CONTRIBUTIONS TO THE QUEENSLAND FLORA, No. 7.

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The present paper contains additions to the flora of Queensland since the publication of the previous contribution (these Proceedings, Vol. 50, pp. 66-87).

My thanks are due to members of my staff and other botanists, both in Australia and abroad, for much help received. Due acknowledgment has been made under the different plants concerned. One family (Dichapetalaceae or Chailletiaceae) and a genus (Gaertnera-Loganiaceae) are added to the Australian flora. Some of the present paper is based on notes made while I was working at the Royal Botanic Gardens, Kew (Eng.), in 1939.

Family DILLENIACEAE.

Hibbertia hexandra sp. nov.

Frutex magnus vel arbor parva, ramulis foliis subtus pedunculis calycibusque dense stellato-tomentosis. Folia manifeste discoloria elongato-obovata, apice obtusa, subobtusa vel emarginata, basin versus in petiolum gradatim attenuata, supra subscabra, subtus dense et submolliter stellato-tomentosa, costa media supra impressa subtus elevata, nervis secundariis supra obscuris subtus visibilibus sed vix prominulis, lamina 2·5–6 cm. longa, 0·6–1·5 cm. lata, petiolo 0·5–2 mm. longo. Flores axillares, solitarii, pedunculis robustis unifloris 0·7–1 cm. longis, apice bracteam hypocalycinam gerentibus. Bractea linearis, 4 mm. longa, dense stellato-tomentosa. Sepala libera, 3 exteriora oblongo-lanceolata, 7–8 mm. longa, extus dense stellato-tomentosa, intus in parte inferiori glabra, 2 interiora extus dense stellato-pubescentes, intus prope apicem pilis paucis stellatis vestita. Petala 7 mm. longa. Stamina 6, glabra, filamentis leviter applanatis, 1·5 mm. longis, antheris 2 mm. longis. Staminodia 0. Carpella 2, 2–ovulata, pilis longis albis dense vestita, stylis glabris.

Moreton District.—Lamington National Park, Macpherson Range, alt. 1,000 m., growing in great profusion on edge of swamps in rather shallow soil overlying trachyte. C. T. White, 11187 (type: flowers), 22nd Oct., 1934 (large shrub or small tree, leaves rather dull green above, markedly paler beneath, flowers yellow). Same locality, scrubby forest country. C. T. White, 11384 (flowers), Dec., 1937 (small tree or large shrub). Mt. Greville Gorge, E. J. Smith, No. 9 (flowers), 20th April, 1938.

In systematic position, the present species belongs to Bentham's section Euhibbertia, and comes between *H. hermanniaefolia* DC. and *H. velutina* R.Br. In general appearance, it very closely resembles *H. melhanoides* F. Muell. (which is doubtfully distinct from *H. velutina* R.Br.), but these species all differ in possessing indefinite stamens. In geographical range, it comes between *H. hermanniaefolia* DC. and the other two species mentioned.

Family CRUCIFERAE.

Cardamine circaeoides Hook. f. & Thompson, Jour. Linn. Soc. V. 144.

Cook District.—North Toohey Creek (prostrate scrambler), growing in crevices of rocky creek bed, North Queensland. H. Flecker, North Queensland Naturalists' Club, Herb. No. 3366 (pods), 23rd May, 1937.

A native of India not previously recorded for Queensland. The specimen collected by Dr. Flecker is a good match for Indian material.

Lepidium bonariense L. species plant. ed. 1 (1753), p. 645.

Queensland.—Maranoa District, Roma, moderately common weed about the town, particularly in sandy soil, C. T. White, No. 9435 (in full fruit), 29th Oct., 1933. Darling Downs.—Wallangarra, weed in railway station yard, C. T. White, No. 9429 (flowers and young fruit), 14th Oct., 1933. Leichhardt District.—Wandoan, near rail track and water tank. C. E. Hubbard (Flora of Queensland, No. 4931 (flowers and fully developed silicules), 15th Nov., 1930 (erect, green leaves).

New South Wales.—Grafton (naturalised weed about the town), C. T. White, No. 10116 (flowers and fully developed fruits), 11th Nov., 1934 (herb about 18 in. high, very dense growth).

The above specimens are, I think, correctly determined. They differ from the typical form in being slightly more pubescent and in the silicules being more prominently reticulate. A specimen distributed by Herter (Plantae Uruguayensis No. 64/76083) seems an exact match for the Australian specimens.

A native of South America, where it has a wide distribution through Brazil, Uruguay, Argentine, and Chili.

Lepidium perfoliatum L. Sp. Plantarum 643.

Moreton District.—Botanic Gardens, Brisbane, a few odd plants seen growing among street sweepings, E. W. Bick, Nov., 1916.

A native of South-eastern Europe and Western Asia.

Family PITTOSPORACEAE.

Pittosporum melanospermum F. Muell. Fragm. Phtyogr. Austr. 1, 70 (1859).

P. setigerum F. M. Bailey. Queens. Fl. 1, 69, 1899.

Cook District.—Cape York Penins., W. Hann (Queensl. Govt. Exped.), No. 98 (shrub with corrugated bark). Walsh River, T. Barclay Millar.

The species, as I understand it, has a wide range through North Queensland and the Northern Territory.

Bentham (Fl. Austral. 1, III.) quoted specimens from Keppel Bay (R. Brown). These were made the type of a new species by K. Domin (*P. queenslandicum*), but on the type sheet at Kew, Spencer Moore has written "*P. melanospermum* Benth. pro parte non F. Muell. This has been described by Domin as *P. queenslandicum*, it is conspecific with *P. ferrugineum* Ait.," and I fully agree with his determination. Bentham l.c. made a variety *lateralis* based on two collections, the one from York Sound, N.W. Australia (A. Cunningham); the other from Whitsunday Island (Henne). The former, Domin has made a distinct species—*P. resinosum* Domin—the other, Domin has written on the Kew sheet "This plant is Celastrus dispermus F. Muell."—a determination which is obviously correct.

Family FLACOURTIACEAE.

Flacourtia Cataphracta Roxb. in Willd. Sp. Pl. IV. 830.

Cook District.—Daintree River, Dr. H. Flecker, N.Q. Nat. Club. No. 7067 (male flowers), 13th Dec., 1940 (tree, 30 ft. high).

A native of India, widely cultivated in Queensland, and here and there subspontaneous, especially along creeks. The Daintree River specimen is probably an escape from cultivation.

Family HYPERICACEAE.

Harungana madagascariensis Poir. in Dict. Sc. Nat. XX. 307.

Cook District:—Frenchman's Creek, Babinda, L. J. Brass and C. T. White, No. 331 (type: flowers and fruits), 25th Sept., 1937. Small tree 8–10 m. high, in rain-forest regrowth. Palma, Dr. H. Flecker (flowers) on 29th Oct., 1939, N.Q. Nat. Club. No. 6403—tree near watercourse, main highway.

I had at first thought this might be a new species allied to the African and Madagascar plant. I sent specimens to the Royal Botanic Gardens, Kew, where they were compared for me by Messrs. Summerhayes and Burtt of the Herbarium staff. They have reported that—

"The Queensland material agrees very closely with this species in nearly all respects, but has the leaves strictly oblong-elliptical, whereas in *H. madagascariensis* the leaves are usually rather wider at the base. In some specimens, however, the leaves are practically identical with those of the Australian material. The fruits in the latter seem to be slightly smaller and more brightly coloured than in *H. madagascariensis*, but it does not seem advisable to emphasise this difference, as we have only one gathering from Queensland. Summing up, such differences as do exist between the African and Australian specimens seem insufficient to justify the creation of a new species."

There is a possibility that the plant may be a naturalised one.

Family MALVACEAE.

Abutilon Andrewsianum W. F. Fitzgerald in Jour. & Proc. Roy. Soc. West Aus. Vol. 3, p. 172 (1918).

A. propinquum W. V. Fitzg. l.c.

A. flavum Ostenfeld. Dansk. Bot. Arkiv. 2 (8) 21. 1918 non *A. flavum* Ulbrich (1913).

Western Australia.—Lennard, Barker, Fitzroy, Adcock, Hann and Isdell Rivers (W. V. Fitzgerald l.c.). Derby, C. H. Ostenfeld No. 1171. 7th Nov., 1914.

Northern Territory.—Settlement Creek, L. J. Brass, No. 321, April, 1923.

Queensland.—Cook District: Cape York Peninsula, W. Hann, No. 76 (Cape York Penins. Exped.). Gilbert River (on river bank), L. J. Brass, No. 425, March, 1925. Burke District: Julia Creek, C. T. White, August, 1916.

Hann's and Brass's specimens from North Queensland are more tomentose than those from Western Australia, but otherwise agree fairly well with co-type material of Fitzgerald's species at Kew. C. T. White's specimens from Julia Creek are much more robust and more densely tomentose, but I do not think can be separated specifically. Brass's from the Northern Territory are an exact match for Ostenfeld's plant except that the leaves are larger approaching indica. The leaves on the twig measure up to 9 by 5·5 cm., a detached leaf which I have little doubt, however, is correctly matched measures 18 by 15 cm. On the lower surface is a very close white tomentum like that of *A. indicum* Sweet; this change in pubescence with age is a fairly common feature in Malvaceae and Sterculiaceae. In his original description Fitzgerald described the petals at the base and staminal column as glabrous. In Ostenfeld's plant and in the Queensland specimens the petals are pubescent at the base and the staminal column glabrous or nearly so. In Brass's specimens from the Northern Territory the staminal column is hairy as in Fitzgerald's *A. propinquum*. I think, therefore, it is best to regard all three species as the same and to allow the plant a wide distribution through North Australia.

Abutilon arenarium n. sp.

Suffrutex erectus ramosus dense stellato-tomentosus et caulibus pilis longis simplicibus vestitis, distantim foliatis. Folia petiolata; petioli 0·3-1·5 cm. longi, laminis multo breviores; laminae oblongae 2-6 cm. longae, 0·5-2 cm. latae, crenulato-serratae ad basi plerumque 7-nerviae, leviter cordatae, apice obtusae minute mucronulatae vel apiculatae sed apiculo ipso deciduo, nervis et venulis supra obsoletis leviter impressis subtus elevatis; stipulae subulatae. Flores parvi flavi, longe pedicellati; pedicelli gracili 1-2·5 cm. longi, ca. 2 mm. infra apicem valde articulati; calyx late campanulatus profunde 5-fidus, 4 mm. longus; corolla calycem subduplo superans, ad 1 mm. longitudinis columnae staminali adnata; columnae pars libera brevis ad basin 2 mm. lata. Calyx fructifer 5 mm. longus 8 mm. latus aliquantum accrescens. Capsula 7 mm. alta 6 mm. diam. truncata. Capsella 7-9 dorso stellato-tomentosa, pilorum fasciculis densis vel distinctis, rotundata sed ad apicem minute apiculata; semina reniformia subangularia ad angulos tenuiter puberula.

Mitchell District.—Torrens Creek, C. T. White, No. 8663 (type: flowers and fruits), 19th March, 1937 (undershrub flowers yellow); 10 miles N.W. of Longreach (on sandy ridges), S. L. Everist and C. T. White, No. 110 (fruits), 28th May, 1936 (openly branched subshrub).

Among previously described Australian species the closest affinities are with *A. indicum* Sweet and *A. Andrewsianum* W. V. Fitzg. (sens lat). The three species can be distinguished as follows:—

Plant with a close grey tomentum not markedly stellate under a lens (X 10). Leaves cordate ovate to cordate-orbicular. Capsules 3 cm. or more in diameter. Carpels readily seceding at maturity and clothed in the bud with long spreading hairs.	*A. indicum.*
Tomentum not tight and close and usually with long simple hairs intermixed. Leaves cordate ovate. Capsule 1.8 c.m. diameter, carpels persistent and clothed on the back with stellate hairs	*A. Andrewsianum.*
Leaves oblong, slightly cordate at the base. Tomentum markedly stellate under a lens (X 10) and mixed with long simple hairs. Capsule 6 mm. diameter, carpels persistent	*A. arenarium.*

A. oxycarpum F. Muell. and its related species *A. malvifolia* J. M. Black and *A. lobulatum* Domin are allied but distinguished by their carpels possessing long spreading pungent points.

Hibiscus Krichauffianus F. Muell. Report Babbage's Exped. 7, 1858.

Gregory North District.—Glengyle Station, about 80 miles north of Birdsville. Growing on edge of sandhill. S. L. Everist and L. S. Smith, No. 103, 20th Jan., 1937. (Recorded from Cooper's Creek in Bailey's "Queensland Flora," but so far as we know, the above is the first authentic specimen from Queensland territory). Determination by L. S. Smith.

Family STERCULIACEAE.

Keraudrenia corollata (Steetz) Domin in Bibl. Bot. 89 (v.) 975, 1928, var. *denticulata* n. var.

Folia grosse et irregulariter dentata vel serrato-denticulata, ad 12 cm. longa et 4 cm. lata. Pedunculi 1-2·5 cm. longi; bracteae ovatae, 4-5 mm. longae, 2 mm. latae peracutae. Calyx albus vel demum carneus. Petala minuta, filamentis similia.

Moreton District.—Ithaca Creek, near Brisbane, F. M. Bailey (flowers and old capsules), Sept. Aspley, near Brisbane, H. Tryon and C. T. White (type of the variety—flowers and old capsules), 19th Dec., 1928.

Differs from the type in having larger, broader, toothed leaves, broader bracts, and white, not coloured, calyx.

Keraudrenia Hillii F. Muell. ex. Benth. Fl. Austr. 1, 246, 1863, var. *velutina* n. var.

Folia serrulato-denticulata, ad 12 cm. longa et 3·5 cm. lata, supra velutina, pilis stellatis numerosis sed distinctis vestita.

Moreton District.—Glass House Mts., C. T. White, Sept., 1909. Saddle Back Mountain, Elimbah, C. T. White, No. 3229 (type of the variety—flowers and capsules), 12th Sept., 1926.

Family TILIACEAE.

Corchorus sidoides F. Muell. Fragm. Phytogr. Austr. III., 9, 1862.

Burke District.—Woolgar, E. W. Bick, Aug., 1915. These specimens are a good match for R. Brown's Carpentaria ones. So far as I know, they are the first authentic specimens from Queensland territory.

Triumfetta plumigera F. Muell. Fragm. Phytogr. Austr. I., 69, 1859.

Burke District.—Lawn Hill, H. I. Jensen, No. 88, May, 1940. Determination by L. S. Smith.

Family RUTACEAE.

Boronia artemesiaefolia F. Muell. Fragm. Phytogr. Austr. I., 66, 1859.

Cook District.—The Gorge, Mt. Mulligan, Dr. H. Flecker (flowers), 2nd April, 1934. New for Queensland.

These specimens approach some from Vanstittart Bay, collected by A. Cunningham, and which he labelled *B. candicans*. Bentham in the Flora Australiensis referred them to *B. artemisaefolia* F. Muell. var. *Wilsoni* F. Muell., a determination, however, in which I cannot agree.

Boronia obovata sp. nov.

Frutex ramulis pilis stellatis ferrugineis dense obsitis. Folia trifoliolata; petiolus communis dense ferrugineo-tomentosus, 1–2 mm. longus; foliola anguste obovata 1–2 cm. longa, 4–7 mm. lata, discoloria, supra pilis stellatis paucis vestita, subtus dense stellato-tomentosa, costa media supra sulcata, subtus elevata, nervis lateralibus obscuris. Flores axillares, solitarii, pedunculis 2–3 mm. longis. Sepala linearia extus pilis stellatis paucis obsita, apice acuta, 4 mm. longa, 1 mm. lata. Petala tomentosa, anguste ovata, 8 mm. longa, 3 mm. lata. Stamina 3 mm. longa, filamentis applanatis 2 mm. longis in parte inferiori pilis longis paucis vestitis, apicem versus incrassatis verruculosis, antheris cordatis 1 mm. longis, minute sed prominenter apiculatis. Cocci crustacei, minute verruculosi, transverse venosi, 6 mm. longi; semen nigrum.

Leichhardt District.—Blackdown Tableland, H. G. Simmons, No. 3 (flowers and fruits), Sept., 1937.

The affinities of the present species are with *B. triphylla* Sieb., which differs in having narrower acute leaves.

Boronia repanda Maid. & Betche, Proc. Linn. Soc. N.S.W., XXXI., 732 (1906), var. *alba* var. nov. Flores albi.

Darling Downs.—Thulimbah (obtained at Wild Flower Show, Queensland Naturalists' Club, 9th Sept., 1933). C. T. White, No. 9234. The colour of the flowers of normal *B. repanda* ranges from pale to very dark pink.

Boronia rivularis sp. nov.

Frutex gracilis, glaber. Folia imparipinnata, 3–6 juga; rhachis leviter alata, 2·5–4·5 cm. longa; foliola lanceolata, submembranacea, margine integra, vel leviter crenulato-dentata, 1·7–3 cm. longa, 3–8 mm. lata, apice acuta, basi angustata. Cymae 5–9 florae, ad apices ramulorum brevium lateralium dispositae, ramis subangularibus. Flores rosei, calycis lobi ovati, 1 mm. longi, petala ovata 6 mm. longa. Stamina biserialia, filamentis applanatis pilis longis albis vestitis, antheris glabris. Ovarium glabrum, stylus pilis paucis vestitus, stigmate parvo capitato. Cocci 1-spermi, 4 mm. longi; semen nigrum.

Queensland.—Wide Bay District, Fraser Island, in damp gullies, C. T. White, No. 2505 (type: flowers), May, 1925 (apparently similar to *B. thujona* Penfold & Welch, but leaves lacking characteristic "black currant" odour recorded as a characteristic feature of that species) (flowers and fruits), Oct., 1921 (sine no.). W. R. Petrie (shrub 2–3 feet high, rose flowers); these specimens distributed from Herb. Kew. Flora of Queensland comm. C. E. Hubbard under No. 5472 as *B. pinnata* Sm. Upper Noosa River, growing on banks of the river, Jas. Keys, No. 61 (slender shrub).

I had previously placed this plant under *B. Muelleri* Cheel and *B. thujona* Penfold & Welch. Mr. E. Cheel, who has done considerable work on *Boronia*, saw these specimens, and considered if *B. thujona* was definitely distinct from *B. Muelleri*, these specimens were intermediate. A portion of the gathering of Keys was evidently seen by Domin, who referred it with some hesitation to *B. pinnata* Sm. var. *Muelleri* Benth. (*B. Muelleri* Cheel.), *see* Bibl. Bot. 89, p. 839. *B. Muelleri* differs in having raised glands on branchlets and leaves, and *B. thujona* in having serrulate leaflets and, when fresh, emitting a "black-currant" odour

when crushed. *B. pinnata* Sm. and its allies is a group in which two courses lie open: either to treat *B. pinnata* Sm. as a polymorphic species with a wide distribution, or to split off a number of individual species, all of which have definite geographical and habitat limits.

Eriostemon queenslandicus sp. nov.

Frutex 30–50 cm. alt., ramis robustis erectis glabris simplicibus vel in parte superiore pauci-ramosis. Folia anguste lanceolata, 1·8–2·5 cm. longa, 1·5–3 mm. lata, crassa, apice acuminata subpungentia, basi sessilia vel in petiolum indistinctum gradatim angustata, enervia, supra concava, vel plana sed margine semper incurva, plerumque subtus plus vel minus verrucosa sed verrucis (glandulis) saepe paucis vel absentibus. Flores axillares; pedunculis unifloris vel rarissime trifloris, 2 mm. longis, ad apicem annulo bractearum parvarum ornatis; pedicellis 4 mm. longis robustis apicem versus incrassatis. Calyx 3 mm. diam., 5-lobatus, lobis late triangularibus subobtusis. Petala oblonga, 6–7 mm. longa, 2·5 mm. lata. Stamina 10, filamentis applanatis, apicem versus gradatim angustatis, basi 0·5 mm. latis, margine pilis longis albis obsitis. Cocci 5, apice oblique truncati, angulo exteriore in acumen producti.

Moreton District.—Moreton Bay (northern end), Miss E. N. Parker (flowers), July, 1918. Coolum, very common in swamps, C. T. White, No. 11416 (flowers), April, 1938 (shrub 1–2 ft. high, usually several stems from a common stock, flowers opening white, turning to pink). Maroochy, F. M. Bailey (flowers), July, 1879. Beerwah, C. T. White, No. 974 (flowers), Sept., 1921 (distributed as *E. scaber* Paxt.). Caloundra, F. H. Kenny (flowers), Aug., 1906. Caloundra, common on high wallum, C. T. White, No. 9654 (flowers and young capsules), Dec., 1933 (undershrub with numerous stems from a common stock, flowers flesh-coloured), distributed as *E. scaber* Paxt. Caloundra, very common on sandy wallum flats, S. L. Everist, No. 454 (type: flowers), August, 1933 (low shrub or subshrub, flowers pink); determined and distributed as E. *scaber* Paxt. Between Beerwah and Landsborough, in open situations amongst masses of dwarf shrubs, grey sandy soil, C. E. Hubbard, No. 3114 (flowers), 22nd June, 1930 (rigid erect solitary stems, dull green fleshy leaves, pale pink or flesh-coloured flowers), determined and distributed from Herb. Kew. as *E. glasshousiensis* Domin. forma.

Wide Bay District.—Near Lake Wybah, Mrs. Estelle Thomson; Lake Cootharaba, Jas. Keys; Coondoo Creek, W. D. Francis; Noosa Heads, H. A. Longman; Wide Bay, H. A. Longman.

The present species is undoubtedly close to *E. scaber* Paxt., and is mainly differentiated on habit. The geographical limits of both species are rather circumscribed, and there is a break of 700 miles between them. The two species can be separated as follows:—

Shrub about 1 m. high, with much branched stems, branches hairy, leaves markedly concave and warty beneath ..	*E. scaber.*
Shrub, 30-50 cm. high, stems simple or with a few branches in the upper parts (probably due to injury), branches glabrous, leaves frequently nearly flat and often smooth or with few warts (verrucose) on the lower face	*E. queenslandicus.*

E. scaber Paxt. has been recorded from the Glass House Mts. District by Mueller, Domin, and Bailey, but I have no doubt these represent *E. queenslandicus*, C. T. White, which is very abundant in this district. *E. scaber* Paxt. should thus be excluded from the Queensland Flora until authentic specimens have been collected.

Evodia micrococca F. Muell. var. *pubescens* Fraser & Vickery in Proc. Linn. Soc., N. S. Wales, Vol. LXII., 289, 1937.

Moreton District.—Ferny Grove, nr. Brisbane, C. T. White, Nov., 1924 (sine no.); near Brisbane, H. A. Longman (ex Herb. Kew).

N. S. Wales.—Hastings River, A. Cunningham, No. 6, May, 1819; same locality, C. Moore; E. Australia, R. Brown, both glabrous and pubescent forms under No. 5333 (all ex Herb. Kew).

Evodia vitiflora F. Muell. Fragm. VII., 144 (1871).

E. littoralis F. M. Bailey, Bot. Bull. XIV. (Dept. Agric., Brisbane) 7 (1896), Queensl. Flora 1, 201 (1899) non Endl.

This species has a wide range from Northern New South Wales to North Queensland. Some Queensland specimens collected at Eumundi were referred by Bailey to *E. littoralis* Endl. Specimens collected by Cunningham on Norfolk Island were distributed as from the Brisbane River, but according to notes on the sheets in the Herb. Kew, this was an error. *E. littoralis* should be deleted from the Australian flora.

Phebalium Beckleri (F. Muell.) Engler in Engler and Prantl. Pflanzenf. III. (iv.), 141, 1896.

Moreton District.—Springbrook, Macpherson Range, in open rain forest near edge of cliff, C. E. Hubbard, No. 4225 (advanced flowers), 28th Sept., 1930 (shrub 4–7 ft. high; leaves dark green and glossy; flowers white). Collected by W. Rudder (distributed from Herb. Kew as *P. elatius* Benth. under C. E. Hubbard, No. 4017. C. T. White, No. 6238 (very handsome and floriferous shrub, leaves glossy green above, somewhat paler beneath). C. T. White, No. 7064, common on edge of rain forest (flowers), 10th Aug., 1930 (handsome shrub 4 ft., flowers white). Lamington National Park, common on cliff edges in scrubby forest, C. T. White, No. 11385 (fruits), Dec., 1937 (large shrub).

The above, with the exception of White 11385, were variously distributed from Herb. Kew, Arnold Arboretum, and Herb. Brisbane as *P. elatius* Benth. The true *P. elatius* Benth. has not yet been collected in Queensland.

Zanthoxylum suberosum nom. nov.

Z. inerme White and Francis Bot. Bull. (Dept. Agric. Brisbane) xxii. 6, cum ic. 1920.

Non *Z. inerme* Mocino and Sesse Fl. Mexico. ed. 2, 320, 1894.

Non *Z. inerme* Koidz. Bot. Mag. Tokyo 33, 218, 1919.

Cook District.—Near Atherton, C. T. White (type: fruits), Jan., 1918, near Boar Pocket, Atherton Tableland. J. F. Bailey (fruits), June, 1899 (medium-sized tree, corky bark). Ravenshoe, C. J. Samundseth (fruits), June, 1940. Rooty Creek, near Mona Mona Mission Station, H. Flecker (old fruits), Oct., 1939. Scrubby Creek, Herberton, common in poor rain forest, S. F. Kajewski, No. 1358 (old fruits), Nov., 1929 (small tree about 8 m. high, leaves with a citron scent).

Kajewski's No. 1358 was recorded by White (Contr. Arn. Arb. 4, 48, 1933) and distributed erroneously as *Melicope erythrococca* Benth.

Zieria aspalathoides A. Cun. var. *obovatum* n. var.

Petiolus 0·5–1 mm. longus; foliola obovata, apice rotundata vel subacuta, margine leviter revoluta, discoloria, supra glabra vel pilis longis paucis vestita, subtus pallidiora vel albescentes, hirsuta vel glabrescentes, 0·6–1 cm. longa, 0·2–0·5 cm. lata.

Cook District.—Herberton, Dr. F. Hamilton Kenny (type of the variety: flowering specimens), Jan., 1912. Rev. J. E. Tenison Woods, J. F. Bailey (fruiting specimens), June-July, 1899. Rev. N. Michael (Nos. 363 and 1649) (small shrub 3–4 ft.). R. C. Ringrose No. 4 (including a narrow-leaved form). Stannary Hills, Dr. T. L. Bancroft, No. 287.

At first glance it is hard to reconcile the above specimens specifically with *Z. aspalathoides* A. Cunn., a species with a wide distribution through N. S. Wales and Queensland. I had drawn up a description of them as a new species, but the discovery among the material in the Queensland Herbarium of typical *Z. aspalathoides* from Herberton and further of intermediate ones from the same place induced me to the conclusion here published.

Zieria aspalathoides A. Cunn. var. *intermedia* n. var.

Petiolus ad 1 mm. longus sed saepe brevior et obsoletus foliola 1 cm. longa ad 3 mm. lata sed saepe angustiora, margine valde vel leviter revoluta.

Cook District.—Ravenshoe, E. W. Bick, No. 116 (flowers and fruits), June, 1913.

Zieria compacta C. T. White sp. nov.

Z. Smithii Andr. var. *parvifolia* Benth. pro parte.

Frutex compactus, ramulis robustis dense pubescentibus. Folia trifoliolata; petiolus communis dense et breviter hirsutus, 2–4 mm. longus; foliola lanceolata supra glabra atro-viridia, costa media sulcata, nervis obsoletis, subtus canescentia dense velutino-pubescentia costa media elevata, venis lateralibus subindistinctis, 6–7 in utroque latere, 1–3 cm. longa, 0·5–1 cm. lata. Cymae folia aequantes vel excedentes, 3–9–florae, pedunculo communi dense tomentoso circa 1 cm. longo, bracteis ad 4 mm. longis. Calyx alte 4–fidus, lobis late deltoides 1 mm. longis. Petala extus dense tomentosa lanceolata 4 mm. longa. Stamina glabra, antheris obtusis vix 1 mm. latis. Gynaecium glabrum. Carpella 5 mm. longa, valvis prominule venosis, seminibus atro-castaneis, tenuiter reticulato-striatis.

Queensland.—Darling Downs: Messines, near Stanthorpe, alt. 2,900 ft. Ex Brisbane Wild Flower Show, C. E. Hubbard (type: flowering specimens), 13th Sept., 1930 (leaves dark green above, greyish green below, flowers pale pink). Crow's Nest, Dr. F. H. Kenny (flowers), Sept., 1920. Crow's Nest, C. T. White (old flowers and young fruits), Oct., 1921 (small bush of dense growth, flowers white).

New South Wales.—Near Tenterfield, C. Stuart; Wallangarra, J. L. Boorman (distributed ex Nat. Herb., Sydney, as *Zieria Smithii* Andr. var. Fraseri F. Muell. ined.) (nearly ripe fruits), Oct., 1901; Wallangarra, E. Betche (ripe fruits), Dec., 1891 (distributed ex Nat. Herb. Sydney as *Z. Smithii* Andr. var. *parvifolia*).

Zieria compacta C. T. White var. *glabrata.*

Ramuli glaberrimi; foliola 2–3 cm. longa, ad 6 mm. lata sed saepe angustiora et marginibus valde revoluta.

Leichhardt District.—Blackdown Tableland, H. G. Simmons, No. 57 (flowers), Sept., 1937.

Zieria compacta C. T. White var. *robusta.*

Ramuli petiolisque tenuiter stellato-tomentosi; foliola 3–4 cm. longa, 4–6 mm. lata.

Leichhardt District.—Blackdown Tableland, H. G. Simmons, No. 73 (flowers), Sept., 1937.

Zieria granulata C. Moore ex Benth. var. *adenodonta* F. Muell. ex Maid & Betche, Proc. Linn. Soc., N.S.W., xxvi., 80, 1901.

Moreton District.—Lamington National Park (Yangabla, Nixon's Creek watershed). J. A. Gresty, No. 782 (flowers), Aug., 1941.

Not previously recorded for Queensland. The normal form has not yet been found in Queensland, specimens previously referred to it belong to *Z. furfuracea* R.Br. (determination by W. D. Francis).

Zieria rimulosa n. sp.

Frutex ramulis pubescentibus deinde glabris et valde rimulosis. Folia glabra trifoliolata, petiolus communis ca. 2·5 mm. longus; foliola obovato-lanceolata vel lineari-obovata, 1·2–1·5 cm. longa, ad 5 mm. lata sed saepe angustiora et marginibus valde revoluta, apice obtusa, basin versus gradatim angustata. Cymae 7–florae, pedunculis foliis ca. 1½ plo superantibus, tenuiter tomentosis, 1·7–2 cm. longis. Calyx glaber, leviter verniculosa, alte 4–lobus, lobis ovatis ca. 1 mm. longis. Petala ovata villosa, 4 mm. longa. Antherae obtusae. Carpella (vix matura) glabra, 4 mm. longa.

Cook District.—Mt. Mulligan, Miss McDonald (flowers and young fruits), 21st April, 1931 (ex Herb. North Queensland Nat. Club No. 450), type Herb. Brisbane. Co-type Herb. North Queensland Nat. Club, Cairns.

This plant had previously been referred with doubt to *Z. pilosa* Rudge. At first sight its affinities seem to lie with that species and its allies, but the absence of any apiculate point to the anthers place it next to *Z. Smithii* Andr. and cognate species.

From *Z. Smithii* it differs in its very much smaller leaves and inflorescense 1½ times or more longer than them.

Family MELIACEAE.

Amoora ferruginea sp. nov.

Arbor 10 m. alta, ramulis robustis, lenticellatis, partibus junioribus pilis stellatis atro-ferrugineis densissime obsitis. Folia imparipinnata, 6–7–juga; petiolus cum rhachi ferrugineo-pubescens, deinde glaber, 22–45 cm. longus; foliola elliptica, apice obtusa vel subobtusa, basi obtusa vel cuneata, costa media excepta glabra, utrinque opaca, subtus prominenter pallidiora, nervis lateralibus ca. 16 tenuibus supra subobscuris subtus visibilibus sed vix prominulis, petiolo valido 5 mm. longo, lamina 15–24 cm. longa. Paniculae axillares foliis multo breviores patentes et multiflorae, dense ramulosae ad 30 cm. diam. (Brass & White 262) vel angustae et pauci-ramosae (Herb. N.Q. Nat. Club, Nos. 2141 and 7272), ramulis pedicellis calycibusque pilis stellatis rufo-ferrugineis densissime obsitis. Calyx late cupulatus, trilobus, 3 mm. diam. (Brass & White 262) 1–5 mm. diam. (Herb. N.Q. Nat. Club, Nos. 2141 and 7272). Petala 3, rotunda, concava, subcoriacea, extus dense ferrugineo-pubescentes, margine glabra, intus glabra, nitida, 3 mm.

diam. (Brass & White 262) 5 mm. diam. (Herb. N.Q. Nat. Club, Nos. 2141 and 7272). Tubus stamineus glaber, antheris 6; Pistillum triloculare, pilis floccosis rufis dense vestitum, Fructus globosus 2·5 cm. diam., pilis asperis stellatis ferrugineis dense vestitus.

Cook District.—Foothills of Thornton Peak (Mt. Alexander), alt. 250 m., in rain forest, L. J. Brass and C. T. White, No. 262 (type: flowers), 20th Sept., 1937 (tree 10 m. high). Fishery Falls, H. Flecker (flowers), 16th Aug., 1936 (Herb. North Queensland Naturalists' Club, No. 2141). Mt. Lewis, T. Carr (fruits), 1st Feb., 1941 (Herb. N.Q. Nat. Club, No. 7272).

Very distinct from the only other known Australian member of the genus *A. nitidula* Benth. which is glabrous in all its parts.

I was undecided whether to regard Brass & White 262 and the specimens received from the North Queensland Naturalists' Club as the same or distinct species. Apart from the character of the inflorescence, their appearance is similar, and though the flowers of the latter are larger, they have exactly the same floral structure.

Dysoxylum arborescens Miq. Ann. Mus. Bot. Lugd-Bat. IV., 25, 1848.

D. Nernstii F. Muell. Fragm. V., 176, 1866.

Miquel l.c. refers to having received specimens of *D. arborescens* from North Australia from Ferd. Mueller. I have seen the type of *D. Nernstii,* and cannot separate it from extra-Australian specimens of *D. arborescens* Miq. Merrill and Perry (Journ. Arn. Arb. xxi., 303, 1940) have already remarked on the similarity of *D. Nernstii* F. Muell. with *D. arborescens* Miq.

Dysoxylum decandrum (Blanco) Merr. in Govt. Lab. Publ. (Philip.), 27, 30, 1905.

D. rufum Benth. var. *glabrescens* Benth. Fl. Austr. 1, 382, 1863.

D. amooroides Miq. Ann. Mus. Bot. Lugd-Bat., 4, 16, 1868.

D. cerebriforme F. M. Bailey, Bot. Bull. xiv. (Brisb.), 7 Pl. I. and II., 1896.

This tree is very common along the Queensland coast from Bundaberg (Burnett District) to Mowbray River (Cook District). I had already stated (N.Q. Nat. vol. 3, p. 34) that Bailey's *D. cerebriforme* was identical with *D. amooroides* Miq. When examining the material of *Dysoxylum* at Herb., Kew, recently, I saw the type specimen of *D. rufum* var. *glabrescens* and should say there is no doubt at all it is the same.

Family CHAILLETIACEAE (DICHAPETALACEAE).

Dichapetalum australianum sp. nov.

Frutex 1·25 m. altus, partibus novellis pubescentibus, mox glabris, ramulis junioribus subangularibus mox teretibus, lenticellatis. Folia lanceolata, breviter petiolata, apice acuminata, in sicco utrinque reticulata, margine undulata, nervis lateralibus in utroque latere ca. 7; lamina 10–13 cm. longa, 3–4 cm. lata; petiolus 2–3 cm. longus. Inflorescentiae laterales, rhachi pilis strigosis sparse obsita; calyx (sub fructu) 5–lobatus, 4 mm. diam., extus sparse pubescens, lobis ovatis 1 mm. longis. Fructus carnosus, 3–lobatus, auriantiacus (fide Brass), in sicco 1·25 cm. longus, 8 mm.–1 cm. latus, trilocularis, loculis 1–2 saepe abortivis.

Cook District.—Slopes of Mt. Fraser, alt. 2,000 ft., in rain-forest gully, L. J. Brass, No. 2510 (fruits), 16th April, 1932 (spreading shrub, 4 ft. high, leaves glabrous and shining, the small veins conspicuous below; fruit fleshy, 3-lobed, orange-yellow).

These specimens were among a collection made by Mr. L. J. Brass in North Queensland on behalf of the Arnold Arboretum. I was not able to place the specimens satisfactorily, and referred them to Dr. E. D. Merrill, who replied: "Brass 2510 . . . . certainly represents *Dichapetalum*, the fruits of which are 1-, 2-, and 3-celled (cf. *D. tricapsulare* (Blanco) Merr."

The family is new to Australia.

Family ICACINACEAE.

Gomphandra australiana F. Muell. Fragm. Phytogr. Austr. vi., 3, 1867.

G. polymorpha F. M. Bail. Queensl. Bot. Bull. viii. (Dept. Agric. Brisbane), p. 71, 1893, non Wight.

North Kennedy District.—Rockingham Bay, J. Dallachy. Herbert River, H. G. Eaton. Cook District.—Barron River, E. Cowley (handsome tree to 60 ft.). Johnstone River, H. G. Ladbrook (small tree). Cairns, L. J. Nugent.

Some of the above were previously referred by F. M. Bailey to *G. polymorpha* Wight, but all agree with Mueller's *G. australiana*, and until authentic material has been gathered, *G. polymorpha* Wight should be deleted from the Queensland flora.

Family RHAMNACEAE.

Cryptandra spinescens Sieb. ex DC. in DC. Prodr. II., 38, 1825.

Darling Downs District.—Glenoie, near Hannaford, growing in red sandy loam. S. L. Everist, No. 1743 (flowers), 7th April, 1939 (densely branched shrub about 3 ft., flowers white).

Determination by S. L. Everist.

This plant is included in the Queensland Flora (p. 275) with the locality as "southern parts of the colony." Previously, however, there were no Queensland specimens in the Queensland Herbarium, hence the above record is interesting as giving a definite locality for the species.

Family SAPINDACEAE.

Toechima dasyrhache Radlk. Proc. Linn. Soc. N.S.W., xxxi., 733, 1906.

Moreton District.—Upper Tallebudgera Creek, C. T. White, No. 6595 (fruits), 20th Nov., 1929 (small tree 5 m., growing along creek bank, only the one specimen seen, capsules red, seed with a shining black testa and small, yellow fleshy aril at the base—very handsome).

These specimens were distributed as *Sarcopteryx stipitata* Radlk. In working through some Papuan and Australian Sapindaceae recently, Dr. Lilian M. Perry noticed the specimens and wrote me as follows:—"Would you check your No. 6595 and see if it belongs to *Toechima*?" There is no doubt this is where it belongs. The Tallebudgera specimens are a good match for White 10464 from Cooper's Creek, Mullumbimby, N.S.W. (in flower), and also distributed as *Sarcopteryx stipitata* Radlk. Both differ from the type in possessing more numerous and smaller leaflets, but are scarcely distinguishable specifically. Apart from these, the species is only known from the type gathering.

Family LEGUMINOSAE.

Acacia Crombiei sp. nov. (Series Uninerves-Angustifoliae).

Arbor glabra ad 10 m. alta, ramulis junioribus triangularibus leviter tortuosis, vetustioribus teretibus costis 3–5 notatis. Phyllodia lineari-lanceolata, recta vel leviter falcata, in sicco pallido-viridia vel glaucescentia, 11–14 cm. longa, 4–6 mm. lata, basi valde angustata, margine valde incrassata, glandula marginali absenti, costa media prominenti, venis lateralibus utrinque prominulis et obscure reticulatis. Pedunculi solitarii, graciles, 1·5–1·8 cm. longi. Flores in capitulum densum dispositi. Sepala 5, libera, lineari-spathulata, ciliolata, 0·5 cm. longa. Petala 5, ovato-lanceolata, 2 mm. longa, margine minute denticulato-ciliolata. Stamina numerosa, 3 mm. longa. Legumen (in specimine meo non maturum) stipitatum, 5–10 cm. longum, 2 cm. latum, inter semina nunc valde nunc haud angustata, margine undulata incrassata, valvis tenuis et valde reticulatis.

Mitchell District.—Near Longreach, J. Crombie, immature pods, May, 1940 (type: flowers), June, 1940.

Mr. Crombie wrote: "In appearance the tree is somewhat like Gidyea or Boree, but is straighter, bushier, and more symmetrical. I know of only one clump of a hundred odd trees of all sizes up to about 30 feet high and 10 inches in diameter. It is on a dry ridge isolated in downs country, and there are no similar trees within at least 40 miles. I have known it for thirty years, and have not recognised it elsewhere or found anybody who knew it."

In botanical sequence it comes into Bentham's Series Uninerves, Section Angustifoliae (Fl. Austr. II., 309), and should be placed between *Acacia Gnidium* Benth. and *A. ramosissima* Benth. It differs from the former in not being resinous, and from the latter in possessing rather prominent anastomosing lateral veins.

Indigofera suffruticosa Miller. Gard. Dict. ed. 8 (1768), No. 2. *I. anil* Linn. Mant. 2, 272, 1771.

This is a very common weed along the Queensland coast from Brisbane to Cairns. It was originally recorded from Bundaberg by F. M. Bailey as *I. argentea* Linn. I have seen these specimens and have no hesitation in placing them under *I. suffruticosa* Miller.

Jacksonia thesioides A. Cunn. ex Benth. Fl. Austr. II., 59 (1864). Banks and Solander, Bot. Cook's Voyage, ed. J. Britten, I., 18, pl. 49.

J. purpurascens F. Muell. IV., 161, 1864.

North Kennedy District.—Rockingham Bay, J. Dallachy (type of *J. purpurascens* F. Muell.). Cook District.—Endeavour River, A. Cunningham (type of *J. thesioides*, A. Cunn.), Banks, and Solander. Watsonville, L. C. Ball. Dimbulah, J. H. Smith. Mt. Fraser, alt. 1,500 ft., gregarious on crest of a granite ridge, L. J. Brass, No. 2424 (immature pods), 9th April, 1932 (much branched shrub 4 ft. high). Thornton Peak, alt. 700 ft., common on quartz ridges, L. J. Brass and C. T. White, No. 272 (flowers), 22nd Sept., 1937 (small shrub, flowers purple). Herberton, Dr. F. H. Kenny, Rev. N. Michael. Stannary Hills, Dr. T. L. Bancroft. Thursday Island, F. M. Bailey. Temple Bay, sandy country, J. E. Young (Wilkins Exped. No. 17), July, 1923. A type piece of *J. purpurascens* F. Muell. has been labelled in pencil in

Hb., Kew, as "*J. thesioides* var." It is the common type in North Queensland. It has more slender branchlets and smaller flowers than typical *J. thesioides*. Both forms are represented in Young's specimens from Temple Bay, they probably run into one another, and I consider it doubtful if they are really even varietally distinct.

Jacksonia vernicosa F. Muell. ex Benth. Fl. Austr. II., 58, 1864.

Cook District.—Newcastle Range, between Forsayth and Einasleigh, on sandstone. L. J. Brass, No. 1760 (flowers), Feb., 1928 (low, much branched shrub).

A definite Queensland locality for the species. These specimens are less vernicose than the type and the flowers are smaller but otherwise they are inseparable.

Psoralea balsamica F. Muell. in Trans. Vic. Instit. III., 55.

Burke District.—Mt. Isa, alt. 1,300 ft., on gully on rocky hill-slopes in reddish-brown soil, C. E. Hubbard and C. W. Winders, No. 7403 (flowers), 9th Feb., 1931 (ex. Herb. Roy. Bot. Gard., Kew). Twelve miles S.W. of Cloncurry, favouring northern slopes of stony hillsides, and inviting strong sunlight in exposed and arid localities, associated with Spinifex (*Triodia*) and Ridge Grass (*Eriachne*), not plentiful, appearing in scattered units, S. E. Pearson, No. 110 (flowers), July, 1941 (plant with single stems, 2–3 ft. high, exuding a sticky substance and possessing a decided odour of mint).

Not previously recorded for Queensland.

Tephrosia varians n. comb.

Galactia varians F. M. Bail., Bot. Bull. x. (Dept. Agric., Brisbane), 22, 1895.

Cook District.—Coolgarra, M. Butler (type), Herberton. Dr. F. H. Kenny. Tate River, A. Straughan (flowers), Feb., 1938 (herb with a carrot-like root, eaten by the natives). Chillagoe, alt. 1,160 ft., in open Eucalyptus forest, in reddish-brown soil amongst grasses. C. E. Hubbard and C. Winders, No. 6759 (flowers), Jan., 1931. North Kennedy District.—Stuart, near Towsnville, R. C. Watts (flowers and pods), Nov., 1940.

When recently going through a collection of Australian plants made by Mr. C. E. Hubbard, I recognised his No. 6759, distributed as *Tephrosia* sp. as *Galactia varians* F. M. Bailey. Bailey's plant was obviously placed in the wrong genus, and I thought it might be identical with *T. reticulata* R. Br., but did not feel satisfied. At my request, a comparison of Hubbard's 6759 was made with R. Brown's *T. reticulata* at the Royal Botanic Gardens, Kew. The comparison was made by Messrs. Summerhayes and Burtt, who reported:

"We have only R. Brown's original gathering of *T. reticulata*. This has three or four pairs of leaflets which are sub-densely hairy beneath, and thicker in texture than in *T. varians*; there are no good flowers. Of the two remaining collections cited in Flora Australiensis, A. Cunningham from Sim's Island is quite a distinct species, but we have not seen the Banks and Solander plant. There are two other specimens at Kew named by Bentham (Hann, Cape York, and Cunningham, Endeavour R.), but both these agree more closely with *T. varians*, though they seem to have smaller flowers than in Hubbard 6759. At present the reduction of *T. varians* to *T. reticulata* is not justified, but it will be seen that the material available is not sufficient to say finally that they are distinct."

Family ROSACEAE.

Rubus Moorei F. Muell. in Trans. Philosoph. Instit. Vic. 2, 67, 1858.

This scrambling shrub or vigorous climber is very common in mountainous areas in South-eastern Queensland at altitudes of 2,000–3,000 feet. It is abundant on the Macpherson Range and is found on the Blackall Range at comparatively low altitudes (about 1,500 ft.), but strange to say, I have never seen it on Tamborine Mountain, though I know that locality well.

It occurs both here and in New South Wales in two distinct forms, the one (the type) with the branchlets, under-surface of the leaves and calyces densely clothed with silky hairs; the other with the branchlets, and under-surfaces of the leaves quite glabrous, or with a few hairs on the midrib and tufts in the axils of the primary nerves. The leaves and flowers are also larger than in the type, and the calyces much less sericeous. The inflorescence is larger and looser and the branches less sericeous. At first sight, the two forms seem so distinct as to be worthy of distinctive specific rank, but I have found what I take to be intermediate forms (unfortunately not in flower or fruit) and think it better for the time being to regard them as races or forms of the one species.

They may be distinguished as follows:—

f. sericea. Rami dense sericeo-tomentosi. Foliola 4–6 cm. longa, 2–3 cm. lata, subtus pilis sericeis longis dense obsita. Inflorescentia 2–4 cm. longa, conferta. Calyx extus densissime sericeus.

f. glabra. Rami glabri. Foliola 6–12 cm. longa, 3–6 cm. lata, utrinque glabra vel costa media pilis paucis obsita et saepe pilorum fasciculis in axillis nervorum. Inflorescentia ad 12 cm. longa, laxe ramosa, ramulis calycibusque sericeo-tomentosis.

The following specimens have been seen by me in Australian herbaria. The following abbreviations have been used to designate the source of the material cited:—B—Brisbane; M—Melbourne; S—Sydney.

R. Moorei F. Muell. *f. sericea.*

Queensland.—Springbrook, alt. 3,000 ft., brown loam soil, in rain forest, C. E. Hubbard, No. 4273 (flowers), 29th Sept., 1930 (rambling over shrubs and low trees) (B); same locality, J. E. Young (fruits), Dec., 1921 (B); Beechmont, alt. 2,000 ft., common on edge of rain forest, C. T. White, No. 6180 (flowers), 1st Sept., 1929 (vigorous vine, flowers white) (B); Candle Mt., C. T. White (B); Blackall Range, C. T. White (sterile material), April, 1918 (B—an intermediate form less sericeous than usual); Roberts Plateau, Lamington National Park, C. T. White (sterile material), Jan., 1919 (B—less sericeous than usual).

New South Wales.—Clarence River, C. Moore (M—type of the species); Lismore, Miss Rothwell, E. Cheel (M); Clarence River, Moore (fruit black of a sub-acid nature) (M); from the creek bank at Mt. Archer, Leichhardt (flowers), 23rd Sept., 1843 (M).

R. Moorei F. Muell. *f. glabra.*

Queensland.—Springbrook, alt. 2,000 ft., C. T. White (B); Roberts Plateau, Macpherson Range, C. T. White (B).

New South Wales.—Dorrigo State Forest, alt. 2,500 ft., common as secondary growth and on edge of rain forest, C. T. White, No. 7542 (flowers), 4th Oct., 1930 (B—type of the form); Upper Williams River, common in brush forests, C. T. White, No. 11484 (climber, leaves glossy

green, local name "Lawyer Vine") (B); Hastings River, F. Mueller (M); Scrub, near Tenterfield, Moore (M); Tweed River, Moore (M); Illawarra, A. T. Ralston (M); Brisbane Water, Moore (M); Blue Mountains, Miss Atkinson (M); creek bush, near Mr. Archer's, Leichhardt, 23rd Sept., 1843 (M); New England, C. Stuart (M); Burrawang, J. J. Fletcher (S); Gosford, Boorman (S); Cooramba, Boorman (S); near Pt. Macquarie, McDonnaugh (S); Clarence River, Beckler (S); Cambewarra Mt., J. H. Maiden (S); Mt. Kembla, A. G. Hamilton (S); Milton, R. H. Cambage (S); Hastings River, Forester Brown (S); Otford, S. C., J. H. Camfield (S).

Family CUNONIACEAE.

Ceratopetalum corymbosum sp. nov.

Arbor(?). Folia opposita, 3-foliolata; petiolus communis validus, 1·5–3 cm. longus; foliola sessilia, coriacea, lanceolata vel peranguste obovata, apice acuta vel plus vel minus abrupte et obtuse acuminata, basi cuneata, utrinque reticulata, margine subintegra (in specimine nostro valde undulata) in sicco anguste recurva, 4–10 cm. longa, 1·3–2·5 cm. lata. Paniculae terminales, corymbosae, ramis primariis 3, quadrangularibus, lateralibus ca. 6 cm. longis, medio 7–8·5 cm. longo; ramis secundariis et ramulis ultimis pedicellisque tenuiter pubescentibus; pedicellis vix 2 mm. longis. Calycis tubus 2 mm. diam. tenuiter pubescens, lobis 5, anguste lanceolatis, 5–6 mm. longis, 1·5 mm. latis, extus, glabris, intus ad margine lineam angustam minute tomentosum notatis. Petala 0 (?). Stamina 10, filamentis 3 mm. longis basin versus leviter dilatatis; antheris 0·75 mm. diam., connectivo in apiculam recurvam non producto. Discus subcarnosus, annulatus, lobatus. Pistillum glabrum.

Thornton Peak, alt. 4,500 ft. Dr. H. Flecker (flowers), 14th Dec., 1940. N.Q. Nat. Club, No. 7108.

The affinities of the present species lie with *C. Virchowii* F. Muell., but the two species can be easily determined as follows:—

Leaflets broadly lanceolate or elliptic, long acuminate, 6-8 cm. long, 2-3 cm. broad. Petiolules 1-2 cm. long. Inflorescences terminal and subterminal. Peduncle solitary	*C. Virchowii.*
Leaflets narrowly lanceolate or very narrowly obovate, shortly acuminate, 4-10 cm. long, 1.3-2.5 cm. broad, sessile. Inflorescence terminal, main branches (peduncles) 3	*C. corymbosum.*

Family HALORAGACEAE.

Haloragis glabrescens sp. nov.

H. tetragyna (Labill.) Hook. var. *glabrescens* F. M. Bailey, Bot. Bull. XIII. (Dept. Agric. Brisbane), 9, 1896; Queensland Flora, 2, 556 (1900).

Herba vel suffrutex subprocumbens, caulibus numerosis simplicibus erectis vel arcuato-adscendentibus angulis decurrentibus lineato-alulatis glabris vel alulis pilis asperis brevis sparsissime obsitis. Folia alternantia, dense disposita, erecta vel suberecta, basi angustata, sessilia, lanceolata, serrata, dentibus remotis, margine minute setoso-serratula, 2–4 cm. longa, 4–8 mm. lata, glabra vel pilis brevis albis conicis asperis sparse obsita. Inflorescentia racemosa, 5–8 cm. longa. Flores hermaphroditi, in axillis foliorum superiorum in bracteas diminutorum axillis dichasium 4–1 florum constituentes, breviter pedicellati, pedicello 1–1·5 mm. longo, ad basim bracteolis 2 anguste lanceolatis munito. Calycis

tubus subglobosus dense et breviter pilosus, irregulariter tuberculatus, lobis 4, ovatis vel anguste triangularibus, 1 mm. longis. Petala 4 late lineari-navicularia, apice acutiuscula, 3–3·5 mm. longa et latere visa 0·5–1 mm. lata, glabra, carino minute asperulo-denticulata. Stamina 8, 2·5–3 mm. longa. Styli 4, glabri, erecti. Fructus subglobosus, 5–6 mm. diam., 4-locularis, induratus, breviter pilosus, processis duris applanatis vel varius teretibus irregulariter sed plus vel minus dense munitus, processorum apice saepe leviter expansus vel furcatus.

Queensland.—Burke District: Marathon Station, West of Hughenden, gully in *Astrebla lappacea* grassland, heavy dark brown soil, wet places in rainy season. C. E. Hubbard, 7770 (flowers), 17th Feb., 1931 (distributed as *H. heterophylla* Brongn. var. *glaucifolia* Schindl.). Flinders River, near Julia Creek, C. T. White, sine No. (fruits), Aug., 1916. Normanton, T. A. Gulliver (fruits), July, 1876. Gregory North District: Roxborough Downs, Georgina River, F. M. Bailey (young flowers), Dec., 1895. Diamantina River, Dr. T. L. Bancroft (flowers and young fruits), April, 1892. Elderslie, Winton, J. F. Kennedy (restricted to channels where it is very common and very prominent). Mitchell District: Landsborough River, C. T. White (type: flowers and fruit) (April, 1919). Muttaburra, C. T. White (fruits), April, 1919.

In its glabrous character, *H. glabrescens* is very near to *H. glauca* Lindl.; I have not seen authentic material of this species, but the fruits as described by Schindler in his monograph of the Halorragaceae (Engl. Pflanzenreich iv., 225, p. 45) are quite glabrous and irregularly tuberculate.

In the Herb., Kew, Bailey's *H. tetragyna* var. *glabrescens* had been placed under *H. heterophylla* Brongn. var. *glaucifolia* Schindl. and Hubbard's 7770 was distributed under this name. I have seen a duplicate of Koch's specimens from South Australia quoted by Schindler, and these differ in being pubescent and having ovaries far less tuberculate than in our plant. In a broad sense, *H. glabrescens* might be classed as a variety of *H. heterophylla* Brongn., but that species as understood by Schindler already I think includes several quite distinct ones. The present plant is very abundant in depressions and channels in the black soil plains of the tropical west of Queensland. The most characteristic feature is the dense covering of hard processes all over the fruits.

Family MYRTACEAE.

Acmena macrocarpa sp. nov.

Arbor glabra, 13 m. alta, ramulis junioribus acute quadrangulatis in parte superiore internodiorum valde dilatatis, internodiis 5–8 cm. longis. Folia anguste oblonga, supra nitida, nervis lateralibus in sicco utrinque leviter elevatis, in venam intramarginalem duplicem confluentibus, sed vena exteriore irregulari et saepe indistincta, interiore 5 cm. margine remota; lamina 16–20 cm. longa, 6–8 cm. lata; petiolo crasso 1 cm. longo, in sicco leviter ruguloso. Inflorescentia terminalis ca. 16 cm. longa, 8 cm. lata, pedunculis 7–8 cm. longis, basi teretibus, 2–3 mm. diam., in parte superiore angulatis, ramulis angulatis. Flores pedicellati, pedicellis 1 mm. longis; alabastris 4 mm. longis, 3 mm. diam., calycibus turbinatis, extus minute puberulis, basi stipitatis, calycis lobis minutis obtusis; petalis suborbicularibus 2 mm. latis extus minutissime puberulis; staminibus petala vix aequantibus. Infructiscentia robusta lignosa, ramulis ca. 1 cm. diam. Fructus globosus 6 cm. diam.

Cook District.—Between Josephine and Russell Creeks, H. Flecker (type: North Queensland Nat. Club No. 4986), small tree 40 ft., flowers white. Russell Heads, F. R. Morris (North Queensl. Nat. Club No. 6429), fruits, 5th Nov., 1939 (tree 40 ft., fruit and branches ruddy).

Among previously described species closest to *A. divaricata* Merrill and Perry, which differs in having terete or slightly compressed branchlets, smaller leaves, and the inflorescence on short peduncles or nearly sessile. The fruit is very like that of *Cleistocalyx gustavioides* (Bail.) Merrill and Perry.

Type fragment and photograph at Herb., Kew, and Arnold Arboretum.

Agonis speciosa comb. nov.

Leptospermum speciosum Schauer ex Walpers, Repertorium Botanices Systematicae Tomus II., Supplementum I., p. 923, 1843. (*Agonis Scortechiniana* F. Muell. Fragm. Phytogr. Austr. XI., 118, 1881). *Melaleuca Leucadendron* L. var. *parvifolia* Benth. Fl. Austr. III., 143, 1866 (in part)).

Cunningham's plant (Moreton Bay, No. 38, 1824), the type of *Leptospermum speciosum* Schauer, is represented in Herb., Kew, by two sheets, and there is no question about its identity with *Agonis Scortechiniana* F. Muell., a shrub moderately common in South-east Queensland.

Eucalyptus camphora R. T. Baker in Proc. Linn. Soc. N.S. Wales XXIV., 298, 1899 (a large flowered form).

Darling Downs.—Racecourse Creek, N.E. of Wallangarra, on swampy flat between granite hills, L. S. Smith, No. 754, 29th Jan., 1940.

We are indebted to Mr. W. F. Blakely, the eminent authority on the genus *Eucalyptus,* for the determination. He remarks that the species had not previously been found north of Nullo Mountain, Rylestone, New South Wales.

Myrtus opaca sp. nov.

Frutex ad 2 m. altus, ramulis cortice griseo persistenti obtectis. Folia petiolata elliptica vel ovato-lanceolata, basi acuta, apice obtuse acuminata, utrinque glabra et opaca sed subtus distincte pallidiora, costa media utrinque distincta, nervis lateralibus invisibilibus vel obscuris, petiolo 2 mm. longo, lamina 2·5–3·5 cm. longa, 0·8–1·5 cm. lata. Pedicelli singulares, axillares, graciles, prominter lenticellati, 1·5 cm. longi; bracteolae subulatae, 1 mm. longae, pilis sericeis paucis obsitae. Calycis tubus late turbinatus, pilis longis sericeis dense obsitus, 2 mm. diam., lobis 5 utrinque sericeis 1·5 mm. altis. Petala 5 oblonga, 3 mm. longa, extus dense intus tenuiter sericea. Stamina numerosa, filamentis glabris petala aequantibus. Bacca ignota.

Wide Bay District.—Kandanga, Mary Valley, C. T. White, No. 9592 (flowers), Nov., 1933 (shrub up to 2 m. high, common on edge of rain forest, flowers white).

The closest affinities of the present plant lie with *M. dulcis* C. T. White. The two species can be distinguished as follows:—

Branchlets clothed with a reddish bark, deciduous in long slender threads. Leaves ovate to ovate-lanceolate, white or paler beneath, very acute; petiole 1 mm. long, blade 1.5-2.5 cm. long, 2.5-8 mm. broad. Pedicels slender, 3 mm. 1.1 cm. long .. .. .. *M. dulcis.*

Branchlets clothed with a grey persistent bark. Leaves elliptic or ovate-lanceolate, very opaque, paler beneath, obtusely acuminate, petiole 2 mm. long, blade 2.5-3.5 cm. long, 0.8-1.5 cm. broad; pedicels slender, 1.5 cm. long .. .. *M. opaca.*

Xanthostemon brachyandrus sp. nov.

Arbor glabra. Folia alterna, late lanceolata, apice acuta vel subacuminata, basi cuneata, lamina 12–18 cm. longa, 5–7 cm. lata, in sicco flavescens; petiolo crasso 0·5–1 cm. longo, in sicco atro-castaneo. Flores in thyrsos 3–6 cm. longos axillares et terminales dispositi. Calyx 5 mm. diam. sinuato-lobatus. Petala alba (Morris) vel in sicco flava, 6–7 mm. longa, 4–5 mm. lata. Stamina petala aequantia. Ovarium glabrum. Capsula ignota.

Cook District:—Mossman Gorge, H. Flecker (bud specimens), 3rd Nov., 1934 (N.Q. Naturalists' Club No. 292). Harvey Creek, F. R. Morris (type: flowering specimens), 19th Nov., 1939 (tree 40 ft., flowers white, fragrant).

Family UMBELLIFERAE

Torilis nodosa L. (Gaertn.) Fruct. i. 82, t. 20, fig. b, 1788.

Darling Downs.—Cooyar, received from State School, Feb., 1939.

A native of Europe, not previously recorded as adventive in Queensland. Determination by Miss D. A. Goy.

Xanthosia diffusa sp. nov.

Suffrutex diffusus, dense pilosus, ramulis subrobustis. Folia tripartita vel rarissime simpliciter triloba, petiolata; petiolo 1–1·5 cm. longo; lamina supra viridi pilis longis albis sparsis vestita, subtus alba vel cremea densissime pilosa, segmento terminali 2–4 cm. longo, basin versus in petiolulum distinctum ad 1·5 cm. longum contracto, saepe trilobo et lobis ipsis 1–2–lobatis, segmentis lateralibus 1·5–3 cm. longis plerumque trilobatis basi cuneatis, subsessilibus vel in petiolulum ad 3 mm. longum contractis. Inflorescentia pedunculata, pedunculo communi 1–5 cm. longo, ad apicem sub radiis 2–bracteato, bracteis lineari-lanceolatis 6 mm. longis. Umbellae 3–4–radiatae, umbellulae 6–9–florae, pedicellatae, pedicellis 5 mm. longis. Involucrorum foliola 3, alba, petaloidea, ad 7 mm. longa et 4 mm. lata. Florum pedicelli 1 mm. longi. Calycis lobi ovati, 1 mm. longi. Petala 1·5 mm. longa, in parte inferiore in unguam contracta.

Moreton District.—Mt. Barney, alt. 1,000 m., C. T. White No. 11309, Sept., 1933 (type). S. L. Everist, No. 1373, 13th Oct., 1935 (intricately branched, subshrub, common in crevices of cliffs; flowers white, leaves pale green above, whitish tomentose beneath). Mt. Maroon, alt. 1,000 m., D. A. Goy and L. S. Smith, No. 705, 3rd Sept., 1939 (procumbent subshrub, flowers cream). Mt. Ernest, alt. 800–1,000 m., C. T. White,

sine No., 10th Oct., 1932 (subshrub of rather weak scrambling habit, flowers and bracts white). S. T. Blake, No. 4311, 10th Oct., 1932 (straggling shrub, flowers white). Lamington National Park, C. T. White, No. 11171, 22nd Oct., 1934 (straggling subshrub in rocky places bordering open forest).

The closest affinities with the present species lie with *X. pilosa* Rudge, under which name duplicates from the Queensland Herbarium had already been distributed. *X. pilosa* Rudge is a polymorphic species of which Domin Bibl. Bot. 87 (vi.), 1046-7, has already named four varieties. It varies considerably in leaf shape from simply pinnate or trilobed to ternately divided. The flowers vary from almost sessile to pedunculate in peduncles over 1 cm. The involucral bracts vary from inconspicuous to fairly large, but never so large as those of *X. diffusa*. The umbels are single and 1–4 flowered. In *X. diffusa* the inflorescence is composed of a 3–4–rayed umbel, each umbel consisting of 6–9 flowers. In this respect, it would come into the latter group of the "Flora Australiensis" (De Candolle's section Leucolaena) but differs in the absence of the sessile central cluster of flowers (umbellula).

Family RUBIACEAE.

Hodgkinsonia frutescens sp. nov.

Frutex, ramulis junioribus compresso-angularibus. Folia in sicco viridia, submembranacea, lanceolata vel elliptica, apice acuminata, basi cuneata in petiolum gradatim angustata, margine leviter undulato-denticulata, dentibus minutis distantibus, nervis lateralibus subparallelibus, nervis praecipuis 8–10 in utroque latere; petiolus ca. 1 cm. longus; lamina 8–13 cm. longa, 3–5 cm. lata. Flores in paniculas umbelliformes terminales dispositi; pedunculus communis gracilis 1–3·5 cm. longus, ramis secundariis pleurumque 5, 2·5–4 cm. longis; ramis ultimis 0·5–1·5 cm. longis sed floribus ipsis non in umbellulas veras dispositis. Calyx minutus, 4–5–lobatus. Corolla anguste campulata et 4–5–lobata vel urceolata et lobis indistinctis, extus glabra, intus dense pilosa, tubo 3 mm. longo, lobis 1 mm. longis. Stamina 4–5, exserta vel in floribus urceolatis inclusa, filamentis applanatis infra medium affixis, antheris dorsifixis 1·75 mm. longis. Ovarium glabrum, stylo profunde 2–lobato.

Cook District.—Atherton, A. L. Merrotsy (flowering Nov. and Dec.). Yungaburra, in rain forest, Dr. H. Flecker (flowers), 24th Dec., 1939 (bush, 4 feet high, flowers white).

The present is very closely allied to the only species previously known (*H. ovatiflora* F. Muell.), but is very distinct in general appearance. The two species can be distinguished as follows:—

Small tree, leaf-blades 5-8 cm. long, 1.5-3 cm. broad, papyraceous in texture when dry, margins entire, peduncle bearing 3 branches and no secondary ones .. .. *H. ovatiflora.*

Shrub, leaf-blades 8-13 cm. long, 3-5 cm. broad, submembranous in texture, margins distantly and minutely toothed, peduncle mostly bearing 5 main branches and often branched again .. .. *H. frutescens.*

Ixora orophila sp. nov.

Frutex (?) glaber, ramulis robustis apices versus dense foliosis. Folia coriacea elliptica vel late lanceolata, apice acuta basi cuneata, margine in sicco leviter recurva, nervis lateralibus supra vix visibilibus, subtus subobscuris, 4 in utroque latere, lamina 3–4 cm. longa, 1·3–2 cm.

lata, petiolo 3–4 mm. longo, stipulis interpetiolatis coriaceis deltoideis persistentibus, 2 mm. altis. Inflorescentiae cymosae, subterminales, folia aequantes, 5–9–florae, pedunculis 2–2.5 cm. longis, pedicellis 2–3 mm. longis. Calycis tubus anguste urceolatus, 2·5 mm. longus, limbo minute 5–dentato. Corolla 5–lobata, tubo urceolato, 2 mm. longo, lobis recurvis 4 mm. longis, ore barbato. Stamina 5, ore inserta. Discus pubescens. Pistillum ignotum. Fructus immaturus.

Cook District.—Thornton Peak, alt. 4,500 ft., Dr. H. Flecker, 14th Dec., 1940. N.Q. Nat. Club, No 7110.

The present species is quite different in general appearance from any other Australian species of *Ixora*. In its small coriaceous leaves and dense compact appearance, it is a typical mountain plant. The 5–merous flowers point to *I. pentamera* Benth. as the closest Australian ally, but this is much larger in all its parts, and very dissimilar in general appearance. In general facies, it approaches closer to *I. Beckleri* F. Muell., which differs in having larger, more prominently-veined leaves, a terminal larger and more spreading panicle, and 4–merous flowers.

Spermacoce auriculata F. Muell. Fragm. Phytogr. Austr. IV., 42, 1862.

Burke District.—Mt. Isa, alt. 1,250 ft., in open Eucalyptus forest in reddish-brown soil, C. E. Hubbard and C. W. Winders, No. 7408 (flowers), 9th Feb., 1931 (erect herb, green leaves, purplish corolla). Thirty-six miles from Mt. Isa on the Cloncurry-Mt. Isa road, on red stony country, S. L. Everist and L. S. Smith, No. 207 (flowers), 5th Feb., 1937 (small shrub with pale lilac flowers).

Not previously recorded for Queensland. Winders and Hubbard, No. 7408, distributed from Hb., Kew; Everist and Smith, No. 207, determined by L. S. Smith.

Family COMPOSITAE.

Arctotheca repens Wendland Botan. Beobacht., 41, 1798.

Darling Downs.—Toowoomba, R. B. Morwood (flowering specimens), Nov., 1940.

Determination by W. D. Francis.

A native of South Africa. The appearance of the plant is very similar to the Cape Weed (*Cryptostemma calendulacea* R. Br.) and it is likely to spread to about the same extent.

Arctotis grandis Thumb. Fl. Cap. 706, 1823.

A. stoechadifolia grandis Less. syn. Gen. comp. 26, 1832.

Maranoa District.—Roma, common in sandy soil along roadsides near the town.

C. T. White, No. 9431 (flowers), 29th Oct., 1933.

This plant is very common in garden cultivation in Queensland and seems to have become completely naturalised about Roma. It is very well illustrated in Addisonia, Vol. IV., 45, Pl. 143 (1919). In the text K. R. Boynton states, "This annual has been cultivated under the name *A. grandis*. Thunberg described it as a distinct species, and some later authors have called it merely a variety of *A. stoechadifolia*. There seem

to have been several forms of the species and perhaps that with long peduncled attractive flowers was brought to Europe for cultivation and the species described from it.''

Cassinia collina sp. nov.

Frutex 2 m. altus, ramulis subrobustis, dense fusco-hispidulis. Folia angustissime lanceolata, apice acuminata vel apiculata, basi angustata, supra sub lente minute asperula, subtus dense cano-tomentosa, margine revoluta, 3–7 mm. longa, 2–4 mm. lata. Inflorescentia multiflora pyramidalis ad 16 cm. longa et 10 cm. lata, plerumque ca. 10 x 8 cm., densa et compacta vel plus vel minus laxa et expansa. Capitula 7–flora. Involucrum 4 mm. longum, bracteis exterioribus atro-stamineis interioribus pallididioribus. Achenia (vix matura) pubescentia.

Burnett District.—Biggenden Bluff, common on talus slopes, C. T. White, No. 7681 (flowers), 17th May, 1931 (shrub 2 m., leaves whitish beneath, flower heads straw-coloured).

Among previously described species, *C. collina* is closest to *C. quinquefaria* R. Br., which differs in its more glabrous character, smaller and narrower leaves, and smaller, fewer-flowered capitula. The leaves of *C. collina* are similar to those of *C. longifolia* R. Br. and *C. compacta* F. Muell., both of which have corymbose, not pyramidal inflorescences.

Chthonocephalus pseudevax Steetz. in Pl. Preiss 1, 445.

Warrego District.—Gilruth Plains, near Cunnamulla, fairly common on hard red soil flats, associated with *Gnaphalodes uliginosum* A. Gray, S. L. Everist, No. 1645, 17th Sept., 1938.

A definite locality for this plant, which was recorded as occurring in Queensland by Mueller in the ''Second Systematic Census of Australian Plants'' and was included by Bailey in the ''Queensland Flora'' and the locality given as ''the interior towards Cooper's Creek.'' There are no Queensland specimens, however, either in the National Herbarium, Melbourne, or the Queensland Herbarium, Brisbane.

Erechthites prenanthoides D.C. Prodr. VI., 296, 1837.

Moreton District.—Roberts Plateau, Lamington National Park, C. T. White, Jan., 1919.

Not previously recorded for Queensland.

Helichrysum Beckleri F. Muell. ex Benth. Fl. Austr. III., 627, 1866.

This species is very common as secondary growth in the cooler rain-forest areas of South-east Queensland. The specimen from Cunningham's Gap (leg. C. J. Gwyther) recorded by F. M. Bailey in ''Queensland Flora,'' Vol. III., p. 840, as *H. cinereum* F. Muell. belongs here. The specimen from Killarney (leg. J. Wedd) recorded by F. M. Bailey l.c. VI., 2007, as *Cassinia denticulata* is also *H. Beckleri* F. Muell.

H. cinereum F. Muell. and *C. denticulata* R. Br. should be deleted from the Queensland Flora until authentic specimens have been collected.

Family STYLIDIACEAE.

Stylidium fissilobum F. Muell. Fragm. Phytogr. Austr. i., 154, 1859.

Cook District.—McLeod River, Dr. H. Flecker (flowers), 18th Sept., 1936. N.Q. Naturalists' Club, No. 2261 (herb, flowers white).

Determination by L. S. Smith. The species is well illustrated by Mildbraed in his monograph of the Stylidiaceae in Das Pflanzenreich IV., 278, p. 36, figs. 13, G.–J. Our specimen differs from his figure in that the posterior corolla lobes are united at the base for a little distance above the glands. In this connection, the present specimens approach *S. schizanthum* F. Muell., but possess the two opposite teeth above the middle of the column, a feature apparently unique in *S. fissilobum* F. Muell. The species has not previously been recorded for Queensland.

Family MYRSINACEAE.

Ardisia Bakeri comb. nov.

A. racemosa R. T. Baker in Proc. Linn. Soc. N.S.W. XXVII., 380. Pl. XVI., 1902, non *A. racemosa* Spreng. nec Mez.

This plant is common as a shrub in rain forests in Northern New South Wales, and on the mountains of South-east Queensland bordering the New South Wales border. Dr. Merrill (in. litt.) drew my attention to the fact that Baker's specific name was already preoccupied.

Family LOGANIACEAE.

Buddleia brasiliensis Jacq. f. Eclog. t. 158.

Moreton District.—Ashgrove, near Brisbane, spontaneous along the bank of a small creek. C. T. White and S. L. Everist (flowers), 6th Aug., 1934 (subshrub 4 ft., leaves greyish green, calyx greyish white. corolla yellow).

A native of South America, not previously recorded as naturalised; up to the present it does not show any tendency to spread very much.

Buddleia Lindleyana Fortune in Lindl. Bot. Reg. (1844), Misc. 25.

Darling Downs.—Toowoomba, D. A. Goy (flowers), 12th March, 1930 (small shrub, flowers lavender, looks like a cultivated plant running wild in paddocks).

Native of China, much cultivated in gardens. It has not previously been recorded as naturalised or subspontaneous in Queensland.

Gaertnera australiana sp. nov.

Frutex (?) ramulis subrobustis fistulosis, junioribus applanatis leviter contortis, cicatricibus stipularis interpetiolaris valde notatis. Folia subcoriacea, lanceolata, utrinque pilis albis sparsis leviter immersis (cystolith-like) obsita, apice obtuse acuminata, basi cuneata; nervi laterales ca. 13 in utroque latere; lamina 17–22 cm. longa, 7–10 cm. lata; petiolus in specimine typico ca. 1 cm., in speciminibus aliis ad 2·5 cm. longus. Inflorescentia terminalis 8·5 cm. longa, ramulis leviter contortis applanato-angulatis, ultimis minute tomentosis, bracteis ovatis 1 mm. longis. Flores sessiles. Calyx cupularis 2 mm. longus, 5–dentatus. Corolla 3 mm. longa, lobis tubo aequilongis, fauce dense albo-barbato. Antherae 1 mm. longae. Pistillum glabrum, stylo elongato-clavato, apice in lobos 2 lineares stigmatosos diviso. Fructus pisiformis, 5–6 mm. diam., 2–spermus.

Cook District.—Utchee Creek, in "jungle," Dr. H. Flecker (type: flowers), 27th Nov., 1938, N.Q. Nat. Club, No. 5313. Danbulla, in rain forest, Dr. H. Flecker (old flowers), 1st Jan., 1941, N.Q. Nat. Club, No. 7174. Bellenden-Ker, C. T. White, No. 1277 (fruits), March, 1922.

The genus is new for Australia. The Queensland plant comes into the group characterised by Ridley (Fl. Malay Penin. 2, 427) as "Thick-stemmed shrubs with large leaves." It seems to come closest to *G. grisea* Hook f., which differs in the branches, inflorescence, and under surface of the leaves being densely pubescent.

Family BORAGINACEAE.

Heliotropium filaginoides Benth. Fl. Austr. IV., 398, 1869.

Gregory North District.—Between Cluney and Currabulka Stations, on top of a low rock-capped hill, S. L. Everist and L. S. Smith, No. 108, 22nd Jan., 1937 (low, stunted, spreading herb from a woody base). Determined by L. S. Smith.

Burke District.—Cloncurry, on bare spots in *Triodia* country, usually on diorite ridges, fairly common, has no associates, S. E. Pearson, No. 116 (harsh, low growing plant, forming compact clumps 1–2 ft. diam., stolons often buried in self-collected dust and drift sand).

Not previously recorded for Queensland.

Family CONVOLVULACEAE.

Ipomaea quinquefolia L. Sp. Pl. 162, 1753.

Cook District.—Cairns, growing over a fence, H. Flecker (flowers), 14th May, 1937 (twiner, flowers cream-coloured). Same locality, in vacant allotments, H. Flecker, No. 2535 (flowers and fruits), 10th Nov., 1936 (scrambling over bushes, flowers pale buff).

A native of continental tropical America and the West Indies. Not previously recorded as naturalised in Queensland.

Ipomaea lonchophylla J. M. Black in Trans. and Proc. Roy. Soc., South Aus., 50, 285, 1926.

Mitchell District.—Darr River, C. W. de Burgh Birch. Blackall, S. L. Everist, No. 1594, 7th Feb., 1938. Malvern Hills, 22 miles west of Blackall, S. L. Everist, No. 2041, 5th March, 1940.

Maranoa District.—Roma, Rev. B. Scortechini.

Not previously recorded for Queensland. The plant is fairly common on downs country in Western Queensland. The specimens from Darr River and Roma were placed in the Queensland Herbarium under *I. heterophylla* R. Br.

Family SOLANACEAE.

Solanum capsicastrum Link ex Schauer in Otto & Dietrich Allgemeine Gartenzeitung 1, 228, 1833.

Moreton District.—Mudgeeraba, side of railway track at railway station, C. E. Hubbard, No. 4299 (flowers), 30th Sept., 1930 (up to 3 ft. high, leaves dull dark green, flowers white, anthers orange).

A native of South America, frequently cultivated on account of its compact growth and ornamental berries. It has not previously been recorded as naturalised in Queensland. Hubbard's plant was distributed by the Royal Botanic Gardens, Kew (Eng.).

Solanum coactiliferum J. M. Black in Trans. Roy. Soc., South Aus. XXXIII., 224, 1909.

Warrego District.—Gilruth Plains, near Cunnamulla, in deep sandy soil, not common, S. L. Everist, No. 1629, 17th Sept., 1938.

Species not previously recorded for Queensland. Determination by S. L. Everist.

Solanum pugiunculiferum n. sp.

Suffrutex glaber 30–60 cm. altus (Brass), ramulis foliis calycibusque aculeis robustis rectis armatis, aculeis flavis ad 1·5 cm. longis basi 2 mm. diam. Folia petiolata; petioli 2·8–5 mm. longi; lamina 2–4 cm. longa, 1–2·5 cm. lata irregulariter pinnatifida, lobis acutis 0·5–1·5 cm. longis, basi 3–8 mm. latis. Inflorescentia laterales racemosae 3–4 cm. longi; pedicelli ad 3 mm. vel sub fructu ad 8 cm. longi. Calyx late campanulatus 3·5 mm. longus, 5–dentatus, dentibus 1 mm. longis. Corolla clausa 6 mm. longa. Stamina prope basin affixa; filamenta 1·5 mm. longa; antherae 2·5 mm. longae. Bacca globosa ca. 1 cm. diam.; semina suborbiculata (2·75 × 3·5 mm.) late alata flava valde compressa.

Burke District.—Settlement Creek, L. J. Brass, No. 244 (flowers and young fruits), Nov., 1922 (subshrub 1–2 ft. high). Burketown, near the old meatworks, P. G. Higgins (fruits), 26th May, 1919.

The present species is very close to *Solanum xanthocarpum* Schrad. & Wendl., with which Hooker (Fl. Br. India IV., 236) unites the Australian *P. armatum* R. Br., particularly some of the Indian forms, but differs in being glabrous in all parts even to the corolla, and in the racemes being shorter.

Family AMARANTACEAE.

Ptilotus exaltatus Nees in Pl. Preiss. i., 630, 1845.

Trichinium exaltatum Benth. Fl. Austr. v., 227, 1870.

Trichinium Burtonii F. M. Bailey Bull. 7, Dept. Agric., Brisbane, 14, 1891 (sometimes quoted as Bot. Bull. 2).

Trichinium nervosum F. M. Bailey, Queens. Agric. Journ. xxv., 287, 1910.

This species is very widely spread in the tropical interior of Queensland. It is strange, however, that though it has a wide range in the other States, all the Queensland specimens in the Queensland Herbarium, Brisbane, are from the tropic of Capricorn northwards. In the south-west it is replaced by *P. nobilis* F. Muell.

Ptilotus Pearsonii sp. nov.

Herba perennis, 20–60 cm. alta, caulibus simplicibus vel in parte superiore ramosis, deinde sublignosis, caulibus foliisque dense lanuginoso-hirsutis. Folia lanceolata superiora sessilia, inferiora in petiolum distinctum gradatim angustata, apice mucronato-acuta, 2·5–7 cm. longa, 0·5–1 cm. lata. Spicae oblongae vel subglobosae deinde saepe nutantes vel horizontales, ad 8 cm. longae, ca. 5 cm. diam. Bracteae hyalinae, pallidae, glabrae (costa media excepta); costa prominens in acumen producta, extus tenuiter sericea; bracteolae bracteis similes sed angustiores. Perianthium 2 cm. longum, flavo-virens, tubo 5 mm. longo, pilis sericeis longis dense obsito, segmentis angustis peracutis extus (apice nudo excepto) plumosis, intus glabris. Stamina subaequalia, omnia fertilia. Pistillum glabrum.

R.S.—Z.

Burke District.—Cloncurry, plentiful in Soldier's Gap area, found regimented on stony ridges, but frequents bare patches free of *Triodia*, S. E. Pearson, No. 112 (type: flowers), July, 1941 (1–2 ft. high, on two or three stems, known locally as "Tassel Top," eaten by horses and kangaroos). Cloncurry, alt. 800 ft., on stony to rocky quartzite hills among *Triodia pungens*, S. T. Blake, No. 10116 (flowers), 7th Nov., 1935 (stock woody, stems tufted, erect up to 2 ft., simple or branched, inflorescence inclined or distinctly nodding, green).

The present species would come under Bentham's Series Straminea (Fl. Austr. v., 218, sub *Trichinium*), and has most affinities with *P. nobilis* F. Muell. (*Trichinium nobile* Lindl.). The two species can be distinguished as follows:—

Glabrous or stems very slightly hairy in the upper part. Leaves broadly obovate to oblong, rarely lanceolate. Spikes terminal, erect, up to 15 cm. long. Bracts with a large dark centre, bracts and bracteoles hairy outside .. .. *P. nobilis.*

Densely hirsute throughout. Leaves narrow-lanceolate. Spikes terminal, subglobose to oblong, up to 8 cm. long. Bracts hyaline throughout, bracts and bracteoles glabrous except for a few hairs on the midrib .. .. *P. Pearsonii.*

Family CHENOPODIACEAE.

Chenopodium atriplicinum (F. Muell.) F. Muell. Fragm. Phytogr. Austr., 7th Nov., 1869.

Warrego District.—Clover Downs, Cunnamulla, R. Rice, No. 3, Aug., 1938.

Darling Downs.—Goondiwindi-Bungunya, R. Roe, No. 71, Sept., 1938.

Not previously recorded for Queensland. Determination by W. D. Francis.

Family EUPHORBIACEAE.

Baloghia marmorata sp. nov.

Arbor parva vel mediocris, ramulis novellis leviter complanatis mox robustis et tereticusculis. Folia petiolata integerrima glaberrima subcoriacea lanceolata vel obovato-lanceolata, apice acuta, basi angustata, venis et venulis in sicco utrinque prominulis, lamina 6·5–15 cm. longa, 2–5·5 cm. lata margine basin versus glandulis instructis; petiolo 2–4 cm. longo supra canaliculato basi incrassato apicem versus applanato; Bractae imbricatae, exteriores 2 cm. longae 4 cm. latae, interiores 6 mm. longae extus glabrae intus ad medium dense albo-sericeae margine albo-ciliolatae. Flores monoeci in racemos perbreves terminales dispositi; rhachi crassa. Flores masculi albi; pedicellis 5 mm. longis; sepalis 5 (?) ovatis, petalis 5 (?) lanceolatis; staminibus numerosis (ca. 40) receptaculo leviter elevato-affixis; filamentis 2·5–3 mm. longis basin versus pilis longis parcis albis vestitis; glandulis atro-purpureis (in sicco rubris) in discum lobatum carnosum plus vel minus connatis. Flos foemineus: pedicellis 1–1·5 cm. longis rectis vel curvatis apicem versus incrassatis; sepala petalaque non visa; ovario glabro, stylis 3 (raro 4) divisis vel raro indivisis. Capsula subglobosa 2 cm. diam., 3– vel 4–locularis in coccos 2–valvos unispermos dissiliens, seminbus ovoideis 1·5 cm. longis, extus irregulariter atro-rubro-maculatis.

Moreton District.—Tamborine Mountain, alt. 1,800 ft. (in rain forest on rich basaltic soils), C. T. White, No. 3588 (flowers and fruits), 17th Aug., 1927 (small or medium sized trees, flowers white).

Baloghia parviflora sp. nov.

Arbor mediocris glabra vel partibus novellis pilis parcis obsitis, ramulis subrobustis. Folia petiolata, subcoriacea, in sicco utrinque valde reticulata, lanceolata elliptica vel obovato-lanceolata, basi angustata, apice acuta vel obtusa; lamina 8–15 cm. longa, 3·5–7·5 cm. lata; petiolus 1·5–7·5 cm. longus, basi incrassatus. Inflorescentiae axillares racemosae, racemis axillaribus pedunculatis, rhachi cum pedunculo 2–6·5 cm. longa. Flores albi parvi in axillis bractearum superiorum 2–3 dispositi, bracteis inferioribus cassis (floribus delapsis?), pedicellis crassis 2–3 mm. longis ad apicem sub calyce 2-bracteolatis, bracteolis subcarnosis. Flos masculus: sepala 5 subcarnosa 3·5 mm. longa; petala 5 mm. longa, 2 mm. lata. Stamina ca. 15 in receptaculo elevata affixa, glandulis carnosis. Flos foemineus: Perianthium maris, ovario glabro, stylis 3 prope basin divisis. Fructus ignotis.

Cook District.—Bartle Frere, alt. 700 m. (common in foothill rain forests), S. F. Kajewski, No. 1251 (flowers), 1st Oct., 1929 (small tree up to 20 m., flowers white, stamens cream). Mt. Spurgeon, alt. about 3,000 ft. (common in rain forest), C. T. White, No. 10546 (type: flowering specimens), Sept., 1936 (medium-sized tree, flowers white). Mt. Lewis, T. Carr, 30th Jan., 1941 (N.Q. Nat. Club, No. 7283).

Euphorbia plumerioides Teysm. ex Hassk. Hort. Bogor. Descript., 1, 29 (1858).

Cook District.—Thursday Island (on the beach), F. M. Bailey, No. 115 (leaves only), June, 1897 (plant milky).

A native of the Philippine Islands and New Guinea. Though the Thursday Island specimens are in leaf only, there seems little doubt about the determination.

Euphorbia thymifolia L. Sp. Pl. 454 (1753).

Cook District.—Cairns (growing on footpaths), H. Flecker, No. 2683 (flowers and immature capsules), 16th Dec., 1936 (a prostrate herb).

A pantropical weed not previously recorded from Queensland. It will probably become equally abundant as the closely allied *E. prostrata* Ait.

Phyllanthus disticha (L.) Muell. Arg. in DC. Prodr. 15 (2), 413 (1866).

Cook District.—Mowbray River, in riverine rain forest, L. J. Brass, No. 2124 (fruits), 27th Jan., 1932 (stiff-branched tree 15 ft. high, wood pale and brittle, bark pale grey, lenticellate, raised in annular wrinkles close below insertion of branches; inflorescence on short spur branches in old wood, fruit depressed, 4-angled, succulent, greenish-white when ripe).

Not previously recorded as Australian; the habitat and locality indicate that it is a native and not introduced.

Family GRAMINEAE.

Agropyron pectinatum (Labill.) Beauv. Agrost. 102, 1812.

Moreton District.—Wilson's Peak, alt. about 2,500 ft., along steep mountain track on edge of rain forest. D. A. Goy and L. S. Smith, No. 385, 2nd May, 1938.

The species has not previously been recorded for Queensland. Our plant agrees well with that of Gunn, No. 999, from Tasmania, collected in 1857. The Queensland plant is apparently taller than the average of those in Tasmania. (Determination by L. S. Smith.)

Family POLYPODIACEAE.

Pellaea viridis (Forsk.) Prantl. in Engl. Bot. Jahrd. 3, 420, 1882.

Moreton District.—Mt. French, E. J. Smith, March, 1940. A native of South Africa.

Mr. Smith, a keen local botanist, writes: "A native fern growing wild beside some large stones in a fairly sunny situation."

I thought at first the specimens represented a bipinnate form of *P. falcata* (B. Br.) Fee, but on closer examination, found they were identical with *P. viridis* (Forsk.) Prantl. This species is fairly common in cultivation in "bushhouses" in Queensland, and the spores must have been carried to the locality recorded by wind or other agency.

THE MIDDLE DEVONIAN RUGOSE CORALS OF QUEENSLAND, III. BURDEKIN DOWNS, FANNING R., AND REID GAP, NORTH QUEENSLAND.

By Dorothy Hill, M.Sc., Ph.D., Department of Geology, University of Queensland.

Plates V. to XI.

(*Read before the Royal Society of Queensland, 27th October,* 1941.)

Summary.—In this paper twenty-three species of Rugosa, fifteen of them new, are described from the limestones of the Charters Towers and Townsville districts, with some discussions on the genera and families to which they are assigned. The fauna is very closely comparable to those of the upper Honsel (*quadrigeminus*) and Büchel (Massenkalk or *Amphipora* Bänke) beds of the Paffrath Basin near Cologne, Germany, so that its age is Givetian—and more narrowly, that middle section of the Givetian covered by the *quadrigeminus* and Büchel beds.

Some of the material described in this paper is in the Collection of the Geological Survey of Queensland, having been collected by various officers of that Survey. But the greater part, collected by Dr. F. W. Whitehouse or myself, is in the Geology Department of the University of Queensland. Collections have been made from the limestones at three different areas:—Burdekin Downs station, Fanning R. station, and the Reid Gap on the northern railway to Townsville.

At Burdekin Downs the limestones are impure and brown weathering, with some thick bands interbedded in a succession of thin (4 to 6 inch) layers. They overlie a massive quartzite, and have generally low dips, but are sometimes faulted, and in some places a granite shows up from beneath the basal quartzite.

On the Fanning R. from 1½ to 2 miles above Fanning R. homestead (location in 1939), the limestone is about 400 ft. thick, striking NNW-SSE, and dipping with a low dip (about 10°) WSW; it is fairly pure, and is grey to brown in colour. The succession observed was as follows, from above downwards:—

Sandstones with white clays up to 18 inches thick.

Shelly limestones (brachiopods and cephalopods).

Main coral and *Amphipora* limestone, about 400 ft. thick.

a. *Endophyllum-Stringophyllum isactis* beds, with very large *Atrypa.*

b. Beds with slender branching polyzoan.

c. Rather massively bedded limestones, in hard bands 4 to 6 inches thick, without shale partings, and with slight development of nodules; with *Stringophyllum bipartitum, Mesophyllum collare, Calceola* and *Atrypa.*

d. Two brown layers, with spherical weathering.

e. *Favistella rhenana* limestones, with many large stromatoporoids and a few *Stringocephalus.*

f. Yellow-weathering shale with gastropods (*Polyamma*).
g. Nodular limestones with *Favistella rhenana* and many *Stringocephalus*.
h. Nodular limestones with small pentameroids and Disphyllids.
j. *Amphipora ramosa* beds with small corals.

Intrusive granite.

Grey shales with limey concretions, and local transitions to nodular limestones with corals and stromatoporoids.

Limestones occur at various other localities on Fanning R. station, the distribution of the outcrops suggesting that they have been determined by faulting.

In the Reid Gap, on the northern Railway about 30 miles south of Townsville, there is another series of outcrops of this limestone, which appear to have been determined by faulting. The limestones here are grey to black, and are considerably metamorphosed, probably by contact metamorphism, as numerous porphyry dykes occur associated with them. They are rather more massive than on the Fanning R., and are of a very high degree of purity.

The lists of Rugose corals obtained from the various localities are as follows:—

Burdekin Downs.

(A) Burdekin Downs, hill rising from fowlyard. D. Hill Coll. 1939 *Acanthophyllum sweeti* rare; *?Dohmophyllum ?clarkei* very rare; *"Cystiphyllum" australe* very common; *Disphyllum* (or *Macgeea*) *trochoides* very common; *Stringophyllum isactis?* rare.

(B) On the north side of the Burdekin R., within ¾ mile of Burdekin Downs homestead. J. H. Reid Coll. 1917. *Dohmophyllum clarkei?, "Cystiphyllum" australe, Disphyllum trochoides, D. excavatum, Favistella rhenana.*

(C) Arthur's Ck. R. L. Jack Coll. *Spongophyllum immersum.*

(D) Fence running North from the East end of the night paddock. D. Hill Coll. 1939. *Dohmophyllum clarkei* fairly common: *"Cystiphyllum" australe* common; *Disphyllum trochoides* common; *Stringophyllum irregulare* common.

(E) Anabranch of Burdekin R. near Big Rocks. D. Hill Coll. 1939. *Acanthophyllum sweeti* common; *Dohmophyllum clarkei* fairly common; *Yabeia salmoni* rare; *Calceola sandalina alta* fairly common; *"Cystiphyllum" australe* fairly common; *Disphyllum gregorii* fairly common; *Fasciphyllum ryani* rare; *Stringophyllum quasinormale* rare; *S. quasinormale* var. *ana* common.

(F) Limestone dam. D. Hill Coll. 1939. *Acanthophyllum sweeti* rare; *Dohmophyllum clarkei* common; *Lyrielasma? lophophylloides* fairly common; *Yabeia salmoni* rare; *Calceola sandalina sandalina* common; *Calceola sandalina alta* fairly common; *"Cystiphyllum" australe* very common; *Stringophyllum quasinormale* very common; *S. quasinormale* var.? rare; *Stringophyllum irregulare* rare.

Fanning R.

A.—Main coral and *Amphipora* limestone, Fanning R. from about 1½-2 miles above Fanning R. homestead. D. Hill Coll. 1939. See p. 229.

Bed A: Top of Fanning R. limestone. *Dohmophyllum clarkei* rare; *Calceola sandalina sandalina* operculum, non in situ; *Endophyllum abditum* var. *columna* common; *Stringophyllum bipartitum* rare; *S. isactis* common.

Bed C: *Dohmophyllum clarkei* common; *Calceola s. alta*; *"Cystiphyllum" australe* rare; *Mesophyllum collare* rare; *Stringophyllum bipartitum* common.

Beds E-G: *Acanthophyllum sweeti* rare; *Dohmophyllum clarkei* common; *"Cystiphyllum" australe* rare; *Disphyllum ?gregorii* rare; *D.* sp. (thick-walled) rare; *Favistella rhenana* common; *Grypophyllum* sp. rare; *Spongophyllum bipartitum?* rare.

Beds H-J: Base of Fanning R. limestone. *Dohmophyllum clarkei* common; *Lyrielasma curvatum* common; *"Cystiphyllum" australe* rare; *Disphyllum gregorii* common; *Disphyllum trochoides?* (with stereozone) fairly common; *Grypophyllum* sp. rare; *Stringophyllum quasinormale* rare; *Stringophyllum irregulare* rare.

B.—Fanning R. limestone, on road on left bank of Fanning R., about 1½ miles upstream from Fanning R. homestead. F. W. Whitehouse Coll. 1938. *Dohmophyllum clarkei* common; *"Cystiphyllum" australe* rare; *Favistella rhenana* common; *Grypophyllum* sp. *Stringophyllum bipartitum* common; *Calceola sandalina alta,* fairly common.

C.—Windmill, about 3 miles ESE of Fanning R. homestead. D. Hill Coll. 1939. *"Cystiphyllum" australe* common, *Disphyllum trochoides* common; this locality is probably on an identical horizon with the hill rising from Burdekin Downs fowlyard.

D.—Dome in Fanning R. near Cow paddock tank, Fanning R. station. D. Hill Coll. 1939. *?Dohmophyllum; Calceola sandalina sandalina; "Cystiphyllum" australe; "C." pseudoseptatum; Mesophyllum (Dialithophyllum) fultum; Disphyllum ?.*

E.—Bauhinia limestone, on Mt. Success road 2½ miles from Fanning R. homestead. D. Hill Coll. 1939. *Dohmophyllum clarkei; "Cystiphyllum" australe; Stringophyllum bipartitum.*

F.—On Mingela road, 2½ miles from Fanning R. homestead. F. W. Whitehouse Coll. 1938. This is probably the same limestone outcrop as E. but the collection appears to have been made from a slightly different horizon, possibly lower. *Acanthophyllum sweeti; "Cystiphyllum" australe; Disphyllum gregorii; D. trochoides; Stringophyllum irregulare; Calceola sandalina alta.*

G.—Summit of hill about 2 miles North of Fanning R. homestead. F. W. Whitehouse Coll. 1938. *Dohmophyllum? clarkei; ?Dohmophyllum* sp. *"Cystiphyllum" australe; ?Disphyllum ?gregorii; D.* sp. (thick walls) *Favistella rhenana; Stringophyllum ?irregulare.*

Reid Gap, on northern railway, 31 miles south of Townsville.

A.—Regan's Quarry (thought to have been in portion 397v parish of Magenta). E. Edelfelt Coll., probably about 1883. *Acanthophyllum sweeti, Dohmophyllum ?clarkei, "Cystiphyllum" australe; Disphyllum gregorii; D. trochoides.*

B.—Benwell's En. Selection. E. Edelfelt Coll. *"Cystiphyllum" australe; Disphyllum gregorii; D. trochoides.*

C.—Philp's. E. Edelfelt Coll. 1883. *Disphyllum gregorii.*

D. Ryan's Quarry, Calcium (portion 62v, parish of Wyoming). C. C. Morton Coll. *Favistella rhenana, Fasciphyllum ryani, Stringophyllum bipartitum.*

E.—Portion 370 parish of Magenta, lower bed. F. W. Whitehouse Coll. 1936. *Acanthophyllum sweeti; Dohmophyllum clarkei; "Cystiphyllum" australe* near *pseudoseptatum; Disphyllum ?gregorii; D. trochoides; Fasciphyllum ryani; Stringophyllum quasinormale; S. irregulare.*

30 ft. above lower bed. *Disphyllum excavatum.*

F.—Portion 54 parish of Wyoming. F. W. Whitehouse Coll. 1936. *Acanthophyllum sweeti; Dohmophyllum clarkei; "Cystiphyllum" australe; Disphyllum gregorii; D. trochoides?; Stringophyllum quasinormale.*

G.—Portion 81v, parish of Wyoming. Lower part of limestone. F. W. Whitehouse Coll. 1936. *Dohmophyllum clarkei; "Cystiphyllum" australe; Disphyllum* sp.; *Grypophyllum compactum; Stringophyllum irregulare.*

A study of the above lists show that their faunas are fairly uniform, although two species occur in only one locality, i.e., at the top of the limestone on the Fanning R. The following general list of the entire fauna shows the foreign species to which ours are most closely comparable.

Family Acanthophyllidae.

Acanthophyllum sweeti (Eth.) cf. *"Stenophyllum" diluvianum* Amans. from the Niederehe (Eifel) upper coralline limestone, and the *reticularis* marl at the base of *Stringocephalus* beds of Soetenich in the Eifel.

Dohmophyllum clarkei sp. nov. cf. *Sparganophyllum difficile, S. simplex, S. gracile* Wdkd. from the *quadrigeminus* beds of Hand, in the Paffrath Basin.

Lyrielasma curvatum sp. nov.

L. ? lophophylloides sp. nov. cf. *Cyathophyllum hallioides* Frech, crinoid beds, Dalbenden near Urft in the Eifel.

Ampleximorphs.

Yabeia salmoni sp. nov. cf. *Yabeia* from the Devonian of Yunnan, China.

Family Calceolidae.

Calceola sandalina sandalina Linn. from the *S. ostiolatus* beds (*Calceola* beds) of the Eifel, and lower part of *Stringocephalus* beds of Sauerland.

C. sandalina alta Richter from the *D. verneuili* beds of the Eifel, and middle part of *Stringocephalus* beds of Sauerland.

Cystimorphs.

"Cystiphyllum" australe (Eth.) cf. *Microplasma schlüteri* Wdkd. from the Upper Honsel beds of Emst, near Hagen, Germany; *Cystiphylloides* Yoh, lower Givetian of Kwangsi, China; *"Cystiphyllum" americanum* Ed. & H. *partim* from the Hamilton of New York.

"C" cf. *pseudoseptatum* Schulz from the upper coralline limestone of Niederehe in the Eifel.

Family Digonophyllidae.

Mesophyllum collare sp. nov. cf. (not very close to) some *Atelophyllum* Wdkd. from the upper Honsel beds of Emst, near Hagen, Germany.

M. (*Dialithophyllum*) *fultum* sp. nov. cf. *D. complicatum* Wdkd., topmost Honsel beds, Genna, Germany.

Family Disphyllidae.

Disphyllum gregorii (Eth.) cf. *C. caespitosum* var. *breviseptata* Fr. (?Plattenkalk), Refrath near Cologne, Germany; *D. emsti* (Wdkd.), Upper Givetian of Moravia.

D. (or *Macgeea*) *trochoides* sp. nov. cf. *D.* (or *M.*) *spongiosum* (Schl.), Büchel beds of Paffrath Basin; *D.* (or *M.*) *conicum* (Kett.), upper Givetian of Moravia.

D. (or *M.*) *excavatum* sp. nov. cf. *C. bathycalyx* Frech, 1886, pl. v, fig. 24 only, crinoid beds, Muhlberg in the Eifel.

Family Endophyllidae.

Endophyllum abditum E. & H. var. *columna* var. nov. cf. *E. colligatum* Eth., Middle Devonian of Tamworth, N.S.W.

Family Favistellidae.

Favistella rhenana Frech from the *quadrigeminus* and Büchel beds near Hand in the Paffrath Basin, Germany.

Fasciphyllum ryani sp. nov.

Family Spongophyllidae.

Spongophyllum immersum sp. nov. cf. *S. kunthi* Schl. and *S. parvistella* Schl., lower *Stringocephalus* beds of the Eifel.

Grypophyllum sp. cf. *G. normale* Wdkd., *quadrigeminus* beds of Hand, in the Paffrath Basin, Germany.

Grypophyllum compactum sp. nov. cf. *G. tenue* Wdkd., *quadrigeminus* beds of Hand, in the Paffrath Basin.

Stringophyllum quasinormale sp. nov. cf. *S. normale* Wdkd., *quadrigeminus* beds of Hand, in the Paffrath Basin; *Bornhardtina* beds of Soetenich in the Eifel.

S. quasinormale var. ?

S. quasinormale var. *ana* nov.

S. bipartitum sp. nov. cf. *S. büchelense* (Schl.), Genna, Germany [? upper Honsel].

S. irregulare sp. nov. cf. *S. tenue* Wdkd., Schwelm, Germany [? Massenkalk].

S. isactis (Frech) from the Büchel beds of Schladetal and Büchel in the Paffrath Basin; upper Givetian of Moravia.

The relationships may be summarised as follows:—

	Paffrath Basin.	Id.*	Comp.*	Altena Saddle.	Id.	Comp.	Eifel.	Id.	Comp.
Upper Middle Devonian = *Stringocephalus* beds = = Givetian.	Plattenkalk		1						
	Massenkalk = Büchel	2	1			1			
	Up. Honsel = *quadrig.*	1	4	Upper Honsel		4	Up. Coral 1st		3
							Crinoid beds		2

* Id. = Identical, Comp. = comparable species.

Thus there is a striking similarity to the fauna of the *quadrigeminus* beds of the Paffrath Basin near Cologne in Germany, and their German equivalents, and I consider that the bulk of the North Queensland limestones are roughly equivalent to the *quadrigeminus* beds of the Paffrath Basin. But on the Fanning R. at least, the top of the limestone probably equals some part of the succeeding Büchel beds (Massenkalk) of the Paffrath Basin, for it contains a species characteristic of the Büchel beds. The list also indicates a relation to the Chinese province. Only one species is comparable with the American Hamilton fauna. The study thus shows that the Burdekin, Fanning and Reid limestones are younger than the Murrumbidgee limestones of New South Wales, and the Clermont and Silverwood limestones of Queensland, all of which are considered to be Couvinian (Hill, 1939b, 1940a, 1940c).

SYSTEMATIC DESCRIPTIONS.

The descriptions given below are based on 524 thin sections and more than 1,000 specimens. It is noticeable that the individuals of many species, particularly those of the genera *Acanthophyllum*, "*Cystiphyllum*," *Disphyllum* and *Stringophyllum* could be divided into local races, from the morphological characters shown by them at the different localities. These races are not herein regarded as varieties, but are mentioned or described in the remarks on the species.

All genera described or named herein are interpreted on the genotypes given in Lang, Smith and Thomas, 1940, which should be consulted for references to the works in which the genera and their genotypes were founded.

FAMILY ACANTHOPHYLLIDAE.

Acanthophyllidae; Hill, 1939a, p. 220; 1939b, p. 56; Hill and Jones, 1940, p. 178.

Genus *Acanthophyllum* Dybowski.

Acanthophyllum Dybowski; Hill, 1939a, p. 222; 1939b, p. 56; Hill and Jones, 1940, p. 179.

Remarks: The genus as diagnosed in the references given above has wide limits, and as our knowledge of Devonian Rugosa becomes more soundly based, it may be found reasonable to split it. Thus there appears to be a distinctive morphological sub-group in the Givetian of Germany and Queensland, embracing the two species *Cyathophyllum sweeti* Etheridge and *Stenophyllum diluvianum* Amanshauser MS in Wedekind (1925, pp. 9, 12, text-figs. 3-4). These differ only in size and number of septa; the German species is about 28 mm. in diameter, with 34 septa of each order; but the Queensland species is smaller, up to 14 mm., with at most 28 septa of each order. In both, the septa are rather broadly waved in the dissepimentarium, and frequently show cymatoid carinae in the tabularium; the major septa are unequal and extend almost to the axis, without vortical curvature in the tabularium; dilatation of the septa occurs only near the epitheca. The calice is concave like an inverse cone, and the tabulae are very close. This sub-group is at present without a separate generic name, for although *S. diluvianum* is the genotype of *Stenophyllum*, this name is pre-occupied (see Lang, Smith and Thomas, 1940, p. 123). In this paper the sub-group is placed in *Acanthophyllum*. The cymatoid carinae of the septa and the arrangement of the axial ends of the major septa in the sub-group, where the cardinal or counter septum may frequently be longer than the others, are seen also in other genera regarded as

members of the Acanthophyllidae—the Silurian *Cymatelasma* and *Spongophylloides,* and the Devonian *Lyrielasma*; and in other species of the genus *Acanthophyllum*—*A. elongatum* and *A. dianthus* (Goldfuss), both described as Cyathophyllids by Le Maitre, 1934, from beds transitional between the Coblenzian and the Couvinian.

Acanthophyllum sweeti (Etheridge) Pl. V., figs. 1-5.

Cyathophyllum sp. ind. Etheridge, 1892, p. 59, pl. 3, figs. 11, 12; Regan's Quarry, Reid Gap.

Cyathophyllum sweeti Etheridge, 1895, p. 521, pl. xl., figs. 3, 4; pl. xli., fig. 1, Reid Gap.

Lectotype: on F 1652, Geological Survey of Queensland, from Regan's Quarry, Reid Gap, figd. Etheridge, 1892, *loc. cit.* Givetian.

Diagnosis: Acanthophyllum with about 26 septa of each order rather broadly wavy in the dissepimentarium, and somewhat dilated towards the periphery; the major septa are unequal and not vortically rotated, and may have cymatoid carinae in the tabularium; the cardinal or counter septum is frequently longer than the others.

Description: The corallum is trocho-cylindrical and probably solitary, and frequently somewhat vermiform. It may attain a diameter of 14 mm., in a height of 45 mm., but most corallites are fragmentary and rather slenderer. The epitheca shows narrow longitudinal septal furrows, and broad intervening ribs, all crossed by fine growth striation, and occasional growth constrictions. The calice is deeply oval like an inverse cone. The corallum is often somewhat oval in transverse section.

In the figured section of the lectotype, taken through the base of the calice, there are 26 septa of each order, but in most specimens the number is somewhat smaller. The septa dilate slightly in the outer parts of the dissepimentarium, gradually increasing till nearly at the epitheca, and then suddenly forming a narrow crenulate stereozone; the dilatation may spread over the upper surfaces of the outermost dissepiments. The minor septa are less dilated than the major septa. The septa are broadly and irregularly wavy, particularly near the epitheca. The major septa are unequal and usually fail to reach the axis, but in some corallites one may extend right to the axis; in one specimen at least this long septum is the counter septum, for its neighbouring minor septa are longer than the others. The major septa may have cymatoid carinae in the tabularium. The minor septa extend up to two-thirds of the way to the axis. The dissepiments are highly inclined and rather elongate, and the outermost series may be dilated. The tabular floors are thin and close, and concave, sometimes deeply so, or with a median notch, and are formed of numerous elongate tabellae.

Localities: Burdekin Downs, A,[1] E, F; Fanning R., A,F; Reid Gap, A (type locality), E,F.

Remarks: This species is almost identical with *A. diluvianum* (see p. 234) from the upper coralline limestone (*Cosmophyllum* beds) of Niederehe in the Eifel, which are at the top of the middle Middle Devonian of Schulz, i.e. near the top of the lower Givetian. Schmidt (1936, p. 317) has recorded *A. diluvianum* from the *reticularis*-marl at the base of the upper Middle Devonian of Soetenich in the Eifel. The only difference is that the Queensland species is smaller and has fewer septa than the German. The specimens from the type locality

[1] For explanation of localities referred to by letters see pp. 230-232.

are frequently slenderer than the type, while those from Burdekin Downs A (on the hill rising from the fowlyard) are somewhat stouter. Specimens from the anabranch of the Burdekin R. near Big Rocks (Burdekin Downs E) are on the whole much slenderer than those from the type locality, though some are stout, and many have recessive minor septa; this last character is so striking that it might prove better to regard the individuals showing it as a variety, but this is not done herein. Other specimens from this locality show a particularly strong development of cymatoid carinae. Specimens from Reid Gap E (portion 370 parish of Magenta) are very similar to those from the type locality.

Genus *Dohmophyllum* Wedekind.

Dohmophyllum Wedekind, 1923, pp. 29, 30; 1924, p. 76.

Trematophyllum Wedekind, 1923, pp. 27, 35 (genus caelebs); 1924, pp. 72, 75; genolectotype, chosen Lang, Smith and Thomas (1940, p. 135) *T. schulzi* Wedekind, 1924, p. 76, text-fig. 104, Lower Middle Devonian (lower coralline limestone), Niederehe, the Eifel.

Sparganophyllum Wedekind, 1925, p. 13; genoholotype *S. difficile* Borchers MS in Wedekind, 1925, pp. 13, 14, text-fig. 9; *quadrigeminus* beds of Hand near Bergisch Gladbach; and Pillingserbachtal, near Letmathe, Germany.

Genoholotype: D. involutum Wedekind, 1923, text-fig. 7 on p. 30; 1924, text-fig. 108. Crinoid beds (base of *Stringocephalus* beds), Auburg, near Gerolstein in the Eifel.

Diagnosis: Large, simple Rugose corals with a wide dissepimentarium of fine dissepiments, with numerous close, flattened tabellae arranged in irregular floors without a median notch, with long unequal major septa, sometimes slightly carinate, and with a vortical axial structure or an axial column of discrete, thickened, curved septal ends, often carinate.

Remarks: In my opinion the genera given in the synonymy should be merged, the distinctions made by Wedekind, on shape of calice, type of septal carination, and tightness of axial structure being considered of not more than specific value in this group. Together they characterise a relatively short period of time, from the top of the *Calceola* beds to the top of the lower part of the *Stringocephalus* beds of the German succession, and they are all covered by the diagnosis given above. The best known member of the genus is perhaps *D. helianthoides* (Goldfuss) from the crinoid beds of the Eifel. In its long, unequal septa and its close flattened tabellae the genus shows the characters of the Acanthophyllidae; but these tabellae are arranged in irregular groups, many of which appear to indicate irregularly domed tabular floors; and by this character they are separable from *Acanthophyllum,* which typically has regularly concave floors with a median notch. *Stenophyllum implicatum* Wedekind (1925, text-fig. 7) from the coralline crinoidal limestone (*Cosmophyllum* beds) of Dachsberg in the Eifel, appears to belong to the genus. Our Queensland species is closest to the German forms from the *quadrigeminus* beds of Hand in the Paffrath Basin.

Dohmophyllum clarkei sp. nov. Pl. V., figs. 6-11.

Holotype: F. 4531, University of Queensland Collection, base of Fanning R. limestone, about 2 miles upstream from Fanning R. homestead (1939). Givetian.

Diagnosis: Large trochoid or trocho-cylindrical *Dohmophyllum*, frequently with rejuvenescence; the axial ends of the long major septa are usually twisted in a moderately wide vortical axial structure; the minor septa are long and both orders are thin except at the periphery, where they suddenly dilate wedge-wise into a fairly narrow stereozone.

Description: The corallum is large and solitary, though usually associated with others of the same species; it is trochoid at first, tending to become cylindrical later; rejuvenescence may frequently cause a sudden decrease in diameter. It is often somewhat flattened. The holotype has a longer diameter of 28 mm. and a shorter diameter of 24 mm. at about 35 mm. from the apex, and is almost erect. Some coralla may be smaller, others much larger; one is 150 mm. long, with a longer diameter of 60 mm.; some may show slight curvature.

The average number of septa of each order is 28 or 30, but small corallites may show fewer, and large corallites up to 37 of each order (at a diameter of 46 mm.). The septa are thin, and usually without carinae, though some short, ragged trabecular carinae may occur on them near the inner margin of the dissepimentarium or in the tabularium. They expand suddenly wedgewise at the periphery, to form a stereozone; this is almost 1 mm. wide in the holotype; it tends to be widest near the apex, and thinnest near the calice. The septa are often somewhat wavy just inside the stereozone, and they may sometimes be discontinuous there. The major septa extend unequally towards the axis; typically many of them are strongly rotated in a counter-clockwise direction in the tabularium, thus forming a vortical axial structure, but they may be almost straight therein; sometimes they are somewhat withdrawn from the axis. The interseptal loculi in the tabularium are somewhat unequal. The septal ends may be somewhat thickened in the tabularium. In one specimen (F 4471) some of the septa are broken off from their axial ends which are twisted together irregularly, forming an axial column as in some *D. helianthoides* (Goldfuss). The minor septa extend nearly two-thirds of the way to the axis in the adult stages, rather less in younger stages, and more in very well developed coralla. The dissepiments are numerous and rather globose, but less so than in other species of the genus, and are steeply inclined. They are frequently geniculate in transverse section of the corallum. The tabular floors are usually irregular, sometimes sagging on one side and domed on the other. They are formed by numerous rather flattened tabellae, though occasional arched plates are seen, and are almost as closely spaced as the successive dissepimental floors. The width of the tabularium is variable, up to one-third the diameter of the corallum. The horizontal skeletal elements are consistently thinner than the septa.

Localities: Burdekin Downs A?, B?, D, E, F; Fanning R. A. (including type locality), B, D?, E, G?; Reid Gap A?, E, F, G.

Remarks: The queries in the locality list refer to specimens, from the locality cited, only doubtfully referred to *D. clarkei*. The species is close to individuals from the *quadrigeminus* beds of Hand in the Paffrath Basin, figured by Wedekind (1925) as *Sparganophyllum difficile, S. simplex,* and *S. gracile*; these have a similar number of septa and a similar external form, but the limits of variation in the German species are unknown. Our species varies within wide limits, and the chief variables are:—size of corallum, the number of septa taking part in the axial structure, the degree of the rotation of the axial ends and the degree to which these are discrete, and the width of the tabularium.

The dilatation and waviness of the septa vary slightly. The variation was not found to be of any strict significance geographically or stratigraphically.

Genus *Lyrielasma* Hill.

Lyrielasma Hill, 1939a, p. 243.

Genotype: Cyathophyllum subcaespitosum Chapman, 1925, p. 112, pl. xiii., figs. 15, 16a, b. Devonian, Cave Hill, Lilydale, Victoria.

Diagnosis: Fasciculate Rugosa with the major septa directed towards the median plane, with wide, deeply concave incomplete tabulae, and with a peripheral stereozone of irregular width, formed by the dilatation of major and minor septa in the dissepimentarium.

Range: Lower or Middle Devonian of Victoria.

Lyrielasma curvatum sp. nov. Pl. V., figs. 12-14.

Holotype: F 4423, University of Queensland Collection, base of Fanning R. limestone, Fanning R. about 2 miles above Fanning R. homestead. Givetian.

Diagnosis: Lyrielasma in which the axial ends of the septa may be vortically curved, and the tabulae may be horizontal or even slightly domed.

Description: The corallum is probably phaceloid, one section and some specimens showing corallites in such positions in the matrix as to suggest that smaller corallites arise from larger by lateral increase. The average diameter is 15 mm., and the corallites are cylindrical or slenderly trochoid, and may be erect or curved. Neither calice nor epitheca could be studied. There are about 25 septa of each order, dilated towards the periphery, so that a stereozone of irregular width is formed, varying from one corallite to another from 1 mm. to 4 mm. The major septa reach or almost reach the axis; they are unequal; sometimes they are arranged not very regularly about a median plane, but more often their axial ends are vortically curved. The dissepiments are small and steeply inclined, and are often geniculate in transverse section. The tabular floors are flat or gently domed or saucered, and are formed of numerous, close lying, flat tabellae.

Remarks: The species is placed somewhat doubtfully in *Lyrielasma* because its flat lying tabellae and the vortical curvature of its axial septal ends, which are not very distinctly arranged about a median plane, have not previously been observed in the genus. No foreign species is known to resemble it at all closely.

Lyrielasma(?) *lophophylloides* sp. nov. Pl. VI., figs. 1, 2.

Holotype: F 5129, University of Queensland Collection, Burdekin Downs, limestone dam. Givetian.

Diagnosis: Phaceloid Rugosa whose slender corallites have straight septa, with one longer and thicker than the others, highly inclined dissepiments and deeply concave tabulae.

Description: The corallum is phaceloid, with cylindrical corallites; increase is lateral. The corallites are about 9 mm. in diameter, and the nature of their epitheca and calice are not known. There is a narrow peripheral stereozone about 0·5 mm. wide, formed by lateral dilatation of the septal bases. There are 20 major septa extending unequally to the axis, all straight throughout their length; one, possibly