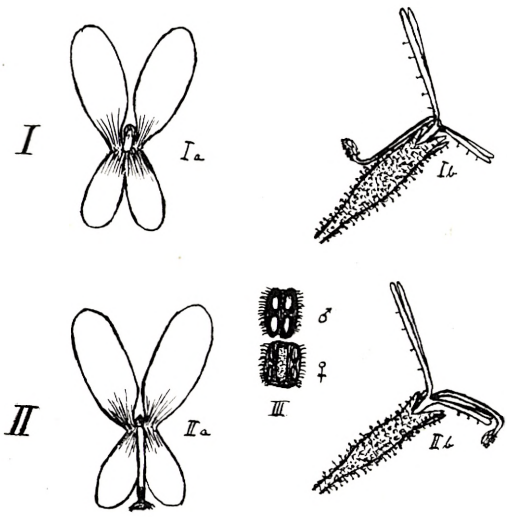


Fig. 17. *Stylidium piliferum* R. Br. Flower biology. Drawn from living plants.

Especially in this species I had the opportunity to study the well known movements of the gynostemium. They have been described by several observers. I need only mention George P. Burns[1] and Alex. G. Hamilton[2], the two latest contributors.

In *S. piliferum* the two larger petals between the base of which the minute labellum is placed, are turned up-

[1] George P. Burns: Beitr. zur Kenntnis der Stylidiaceen. Flora, vol. 87 (1900) 313—354.

[2] Alex. G. Hamilton: On the Fertilization of Clerodendron tomentosum and Candollea (Stylidium) serrulata. Proc. Linn. Soc. N. South Wales, vol. 9 (1895) 18—24, pl. II.

wards and the gynostemium is — when untouched — bent backwards between them (Fig. 17, I a and b). The apical part of the gynostemium is curved so much as to form a blunt right angle with the lower part. If one touches the two smaller petals the gynostemium suddenly acts and springs into the position drawn in Fig. 17, II a and b; it now lies between the two smaller petals, which are united at their base, and its apical part is still curved. The irritability is only found in the basal part of the gynostemium. In the course of a quarter of an hour or half an hour the gynostemium has, slowly, wandered back into the first position, but it takes some time before it is sensitive again.

The flower is proterandrous. In the male stage the two double anther-sacks are seen on the head of the gynostemium surrounded by ciliate hairs on the outer side, while the stigma is hidden between them (Fig. 17, III ♂). In the female stage the anther-sacks have emptied their pollen and have shrunk, at the same time the stigma opens and takes the central place of the head of the gynostemium (Fig. 17, III ♀).

HAMILTON (l. c.) says that insects are the fertilizers of *Stylidium serrulatum*. I have not succeeded in seeing any visitor in *S. piliferum*, but most probably the same is the case with this plant and with most species of the whole family.

Stylidium schoenoides D. C. Prodr. VII (1839) 782; Sonder, in Pl. Preiss. I, 3 (1845) 372; Diels u. Pritzel, in Botan. Jahrb. 35 (1904) 589; Mildbraed, Stylidiaceæ, l. c. 77, fig. 22 C—H; *S. reduplicatum* Benth. Fl. Austr. IV (1869) 7, ex max. parte; non R. Br.

Common around Perth (Nos 1081, 1083—1085, 1087,

1088); Yornup, south of Bridgetown (No. 1086; 2. Oct. 1914); Albany, damp places (No. 1082; 20. Oct. 1914).

Pritzel (l. c.) has shown that the true *S. reduplicatum* of R. Brown is a species restricted to the eastern part of the south coast of W. A. What has passed for *S. reduplicatum* is another species which is well described by Sonder (l. c.). It seems to be fairly widely distributed between Swan River and King George's Sound.

Stylidium divaricatum Sond., in Pl. Preiss. I, 3 (1845) 385; Mildbraed, Stylidiaceæ, l. c. 84, fig. 23 A, D, F; *S. streptocarpum* var. *tenellum* Benth. Fl. Austr. IV (1869) 28; Diels u. Pritzel in Botan. Jahrb. **35** (1904) 594; *S. gypsophiloides* Spencer Moore, Journ. Bot. XL (1902) 27.

A single plant of this species was found near Perth (No. 1055; 13. Sept. 1914, E. Dorph-Petersen). The flowers had a slight pink tint.

Stylidium leptophyllum D. C. Prodr. VII (1839) 783; Benth. Fl. Austr. IV (1869) 30; Mildbraed, Stylidiaceæ, l. c. 91; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 595.

Tammin, sandy soil (No. 1070; 6. Oct. 1914), flowers pink.

Compositæ.

Minuria Cunninghamii (D. C.) Benth. Fl. Austr. III (1866) 498.

Kalgoorlie (Nos. 856 and 857; 7. Oct. 1914).

Calotis multicaulis (Turcz.) comb. nov.; *C. plumulifera* F. v. Müll., Trans. Philos. Inst. Victoria III (1859) 57; Benth. Fl. Austr. III (1866) 505; *Goniopogon multicaule* Turcz. in Bull. de Moscou XXIV (1851) 174, tab. 2.

Kalgoorlie (No. 908; 7. Oct. 1914).

Calotis hispidula F. v. Müll. Trans. Victor. Inst. (1855) 130 ex Benth. Fl. Austr. III (1866) 506.

Kalgoorlie (No. 903; 7. Oct. 1914).

Pteronia australiensis, HUTCHINSON, sp. nov.

Frutex dense ramosissimus; rami cortice rupto brunneo obtecti; ramuli ultimi subgraciles, dense foliati, molliter lanato-tomentosi. Folia alterna, sessilia, spathulato-oblanceolata, obtusa, 5—8 mm longa, 2—3,5 mm lata, crasse coriacea, supra plana, infra carinata, utrinque dense molliter albido-tomentosa. Capitula discoidea, terminalia, solitaria, sessilia, elongato-cylindrica, leviter curvata, circiter 1,2 cm longa, 2,25 mm diametro. Involucri bracteæ circiter 5-seriatæ, plus minusve oblongo-ovatæ, minute mucronatæ, subcarnosæ, extra tenuiter pubescentes. Flores plerumque 5; corollæ tubus 7,5 mm longus, superne sensim latior, glaber, lobis 5 lineari-lanceolatis subacutis. Antheræ 5 mm longæ, longe apiculatæ, basi minute sagittatæ; pollinis granulæ globosæ, muricatæ. Achænia (matura non visa) linearia, glabra, basi callosa. Pappi setæ copiosæ, inæquales, basi in annulum brevissimum connatæ, corolla paulo breviores, subplumosæ.

Kalgoorlie (No. 858; 7. Oct. 1914).

Mr. J. HUTCHINSON has kindly examined this plant which I could not identify. He adds the following remarks to his description:

"When Dr. Ostenfeld first showed me this remarkable Composite I said at once that it was a *Pteronia*, a South African genus with which I am very well acquainted, having published a revision (with E. P. Phillips) in the Annals of the South African Museum, vol. ix, pt. v, pp. 277—329 (1917). Subsequent investigation has confirmed this surmise, and I have no hesitation in describing the plant as a new

species of *Pteronia*, a natural and well defined genus of about 60 species hitherto known only from South Africa.

The finding of *Pteronia* in Western Australia by Dr. Ostenfeld is therefore of very great phytogeographical interest, and is a striking example indicative of a probable former land connection between these two regions, so well illustrated in the case of the natural family *Proteaceae*. Excluding the few large genera such as *Senecio*, *Helichrysum*, *Cotula*, etc., there are very few genera of *Compositæ* common to Australia and South Africa. The only natural genus common to the two areas is *Athrixia*, which occurs also in Tropical Africa and Madagascar. It is true the same may be said of *Helipterum*, but then *Helipterum* is in my opinion nothing more than an artificial genus developed separately in the two areas from the closely allied cosmopolitan *Helichrysum*. In the case of *Compositæ* especially, great caution should be observed in arriving at theoretical conclusions regarding distribution, as in most "natural" families many of the genera are probably polyphyletic".

Brachycome pachyptera Turcz., in Bull. de Moscou XXIV (1851) 175; Benth. Fl. Austr. III (1866) 512.

Kalgoorlie (No. 901; 7. Oct. 1914).

Brachycome trachycarpa F. v. Müll., in Linnæa XXV (1852) 337; Benth. Fl. Austr. III (1866) 515.

Kalgoorlie (No. 906; 7. Oct. 1914).

This species is not before recorded from W.A. My specimens agree well with the Kew specimens of it.

Brachycome ciliaris (Labill.) Less., Synops. Compos. (1832) 172; Benth. Fl. Austr. III (1866) 518.

I think that there are several species under what is called „*B. ciliaris*", and several of BENTHAM's varieties (l. c. 519) deserve to be more closely examined and separated from the main species.

I have what I consider the real *B. ciliaris* from Kalgoorlie (Nos. 862 and 905; 8. and 7. Oct. 1914), and further a much smaller glandular-pubescent plant from the same area: Kalgoorlie (No 907; 7. Oct. 1914); I have named it var. *glandulosa* Benth. (l. c.).

Brachycome latisquamea F. v. Müll., Fragm. Phytogr. Austr. XI (1878) 16; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 606.

Carnarvon, on dunes (No. 840; 31. Oct. 1914).

I agree with DIELS and PRITZEL (l. c.) in considering this species a suffrutex, not a herb as said by F. v. MÜLLER. My specimens are from the same locality as those collected by DIELS and PRITZEL. The species is hitherto only known from the northern part of the west coast of W. A.

Cotula coronopifolia L. Sp. pl. (1753) 892; Benth. Fl. Austr. III (1866) 549.

Perth (No. 885; 13. Sept. 1914, E. Dorph-Petersen).

Cotula bipinnata Thunb. Fl. Cap. (1823) 696; Harvey and Sonder, Fl. Cap. III (1864—65) 179; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 606; *C. oxyodonta* D. C. Prodr. VI (1836) 78.

York (No. 1393; 25. Nov. 1915; Mrs. Davis).

My specimens agree well with the specimens so named from Cape, collected by DREGE and present in the Kew Herbarium. HARVEY says (l. c.) that they are identical with THUNBERG's specimens, only smaller. If not, they should bear the name *C. oxyodonta* D. C., which name was based upon DREGE's plant.

This Cape plant has only once before been recorded from W. Australia, as far as I am aware, namely by Diels and Pritzel (l. c.).

Cotula gymnogyne F. Müll., ex Benth. Fl. Austr. III (1866) 549; *Gymnogyne cotuloides* Steetz, in Pl. Preiss. I (1845) 432.

Busselton, in dune depressions (No. 887; 30. Sept. 1914).

Cotula australis (Less.) Hook. f., Fl. Nov. Zel. I (1853) 128; Benth. Fl. Austr. III (1866) 550.

Perth, a common weed in the garden of St. Omer Hospital (No. 872; 10. Sept. 1914).

Isoëtopsis graminifolia Turcz., in Bull. de Moscou (1851) 175, tab. 3; Benth. Fl. Austr. III (1866) 556.

Kalgoorlie (No. 895; 7. Oct. 1914).

Myriocephalus gracilis (A. Gray) Benth. Fl. Austr. III (1866) 559; *Antheidosorus gr.* A. Gray, in Hook. Kew Journ. III (1851) 173; *Gilbertia tenuifolia* Turcz., in Bull. de Moscou (1851) 193.

Vicinity of Perth (No. 1379; 1915, Mrs. M. Davis).

Siloxerus humifusus Labill. Pl. Nov. Holl. II (1806) 58; *Angianthus h.* Benth. Fl. Austr. III (1866) 563 (excl. var. *minor*).

Vicinity of Perth (No. 848; 25. Oct. 1914, E. Dorph-Petersen); Albany (No. 852; 21. Oct. 1914); Yallingup Cave, sandy damp soil (No. 891; 28. Sept. 1914). Fig. 18 d—f.

As already pointed out by Bentham (l. c. p. 561) Labillardière's name *Siloxerus* is earlier than Wendland's *Angianthus* (1809) and I cannot see any reason for rejecting it, as Bentham's objection ("being at complete variance with the etymology given by the author") does not count nowadays.

More difficult to decide is the question whether the genus as taken by BENTHAM is a natural one, or whether it would be better to take up again some of the many, mostly monotypic genera which Bentham united into his *Angianthus*. For the present I think it more convenient to follow Bentham in the delimitation of the genus, but not in the name.

Fig. 18. *a, Siloxerus filifolius* (Benth.) Ostf., from Woorooloo (leg. Max Koch). *b—c*, The same, from Bayswater. *d, S. humifusus* Labill., from Albany. *e—f*, The same, from Perth. ($^3/_2$ nat. size).

BENTHAM (l. c. 563) has a var. *minor* based upon specimens from Kalgan River collected by OLDFIELD. These specimens I have seen at Kew and some of them represent a distinct species which differs from *S. humifusus* in several respects (see below). A single specimen of the same plant, collected by OLDFIELD at Murray River, is the type of *Gnaphalodes filifolium* Benth. (Fl. Austr. III, 1866, p. 578), which is no *Gnaphalodes*. In Kew Herb. I have examined

the only specimen known. To this species belong also some more specimens which are named "*Angianthus humifusus*" in the collections at the British Museum and Kew.

If we use the species name in Bentham's *Gnaphalodes filifolium* for the plant in question we get the following synonymy:

Siloxerus filifolius (Benth.) comb. nov.; *Gnaphalodes filifolium* Benth. Fl. Austr. III (1866) 578; *Angianthus humifusus*, var. *minor* Benth., l. c. 563, ex parte; (?) *A. h.* var *grandiflorus* Ewart, in Proc. R. Soc. Victoria, 20 (N. S.), pt. I (1907) 74.

It (Fig. 18 b—c) has great likeness to *S. humifusus*, but is generally a still smaller plant. The compound heads are globular, surrounded by a few linear leafy bracts, which exceed the head, at least when young. The involucral leaves of the partial heads are membraneous, obovate, whitish-transparent, often plicate or undulate above, about as long as the flowers or a little longer. Pappus of 5—6 much jagged-fringed scales, nearly as long as the flower, achenes smooth (or with very small palillæ). See Fig. 19, b.

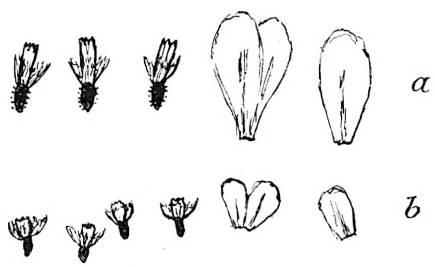


Fig. 19. *a*, *Siloxerus humifusus* Labill. *b*, *S. filifolius* (Benth.) Ostf. Flowers and involucral bracts (about $^5/_1$ nat. size).

In *S. humifusus* the involucral leaves are much larger and considerably longer than the flowers (see Fig. 19, a.) The pappus scales on the other hand are hardly more than half as long as the corolla and they are not so much fringed as in *S. filifolius*. The whole flower is larger, mainly because of the longer tubular corolla.

The achenes are covered with transparent, protruding papillæ, already figured by LABILLARDIÈRE.

I have seen *S. filifolius* from the following W. A. localities: Murray R., Oldfield (type in Kew Herb.); Kalgan R., Oldfield (mixed with *S. humifusus*), Kew Herb.; W. Austr., Drummond (mixed with *S. humifusus*), Brit. Mus.; Bayswater (No. 854; 18. Oct. 1914, Ostenfeld), in a swamp,; Woorooloo, No. 1823, 1907, Max Koch ("*var. grandiflorus*"), Kew Herb. (this is perhaps a separate species as the achenes are finely papillose, the involucral leaves crispate, and the plant more robust, see Fig. 18 a).

In Kew Herb. there are further some very young specimens marked "Australia, Müller. Hort. Kew. Aug. 9th 1878". They seem to belong to the present species.

Siloxerus strictus (Steetz) comb. nov.; *Pogonolepis stricta* Steetz, in Pl. Preiss. I (1845) 440; *Angianthus strictus* Benth. Fl. Austr. III (1866) 568.

Kalgoorlie (No. 902; 7. Oct. 1914); Perth, near Cannington (No. 1126; 22. Sept. 1914, E. Dorph-Petersen).

The single specimen from the first mentioned locality has some resemblance to *Angianthus lanigerus* Ewart and White (Proc. R. Soc. Victoria, **23**, (N. S.), 1911, 288), which I only know from the description and drawing.

Siloxerus tenellus (F. v. Müll.) comb. nov.; *Chrysocoryne t.* F. v. Müll., Trans. Vict. Inst. (1855) 130; *Angianthus tenellus* Benth. Fl. Austr. III (1866) 564.

Geraldton, amongst the dunes (No. 838; 29. Oct. 1914).

Siloxerus tomentosus (Wendl.) comb. nov.; *Angianthus t.* Wendl. Coll. II (1809) 31, tab. 48; Benth. Fl. Austr. III (1866) 562.

Kalgoorlie (No. 893; 7. Oct. 1914).

Gnephosis arachnoidea Turcz., in Bull. de Moscou (1851) 189; Benth. Fl. Austr. III (1866) 571.

Kalgoorlie (No. 892; 7. Oct. 1914).

Calocephalus Drummondii (A. Gray) Benth., Fl. Austr. III (1866) 574.

Mundaring Weir; Darling Range, on somewhat damp clayey soil (No. 868; 13. Sept. 1914).

Cephalipterum Drummondii A. Gray, in Hook. Kew Journ. IV (1852) 272; Benth. Fl. Austr. III (1866) 577.

Moora (Nos. 1422 and 1423; 25. Sept. 1915, Miss G. Davis), fl. yellow and fl. white. Both nos. belong to "*forma major*" by Diels (Bot. Jahrb. 35 (1904) 615).

Rutidosis argyrolepis (Schlecht.) F. v. Müll., ex Diels u. Pritzel, Bot. Jahrb. 35 (1904) 616; *R. pumilo* Benth., Fl. Austr. III (1866) 595.

Armadale, open and clayey damp soil (No. 851; 20. Sept. 1914); Cannington near Perth, damp soil (No. 875; 4. Sept. 1914).

Quinetia Urvillei Cass., in Diction. sc. nat. LX (1830) 579; Benth. Fl. Austr. III (1866) 595.

Yallingup Cave, on sandy soil (No. 877; 26. Sept. 1914).

Millotia tenuifolia Cass., in Ann. Sc. nat. XVII (1829) 416; Benth. Fl. Austr. III (1866) 596.

Busselton, in dune depressions (No. 889; 30. Sept. 1914); Mundaring Weir, Darling Range (No. 870; 13. Sept. 1914).

Podolepis rosea Steetz, in Pl. Preiss. I (1845) 463; Diels, in Botan. Jahrb. 35 (1904) 621.

Perth, common in King's Park, in sandy open places (Nos. 842 and 873; 10. Sept. and 13. Oct. 1914).

As to the species of *Podolepsis* I follow the treatment of L. DIELS (l. c.)

Podolepis aristata Benth., in Huegel, Enum. pl. (1837) 64; Fl. Austr. III (1866) 605.

Tammin, on sandy soil (No. 860; 6. Oct. 1914).

Podolepis capillaris (Steetz) Diels, in Botan. Jahrb. 35 (1904) 621; *P. siemssenia* F. v. Müll., in Benth. Fl. Austr. (1866) 607; *Siemssenia capillaris* Steetz, in Pl. Preiss. I (1845) 467.

Kalgoorlie, common (No. 896; 8. Oct. 1914).

Schoenia Cassiniana (Gaudich.) Steetz, in Pl. Preiss. I (1845) 481; Benth. Fl. Austr. III (1866) 611.

Moora (No. 1426; 25. Sept. 1915, Miss G. Davis).

Waitzia acuminata Steetz, in Pl. Preiss. I (1845) 453; Diels u. Pritzel, in Bot. Jahrb. 35 (1904) 625; *W. corymbosa* Benth. Fl. Austr. III (1866) 635; non Wendland.

Tammin (No. 859; 6. Oct. 1914).

According to DIELS and PRITZEL (l. c.) F. v. MÜLLER (in Oesterr. Apoteker-Ver. Zeitschr. 1896) has shown that BENTHAM (l. c.) was wrong when he used the name "*W. corymbosa* Wendl." for this species. Already STEETZ (in Pl. Preiss.) has correctly used WENDLAND's name for the following species and has given the present one a new name. This species belongs to the eremæan part of W. A. and does not occur in the coastal belt.

Waitzia corymbosa Wendl. Coll. Pl. II (1809) 13, tab. 42; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 626; *W. nivea* Benth. Fl. Austr. III (1866) 636.

Perth, King's Park, sandy soil (No. 844; 13. Oct. 1914).

Waitzia podolepis (Gaudich.) Steetz, in Pl. Preiss. I (1845) 450; Benth. Fl. Austr. III (1866) 637; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 626.

Geraldton (No. 839; 29. Oct. 1914).

My specimens of this rare species agree well with specimens distributed by E. Pritzel (No. 621) and with the description given by Diels and Pritzel (l. c.). This species seems to be restricted to the coastal area of the middle part of W. A.

Waitzia Steetziana Lehm., in Pl. Preiss. I (1845) 454; Benth. Fl. Austr. III (1866) 636.

Yallingup Cave, in open places of the forest, both with whitish and with yellow involucres (Nos. 879 and 890; 26. and 29. Sept. 1914).

Helipterum roseum (Hook.) Benth. var. **nigropapposum** nov. var.

Differt a typo habitu graciliore, capitulis minoribus et præcipue apicibus plumosis pappi radiorum nigrescentibus.

Perth, King's Park, in open sandy places (No. 874; 10. Sept. 1914).

This plant, which seems to be one of the many forms of *H. roseum*, differs from the typical species in its slender and smaller size and in the black terminal tufts of hairs of the pappus bristles. The specimens are erect, one-headed, ab. 20 cm high; the inner involucral leaves are pink to white.

Helipterum rubellum (A. Gray) Benth. Fl. Austr. III (1866) 641.

Kalgoorlie (No. 861; 8. Oct. 1914).

Helipterum Fitzgibbonii F. v. Müll., Vict. Natur. VII (1890) 38; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 629; Sp. Moore, Journ. Linn. Soc. 34 (1899) 200.

Boulder (Ex herb. Mus. Perth; leg. W. D. C., 1900).

Helipterum chlorocephalum (Turcz.) Benth. Fl. Austr. III (1866) 641; *Schoenia chlorocephala* Turcz., in Bull. Mosc. (1851) 193; *Acroclinium multicaule* A. Gray, in Hook. Kew Journ. IV (1852) 271.

Moora (No. 1416; 25. Sept. 1915, Miss G. Davis).

Besides DRUMMOND's type specimens of this plant which have the metallic green inner involucral leaves, there are in the Kew Herb. several specimens of the same species. All the characters are identical, only they have white involucral leaves; undoubtedly DRUMMOND's specimens acquired their peculiar colour when they were dried and therefore the species name is very inappropriate.

The specimens present at Kew came mostly from places in the interior of Australia where the species seems to be widely distributed. They were named differently, some as *H. chlorocephalum*, others as *H. cotula* var., others again as *H. roseum* var.

Helipterum variabile (Sond.) comb. nov.; *H. hyalospermum* F. v. Müll., in Benth. Fl. Austr. III (1866) 644; *H. glutinosum* Druce, in Rep. Brit. Exch. Club, Suppl. 627 (1916) 1917; *Hyalosperma strictum* et *H. glutinosum* Steetz, in Pl. Preiss. I (1845) 477; *Hyalosp. variabile* Sond., in Linnæa 25 (1852) 519.

Vicinity of Perth (No. 1378; Mrs. Davis, 1915).

STEETZ's names are the earlier, but as we have *Helipt. strictum* (Lindl.) Benth. and a *Helichrysum glutinosum* Benth. (described as *Helipt. glutinosum* Hook.), none of them are valid, which DRUCE (l. c.) seems to have overlooked. Hence

we must use Sonder's species name as being prior to F. v. Müller's.

Helipterum Haigii F. v. Müll., Fragm. Phytogr. Austr. X (1877) 107; Sp. Moore, Journ. Linn. Soc. 24 (1899) 200.

Kalgoorlie (No. 899; 7. Oct. 1914).

Helipterum tenellum Turcz, in Bull. de Moscou (1851) 198; Benth. Fl. Austr. III (1866) 646; Diels u. Pritzel, Botan. Jahrb. 35 (1904) 630.

Kalgoorlie (No. 900; 7. Oct. 1914).

Helipterum pygmæum (D. C.) Benth. var. **Drummondii** (A. Gray) comb. nov.; *H. pygmæum*, var. *occidentale* Benth. Fl. Austr. III (1866) 647; *Pteropogon Drummondii* A. Gray, in Hook. Kew Journ. IV (1852) 267.

Kalgoorlie (No. 898; 7. Oct. 1914).

It would perhaps be preferable to regard the western form of *H. pygmæum* as a separate species which must then bear the name *H. Drummondii* (A. Gray, sub *Pteropogone*).

Helipterum polycephalum (A. Gray) Benth. Fl. Austr. III (1866) 649; *Pteropogon polycephalus* A. Gray, in Hook. Kew Journ. IV (1852) 268.

Yallingup Cave, open soil in the forest (No. 878; 26. Sept. 1914).

Helipterum australe (A. Gray) comb. nov.; *H. dimorpholepis* Benth. Fl. Austr. III (1866) 650; *H. pygmæum* Druce, in Hayward and Druce, Advent. Fl. Tweedside (1919) 103; *Dimorpholepis australis* A. Gray, in Hook. Kew Journ. IV (1852) 227; Hook. Ic. Pl. tab. 856; *Triptilodiscus pygmæus* Turcz. in Bull. de Moscou (1851) 66.

Kalgoorlie (No. 894; 7. Oct. 1914).

According to the rules of nomenclature it is neccessary to alter the species name of *H. dimorpholepis* Benth., and as we have already a *H. pygmœum*, A. GRAY's name must be used, not TURCZANINOW's, as DRUCE (l c.) has done.

Gnaphalium collinum Labill. Pl. Nov. Holl. II (1806) 44, tab. 189; Benth. Fl. Austr. III (1866) 654.

Albany, damp soil (No. 855; 21. Oct. 1914).

The specimens agree very well with the specimens of this plant from Tasmania and S. E. Australia; they are perennial with rosulate leafy shoots, ascending flowering shoots and supraterranean runners.

It has not been reported from W. Austr. before, but has perhaps been included under *G. japonicum*.

Senecio brachyglossus F. v. Müll., in Linnæa 25 (1852) 525; Benth. Fl. Austr. III (1866) 669.

Kalgoorlie (No. 904; 7. Oct. 1914).

Perhaps SP. MOORE (Journ. Linn. Soc. 24, 1899, 201) meant this species, when he says that *S. vulgaris* is common round Coolgardie.

Ursinia anthemoides (R. Br.) Gärtn. fruct. II (1791) 463, in observ.; *Sphenogyne anthemoides* R. Br.

A common weed around Perth (western suburbs) on sandy poor soil (No. 843; 13. Oct. 1914, and No. 1374; 1915, Mrs. Davis).

Specimens of this South-African plant were sent to Kew some years ago by Dr. F. STOWARD, from the same area.

In 1887 N. E. BROWN (Gard. Chron., vol. 1, 670) created a new species *U. pulchra* N. E. Brown upon *Sphenogyne speciosa* Knowles and Westcott, Floral Cabinet (1838) II, 131, pl. 77; Paxton's Magaz. of Bot. (1839) VI, 77 with plate; and the Perth plant was at Kew identified with this species

which was said to be a common Garden plant, but not known in the wild state. I have compared N. E. BROWN's type specimen with the numerous specimens of *U. anthemoides* present in Kew and fail to find any difference marked enough to maintain the new species which, therefore, I consider a synonym only to *H. anthemoides*.

Arnoseris minima (L.) Schweigg. et Koerte, Fl. Erlangen II (1811) 72; *A. pusilla* Gärtn.; Benth. Fl. Austr. III (1866), 680.

Mundaring Weir, a weed (No. 867; 13. Sept. 1914).

Sonchus oleraceus L. Sp. pl. (1753) 794.

Seems to be rapidly spreading. It was common in Perth (No. 1341; 26. Oct. 1914) and was also present at Yallingup Cave (No. 1342; 29. Sept. 1914). Both nos. belong to the typical form: *α, triangularis* Wallr.

Forelagt paa Mødet d. 17. Decbr. 1920.
Færdig fra Trykkeriet d. 30. April 1921.

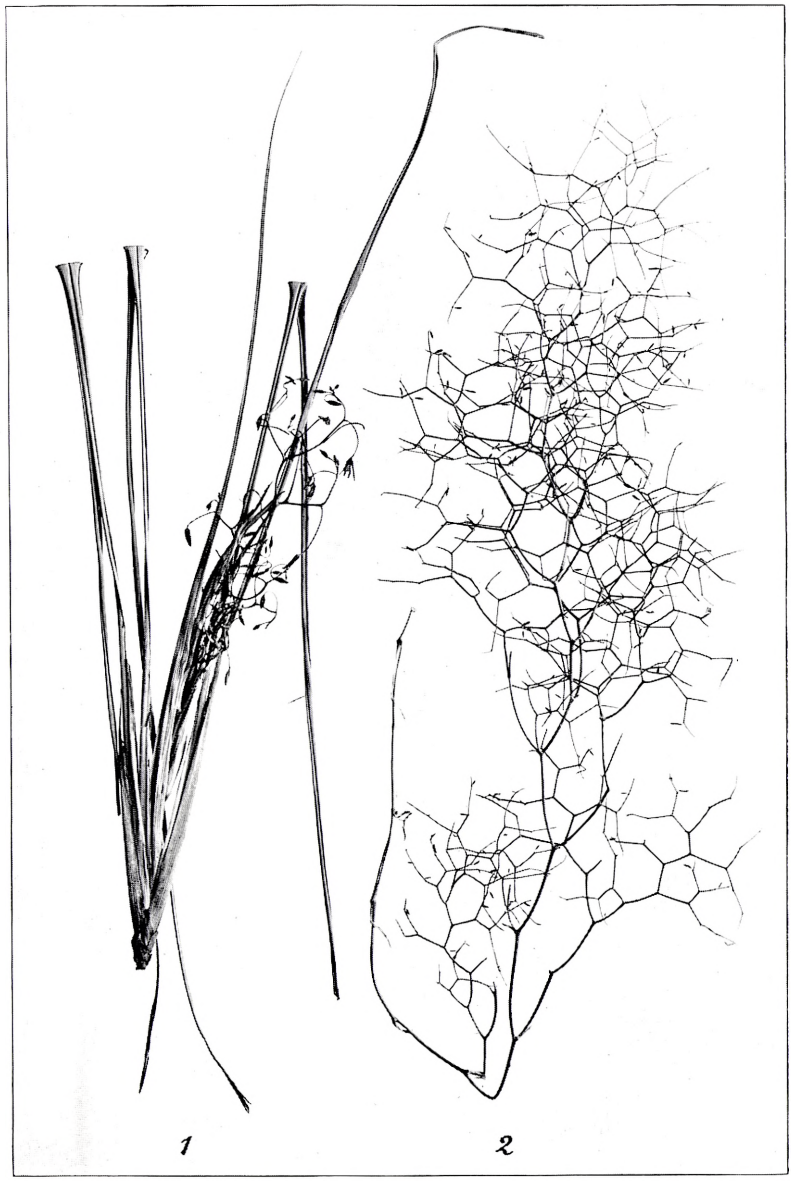


Fig. 1. Dianella revoluta R. Br., var. brevicaulis Ostf.
Fig. 2. Corynotheca micrantha (Lindl.) Macbride. (3/8 nat. size).

Fig. 1. Conostylis juncea Endl., var. involucrata (Endl.) Ostf. Fig. 2. Conostylis juncea Endl. Fig. 3. Cæsia parviflora R. Br. Fig. 4. Cæsia micrantha Lindl. ($^3/_5$ nat. size).

Fig. 1. Caladenia macrostylis Fitzg. Fig. 2. Bartlingia paleacea (F. Müll.) Ostf. Fig. 3. Patersonia pygmæa Lindl. Fig. 4. Patersonia longiscapa Sweet. Fig. 5. Juncus planifolius R. Br., var. humilis Ostf. Fig. 6. Borya nitida Labill., coarse form from Tamin. (1/2 nat. size).

Fig. 1 Casuarina decussata Benth., branch with ripe cone and branchelets with male inflorescences.
Fig. 2. Casuarina lepidophloia F. v. Müll., with young cones. (5/9 nat. size).

Casuarina acutivalvis F. v. Müll., male branch to the left, female branch with cones to the right. (3/8 nat. size).

Fig. 1. Adenanthos barbigera Lindl. Fig. 2. Adenanthos intermedius Ostf. Fig. 3. Adenanthos obovatus Labill., narrow-leaved form. Fig. 4. Adenanthos obovatus Labill., typical. ($^{7}/_{12}$ nat. size).

Fig. 1. Simsia latifolia R.Br., var. gracilis Ostf. from Perth, King's Park. Fig. 2 Simsia latifolia B.Br. typical, from the same place (taken about a month earlier). (2/5 nat size).

Tetragonia eremæa Ostf., a large branched specimen and a small unbranched one; wholly and partly ripe isolated fruits, seen from above and from the side. (nat. size).

Fig. 1. Marianthus erubescens Putterl.
Fig. 2. Marianthus gracilis Ostf. ($^{7}/_{12}$ nat. size).

a. Hibbertia pulchra Ostf. b. Hibbertia teretifolia Turcz.
c. Hibbertia inconspicua Ostf. (nat. size).

Fig. 1. Xanthosia candida Steud., var. subtrilobata Ostf.
Fig. 2. Petroselinum sativum Hoffm., abnormal form from Yallingup Cave. ($^{7}/_{12}$ nat. size).

Fig. 1. Eremophila angustifolia (Sp. Moore) Ostf. Fig. 2. Eremophila decipiens Ostf. Fig. 3. Stylidium spathulatum R. Br., var. obovatum Ostf. Fig. 4. Samolus repens (Forst.) Pers., var. floribundus Benth. (1/2 nat. size.)

DET KGL. DANSKE VIDENSKABERNES SELSKABS SKRIFTER

NATURVIDENSKABELIG OG MATHEMATISK AFDELING

8DE RÆKKE

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II., 1916—1918 (med 4 Tavler) 11,50

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