

(*Siloxerus*, Labill.; *Ogcerostylus*, Cass.; *Styloncerus*, Spreng.; *Cylindrosorus* and *Phyllocalymma*, Benth.; *Skirrophorus*, DC.; *Chrysocoryne*, Endl.; *Eriocladium*, Lindl.; *Pogonolepis*, Steetz; *Piptostemma*, Epitriche and *Gamozygis*, Turcz.; *Cephalosorus*, *Hyalochlamys* and *Dithyrostegia*, A. Gray; *Pleuropappus*, F. Muell.)

Flower-heads numerous and sessile on a cylindrical conical convex or flat receptacle, in a dense cluster spike or compound head, surrounded by a general involucre of large and leaf-like or of small and herbaceous or scarious bracts, or of both in few rows without radiating tips or sometimes very few or none. Partial heads 1- or few-flowered, very rarely many-flowered. Involucre compressed, of few scarious transparent bracts, the subtending one flat, two lateral ones conduplicate and keeled or concave, and sometimes 2 or

more inner ones flat or slightly concave. Receptacle without scales. Florets hermaphrodite, tubular, slender, 4- or 5-toothed, often hardened at the base. Anthers more or less distinctly pointed or tailed at the base. Style-branches nearly terete, truncate. Achenes usually compressed. Pappus none or of 1, 2 or more jagged or awned scales, often united in a ring or cup at the base. Annual or rarely perennial herbs, or in one species shrubby, glabrous or more or less cottony or woolly-white. Leaves alternate or very rarely irregularly opposite, entire. Clusters or spikes of flower-heads terminal, sessile or pedunculate, cylindrical, oblong-ovoid, globular or hemispherical, the partial involucre usually very deciduous with the achenes, or rarely the subtending bract persistent.

The genus is limited to Australia. The numerous genera, mostly monotypic or nearly so, which it is here proposed to unite, have been established chiefly upon minute distinctions in the pappus, which appear to me to afford a much better specific than generic character. In the genus the general involucre is less perfect and the general receptacle less developed than in *Myriocephalus*, more so than in *Gnephosis* and *Calocephalus*, and the partial involucre more reduced and flattened than in either of the two latter genera. For the common name, *Siloxerus* of Labillardiere has undoubtedly the right of priority, but it has by common consent been rejected as being at complete variance with the etymology given by the author. Cassini's emendation (rejected as barbarous) and Sprengel's generally adopted one are both more recent than Wendlan's name, which typically represents the tribe, and has been applied to several of the species, whilst Labillardiere's has only been given to a single one. The general rules of the science appear therefore to be best observed by applying the name of *Angianthus* to the whole genus.

Clusters or spikes of flower-heads cylindrical, oblong-ovoid or rarely globose, the receptacle a cylindrical rhachis. Annuals or rarely herbaceous perennials.

Pappus conspicuous.

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| Spikes cylindrical without floral leaves. Pappus of 2 or 3 scales ending in bristles plumose at the end | 1. <i>A. tomentosus</i> . |
| Spikes cylindrical, surrounded by floral leaves. Pappus of 1 very oblique fringed boat-shaped scale | 2. <i>A. pleuropappus</i> . |
| Spikes oblong, often surrounded by floral leaves. Pappus a short irregularly-fringed cup | 3. <i>A. brachypappus</i> . |
| Spikes ovoid, surrounded by floral leaves. Involucral bracts with white appendages. Pappus of several lanceolate fringed scales. Stems very short. | 4. <i>A. humifusus</i> . |
| Pappus none or a minute ring. | |
| Bracts of the general involucre all scarious. | |
| Spikes slender, cylindrical, $\frac{1}{2}$ to 1 in. long, attenuate at the base, of a shining brown | 5. <i>A. myosuroides</i> . |
| Spikes short, cylindrical, obtuse at both ends, brown | 6. <i>A. tenellus</i> . |
| Spikes oblong, attenuate at the base | 7. <i>A. pusillus</i> . |
| Outer bracts of the general involucre leafy or tomentose, although short. Spikes ovoid-oblong | 8. <i>A. Milnei</i> . |

Clusters of flower-heads ovoid, the receptacle conical. Plant shrubby at the base.

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| Pappus none or a minute ring. General involucre shorter than the heads | 9. <i>A. Cunninghamii</i> . |
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Clusters of flower-heads ovoid globular or hemispherical, the receptacle flat, convex or rarely conical (almost oblong in *A. globifer*). Annuals or rarely herbaceous perennials.

Pappus conspicuous.

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| Tall plant. Clusters of flower-heads surrounded by broadly ovate floral leaves. Pappus cup-shaped, deeply jagged | 10. <i>A. phyllocephalus</i> . |
| Small plant. Clusters of flower-heads surrounded by long linear bracts. Pappus of 5 ovate awned scales | 11. <i>A. micropoides</i> . |
| Small plant. Clusters of flower-heads surrounded by 3 or 4 floral leaves not exceeding the heads. Pappus of 3 ovate awned scales | 12. <i>A. microcephalus</i> . |
| Pappus none or a minute ring. | |
| Involucral bracts usually 4 enclosing 2 or rarely 1 floret. | |
| Stems 2 to 3 in. long or more. Florets 5-merous. | |
| Floral leaves broadly ovate | 13. <i>A. platycephalus</i> . |
| Floral leaves ovate-lanceolate | 14. <i>A. Drummondii</i> . |
| Stems 2 to 3 in. long. Florets 4-merous. | |
| Clusters of flower-heads hemispherical. Florets thickened at the base | 15. <i>A. Preissianus</i> . |
| Clusters of flower-heads ovoid or globular. Florets not thickened at the base | 16. <i>A. eriocephalus</i> . |
| Stems scarcely any. Clusters of flower-heads depressed-globular, almost radical. Florets 5-merous. | |
| Heads 2-flowered | 17. <i>A. pygmaeus</i> . |
| Heads 1-flowered | 18. <i>A. globifer</i> . |
| Involucral bracts 2, enclosing 1 floret. | |
| Dwarf plant, the clusters of flower-heads almost radical | 19. <i>A. demissus</i> . |
| Erect or ascending 1 to 6 in. high with terminal clusters. | |

N33

ASTERACEAE

Angianthus acrohyalinus

Involucral bracts few, in about 2 or 3 rows, the outer ones herbaceous, the inner ones usually bordered with a thin whitish margin. Receptacle chaffy. Ray-florets neuter, sterile, ligulate or sometimes wanting; disk-florets tubular, hermaphrodite, 5-toothed. Anthers obtuse at the base. Style-branches with an acute or subulate point. Achenes broad and flattened or slender and 4-angled, often produced into a short beak. Pappus of 2 to 4 rigid retrorsely hispid persistent awns.—Herbs with opposite leaves. Flower-heads on terminal peduncles, the ray yellow or white.

Of the two sections of the genus one, *Platycarpæa*, belongs chiefly to the temperate regions of the northern hemisphere, the Australian species being identical with one of the common northern ones; the other, *Psilocarpæa*, is entirely American with the exception of the two Australian species, which are common weeds in all warm countries.

SECTION I. *Platycarpæa*.—Achenes flat and rather broad.

Leaves divided into 3 lanceolate serrate segments 1. *B. tripartita*.

SECTION II. *Psilocarpæa*.—Achenes slender, 4-angled.

Leaves mostly pinnate, with 3 or 5 segments. Ray white 2. *B. pilosa*.

Leaves mostly bipinnate. Ray yellow 3. *B. bipinnata*.

3. **B. bipinnata**, *Linn.*; *DC. Prod.* v. 603. A glabrous annual, resembling *B. pilosa*, but the leaf-segments are usually again divided into small deeply-toothed or lobed segments, the flower-heads are smaller, the involueral bracts less bordered, and the ray-florets small and yellow.

N. Australia. Victoria river, *F. Mueller*; islands of the Gulf of Carpentaria, *R. Brown*.

Queensland. Common on the sandy seacoasts, *R. Brown* and others; islands of Moreton Bay, *F. Mueller*.

The species is common in most warm countries both in the New and the Old World, and apparently truly indigenous in Australia.

2. **B. pilosa**, Linn.; DC. Prod. v. 597. An erect glabrous or slightly hairy annual, 1 to 2 ft. high. Branches angular. Leaves thin, pinnately divided, or the lower ones sometimes simple; segments 3 or sometimes 5, petiolulate, ovate or ovate-lanceolate, 1 to 2 in. long, serrate or rarely lobed. Flower-heads few, terminal, rather small, on slender peduncles. Involucral bracts 2 to 3 lines long. Ray-florets white, few and short or sometimes wholly wanting. Achenes slender, 4-angled, the inner ones often 6 to 7 lines long, the outer ones shorter.—Benth. Fl. Hongk. 183, with the synonyms adduced.

Queensland. Brisbane river, Moreton Bay, *F. Mueller*.

N. S. Wales. Newcastle, *R. Brown*; Port Jackson, *Woolfs*; Blue Mountains, *Miss Atkinson*; Clarence river, *Beckler*.

Victoria. Yarra-Yarra, *F. Mueller*.

The species is very common as a weed over most warm countries both in the New and the Old World, and may therefore have been introduced into Australia by cultivation.

Involucre ovoid or campanulate, the bracts imbricate in several rows, narrow-linear, herbaceous or soft. Receptacle nearly flat, without scales. Florets all tubular, those of the circumference female, filiform, usually very numerous, those of the disk hermaphrodite, broader, usually few. Anthers with short fine tails or points at the base. Style-branches filiform, papillose outside at the end. Achenes small, usually somewhat compressed, striate or ribbed. Pappus of numerous capillary bristles.—Annual or perennial herbs, usually villous woolly or glandular-pubescent. Leaves alternate, toothed, lobed or rarely entire. Flower-heads in terminal pyramidal or oblong panicles, sometimes contracted into spikes or clusters, or rarely the heads solitary.

A considerable genus, confined to the warmer regions of the Old World, some of them ubiquitous and variable weeds, upon which a large number of spurious species have been fabricated, the real limits of the more distinct forms often very difficult to establish. Of the seven Australian species three appear to be endemic, the other four belong to some of the more common Asiatic forms. The genus is very closely allied to *Conyza* and to *Pluchea*, having very nearly the same florets and achenes, with the involucre and habit of the former and the tailed anthers of the latter.

Flower-heads all distinctly pedunculate.

Glandular-pubescent, not tomentose.

Leaves all or almost all narrowed into a petiole. Usually above
1 ft. high 1. *B. glandulosa*.

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| Stem-leaves sessile and stem-clasping. Radical leaves only petiolate. Rarely exceeding 1 ft. in height | 2. <i>B. amplexans</i> . |
| Usually not exceeding 1 ft., pubescent or villous, not viscid. Stem-leaves sessile and stem-clasping, mostly lanceolate. Peduncles rather long | 3. <i>B. integrifolia</i> . |
| Small. Leaves chiefly radical. Stem-leaves few, small, ovate. Peduncles long and filiform | 4. <i>B. diffusa</i> . |
| Flower-heads, at least the upper ones, sessile and clustered. Leaves lanceolate, oblong or obovate-oblong, the upper ones sessile. Involucre about 4 lines long | 5. <i>B. hieracifolia</i> . |
| Involucre under 3 lines long | 6. <i>B. Cunninghamii</i> . |
| Almost all the leaves petiolate and broadly obovate. Involucre 2 to 3 lines long | 7. <i>B. lacera</i> . |

2. **B. amplexans**, *DC. Prod.* v. 433. An annual with erect or ascending stems, usually under 1 ft. high, more or less covered with a glandular-viscid pubescence. Radical leaves obovate and petiolate, the stem leaves all sessile and stem-clasping, from ovate to lanceolate, acutely toothed and usually small. Flower-heads all pedunculate, not numerous, in a loose panicle, very divaricate in Indian specimens, less so in the Australian ones. Involucres nearly 3 lines long. Style-branches of the disk-florets long and slender.

Queensland. Keppel Bay, *Thozet*; Connor river, *Bowman*. The species is common in E. India.

4. **B. diffusa**, *R. Br. Herb.* A small slender and diffuse annual, slightly viscid, with a very little wool at the base of the stems, rarely exceed-

ing 6 in. including the peduncles. Leaves chiefly radical and rosulate, petiolate, obovate-oblong, $\frac{1}{2}$ to 1 or rarely 2 in. long; those on the stem few, small, ovate, stem-clasping. Peduncles long and very slender. Flower-heads small, glabrous or slightly pubescent.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown*; towards M'Adam Range, *F. Mueller*.

5. **B. hieracifolia**, DC. *Prod.* v. 442. An erect stiff almost simple annual, 1 to 2 ft. high, more or less tomentose or densely villous, but not viscid. Leaves oblong, irregularly and sharply toothed, the lowest nearly obovate, 2 to 3 in. long, and petiolate, the others sessile or nearly so but narrowed at the base, the uppermost almost lanceolate. Flower-heads about 4 lines long, mostly sessile and clustered, the lower clusters distant, the upper ones forming a terminal leafy spike, or more rarely branching into an oblong terminal panicle. Involucres always tomentose, the bracts linear acute and soft as in the rest of the genus, but rather broader than in the following 2 species.—Wight, *Ic. t.* 1099 (representing a dwarf form).

N. Australia. Between Providence Hill and M'Adam Range, *F. Mueller*.

Queensland. Broad Sound, *R. Brown*; Keppel Bay, *Thozet*; Moreton Bay, *Leichhardt*; also a doubtful fragment in *Bowman's* collection.

The species is one of the common ones in tropical Asia from Ceylon and the Peninsula to the Archipelago, and northwards to S. China and Formosa. *R. Brown's* and *F. Mueller's* specimens belong to the very villous var. *holosericea*, Benth. *Fl. Hongk.* 178, or *B. holosericea*, DC. *Prod.* v. 442. *Leichhardt's* and *Thozet's* are less villous, the leaves of the former nearly glabrous and on longer petioles.

3. **B. integrifolia**, *DC. Prod. v. 433*. A rather slender annual, erect or branching from the base, rarely above 1 ft. high, pubescent or hirsute, and perhaps sometimes viscid, the young shoots occasionally silky-woolly. Leaves oblong-lanceolate or rarely the lower ones almost obovate, acute and bordered by distant acute teeth, rather rigid and often scabrous, the lower ones 1 to 3 in. long, the upper ones smaller, narrowed towards the base or broad and stem-clasping at the base. Flower-heads not clustered, the peduncles at first short but generally long and slender when the flowers are fully out. Involucres 2 to 3 lines long.

N. Australia. Port Keatts, N.W. coast, *A. Cunningham*; Victoria river, M'Adam Range, Roper river, *F. Mueller*.

7. **B. lacera**, DC. *Prod.* v. 436. An erect annual, 1 to 2 ft. high, simple or branched, not usually so stiff as *B. hieracifolia*, more or less clothed with soft whitish hairs or pubescence. Leaves all petiolate, obovate or rarely oblong, coarsely toothed or almost lyrate. Flower-heads seldom above 3 lines long and often not above 2 lines, very numerous in narrow oblong and dense or looser and more spreading panicles, leafy at the base, the upper heads sessile and clustered on the branches. Involucral bracts usually very narrow.

N. Australia. Victoria river, *F. Mueller*.

Queensland. Shoalwater Bay, *R. Brown*; Burdekin Expedition, *F. Mueller*; Rockhampton, *Dallachy*; Brisbane river, Moreton Bay, *Fraser, F. Mueller*.

This is one of the commonest weeds in tropical Asia, extending from tropical and sub-tropical Africa to the Archipelago and S. China. It is also extremely variable and sometimes difficult to recognize in the bad specimens often preserved in herbaria. The Aus-

tralian ones I have seen belong chiefly to a slender loosely-branched variety with long-petioled thin leaves, often distinguished as a species under the name of *B. Wightiana*, DC. *Prod.* v. 435; Benth. Fl. Hongk. 178, but which Thwaites appears to be right in reducing to *B. lacera*. The Brisbane river specimens are on the other hand nearly as tall and rigid as *B. hieracifolia*, and the flower-heads are rather larger than usual in *B. lacera*, but the leaves are mostly lyrate and all petiolate, and they appear to represent only a luxuriant state of *B. lacera*.

NIP

ASTERACEAE

Blumea laciniata

NID

ASTERACEAE

Blumea mollis

NSD

ASTERACEAE

Blumea prostrata

N 510

ASTERACEAE

Blumea pungens

NIB

ASTERACEAE

Blumea saxatilis

N 10

ASTERACEAE

Blumea tenella

NID

ASTERACEAE

Blumea tenella

N30

ASTERACEAE

Blumea
wrightiana

18. CALOTIS, R. Br.

ASTERACEAE

(Huenefeldia, Walp.; Goniopogon, Turcz.; Cheiroloma, F. Muell.)

Involucre usually hemispherical, the bracts in about 2 rows, nearly equal, broad or narrow, with dry or scarious margins and usually a few inner narrow bracts. Receptacle flat or convex, without scales. Florets of the ray female, ligulate, often numerous, but in a single row. Disk-florets numerous, apparently hermaphrodite but sterile (except in *C. hispidula*), tubular, 5-toothed. Anthers obtuse at the base. Style-branches in the disk-florets somewhat flattened or almost filiform, usually obtuse, papillose outside at the end. Fruiting-heads usually globular. Achenes of the ray flat, obovate or oblong. Pappus of 2 or more barbed bristles, sometimes all short, but more frequently 1, 2 or more growing out into rigid divaricate awns or spines, and accompanied sometimes by 2 or more truncate scales. Disk-achenes usually abortive.—Perennial herbs or rarely annuals, with the habit nearly of *Brachycome*. Leaves alternate, entire toothed or pinnately divided. Flower-heads pedunculate, the rays white, rarely blue or purple.

The genus is confined to Australia.

SECTION I. **Eucalotis**.—Pappus consisting of rigid barbed awns and flat truncate scales. Perennials with leafy stems.

- Leaves linear-lanceolate or oblong, remotely toothed or pinnatifid.
- Scales of the pappus usually united in a cup; awns 1 or 2 1. *C. dentex*.
- Leaves cuneate or spatulate, toothed at the end. Scales of the pappus 2 or 3, alternating with the awns. Plant not glandular 2. *C. cuneifolia*.
- Leaves oblong-cuneate, deeply toothed at the end. Scales of the pappus 3 to 6, alternating with the awns. Plant glandular-hirsute 3. *C. glandulosa*.

SECTION II. **Cymbaria**.—Pappus consisting of 2 or more rigid awns, dilated and united at the base, without scales. Perennials with leafy stems, sometimes appearing annual.

- Awns of the pappus 2, almost boat-shaped at the base. Plant usually pubescent or hirsute 4. *C. cymbacantha*.
- Awns of the pappus several, united in a glabrous cup at the base. Stems elongated, glabrous or nearly so 5. *C. erinacea*.

SECTION III. **Acantharia**.—Pappus consisting of several unequal awns, all distinct and usually hispid at the base, sometimes all short.

- Achenes not winged. Perennials.
- Stock emitting stolons or creeping rhizomes and a tuft of radical leaves. Scapes simple or with very few heads.
- Radical leaves entire, toothed or lobed.
- Rhizome creeping. Plant usually hirsute. Radical and lower leaves mostly toothed. Fruiting heads $\frac{1}{2}$ in. diameter 6. *C. scabiosifolia*.

- Plant stoloniferous, usually glabrous. Leaves radical, narrow. Scapes almost leafless. Fruiting heads small 7. *C. scapigera*.
- Radical leaves pinnate with pinnatifid or linear segments. Involucral bracts few, broad 8. *C. anthemoides*.
- Stems numerous, erect, several-headed, the radical leaves decayed before flowering. Flower-heads small. Involucral bracts narrow.
- Upper leaves linear. Pappus longer than the achenes. Fruiting-heads nearly 3 lines diameter 9. *C. lappulacea*.
- Upper leaves small, cuneate. Pappus shorter than the achenes. Fruiting-heads not 2 lines diameter 10. *C. microcephala*.
- Achenes winged. Pappus short or of very fine awns. Perennial with slender branching stems 11. *C. breviseta*.
- Small annuals.
- Ray white. Achenes completely covered with long intricate or plumose hairs 12. *C. plumulifera*.
- Ray purple. Achenes shortly hirsute with ciliate wings 13. *C. porphyroglossa*.
- Ray white. Achenes nearly glabrous, the wings very shortly ciliate 14. *C. pterosperma*.

SECTION IV. **Cheiroloma**.—Ray-florets scarcely exceeding the pappus. Disk-florets fertile. Pappus consisting of several unequal awns, alternating with very short, entire or lobed bristles or scales.

- Annual. Achenes not winged 15. *C. hispidula*.

11. **C. breviseta**, *Benth. in Hueg. Enum.* 60. An erect perennial of $\frac{1}{2}$ to 1 ft., or sometimes more, diffuse with slender stems of 1 to 2 ft. Leaves linear, obtuse, entire, or some of the lower ones linear-cuncate and coarsely toothed. Flower-heads very small, on slender peduncles. Involucral bracts numerous, linear, mostly acute, scarcely 1 line long. Ray-florets white. Achenes ovate, shortly hispid, not 1 line long, bordered by a narrow flat edge almost expanded into a wing. Pappus of 5 to 10 or even more little rigid barbed awns, usually much shorter than the achene.—*C. tropica*, F. Muell. in *Trans. Phil. Inst. Vict.* iii. 58.

N. Australia. Upper Victoria river and barren plains, Fitzmaurice river, *F. Mueller*; Albert river, *Henne*.

15. **C. hispidula**, *F. Muell. in Trans. Vict. Inst.* 1855, 130. A hispid annual, with procumbent or rarely erect branching stems of 3 to 6 in. Lower and radical leaves petiolate, obovate spathulate or cuneate, upper ones oblong-lanceolate, toothed towards the end or entire. Peduncle short. Involucral bracts ovate-lanceolate or oblong, hispid or almost muricate. Ray-florets few and very small, the ligula scarcely exceeding the pappus; disk-florets numerous, also small and all fertile. Fruiting-heads 3 to 4 lines diameter. Achenes quite similar in the ray and in the disk, flattened with thick obtuse margins, slightly hispid; pappus of about 4 to 6 rigid divaricate more or less barbed unequal bristles, alternating with as many much shorter bristles or scales either subulate and entire or palmately 3-fid or sometimes spathulate, and all hispid.—*Cheirotonia hispidulum*, *F. Muell. in Linnæa*, xxv. 401; *Sonder in Linnæa*, xxv. 473.

N. S. Wales. Mollé's Plains, *A. Cunningham*; Upper Bogan and Lachlan rivers, *L. Morton*; Darling river to the Barrier Range, *Victorian Expedition*; between Stokes Range and Cooper's Creek, *Wheeler*.

Victoria. Wimmera, *Dallachy*.

S. Australia. Crystal Brook and Cudnaka, *F. Mueller*.

W. Australia. Swan River, *Drammond*, *1st Coll. and n.* 375; Champion Bay, *Walcott*.

N10

ASTERACEAE

Centipeda

cunninghamii

NIB

ASTERACEAE

Centipeda minima

NIB

ASTERACEAE

Chrysogonum eclipoides

NEB

ASTERACEAE

Chrysogonum
trichodesmoides

31. **ECLIPTA**, Linn.

ASTERACEAE

Involucre of about 2 rows of nearly equal herbaceous bracts. Receptacle chaffy. Florets of the ray female, shortly ligulate, narrow; disk-florets hermaphrodite, usually fertile, tubular, 4-toothed. Anthers obtuse at the base. Style-branches linear, flattened, obtuse. Achenes of the ray triangular, those of the disk flattened. Pappus none or reduced to a border of minute teeth. — Herbs with opposite leaves. Flower-heads small, on axillary or terminal peduncles.

Besides the subjoined species, of which one is endemic in Australia and the other a common weed in warm countries, some Brazilian perennials are included in the genus, but perhaps not correctly so.

- Ray white. Involucral bracts ovate 1. *E. alba*.
Ray yellow. Involucral bracts narrow-lanceolate 2. *E. platyglossa*.

2. ***E. platyglossa***, *F. Muell. Fragm.* ii. 135; *Pl. Vict.* t. 39. Very near to *E. alba*, but the flower-heads are smaller, the involucre bracts narrow-lanceolate, and the ray-florets yellow. Leaves almost or quite sessile, lanceolate, strigose. Achenes quite those of *E. alba*.—*Wollastonia* or *Wedelia eclipoides*, *F. Muell. Pl. Vict.* t. 39.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown, Henne*; Albert and Roper rivers, *F. Mueller*.

Queensland. Broad Sound, *R. Brown*; Rockhampton, *Dallachy*; Moreton Bay, *C. Stuart*; also in *Leichhardt's* collection.

N. S. Wales. Cabramatta and Mudgee, *Woolfs*; Clarence river, *Beckler*; Darling and Murray rivers, *Dallachy and Goodwin, Herrgott*.

Victoria. Avoca and Murray rivers, *F. Mueller*.

S. Australia. Torrens river, St. Vincent's Gulf, *F. Mueller*.

A specimen from Facing Island, Port Curtis, *R. Brown*, has the involucre bracts nearly as narrow as in *E. platyglossa*, but according to *R. Brown's* notes, the ray-florets are white and it seems almost to connect the two species.

25. **EPALTES**, Less.

ASTERACEAE

(*Sphaeromorpha*, DC. (*partly*); *Ethuliopsis*, F. Muell.)

Involucre ovoid-globular or hemispherical, the bracts imbricate, usually broad, dry and rigid. Receptacle nearly flat, without scales. Florets all tubular, those of the circumference numerous, female, very slender, minutely toothed, those of the disk hermaphrodite, but usually sterile, broader, 3- to 5-toothed, either few or the flower-heads almost dioecious. Anthers with minute tails or points at the base. Style of the disk-flowers undivided or with short obtuse branches, papillose outside. Achenes nearly terete, striate, those of the ray without any pappus, those of the disk usually abortive and with a pappus of 2 or 3 very deciduous bristles.—Herbs, either erect and dichotomous or diffuse. Leaves alternate, entire, toothed or lobed. Flower-

2. **E. australis**, Less. in *Linnaea*, v. 148, and *Syn. Comp.* 206. Annual (or sometimes perennial?), branching at the base and diffuse or prostrate, small or rarely exceeding 1 ft., glabrous scabrous or hirsute with transparent hairs. Leaves petiolate, obovate or cuneate-oblong, entire toothed or almost lyrate, $\frac{1}{2}$ to $1\frac{1}{2}$ in. long. Flower-heads lateral, sessile or shortly pedunculata. Involucre depressed-hemispherical, 2 to 3 lines diameter, the bracts orbicular concave and very obtuse. Female florets not exceeding the involucre, short, and not so slender as in *E. Cunninghamii*, and very numerous; disk-florets fewer, 3- to 5-lobed. Style usually branched with short narrow obtuse lobes. Achenes all without any pappus, those of the disk mostly, but not always sterile.—*Sphaeromorpha petiolaris*, DC. Prod. vi. 140.

N. Australia. Victoria river to Arnhem's Land, *F. Mueller*; in the interior, *M' Douall* *Stuart's Expedition*; islands of the Gulf of Carpentaria, *R. Brown*.

Queensland. Keppel Bay, *R. Brown, Thozet*; E. coast, *A. Cunningham*; Wide Bay, *Bidwill*; Walloon, *Bowman*; Brisbane river, Moreton Bay, *F. Mueller*.

N. S. Wales. Port Jackson, *R. Brown, Woolfs*, and others.

S. Australia. Murray river, *F. Mueller*; Cooper's Creek, *D. Murray*.—Recently received also from Formosa (*R. Oldham*). The species has, at first sight, some resemblance with *Myriogyne minuta*, especially in inflorescence, but besides the distinctly tailed anthers and other floral characters, it is readily distinguished by the involucre.

WIB

ASTERACEAE

Erioglossum edule

41. **FLAVERIA**, Juss.

ASTERACEAE

Flower-heads collected in dense clusters or compound heads surrounded by a few leafy bracts or floral leaves. Involucres cylindrical or compressed, with few conduplicate dry bracts. Florets few, the female ones often solitary in the involucre with a small ligula, hermaphrodite florets tubular, 5-toothed. Anthers obtuse at the base. Style-branches truncate. Achenes somewhat compressed. Pappus none.—Herbs with opposite leaves. Clusters of flower-heads terminal or sessile in the forks. Florets yellow.

Besides the Australian species, which is endemic, there are a few American ones, one of which, from S. America, is closely allied to the Australian one.

1. **F. australasica**, Hook. in *Mitch. Trop. Austr.* 118. An erect rigid perfectly glabrous pale green annual, usually about 1 ft. but attaining sometimes 2 or 3 ft. in height, with opposite or dichotomous divaricate branches. Leaves linear or linear-lanceolate, 1 to 2 in. long, entire or with small remote

teeth, the lower ones narrowed towards the base but stem-clasping, the upper ones much dilated at the base. Flower-heads numerous, in dense globular or hemispherical sessile clusters often $\frac{1}{2}$ in. diameter, surrounded by a few broad ovate-acuminate or lanceolate floral leaves longer than the clusters. Involucres 2 to 3 lines long, the outer ones of each cluster usually consisting of 2 or 3 obtuse narrow bracts and including a single ligulate floret, the others containing 2 to 6 disk-florets, the corollas slightly dilated over the achene and glandular at the base. Achenes prominently ribbed.—F. Muell. *Fragm.* i. 183.

N. Australia. Nichol Bay, N.W. coast, *F. Gregory's Expedition*; Victoria river and Hooker's Creek, *F. Mueller*; islands of the Gulf of Carpentaria, *R. Brown*; in the interior, *M. Douall Stuart's Expedition*; Albert river, *Henne*.

Queensland. Balonne river, *Mitchell*.

There is very little to distinguish this from the common S. American *F. Contrayerva*, except the narrow leaves and the more sessile and compact clusters of flower-heads with broader floral leaves.

37. GLOSSOGYNE, Cass.

ASTERACEAE

(Diodontium, F. Muell.)

Involucral bracts few, in about 2 rows, narrow and nearly equal. Receptacle chaffy. Ray-florets female, ligulate, fertile or sometimes wanting; disk-florets tubular, hermaphrodite, 4- or 5-toothed. Anthers obtuse at the base. Style-branches ending in subulate points. Achenes narrow, usually flattened. Pappus of 2 to 4 rigid retrorsely hispid or smooth persistent awns.—Gla-

brous perennials, with alternate or opposite, pinnate or undivided narrow leaves. Flower-heads small on long terminal peduncles.

A small genus, extending over tropical Asia, to which have also been referred one or two Brazilian species. Of the three Australian species one is also in the Indian Archipelago, the other two are endemic. It is very closely allied to *Bidens*, and further investigation of the allied American plants may induce its reduction to a section of that genus.

Leaves alternate, pinnate. Ray-florets few. Disk-florets 4-toothed.

Style-branches of the disk-florets very long. Achenes longitudinally striate, the awns erect or slightly spreading 1. *G. tenuifolia*.

Style-branches rather short. Achenes transversely rugose, the awns very spreading or reflexed 2. *G. retroflexa*.

Leaves opposite, entire, slender. Ray-florets wanting. Disk-florets 5-toothed 3. *G. filifolia*.

1. **G. tenuifolia**, Cass.; DC. Prod. v. 632. Stock perennial, tufted, sometimes almost woody, with erect dichotomous stems, 6 in. to 1 ft. high, often almost leafless, or sometimes elongated decumbent and leafy at the base. Leaves chiefly radical or nearly so, the lowest sometimes cuneate and 3-lobed, all the others pinnately divided into 5 or 7 stiff linear segments either entire or 2- or 3-lobed. Flower-heads small, on long slender terminal peduncles. Involucre campanulate, not 2 lines long. Ray-florets small, yellow, spreading. Achenes linear, flattened, about 4 lines long, striate, with 3 or more numerous ribs on each face, crowned by 2 erect or slightly diverging awns. — *Bidens tenuifolia*, Labill. Sert. Austr. Caled. 44. t. 45; *Glossogyne pedunculosa*, DC. Prod. v. 632; *G. bidentidea*, F. Muell. in Linnæa, xxv. 402; *Bidens denudata*, Turcz. in Bull. Mosc. 1851, i. 183.

N. Australia. Goulburn islands, *A. Cunningham*.

Queensland. Northumberland islands and Shoalwater Bay, *R. Brown*; Cape Cleveland and Rodd's Bay, *A. Cunningham*; Cape York and Port Curtis, *M. Gillivray*; Rockingham Bay, *Dallachy*; Albany island and Brisbane river, Moreton Bay, *F. Mueller*.

N. S. Wales. Port Jackson, *R. Brown* and others; New England, *C. Stuart*; Clarence, Hastings and Macleay rivers, *Beckler*; Kiama, *Harvey*, and in the interior on Lachlan river, *A. Cunningham*.

S. Australia. Cudnaka and between Spencer's Gulf and Flinders range, *F. Mueller*.

The species is also in New Caledonia and in the Indian Archipelago, and differs but very little from the East Indian *G. pinnatifida*.

3. **G. filifolia**, *F. Muell. Herb.* Glabrous, erect, with 2- or 3-otomous branches. Leaves opposite, linear-terete, slender, 1 to 2 in. long or even longer, undivided but clustered at the base of the branches. Flower-heads small, rather numerous in a loose corymbose terminal panicle. Involucre of 4 to 6 unequal lanceolate or linear bracts, the longest inner ones rarely exceeding 2 lines and shorter than the florets. Ray-florets wanting; disk-florets tubular, 5-toothed. Style thickened upwards, with 2 filiform papillose almost hairy branches. Achenes about as long as the involucre, ovate, flattened, with thin almost winged margins; awns almost divaricate, not

so long as the breadth of the achene, smooth or with a few reversed prickles.—*Diodontium filifolium*, *F. Muell. in Hook. Kew Journ.* ix. 19.

N. Australia. Sources of Hooker's Creek, *F. Mueller.*

80. GNAPHALIUM, Linu.

(Leontopodium, R. Br.; Euchiton, Cass.)

Involucre ovoid or campanulate (rarely hemispherical?), the bracts imbricate in several rows, more or less scarious, with or without small spreading tips. Receptacle without scales. Florets of the circumference female, filiform, in 2 or more rows, often very numerous, those of the disk fewer, often very few, hermaphrodite, tubular, 5-toothed. Anthers with fine tails. Style-branches in the disk-florets nearly terete, truncate. Achenes oblong or obovate, not striate, glabrous or papillose. Pappus of capillary bristles, in a single row.—Herbs annual or perennial, more or less cottony or woolly. Leaves alternate, entire, usually soft. Flower-heads small, usually clustered, either in the upper axils or in terminal spikes, corymbs or compound heads. rarely solitary.

A considerable genus, distributed over nearly the whole globe, but as yet very imperfectly defined. Of the 8 Australian species, 4 occupy a very wide range in the Old World, and 2 of them also in America. Of the remaining 4, 1 is also in New Zealand, the other 3 are endemic.

- Clusters or compact corymbs of flower-heads terminal, leafless, solitary or several in an irregular panicle 1. *G. luteo-album*.
- Clusters forming a terminal globular head, usually surrounded by a few floral leaves.
 - Annual 2. *G. japonicum*.
 - Perennials with a tufted or creeping rhizome.
 - Floral leaves narrow, glabrous above 3. *G. collinum*.

- Floral leaves oblong, spreading, cottony on both sides. Flower-heads almost monœcious 4. *G. alpinum*.
- Clusters of flower-heads axillary or forming a terminal spike.
 - Flower-heads about 2 lines long 5. *G. purpureum*.
 - Flower-heads about 1 line long 6. *G. indicum*.
- Flower-heads in little leafy corymbs. Branching annual of 1 to 3 in.
 - Flower-heads solitary on leafy scapes of $\frac{1}{2}$ to 3 in.
 - Involucre about 2 lines long, surrounded by linear floral leaves 3. *G. collinum*, var.
 - Involucre at least 3 lines long, without floral leaves, besides very short woolly outer bracts 8. *G. Traversii*.

6. **G. indicum**, *Linn.*; *DC. Prod.* vi. 231. A decumbent ascending or erect annual, rarely exceeding 6 in., covered with a loose cottony wool, sometimes very abundant. Leaves petiolate, spatulate or linear. Flower-heads small, densely clustered in ovate or oblong terminal leafy spikes, with a few in the upper axils. Involucres ovoid, about 1 line long, the bracts densely imbedded in wool, the tips only usually protruding. Female florets very numerous, with 2 or 3 hermaphrodite ones in the centre. Pappus-bristles numerous, cohering in a ring at the base.—*G. niliacum*, Raddi; *DC. l. c.*

Queensland. Upper Roper and Alligator rivers, *F. Mueller.*

N. S. Wales. Darling river, *Victorian Expedition.*

Victoria. Near Station Peak, *Herb. F. Mueller.*

The species is common in India, extending westward to the Nile and eastward to the Malayan peninsula and China. *F. Mueller, Fragm. v. 149*, unites it with *G. purpureum*; they appear to me, however, to be always readily distinguished, the *G. indicum* being of the Old World, the *G. purpureum* of American origin. The Australian specimens are small, with very narrow leaves.

1. **G. luteo-album**, *Linn.*; *DC. Prod.* vi. 230. An annual or perhaps biennial, densely woolly-white, with ascending or erect stems of 1 to 1½ ft. when full grown. Lower leaves petiolate obovate or oblong-spathulate, obtuse; upper ones sessile linear or lanceolate, acute, all usually soft and retaining the wool on both sides. Flower-heads in loose terminal nearly globose clusters or dense corymbs, without floral leaves, either solitary and terminal or several of the clusters in the forks or on the branches of an irregular corymbose panicle. Involucres about 2 lines diameter, nearly globose, the bracts scarious, pale brown or straw-colour, with obtuse scarious tips not spreading. Female florets exceedingly numerous with a few hermaphrodites in the centre.—*Hook. f. Fl. Tasm.* i. 216; *Steetz in Pl. Preiss.* i. 478.

Queensland. Cape Upstart, Barnard Isles, Port Curtis, *M'Gillivray*; Suttor river, *Bowman*; Keppel Bay, *Thozet*.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown* and others; northward to Clarence river, *Beckler*; southward to Gabo island, *Maplestone*; Lord Howe's Island, *M'Gillivray*.

Victoria. Murray river, Station Peak, *F. Mueller*; Wimmera, *Dallachy*; Skipton, *Whan*; Portland, *Allitt*.

Tasmania. Abundant in rocky places and wet or dry pastures, *J. D. Hooker*.

S. Australia. Mount Gambier, Lofty Range, Kangaroo Island, *F. Mueller*; Burra Burra, *Hinteraecker*.

W. Australia. King George's Sound and neighbouring districts, *Drummond*, *Preiss*, n. 33, 34; eastward to Esperance Bay, *Maxwell*; Murchison river, *Oldfield*.

The species is common in almost all the warm and temperate regions of the globe.

N=8

ASTERACEAE

Gnaphalium
polycaulis

(*Petalolepis* and *Faustula*, *Cass.*; *Ozothamnus*, *R. Br.*; *Swammerdamia*, *DC.*; *Lawrencella*, *Lindl.*; *Argyrophanes*, *Schlecht.*; *Chrysocephalum*, *Walp.*; *Conanthodium*, *A. Gray.*; *Xanthochrysum* and *Argyroglottis*, *Turcz.*; *Acanthocladium*, *F. Muell.*)

Involucre from broadly hemispherical to narrow-ovoid or cylindrical, the bracts imbricate in several rows, either entirely or their laminae rigidly or opaquely scarious or petal-like, more or less spreading or rarely appressed. Receptacle flat, convex or almost conical, without scales (or very rarely a few in the centre amongst sterile florets). Florets either all hermaphrodite, tubular, and 5- rarely 4-toothed, or a few in the circumference (very rarely 1 or 2 outer rows) female, slender but not longer than the others, 2- or 3-toothed, a few of the central ones sometimes sterile. Anthers with fine tails. Style-branches nearly terete, truncate or rarely with small conical tips. Achenes angular, terete or slightly compressed, not contracted at the top, glabrous papillose or rarely silky-villous. Pappus of capillary bristles simple or more or less barbellate or plumose at the end, not distinctly plumose from the base, those of the female florets often fewer or rarely wanting.—Herbs undershrubs or shrubs, with leafy stems, usually more or less clothed with cottony wool. Leaves alternate or the lower ones very rarely opposite, entire. Florets yellow, the laminae of the involucre bracts usually white yellow brown or pink, often varying in all these colours with intermediate shades in the same species.

A large genus represented in most warm and temperate regions of the globe, especially numerous in S. Africa and Australia, but without any cosmopolitan species, the Australian ones being all endemic. The limits to be assigned to the group are very uncertain, as it is connected with so many others by almost insensible gradations. The radiating or irregular female florets which separate *Podolepis* and *Athrixia* are, in *P. Lessoni*, *P. rutidolepis*, and *A. tenuifolia*, and sometimes in *P. canescens*, but little different from those of *Helichrysum*. *Ixiolana* passes into *Helichrysum* through *I. tomentosa* and *H. podolepideum*, *Leptorhynchus* through *L. ambiguus* and *L. tenuifolius*, which are very near the section *Chrysocephalum*, and yet cannot be generically separated from *L. squamatus*. The plumose pappus of *Helipterum* is not very distinct from the strongly barbellate pappus of *Lawrencella*, or the semiplumose one of *Chrysocephalum*. The more numerous female florets of *Chrysocephalum*, and the elastically spreading involucre of *H. collinum* and its allies, connect *Helichrysum* with *Raoulia* and through that genus with the *Eugnaphalieae*, whilst through *Helipterum* and *Cephalopterum* there is a gradual passage into the *Angiantheae*. And many other connections with other genera of *Gnaphalieae* may be traced through South African and northern forms. We are obliged, therefore, as in the case of *Asteroidae*, to make arbitrary demarcations, in order not to unite the whole tribe into one unmanageable genus. Those here adopted are the best that have suggested themselves after much consideration, although it must be admitted that in some instances they are not altogether satisfactory.

SECTION I. *Lawrencella*.—*Annuals*. Involucre hemispherical or campanulate, the outer bracts brown sessile and appressed, the inner ones with coloured radiating laminae. Achenes with erect transparent obtuse hairs (or elongated papillae), or the centre ones sometimes abortive and glabrous.

- Branches and peduncles elongated and slender.
- Involucres pink or white 1. *H. Lawrencella*.
 - Involucres golden-yellow.
 - Involucre hemispherical, $\frac{3}{4}$ to 1 inch diameter without the ray 2. *H. subulifolium*.
 - Involucre broadly campanulate, not $\frac{1}{2}$ in. diameter without the ray 3. *H. filifolium*.
 - Branches compact. Peduncles very short. Involucre ovoid-campanulate with yellow or white rays 4. *H. semifertile*.

SECTION II. *Xerochloana*.—*Perennials*, sometimes almost woody at the base, rarely also annual. Involucre broad, hemispherical, the outer sessile broad bracts passing more or less gradually into the intermediate or inner ones with scarious or linear claws and radiating coloured laminae (scarcely conspicuous in *H. rutidolepis*). Achenes glabrous, papillose or rarely shortly villous.

- Flower-heads singly terminating the branches on long peduncles.
- Pappus-bristles simple at the base, barbellate or almost plumose towards the end.
 - Involucral bracts elegantly ciliate, the intermediate (white or pink) more than twice as long as the florets, the innermost small and plumose 5. *H. Baxteri*.
 - Involucral bracts not ciliate, the intermediate (yellow) not twice as long as the florets.
 - Stems mostly erect and single headed. Involucre $\frac{3}{4}$ to 1 in. diameter 6. *H. scorpioides*.
 - Stems decumbent, often branched. Involucres not exceeding $\frac{1}{2}$ in. diameter 7. *H. rutidolepis*.
 - Involucral bracts not ciliate, the intermediate (white or pink) more than twice as long as the florets.
 - Achenes glabrous or papillose.
 - Stems erect, branching 8. *H. obtusifolium*.
 - Stems branching at the base only, the branches erect or ascending, single-headed 9. *H. dealbatum*.
 - Achenes shortly hirsute. Tufted plant with short erect single-headed stems 10. *H. pumilum*.
 - Flower-heads singly terminating the branches on long peduncles.
 - Pappus-bristles simple or equally denticulate.
 - Radiating involucral bracts rigid, mostly obtuse (yellow, brown, red, or white).
 - Stock tufted with short single-headed stems 11. *H. Milligani*.
 - Stem tall, usually branched 12. *H. bracteatum*.
 - Radiating involucral bracts petal-like, mostly acute (white or pink).
 - No floral leaves.
 - Leaves lanceolate or oblong, cottony underneath or on both sides 13. *H. elatum*.

radiating ones white. Pappus-bristles more barbellate towards the end. 17. *H. Blandowskianum*.

SECTION III. **Oxylepis**.—Perennials or undershrubs. Involucres hemispherical or broadly campanulate, the bracts all with linear claws and radiating laminae, narrow, acute, and often revolute. Pappus-bristles simple or shortly barbellate, not thickened nor more barbellate upwards.

Involucres broadly hemispherical, radiating laminae subulate-acuminate.
Leaves linear with revolute margins, glabrous or glandular-pubescent 18. *H. oxylepis*.

Leaves oblong or lanceolate, cottony-white underneath.
Laminae of the involucre bracts spreading or reflexed, the long ones longer than their loosely woolly or nearly glabrous claws 19. *H. collinum*.

Laminae of the involucre bracts revolute, all shorter than their densely woolly claws 20. *H. rupicola*.

Involucres campanulate, laminae small, narrow, scarious. Leaves obovate or spatulate, woolly-white on both sides 21. *H. podolepideum*.

SECTION IV. **Chrysocephalum**.—Herbs with corymbose flower-heads. Involucres ovoid-turbinate or almost globose, the bracts coloured in many rows scarcely exceeding the florets, appressed or squarrose, ciliate. Female florets in 1 or 2 rows, but not so numerous as the hermaphrodite ones. Achenes glabrous or papillose. Pappus-bristles few, simple at the base, plumose at the end.

Leaves usually flat and cottony. Flower-heads often 6 to 8 lines diameter, loosely corymbose, the bracts scarcely squarrose 22. *H. apiculatum*.

Leaves very narrow or not cottony. Flower-heads small, densely corymbose, the bracts often squarrose 23. *H. semipapposum*.

(The remarkable ciliate bracts and almost the pappus of *Chrysocephalum* occur also in *H. Baxteri*, which has solitary flower-heads and large radiating involucres, in *Leptorhynchus tenuifolius* and *L. ambiguus*, which have solitary flower-heads and the achenes usually contracted under the pappus, and in *Helipterum pterochatum*, which has the pappus plumose from the base.)

SECTION V. **Ozothamnus**.—Shrubs or rarely undershrubs or herbs. Involucre small oblong-ovoid or turbinate-campanulate (rarely larger and ovoid-conical), the bracts imbricate, not exceeding the florets or the inner ones with small coloured radiating tips not much longer than the florets. Female florets few or none. Achenes glabrous or shortly villous. Pappus-bristles simple, often thickened or more denticulate towards the end.

Flower-heads rather large, solitary, ovoid or turbinate.
Cottony-white undershrub with spinescent branches. Involucral bracts scarious, without coloured tips 24. *H. Dockerii*.

Divariately-branched shrub (or undershrub?) with little wool.
Involucral bracts rigid, the inner ones with radiating coloured tips 25. *H. argyrolottis*.

Flower-heads small, in compound or small panicles.
Panicles loose, compound, almost leafless. Herbs or undershrubs with flat leaves.
Leaves nearly sessile, narrow. Involucres scarcely woolly, inner bracts with white spreading tips 26. *H. ramosum*.

Leaves distinctly petiolate. Involucres woolly.
Lower leaves cordate. Inner involucral bracts with white spreading tips 27. *H. cordatum*.

Leaves narrowed at the base. Tips of the involucral bracts scarcely squarrose 28. *H. obovatum*.

Panicles small, compact, terminating the leafy branches of shrubs (or undershrubs?). Involucral bracts scarious without spreading tips.
Leaves ovate on slender petioles. Branches slender, divaricate 29. *H. Bidwillii*.

Leaves elliptical-oblong or linear, almost sessile. Branches slender, divaricate 30. *H. Becklerii*.

Leaves very small, erect with recurved margins, sessile with rounded auricles. Branches virgate 31. *H. diotophyllum*.

Flower-heads small, usually numerous, in terminal corymbs. Erect shrubs.
Leaves linear with revolute margins, rarely almost lanceolate and flat.
Involucral bracts with concave erect or loose but not spreading obtuse tips, all or the inner ones white or pink.
Leaves not decurrent. Florets above 20 32. *H. diosmifolium*.

Leaves decurrent in prominent lines. Florets about 10 to 12 33. *H. adnatum*.

Involucral bracts erect, few, narrow, almost acute. Florets 3 or with scarcely conspicuous white tips 34. *H. Cunninghamii*.

Involucre broadly campanulate. Florets above 20. Achenes villous. Leaves coriaceous, obtuse 35. *H. reticulatum*.

Involucre ovoid-turbinate. Florets above 15. Achenes glabrous or papillose.
Leaves not decurrent 36. *H. cinereum*.

Leaves shortly decurrent 37. *H. bracteolatum*.

Involucre narrow. Florets 10 to 15. Achenes glabrous 38. *H. cassinioides*.

Involucral inner bracts with white tips usually spreading. Florets under 15 and usually under 12.
Leaves much revolute, very narrow, obtuse, $\frac{3}{4}$ to 1 in. long. Corymbs compound, very dense. Involucres nearly 3 lines long 39. *H. Gunnii*.

Leaves much revolute, thick and very obtuse, under $\frac{1}{2}$ in. long, tomentose above when young. Corymbs small and dense 40. *H. ledifolium*.

- Leaves narrow with revolute margins, mostly obtuse, from under $\frac{1}{2}$ to above 1 in. long. Corymbs usually in leafy panicles 41. *H. rosmarinifolium*.
- Leaves nearly flat, linear or lanceolate, often acute, from under $\frac{1}{2}$ to near 2 in. long. Corymbs compound, mostly flat 42. *H. ferrugineum*.
- Leaves obovate or cuneate, flat or with recurved margins.
 Involucral bracts without any or with very small white not spreading tips.
 Involucres turbinate-campanulate. Florets above 20 . . . 43. *H. antennarium*.
 Involucres narrow. Florets about 12 44. *H. obcordatum*.
- Involucral inner bracts with small white spreading tips.
 Florets about 12 to 15. Leaves mostly obovate or almost oblong, under $\frac{1}{2}$ in. long 45. *H. Backhousii*.
 Florets about 4 to 6. Leaves mostly cuncate, $\frac{1}{2}$ to $1\frac{1}{2}$ in. long 46. *H. cuneifolium*.
- Leaves almost scale-like with revolute margins, $\frac{1}{2}$ to 1 line long.
 Leaves closely erect. Flower-heads capitate. Inner involucral bracts with white spreading tips. Florets 2 to 4 . 47. *H. baccharoides*.
 Leaves closely reflexed.
 Flower-heads corymbose. Involucral bracts with white concave tips. Florets 8 to 10 48. *H. lepidophyllum*.
- Flower-heads capitate. Involucral bracts without white tips. Florets 12 to 18 49. *H. scutellifolium*.
- Leaves small, convex or keeled underneath, concave above.
 Leaves erect and closely appressed, scale-like. Flower-heads corymbose 50. *H. pholidotum*.
 Leaves loosely erect or spreading. Flower-heads capitate.
 Involucral bracts with concave tips. Florets above 20 . 51. *H. lycopodoides*.
 Involucral inner bracts with spreading tips. Florets 8 to 12 52. *H. selaginoides*.

22. **H. apiculatum**, DC. *Prod.* vi. 195. A perennial or perhaps annual, usually branching and hard at the base, with several erect stems, attaining 1 to 2 ft., clothed with a soft silvery tomentum, which rarely disappears from the older leaves. Radical and lower leaves oblong-cuneate and petiolate, the upper ones lanceolate or linear, or sometimes all narrow, the larger ones 1 to 2 in. long. Flower-heads in more or less dense terminal corymbs. Involucres in the original form broadly turbinate or nearly globose, about $\frac{1}{2}$ in. diameter, of a bright golden colour, but sometimes much smaller, and, especially in the Western forms, passing into brown, red, straw-coloured, pure white, or pink. Bracts small and very numerous, the laminae lanceolate, more or less ciliate, the outer ones sessile, the inner ones on woolly claws, all acute or the innermost obtuse, appressed or more rarely squarrose. Florets often as long as the involucre, those of the circumference in 1 or sometimes 2 rows, female, slender, with a reduced or abortive pappus, those of the disk very numerous. Achenes glabrous. Pappus of the disk of 4 to 10 fine bristles, strongly barbellate or almost plumose towards the end.—Hook. f. *Fl. Tasm.* i. 212; *Gnaphalium apiculatum*, Labill. *Pl. Nov. Holl.* ii. 43. t. 188; *Bot. Reg.* t. 240; *G. flavissimum*, Sieb. *Pl. Exs.*; *Helichrysum flavissimum*, DC. *Prod.* vi. 195; *H. odorum*, DC. l. c. 196; *Chrysocephalum helichrysoides*, Walp. in *Linnæa*, xiv. 503; *C. apiculatum*, Steetz in *Pl. Preiss.* i. 474; *C. vitellinum*, Sond. and Muell. in *Linnæa*, xxv. 514 (the root apparently annual).

N. Australia. Arnhem's Land, *F. Mueller*.

Queensland. Bustard Bay, *Banks and Solander*; Keppel islands, *M'Gillivray*; on the Maranoa, *Mitchell*. (These specimens appear more shrubby and woolly, with broader leaves and larger flower-heads, than the others, but the smaller forms are also in many Queensland collections.)

N. S. Wales. Port Jackson, *R. Brown, Sieber*, n. 336, and others, and from various parts of the colony in numerous collections.

Victoria. Throughout the colony, *F. Mueller* and others.

Tasmania. Port Dalrymple, *R. Brown*; abundant throughout the island, *J. D. Hooker*.

S. Australia. Memory Cove, *R. Brown*: from the Murray to St. Vincent's and Spencer's gulfs, *F. Mueller* and others.

Var. *minor*. Leaves narrow but woolly, flower-heads smaller but not numerous, connecting this with *H. semipapposum*.—*H. ramosissimum*, Hook. in *Mitch. Trop. Austr.* 83.—Chiefly in dry barren situations in all the eastern colonies.

Var. *occidentale*. Leaves narrow. Flower-heads medium-sized, the bracts appressed or squarrose, as frequently white pink or straw-coloured as yellow.—*Chrysocephalum squarrososum*, Steetz in *Pl. Preiss.* i. 472; *C. flavissimum*, Steetz, l. c. 473; *C. canescens*, Turcz. in *Bull. Mosc.* 1851, i. 196; *C. glabratum*, Turcz. l. c. 197.

W. Australia. King George's Sound and adjoining districts, *Drummond*, n. 20, 115, 121, 342, 343, *Ereiss*, n. 23, 25, *Oldfield, Maxwell*.

12. **H. bracteatum**, Willd.; DC. Prod. vi. 188. An erect branching or simple perennial, of 1 to 2 ft., often flowering the first year so as to be also annual, glabrous scabrous or sprinkled with a few hairs, without cottony wool. Leaves from linear to oblong-lanceolate or the lower ones obovate-oblong, the longer ones often attaining 3 or 4 in., green and sometimes somewhat glutinous. Flower-heads large, solitary or few together on separate peduncles. Involucre hemispherical, spreading to from a little more than 1 in. to nearly 2 in. diameter, in the original form shining yellow or straw-coloured with more or less of a reddish-brown, the outer bracts short ovate and sessile, the inner gradually longer and more lanceolate on a short broad claw, the innermost narrow and rather shorter, all rigid and usually obtuse. Florets very numerous, very much less than half the length of the involucre, the outer ones female and slender. Achenes glabrous or slightly papillose. Pappus-bristles denticulate, not thickened upwards, slightly cohering at the base.—Hook. f. Fl. Tasm. i. 210; Steetz in Pl. Preiss. i. 471; *Xeranthemum bracteatum*, Vent. Jard. Malm. t. 2; *Helichrysum chrysanthum*, Pers. Syn. Pl. ii. 414; *Helichrysum lucidum*, Henckel, Adumbr. (DC.); *Helichrysum viscosum*, Sieb. Pl. Exs.; *H. Banksii*, A. Cunn. in DC. Prod. vi. 188 (with rather broad leaves); *H. bicolor*, Lindl. Bot. Reg. t. 1844 (with narrow leaves); *H. acuminatum*, DC. Prod. vi. 188 (with less obtuse involucre bracts); *H. macrocephalum*, A. Cunn. in DC. l. c. (with large flower-heads).

N. Australia. Port Essington, *Armstrong*.

Queensland. Abundant along the whole coast, *Banks and Solander*, *R. Brown*, and many others.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown*, *Sieber*, n. 345, and others; lagoons of the interior, *A. Cunningham*; New England, *C. Stuart*; Clarence and Hastings rivers, *Beckler*.

Victoria. From the Glenelg to Gipps' Land, *F. Mueller*, *Robertson*, and others; snowy top of Mount Buller, *F. Mueller*; Wimmera, *Dallachy*.

Tasmania. Abundant throughout the island, especially in marshy situations, *J. D. Hooker*.

S. Australia. From the Murray to St. Vincent's and Spencer's Gulfs, *F. Mueller* and others.

W. Australia. Swan River, *Drummond*, *Preiss*, n. 4.

Var. *albidum*, DC. Prod. vi. 189. Involucral bracts white, passing into straw-colour pale brown or pink.—*H. papillosum*, Labill. Pl. Nov. Holl. ii. 46. t. 192; DC. Prod. vi. 189; Hook. f. Fl. Tasm. i. 212; *Gnaphalium papillosum*, Poir. Dict. Suppl. ii. 808; *H. glabratum*, DC. Prod. vi. 189 (from the character given); *H. macranthum*, Benth. in Hueg. Enum. 65; DC. Prod. vi. 189; Paxt. Mag. v. 247, with a fig.; Steetz in Pl. Preiss. i. 471; Bot. Reg. 1838, t. 58; *H. niveum*, Grah. in Bot. Mag. t. 3857; Steetz in Pl. Preiss. i. 471.—Victoria, Tasmania, and W. Australia, in the latter colony at least as abundant as the yellow (including *Drummond*, 3rd Coll. n. 170, 4th Coll. n. 114, also n. 197, and *Preiss*, n. 1).

NIB

ASTERACEAE

Helichrysum oligochaetum

(Pteropogon, DC.; Rhodanthe and Xyridanthe, Lindl.; Anisolepis and Hyalosperma, Steetz; Tripilodiscus, Turcz.; Acroclinium, Moneucyathes and Dimorpholepis, A. Gray; Duttonia and Cassiniola, F. Muell.)

Involucre from broadly hemispherical to narrow-ovoid or cylindrical, the bracts imbricate in several rows, either entirely or only their laminæ scarious

or petal-like, more or less spreading or appressed. Receptacle flat, convex or conical, without scales, and in the Australian species without bristles or fringed pits. Florets in the Australian species hermaphrodite tubular and 5- rarely 4-toothed, or very rarely a few in the circumference female, slender but not longer than the others, 2- to 4-toothed, several in the centre frequently sterile. Anthers with fine tails. Style-branches nearly terete, truncate. Achenes angular terete or somewhat flattened, very rarely contracted at the top but not distinctly beaked, glabrous, papillose or more frequently densely silky-villous. Pappus of capillary or very rarely dilated and almost scale-like bristles, finely plumose-ciliate from the base, those of the female florets or of the central sterile ones sometimes fewer or wanting.—Herbs frequently annual, sometimes perennial, or very rarely slender divaricate shrubs with leafy stems, clothed with cottony wool or nearly glabrous. Leaves alternate or the lower ones very rarely opposite, entire. Florets yellow, the laminæ of the involucre usually white yellow brown or pink, often varying in all these colours with intermediate shades in the same species.

A considerable genus, but confined to South Africa and Australia, the species of each of the two regions all endemic. It differs from *Helichrysum* solely in the plumose pappus, and, although annual duration, more scarious outer involucre bracts, and some other minor characters are more prevalent in *Helipterum* than in *Helichrysum*, yet there are several species in each genus closely allied to corresponding ones in the other, and the section *Lawrencella* of *Helichrysum* is an approach, both in habit and in the prominently barbellate pappus-bristles, to *Helipterum*; the species of each genus are, however, numerous both in Australia and South Africa, and the character is not difficult to appreciate, it may therefore be convenient to retain the two as distinct genera. Two species, *H. pyrethrum* and *H. dimorpholepis*, have the pappus-bristles dilated towards the base, tending towards the scales of *Rutidosis* but with a very different involucre. Several S. African species have the pits of the receptacle fringed with short bristles. The genus is also closely connected with *Waitzia* through *W. Steetziana*, and with the *Angiantheæ* through *Cephalipterum*, which is very nearly allied to *Helipterum condensatum*.

SECTION I. *Euhelipterum*.—Involucre broadly hemispherical, with or without radiating petal-like laminæ to the inner or intermediate bracts.

Achenes villous with long silky hairs.

Receptacle flat. Involucres with radiating laminæ.

Outer bracts thinly scarious or petal-like, inner petal-like with narrow claws. Leaves broad, stem-clasping 1. *H. Manglesii*.

Outer bracts brown, scarious, inner with coloured laminæ and broad claws. Leaves narrow.

Pappus with a terminal tuft of compact hairs. Annual. Rays white or pink 2. *H. roseum*.

Pappus equally plumose.

Perennial. Involucre ray white 3. *H. anthemoides*.

Annual. Involucre ray yellow 4. *H. polygalifolium*.

Receptacle conical. Involucres with radiating laminæ and broad claws.

Pappus with a terminal tuft of compact hairs.

Radiating involucre laminæ reddish 5. *H. rubellum*.

Radiating involucre laminæ metallic-green when dry 6. *H. chlorocephalum*.

Pappus equally plumose. Radiating involucre laminæ white

Pappus-bristles dilated and scale-like, plumose-ciliate. Radiating involucre laminæ white, Leaves small 7. *H. floribundum*.

Receptacle flat or convex, honeycombed. Involucre bracts with scarious tips, scarcely radiating.

Pappus with a terminal tuft of compact hairs.

Radiating involucre laminæ reddish 5. *H. rubellum*.

Radiating involucre laminæ metallic-green when dry 6. *H. chlorocephalum*.

Pappus equally plumose. Radiating involucre laminæ white

Pappus-bristles dilated and scale-like, plumose-ciliate. Radiating involucre laminæ white, Leaves small 7. *H. floribundum*.

Receptacle flat or convex, honeycombed. Involucre bracts with scarious tips, scarcely radiating.

Involucre hemispherical, the outer bracts small and scarious 9. *H. heteranthum*.

Involucre broadly campanulate, the outer bracts foliaceous though thin *Podotheca fuscescens*.

Achenes glabrous or papillose.

Outer bracts few, sessile, intermediate with subulate claws and radiating petal-like laminæ.

Outer bracts subulate 10. *H. stipitatum*.

Outer bracts broad 11. *H. incanum*.

Outer bracts brown, scarious or coloured, intermediate with broad claws and radiating petal-like laminæ.

Outer bracts wholly scarious or petal-like 12. *H. Cotula*.

Outer bracts with a lanceolate rigid although coloured centre.

Achenes much compressed 13. *H. Hyalospermum*.

(See also the section *Lawrencella* of *Helichrysum*, in which the pappus is almost plumose, and *Rutidosis Brownii*, in which the pappus-scales are almost divided into bristles.)

cont'd / ...

SECTION II. **Pteropogon**.—*Involucres ovoid, turbinate-campanulate or cylindrical, the outer bracts appressed, scarious or rigid, the intermediate or inner with or rarely without radiating petal-like laminae or tips. Achenes villous. Florets rarely above 12.*

- Flower-heads small with conspicuous rays, in compact terminal corymbs. Achenes shortly hirsute.
 Almost all the bracts with white laminae as long as or longer than the claws 14. *H. condensatum*.
 Laminae of the inner bracts shorter than their claws, those of the outer ones minute or none.
 Involucre ovoid-turbinate, the laminae white 15. *H. polyphyllum*.
 Involucre cylindrical, the laminae yellow 16. *H. Humboldtianum*.
 Flower-heads on long peduncles or loosely corymbose, with conspicuous rays. Achenes densely silky-villous.
 Outer involucral bracts with linear green tips.
 Involucres cylindrical, the rays as long as the outer bracts, linear tips squarrose. Corymb rather compact 17. *H. involucreatum*.
 Involucres turbinate-campanulate, the rays as long as the outer bracts, linear tips erect 18. *H. tenellum*.
 Involucres ovoid, the rays not half so long as the outer bracts 19. *H. gracile*.
 Outer involucral bracts with obtusely scarious tips.
 Glabrous. Flower-heads on long peduncles. Involucres ovoid 20. *H. strictum*.
 Cottony. Flower-heads loosely corymbose. Involucres broadly turbinate 21. *H. corymbiflorum*.
 Flower-heads nearly sessile. Involucres narrow.
 Dwarf branching plants, the flower-heads in an irregular leafy corymb. Involucres with very small white laminae.
 Cottony. Florets 10 to 15 21. *H. corymbiflorum* var.
 Nearly glabrous. Florets 4 to 6 22. *H. pygmaeum*.
 Stems $\frac{1}{2}$ to $1\frac{1}{2}$ ft. high. Flower-heads very small and numerous in an oblong or globular spike-like leafless panicle. No radiating tips 23. *H. spicatum*.

SECTION III. **Monencyanthes**.—*Involucres ovoid, cylindrical or campanulate, the bracts scarious or coloured without any or with very minute scarious radiating tips. Achenes glabrous or papillose. Flower-heads often very small.*

- Flower-heads in dense corymbose clusters almost contracted into heads.
 Erect cottony herb of $\frac{1}{2}$ to $1\frac{1}{2}$ ft. Flower-heads small and numerous. Involucral bracts very woolly inside at the base.
 Florets 2 to 4 24. *H. moschatum*.
 Slender divaricate undershrub or shrub. Flower-heads few.
 Involucral bracts ciliate. Florets 15 to 20 25. *H. pterochætum*.
 Flower-heads in loose leafless corymbs or panicles. Involucres small, narrow, scarious, coloured. Florets 10 to 15.
 Leaves linear or lanceolate, acute. Corollas dilated upwards.
 Involucres all pedicellate, under 2 lines long. No radiating tips 26. *H. polycephalum*.
 Involucres mostly sessile or nearly so, about 2 lines long, with minute scarious radiating tips 27. *H. corymbosum*.
 Leaves linear obtuse. Corollas very slender. Involucres without radiating tips 28. *H. laeve*.
 Flower-heads singly sessile within the floral leaves. Small annuals. Florets above 20.
 Plant of 1 to $1\frac{1}{2}$ in. Involucres campanulate. Pappus-bristles about 10, plumose, not dilated 29. *H. exiguum*.
 Plant of 3 to 6 in. Involucres broadly ovoid. Pappus-bristles of the perfect florets about 5, dilated and almost scale-like 30. *H. dimorpholepis*.
 (*Olearia conocephala*, p. 480, has homogamous flower-heads and a plumose pappus, but the involucre is less scarious than in *Helipterum*, and the style different.)

NID

ASTERACEAE

Helipterum cirratum

7. **H. floribundum**, DC. *Prod.* vi. 217. Stems erect and nearly simple when flowering the first year, at length diffuse, much-branched and woody at the base, the branches ascending from a few inches to above 1 ft. high, glabrous or loosely woolly. Leaves linear or rarely linear-lanceolate, acute. Flower-heads solitary on each branch, but the upper branches often numerous and paniculate. Involucre hemispherical, rather smaller than in *H. anthemoides*, the bracts all white and petal-like, the outer ones short and sessile, passing into the inner ones with a scarious claw and radiating lanceolate lamina of 3 lines or more. Receptacle hemispherical or conical. Florets all hermaphrodite. Achenes densely silky-villous. Pappus of 7 to 10 rigid equally plumose bristles.—*H. chionolepis*, F. Muell. in *Linnaea*, xxv. 416.

N. S. Wales. Molle's Plains, *Fraser*; Darling and Lachlan rivers, *Victorian and other Expeditions*; between Stokes Range and Cooper's Creek, *Wheeler*.

S. Australia. Flinders Range, Cudnaka, *F. Mueller*; Wills' Creek, *Howitt's Expedition*; Mount Searl, *Warburton*.

Var. *Stuartianum*. Rather taller; flower-heads larger, the outer bracts assuming a straw-colour.—*H. Stuartianum*, Sond. in *Linnaea*, xxv. 518.—Murray river, *F. Mueller*.

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ASTERACEAE

Helipterum margaretho

NSB

ASTERACEAE

Ichnocarpus Prutescens

N10

ASTERACEAE

Litsea glutinosa

17. MORINDA, Linn.

Flowers usually several together, united at the base into a small head. Calyx-limb short, scarcely toothed. Corolla-tube cylindrical or slightly dilated at the top; lobes 5, rarely 4, valvate in the bud. Anthers included in the tube or rarely exerted. Ovary 2-celled or more or less completely 4-celled, with 1 ovule in each cell, laterally attached at the base or below the middle; style exerted, with 2 stigmatic lobes or rarely entire. Fruits of each flower-head united in a compound succulent berry, including a number of hard 1-seeded pyrenes, usually 2 to 4, proceeding from each flower.—Shrubs or small trees, or sometimes woody climbers. Stipules usually membranous and united within the petioles in a short sheath. Flower-heads on axillary or terminal solitary or clustered peduncles.

A considerable tropical genus, chiefly Asiatic or African, with 2 or 3 American species. Of the 4 Australian species, one is common in tropical Asia, another as widely distributed over the seacoasts of southern Asia and the Pacific, the two others are endemic.

- Peduncles solitary, apparently leaf-opposed. Leaves very large . . . 1. *M. citrifolia*.
- Peduncles 2 together at the ends of the branches 2. *M. jasminoides*.
- Peduncles 4 or more together at the ends of the branches.
- Leaves ovate to oblong-lanceolate, not much veined. Flower-heads without prominent bracts 3. *M. umbellata*.
- Leaves broadly ovate or orbicular, coriaceous and prominently reticulate. One large coloured leafy bract to each flower-head . . . 4. *M. reticulata*.

49. MYRIOCEPHALUS, Benth.

(*Hyalolepis*, DC.; *Antheidosorus*, A. Gray; *Gilberta*, Turcz.; *Lamprochlæna*, Elachopappus, and *Polycalymma*, F. Muell.)

Flower-heads exceedingly numerous and sessile on a broad very flat receptacle, in a dense cluster or compound head, surrounded by a general involucre of numerous narrow bracts in many rows, each usually with a scarious tip or radiating appendage. Partial heads 1- or few-flowered. Involucre of few bracts (the outer ones including one on the general receptacle subtending each head), usually contracted into a stalk-like base and scarious at the tip, the inner ones scarious and transparent from the base or rarely all narrow and rigid. Receptacle without scales. Florets hermaphrodite, tubular, slender, 3- to 5-toothed. Anthers with more or less conspicuous points or tails at the base. Style-branches nearly terete, truncate. Achenes more or less compressed. Pappus none or of 1 or more awns or bristle-like scales, simple or more or less plumose.—Herbs, either annual or with a perennial or woody base, often hoary or white, especially when young, with woolly or cottony hairs. Leaves alternate, entire. Clusters or compound heads terminal, usually globose or hemispherical; the flat receptacle sometimes so broadly dilated that the outer flower-heads are reflexed.

The genus is limited to Australia. It differs from *Angianthus* in the more perfect general involucre and more developed common receptacle, the partial involucre sometimes reduced to 2 bracts with a single floret, so as in some species to bring the compound head of *Myriocephalus* in close analogy to the simple head of *Helichrysum*.

Appendages of the general involucre bracts under 1 line long or inconspicuous.

Dwarf plant. Leaves much longer than the flower-heads. Partial heads 1-flowered. Pappus of 1 very fine awn or none. Plants of $\frac{1}{2}$ to 1 ft. Leaves under 1 in. long. Partial heads 4- to 6-flowered. Pappus none or of microscopic scales. 1. *M. rhizocephalus*.

Appendages of the general involucre bracts minute and yellowish or inconspicuous. 2. *M. nudus*.

Appendages of the general involucre bracts white and nearly 1 line long. 3. *M. appendiculatus*.

Decumbent or ascending plant, under 6 in. Leaves small, mostly cuneate or spatulate. Partial heads 4-flowered. Pappus of 1 to 4 bristle-like scales. 4. *M. Rudallii*.

Appendages of the general involucre bracts 1 to 2 lines long, broad and very conspicuous.

Appendages yellow. Partial-heads 1-flowered. Achenes glabrous. Pappus of 5 to 7 bristles, plumose from the base or at the end. 5. *M. gracilis*.

Appendages white. Herbaceous and flaccid. Partial heads 2- or 3-flowered. Achenes hairy. Pappus of 1 to 4 bristles. 6. *M. helichrysoides*.

Shrubby at the base with rigid erect branches. Partial heads 2-flowered. Achenes glabrous. Pappus of several bristles tipped with transparent globules. 7. *M. suffruticosus*.

Herbaceous and tall. Partial heads 5- to 8-flowered. Achenes woolly. Pappus of numerous ciliate bristles. 8. *M. Stuartii*.

4. **M. Rudallii**, *Benth.* An annual, branching at the base, with decumbent or ascending stems under 6 in. long, loosely woolly. Leaves oblong-linear, cuneate or spatulate, very obtuse, often dilated at the base, not above $\frac{1}{2}$ in. long. Clusters of flower-heads when full-grown about $\frac{1}{2}$ in. diameter. General involucre of very numerous woolly-ciliate bracts, those of the outer rows shorter, with green midribs and no laminæ, those of the inner rows with small white petal-like spreading tips, forming a ray to the cluster. Partial heads about 4-flowered, the involucre of about 5 very narrow bracts, the subtending and outer ones little more than the midrib dilated and exceedingly thin and transparent at the end, all ciliate with fine long woolly hairs. Achenes with 1 to 4 unequal bristle-like scales.—*Elachopappus Rudallii*, F. Muell. Fragm. iii. 157.

S. Australia. Cooper's Creek, *Howitt's Expedition.*

N50

ASTERACEAE

Olax pendula

11. OLEARIA, Moench.

(*Eurybia*, Cass.; *Steetzia*, Sond.)

ASTERACEAE

Involucres from broadly hemispherical to narrow-ovate, the bracts imbricate in several rows, the margins more or less dry or scarious, without herbaceous tips. Receptacle pitted, the borders of the pits often denticulate, but without scales. Florets of the ray female in a single row, or fewer than those of the disk, usually ligulate, spreading, very rarely slender and filiform or deficient. Disk-florets numerous or few, hermaphrodite, tubular, gradually tapering to the base in most species of the first two sections, more abruptly contracted in some others, usually 5-lobed. Anthers often acute at the base or with minute tails, rarely obtuse. Style-lobes flattened with short obtuse or rarely lanceolate appendages, papillose on the back. Achenes striate, terete or slightly compressed. Pappus of numerous, usually unequal, capillary bristles.—Shrubs undershrubs or very rarely herbs. Leaves alternate or rarely opposite. Heads solitary, corymbose or paniculate, terminal but sometimes appearing axillary from the shortness of the flowering branches. Ray-florets white or blue. Disk-florets yellow or rarely purplish or even

blue. The indumentum of the underside of the leaves is usually more or less present also on the branches and inflorescence.

The genus is limited to Australasia, there being, besides the 63 Australian species, which are all endemic, only about 20 others, all natives of New Zealand. It is, however, very closely allied to the extensive genus *Aster*, widely diffused over the temperate regions of the northern hemisphere, especially in America, not separated indeed from *Olearia* by any one definite character, and F. Mueller has recently proposed to unite the whole and several others to *Aster* itself. It appears to me, however, that independently of the convenience of retaining *Olearia* for the Australasian species, there is little risk of its being confounded with the northern genus. The habit of most species is very different. Where the achenes are the same or nearly so (as in the North American *Biotias*, which have the achenes as little compressed as in a few Australian species), the foliaceous-tipped involucral bracts of the former are a ready distinction. Some Australian species again are separated from all the American ones by their styles, others by their anthers, and most of them by the indumentum. There appear to be indeed better grounds for maintaining *Olearia* as distinct from *Aster* than for retaining *Erigeron*, which passes so gradually into it, and that again into *Conyza*, and if all these were united into one, we should have a group quite unmanageable without dividing it into sections corresponding to the present genera, which would be in fact retaining the present arrangement, but with all the evils consequent on the nominal change.

That *Olearia* and *Eurybia* are inseparable even as sections has been shown by J. D. Hooker, Archer, and others, and I follow J. D. Hooker in adopting the former as the older name. Schultz-Bipontinus, under the idea that the genus is the *Shawia* of Forster, adopts the latter name, and accordingly, in the 'Pollichia,' gives to all published species, good or bad, new names, as *Shawias*. This is, however, a mistake. Forster considered the true *Olearias* as *Asters*, and founded *Shawia* on a plant characterized specially by solitary florets. It proved afterwards that this was not a constant character, and his genus was suppressed, and the circumstance that this abnormal peculiarity occurs on some specimens of one species of *Olearia*, can surely be no reason for now transferring the name founded on it to a large genus where it has not been observed in any other species.

In the subdivision of *Olearia*, I have adopted the main sections proposed by Archer (Journ. Linn. Soc. v. 17, 20), founded on the indumentum, which, with the exception of two or three species where it almost disappears, seems to be the most available in a genus where so many species pass into each other by almost insensible gradations.

SECTION I. *Dicerotriche*.—Indumentum of the underside of the leaves (usually either silvery-shining, tomentose or loosely villous) consisting of centrally-attached or divaricately forked (Y-shaped) hairs, otherwise simple.

Leaves opposite.

Leaves oblong, flat, 2 to 4 in. long, densely tomentose underneath.

Flower-heads large. Ray-florets usually 10 to 12 1. *O. megalophylla*.

Flower-heads small. Ray-florets usually 2 or 3 2. *O. chrysophylla*.

Leaves narrow-oblong, with recurved margins, densely silky underneath 3. *O. alpicola*.

Leaves linear, with revolute margins 4. *O. rosmarinifolia*.

Leaves lanceolate, viscid, smooth (not rugose) above, white underneath 5. *O. viscosa*.

Leaves alternate.

Flower-heads very large, solitary, on long peduncles. Leaves ovate, 2 to 4 in. long.

Leaves denticulate, closely silky or silvery underneath 6. *O. grandiflora*.

Leaves mostly entire, densely and softly cottony underneath 7. *O. pannosa*.

Flower-heads small, numerous and paniculate, or rather larger and shortly pedunculate. Indumentum close.

Leaves prominently reticulate on the upper surface.

Leaves broadly ovate or elliptical, mostly 3 or 4 in. long, entire or slightly toothed.

cont'd | . . .

- Indumentum very silvery and close. Involucres narrow-cylindrical, few-flowered 8. *O. oligantha*.
- Indumentum silvery and close. Involucres turbinate, few-flowered 9. *O. argophylla*.
- Indumentum white and soft. Involucres hemispherical, many-flowered 10. *O. cydoniaefolia*.
- Leaves from obovate to oblong or lanceolate, mostly obtuse, sinuate-toothed and under 2 in. long 11. *O. myrsinoides*.
- Leaves not reticulate on the upper surface.
- Leaves obovate or oblong, entire, under 1 in. long 12. *O. persoonioides*.
- Leaves small, cuneate, mostly toothed at the end 13. *O. obcordata*.
- Leaves narrow-linear, crowded.
- Leaves pungent-pointed, mostly above 1 in. long 14. *O. pinifolia*.
- Leaves obtuse, mostly $\frac{1}{2}$ in. long 15. *O. ledifolia*.
- Flower-heads rather large, usually pedunculate and corymbose.
- Leaves ovate, loosely tomentose underneath 16. *O. dentata*.

SECTION II. **Asterotriche**.—Indumentum of the under side of the leaves consisting of stellate hairs, sometimes very close and almost mealy.

- Leaves alternate, mostly toothed or sinuate.
- Leaves ovate-oblong or lanceolate, smooth or scabrous above.
- Flower-heads rather small. Involucres broadly turbinate.
- Achenes hairy 17. *O. stellulata*.
- Leaves oblong-linear, sinuate-toothed, obtuse. Flower-heads rather large. Achenes hairy 18. *O. asterotricha*.
- Leaves ovate-lanceolate or oblong, very rugose. Flower-heads large. Achenes glabrous 19. *O. gravis*.
- Leaves ovate-lanceolate, acute, rather thin and somewhat glutinous. Flower-heads in pedunculate corymbs 20. *O. Nernstii*.
- Leaves alternate or opposite, narrow, quite entire.
- Leaves alternate, narrow-linear 21. *O. hygrophila*.
- Leaves mostly opposite, lanceolate 22. *O. viscidula*.

SECTION III. **Eriotriche**.—Indumentum of the under side of the leaves consisting of densely intricate woolly hairs. Leaves alternate, often small.

- Flower-heads (usually small and ovoid) axillary or on very short axillary branchlets, forming long leafy racemes.
- Ray-florets slender, tubular, much shorter than the entire part of the style 23. *O. tubuliflora*.
- Ray-florets ligulate, but shorter than their style 24. *O. axillaris*.
- Ray-florets ligulate, scarcely longer than their style. Flower-heads sessile. Western species.
- Leaves 3 to 6 lines long, linear to oblong-cuneate, with recurved margins 25. *O. revoluta*.
- Leaves 1 to 2 lines long, linear, with revolute margins 26. *O. exilifolia*.
- Ray-florets conspicuously exceeding the style.
- Eastern species.
- Leaves 1 to 4 lines long, obovate to oblong-linear, the upper surface glabrous or scabrous 27. *O. ramulosa*.
- Leaves under 1 line, narrow, the upper surface glabrous or scabrous. Flower-heads usually very small and numerous 28. *O. floribunda*.
- Leaves mostly under 1 line and often under $\frac{1}{2}$ line, obovate oblong or globular, the upper surface glabrous or tomentose 29. *O. lepidophylla*.
- Leaves narrow-linear, 3 to 6 lines long. Flower-heads forming short, dense, terminal, leafy racemes 30. *O. subspicata*.
- Western species.
- Leaves very small, mostly obovate and 3-toothed 31. *O. exiguifolia*.
- Leaves narrow-linear, $\frac{1}{4}$ to $\frac{1}{2}$ in. long, quite entire 32. *O. Cassinia*.
- Flower-heads usually hemispherical, terminal, solitary or corymbose.
- Rays conspicuous.
- Leaves mostly reflexed, clustered, about 1 line long. Flower-heads solitary 33. *O. ramosissima*.
- Leaves oblong-cuneate, 3 to 4 lines long.
- Flower-heads solitary, on long branchlets 34. *O. pimeleoides*.
- Flower-heads corymbose or on short branchlets 35. *O. isochroa*.
- Leaves linear, 2 to 4 lines long, with revolute margins. Plant glandular-pubescent and slightly woolly 36. *O. adenolasia*.
- (See also 51. *O. muricata*, which is sometimes very near *O. adenolasia*, 50. *O. heleophila*, which has often a little wool about the involucre, and 62. *O. arguta*, which has the young foliage sometimes woolly.)
- Flower-heads cylindrical, with few tubular florets, without any ray . 37. *O. conocephala*.

cont'd/...

SECTION IV. Adenotriche.—Plant glabrous, usually glutinous. Involucre ovoid, turbinate or rarely hemispherical, the bracts usually obtuse, rigid, scarious on the margins and often ciliate.

- Flower-heads solitary or in leafy corymbs or panicles.
 Leaves flat, obovate cuneate or oblong-linear, mostly toothed.
 Flower-heads solitary, almost sessile above the last leaf.
 Flower-heads very large. Involucre broadly turbinate, above $\frac{1}{2}$ in. long.
 Leaves narrow, cuneate 38. *O. magniflora*.
 Leaves small, obovate 39. *O. calcarea*.
 Flower-heads small. Involucre almost hemispherical, 3 to 4 lines long.
 Leaves small, obovate 40. *O. Muellerei*.
 Leaves narrow, oblong or lanceolate 41. *O. Stuartii*.
 Leaves flat, linear or linear-cuneate, entire or toothed.
 Flower-heads small, solitary or in an oblong panicle 42. *O. decurrens*.
 Flower-heads ovoid, corymbose 43. *O. glutinosa*.
 Leaves linear or small, quite entire, with revolute margins.
 Flower-heads ovoid (except *O. imbricata*), nearly sessile, solitary or corymbose.
 Leaves slender, $\frac{1}{2}$ to in. long or more. Eastern species 43. *O. glutinosa*.
 Leaves erect or spreading, about $\frac{1}{2}$ in. long. Western species 44. *O. passerinoides*.
 Leaves erect, under $\frac{1}{2}$ in. long. Eastern species 45. *O. teretifolia*.
 Leaves very spreading or recurved, under $\frac{1}{2}$ in. long. Eastern species 46. *O. Hookeri*.
 Leaves very short, thick, spreading. Involucre more hemispherical. Western species 47. *O. imbricata*.
 (See also *O. tenuifolia*, which has the involucre bracts rather obtuse.)
 Flower-heads small, numerous, in a leafless corymbose panicle.
 Leaves elliptical-oblong or lanceolate, $1\frac{1}{2}$ to 3 in. long 48. *O. elliptica*.
 Leaves narrow-linear, $\frac{1}{2}$ to $1\frac{1}{2}$ in. long 49. *O. glandulosa*.

SECTION V. Merismotriche.—Glabrous, glandular-pubescent or hirsute, and often glutinous, the hairs simple rigid, white or transparent and septate. Involucre hemispherical, with narrow, usually acute bracts.

- Flower-heads terminal, the peduncles mostly shorter than the heads.
 Leaves usually under $\frac{1}{2}$ in. long. Involucres under $\frac{1}{2}$ in. diameter.
 Glabrous or slightly glandular-pubescent. Leaves linear, with slightly recurved margins, small and distant or long and crowded. Panicles loose, divaricate 50. *O. heleophila*.
 Glabrous glandular-pubescent or muricate. Leaves linear, the margins revolute, small and obtuse. Panicles loose, divaricate 51. *O. muricata*.
 Muricate, scabrous or hispid. Panicles loose, divaricate.
 Leaves linear, mucronate, erect, the margins revolute 52. *O. strigosa*.
 Leaves obovate-cuneate or almost linear, entire or 3-toothed 53. *O. paucidentata*.
 Very glandular-pubescent. Leaves linear. Panicles oblong, narrow 54. *O. stricta*.
 Flower-heads rather large, few, terminal or in the upper axils, on peduncles shorter than or rarely exceeding the leaves.
 Leaves linear, $\frac{1}{2}$ to 2 in. long.
 Slightly glandular-pubescent. Leaves slender. Peduncles mostly exceeding the leaves. Involucre scarcely $\frac{1}{2}$ in. diameter 55. *O. tenuifolia*.
 Very viscid-pubescent or hirsute. Corymb dense. Involucre about $\frac{1}{2}$ in. diameter, the bracts unequal 56. *O. adenophora*.
 Very scabrous. Flower-heads few, almost sessile. Involucre nearly $\frac{1}{2}$ in. diameter, the bracts nearly equal 57. *O. homolepis*.
 Leaves oblong-cuneate or almost linear, toothed. Plant glabrous, glutinous. Involucres much imbricate 41. *O. Stuartii*.
 Leaves obovate or oblong, crenate, very viscid. Peduncles longer than the leaves. Involucres scarcely $\frac{1}{2}$ in. diameter 58. *O. xerophila*.
 Flower-heads solitary, on peduncles very much longer than the leaves.
 Leaves obovate-oblong to lanceolate.
 Glabrous. Peduncles with subulate bracts. Involucre much shorter than the disk 59. *O. Ferrerii*.
 Glabrous or hispid. Peduncles without any or with only one bract. Involucre as long as the disk.
 Leaves mostly oblong, obtuse, coarsely toothed. Southern and Western species 60. *O. rudis*.
 Leaves lanceolate, acute, entire or with 2 or 3 acute teeth towards the end. Tropical species 62. *O. arguta*.
 Leaves linear.
 Leaves hoary-hispid 61. *O. picridifolia*.
 Leaves ciliate, otherwise glabrous 63. *O. ciliata*.

Eurybia chrysotricha, Ten. Cat. Hort. Neap. 85, is supposed by Lindley, Bot. Reg. Misc. 1841, 19, to be from Australia. Tenore however says that it was raised from seed sent by Bonpland from America. At any rate the character given is wholly insufficient for identifying it.

62. **O. arguta**, *Benth.* A shrub or undershrub, of 1 to 2 ft., more or

less hirsute with septate hairs and somewhat glutinous. Leaves oblong-lanceolate, acute, entire or with a few pointed teeth towards the end, narrowed below the middle, but broad and stem-clasping at the base, 2 to 4 in. long. Flower-heads rather large, solitary, on peduncles longer than the leaves, with 1 or 2 small bracts. Involucre nearly hemispherical, the bracts narrow, acute, the inner ones 4 to 5 lines long, the outer ones shorter. Ray-florets numerous; disk-florets not longer than the involucre. Achenes pubescent. Pappus-bristles nearly equal.—*Aster argutus*, R. Br. Herb.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown.*

Var. *lanata*. Young leaves clothed with a dense white deciduous wool, and mostly quite entire.—Arihem, N. and S. bays, *R. Brown.*

This species is certainly nearly allied in essential characters to *O. rudis*, but the aspect of the specimens is very different, and the stations of the two are widely distant.

N50

ASTERACEAE

Olearia aspera

24. **O. axillaris**, *F. Muell. Fragm. v. 64*. An erect much-branched shrub of 3 to 6 ft., more or less hoary or white with a close woolly tomentum. Leaves from obovate or oblong-cuneate and $\frac{1}{4}$ to $\frac{1}{2}$ in. long to linear or linear-lanceolate and $\frac{1}{2}$ to $\frac{3}{4}$ in. long, obtuse, entire, with revolute margins, woolly-white on both sides or glabrous and shining above. Flower-heads sessile in the axils, and shorter than the floral leaves, or very rarely 1 or 2 together on short axillary leafy shoots. Involucre ovoid, 2 to 3 lines long, the bracts obtuse. Ray-florets about 4 to 6, shorter than those of the disk, the small ligula not so long as the style, entire or 2- or 3-toothed; disk-florets about 6 to 10, exceeding the involucre. Style-appendages short. Achenes hairy or rarely glabrous. Pappus-bristles all nearly equal or occasionally a very few short outer ones.—*Eurybia*, sect. *Brachyglossa*, DC. Prod. v. 265; *Aster axillaris*, *F. Muell. Fragm. v. 64*.

N. Australia. Dampier's Archipelago, N.W. coast, *A. Cunningham*.
Victoria. Common on the sandy seacoasts, *F. Mueller* and others.

Tasmania. Sandy hills of the N. coast and islands of Bass's Straits, *R. Brown, J. D. Hooker* and others.

S. Australia. Sandy hills of the coast both on the mainland and Kangaroo Island, *R. Brown, F. Mueller*, and others.

W. Australia. Goose Island Bay, *R. Brown*; sandy hills on the S. coast and on the west coast to Swan River, Murchison river, Shark's Bay, Dirk Hartog's Island, etc., *A. Cunningham*; *Baudin*; *Drummond*, n. 126, 129; *Preiss*, n. 89, 90, 91, 92, 93.

Very variable in the degree of woolliness and in the shape of the leaves. The following forms, described as distinct species, appear to pass very much one into the other, and are all uniform in essential characters:—

a. obovata. Leaves obovate to cuneate-oblong, very tomentose on both sides, or glabrous above. Flower-heads small.—*Eurybia oligantha*, DC. Prod. v. 266; *E. brachyglossa*, DC. l. c. 265 (with glabrous achenes); *E. candidissima*, Steetz in Pl. Preiss. i. 418.—Chiefly on the W. coast, from Swan River to Shark's Bay.

b. normalis. Leaves narrow-linear, mostly under $\frac{1}{2}$ in. Florets rarely more than 10 in the head.—*Eurybia axillaris*, DC. Prod. v. 266; Steetz in Pl. Preiss. i. 417; *E. capitellata*, DC. l. c.; *E. Dampieri*, DC. l. c. (with longer very narrow leaves).—The commonest form on the S. coast.

c. linearis. Leaves linear or linear-lanceolate, mostly above $\frac{1}{2}$ in. Florets usually 10 to 15 in the head.—*Eurybia linearifolia*, DC. Prod. v. 266.—Occasionally both on the S. and W. coasts.

41. **O. Sturtii**, *F. Muell. Fragm.* v. 76. Apparently a divaricately-branched small shrub, densely glandular-viscid, otherwise glabrous. Leaves cuneate-oblong or almost linear, obtuse and obtusely toothed, $\frac{1}{2}$ to 1 in. long, narrowed into a petiole. Flower-heads terminal, shortly pedunculate, broadly ovoid or almost hemispherical. Involucral bracts much imbricate, more acute than in the other species of this section. Achenes slightly hairy. Pappus rather unequal.—*Eurybia Sturtii*, *F. Muell. Fragm.* i. 202; *Aster Sturtii*, *F. Muell. Fragm.* v. 76.

S. Australia. N.W. of Lake Gairdner, *M'Douall Stuart*. The species might perhaps be transferred to the following section, but requires further elucidation from more perfect specimens.

N3B

ASTERACEAE

Parinari nodosa

6. PLEUROCARPÆA, Benth.

ASTERACEÆ

Involucre ovoid, the bracts few, herbaceous, imbricate, not so long as the florets. Receptacle without scales. Florets all tubular and equal, regular, often incurved, with 5 narrow lobes. Anthers sagittate at the base, the auricles produced into short not fine points. Achenes thick, with prominent ribs. Pappus of 2 to 5 rigid short exceedingly deciduous bristles.—Leaves alternate, entire or toothed. Flower-heads on terminal peduncles.

The genus is limited to a single species endemic in Australia, not nearly allied to any one known to me, unless it be to some anomalous species of *Decaneurum*.

1. **P. denticulata**, *Benth.* Herbaceous, with hard divaricate or decumbent branches, our specimens above 1 ft. long, and quite glabrous. Leaves ovate or oval-elliptical, mucronate-acute, contracted into a very short petiole, the larger ones above 2 in. long, irregularly bordered by acute teeth, the upper ones smaller and entire. Peduncles terminal, solitary or 2 together, 1 to 2 in. long or longer after flowering, slightly thickened under the head. Involucre about 4 lines long, thickened at the base, the bracts broadly lanceolate, acuminate. Florets about 10 to 20, of a bluish-purple, the tube exceeding the involucre, often incurved, shortly dilated into a deeply 5-lobed limb.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown*, who had given it the provisional name of *Lipothrix denticulata*, but he afterwards published as *Lipotriche* a very different African plant.

24. **PLUCHEA**, Less.

(*Spiropodium* and *Eyrea*, F. Muell.)

Involucre either ovoid with the bracts imbricate in several rows, usually broader, more rigid and less acuminate than in *Blumea*, or hemispherical with narrow bracts. Florets all tubular, those of the circumference female, filiform, usually very numerous, those of the disk broader, hermaphrodite, but usually sterile, few, or the heads almost diœcious. Anthers with short fine tails or points at the base. Style (of the disk-florets) simple, papillose towards the end, or very rarely branched as in *Blumea*. Achenes small, usually somewhat compressed. Pappus of numerous capillary bristles.— Shrubs, undershrubs, or perennial herbs (rarely if ever annuals). Leaves alternate, entire toothed or rarely almost pinnatifid. Flower-heads in terminal corymbs, sometimes contracted into clusters or rarely solitary.

The genus comprises several N. and S. American species, a very few from Africa and tropical and subtropical Asia, besides the Australian ones, five of which are endemic, the sixth a common Asiatic one. They differ generally from *Blumea*, in habit as well as in the involucre and style, but none of these characters are quite constant. They have some affinity also with *Pterigeron*, but the female florets are never ligulate, and the style is scarcely or not at all bulbous at the base.

SECTION I. Pluchea.—*Flower-heads ovoid. Involucral bracts lanceolate or the outer ones ovate.*

- Shrub of 3 to 4 ft. Leaves obovate. Flower-heads in dense terminal corymbs 2 to 3 in. diameter 1. *P. indica*.
- Herbs or undershrubs of 1 to 2 ft. Flower-heads in loose leafy corymbose panicles, solitary or in small clusters on the branches.
- Leaves obovate or oblong-lanceolate 2. *P. tetranthera*.
- Leaves linear 3. *P. baccharoides*.

SECTION II. Eyrea.—*Flower-heads broad or hemispherical. Involucral bracts narrow.*

- Flower-heads about ¼ in. diameter, the bracts all dry 4. *P. Eyrea*.
- Flower-heads nearly ½ in. diameter, the outer bracts with reflexed tips often leafy.
- Inner bracts with acuminate coloured tips. Western species . . . 5. *P. squarrosa*.
- Nearly all the bracts with fine hair-like tips. Eastern tropical species 6. *P. dentex*.

N10

ASTERACEAE

Plichaea rubelliflora

5. **P. squarrosa**, *Benth.* Erect, glabrous or minutely glandular-pubescent, with virgate corymbose branches, 1 to 2 ft. high. Leaves linear-lanceolate or lanceolate, bordered by a few distant teeth or the larger ones almost pinnatifid, narrowed at the base, often above 1 in. long. Flower-heads much larger than in *P. Eyrea*. Involucres hemispherical, fully $\frac{1}{2}$ in. diameter, the bracts numerous, with herbaceous reflexed tips, the innermost with acuminate, erect, coloured tips. Female florets very numerous, slender, but scarcely filiform, rather longer than the involucre, the style-branches protruding. Disk-florets several, with an undivided style. Achenes pubescent.

W. Australia. Murchison river, *Oldfield*, *Drummond*, 6th Coll. n. 150.

2. **P. tetranthera**, *F. Muell. Rep. Babb. Exped.* 12. A rigid perennial or undershrub, glabrous or glandular-pubescent in the ordinary forms. Leaves petiolate, from small and obovate to oblong-lanceolate and 1 in. long or rather more, the upper ones sometimes linear, acutely and irregularly toothed or almost entire, those of the barren shoots usually obovate. Flower-heads small, often sessile in clusters of 2 or 3, forming a terminal corymbose panicle. Involucre narrow-ovoid, scarcely 3 lines long, the outer bracts short and obtuse, the inner acute rigid and dry. Florets rather shorter than the involucre, in some heads the female filiform ones very numerous, with only 2 or 3 disk-florets, in others those of the disk at least as numerous as the female ones. Corollas of the disk 4-toothed. Style with 2 filiform papillose branches.

N. Australia. Victoria, Flinders, and Van Alphen rivers, *F. Mueller.*

Queensland. Broad Sound, *R. Brown*; heads of Isaacs river, *Bowman*; Rockhampton, *Thozet.*

Var. *tomentosa.* Taller, leaves larger, and the whole plant closely but softly tomentose. —Arnhem's Land, *F. Mueller.*

14. **PODOCOMA**, Less.; R. Br.

ASTERACEAE

(Podopappus, Hook. et Arn.; Asteropsis, Less. ?; Ixioclamys, F. Muell.).

Involucre broadly ovoid or hemispherical, the bracts imbricate in several rows, narrow, acute. Receptacle without scales. Florets of the ray female numerous, crowded in several rows, ligulate but very narrow. Disk-florets few, hermaphrodite, tubular but slender, usually 5-lobed. Anthers obtuse at the base. Style-lobes somewhat flattened, with narrow tips or appendages sometimes almost subulate. Achenes short, flat, produced into a long or short slender beak. Pappus of numerous capillary bristles.—Perennial herb. Leaves alternate. Flower-heads large, terminal, solitary, or very loosely corymbose.

Besides the Australian species, which is endemic, there are three from extratropical South America. Notwithstanding the confusion arising from Lessing's having described the ray-florets as 1-seriate, there seems little reason to doubt that *Erigeron hieracifolium*, Poir. (or

Podocoma hieracifolia and *P. primatifolia*, Cass.), is identical with *Podopappus hirsutus*, Hook. et Arn., and *Asteropsis macrocephala*, Less., is most probably the same as *Podopappus tomentosus*, Hook. et Arn. The genus only differs from *Vittadinia* in the beaked achene, the length of the beak varying even in the same species.

72. *PODOLEPIS*, Labill.

(*Scalia*, Sims; *Pauætia*, Cass.; *Scaliopsis*, Walp.; *Siemssenia*, Steetz; *Stylolepis*, Lehm.; *Rutidochlamys*, Sond.)

Involucre hemispherical or rarely ovoid, the bracts imbricate, in several rows, with very thin scarious laminae, not radiating, the outer ones sessile, the inner ones on rigid or scarious stalks or claws. Receptacle flat, without scales. Florets of the circumference few or numerous, in a single row, female, either ligulate or irregular or with fewer lobes than the disk-florets, which are hermaphrodite, tubular, with 5 or rarely 4 narrow lobes, sometimes slightly irregular. Anthers with fine tails, sometimes very short. Style-branches filiform, truncate or capitate. Achenes nearly terete or slightly compressed.

not beaked, glabrous or papillose. Pappus of capillary bristles, simple or shortly barbellate, often slightly united at the base.—Annual or perennial herbs, the cottony wool usually very deciduous, leaving the stem and leaves glabrous and smooth. Leaves alternate, lanceolate or linear, very frequently stem-clasping. Flower-heads terminal, pedunculate or rarely sessile, the ray-florets yellow pink or purple, the scarious laminae of the involucre bracts imbricate so as to conceal the claws, in all except *P. longipedata*.

The genus is limited to Australia. It is allied to *Athrixia* through those species where the female florets are ligulate, but differs in the involucre; where the female florets are less developed it passes almost into *Helichrysum*, differing chiefly in the very thinly scarious, not opaque or petal-like laminae of the involucre bracts. A nearly similar involucre occurs in some species of *Helipterum*, but with a plumose pappus.

- Involucres ovoid, almost sessile in clusters 1. *P. rutidochlamys*.
- Involucres hemispherical, pedunculate or rarely here and there almost sessile, $\frac{1}{2}$ to $1\frac{1}{2}$ in. diameter (or only 4 lines in *P. Lessoni*).
Laminae of the intermediate involucre bracts much shorter than their claws, obtuse or almost acute 2. *P. longipedata*.
Laminae of the intermediate involucre bracts as long as or longer than their claws and concealing them.
Laminae very acute or acuminate. Ray-florets yellow, 3- or 4-lobed.
Perennial. Flower-heads large. Eastern species 3. *P. acuminata*.
Annuals. Involucres under 1 in. diameter.
Eastern species. Involucre bracts acute, smooth or slightly rugose 4. *P. canescens*.
Western species. Involucre bracts very acuminate, smooth 5. *P. aristata*.
Western species. Involucre bracts acute, very rugose 6. *P. pallida*.
Laminae obtuse or scarcely acute. Ray-florets purple, ligulate, entire.
Claws of the involucre bracts glabrous. Pappus usually thickened upwards 7. *P. nutans*.
Claws of the involucre bracts glandular. Pappus not thickened upwards 8. *P. gracilis*.
Laminae of the involucre bracts obtuse. Ray-florets 3- or 4-lobed.
Ray-florets yellow. Perennial. Involucre 1 to $1\frac{1}{2}$ in. diameter; bracts very rugose 9. *P. rugata*.
Ray-florets pink, small. Annual. Involucre under $\frac{1}{2}$ in. diameter; bracts smooth 10. *P. Lessoni*.
- Involucres not 3 lines diameter, turbinate or at length hemispherical.
Slender annuals. Ray-florets irregular, not much longer than those of the disk.
Involucres turbinate, rather narrow 11. *P. Siemssenia*.
Involucres at length hemispherical 12. *P. microcephala*.

†. **P. canescens**, A. Cunn. in DC. Prod. vi. 163. An annual with erect or ascending branching stems, rarely much exceeding 1 ft. Leaves linear or lanceolate, chiefly at the base of the stem, 1 to 2 in. long or even more, stem-clasping and sometimes shortly decurrent, the upper ones small and distant. Flower-heads rather small, on slender peduncles. Involucre hemispherical, 6 to 8 lines diameter, the scarious laminae of the bracts acute or acuminate, smooth or slightly rugose, their claws with broad scarious margins. Florets yellow, the outer ones slightly exceeding the others, irregularly 3- or 4-lobed, ligulate or almost 2-lipped.—*P. inundata*, A. Cunn. in DC. Prod. vi. 163; *P. affinis*, Sond. in Linnæa, xxv. 507.

N. S. Wales. Inundated banks of Lachlan river and exposed rocky situations near Croker's Range, A. Cunningham; Darling and Murray rivers and Mount Goningberi, *Victorian Expedition*.

Victoria. Wimmera, *Dallachy*.

S. Australia. From the Murray to St. Vincent's and Spencer's Gulfs, *F. Mueller*, *Wilhelmi*, and others.

10. **F. LESSONIA**, *Donn.* A slender erect branching annual of $\frac{1}{2}$ to 1 ft., loosely woolly or at length glabrous. Leaves small, from ovate to lanceolate, stem-clasping and sometimes slightly decurrent. Peduncles filiform. Involucres hemispherical, about 4 lines diameter, the very numerous imbricate thinly scarious bracts broadly ovate, obtuse or almost acute, ciliate, the claws

of the inner ones linear, not at all or scarcely glandular. Florets all nearly equal and longer than the involucre with narrow lobes, the outer female ones more slender, irregularly 3- or 4-lobed. Pappus of few capillary bristles, barbellate towards the end, usually reduced in the achenes of the ray to a single bristle or entirely wanting.—*Panætia Lessonii*, Cass.; DC. Prod. vi. 162; Steetz in Pl. Preiss. i. 461; *Panætia Muelleri*, Sond. in Linnæa, xxv. 505; *Podolepis Gilberti*, Turcz. in Bull. Mosc. 1851, i. 195.

N. S. Wales. Darling river, *Herb. F. Mueller.*

S. Australia. Flinders Range, St. Vincent's Gulf, *F. Mueller.*

W. Australia. King George's Sound, *Menzies, Preiss, n. 59*, and thence to Swan River, *Drummond, 1st Coll. and n. 329, 330; 5th Coll. n. 386, Oldfield*, and others; Champion Bay, *Oldfield.*

26. PTERIGERON, DC.

(*Streptoglossa*, Steetz; *Oliganthemum*, F. Muell.)

Involucre hemispherical or ovoid, the bracts imbricate in several rows, usually dry and rigid or the outer ones herbaceous, the innermost narrow, acute, often coloured at the tips. Receptacle without scales. Florets of the circumference numerous or few, female, ligulate or, if tubular, less regularly or more deeply lobed than those of the disk; disk-florets numerous or few, hermaphrodite, fertile or sterile, usually 5-lobed. Anthers with fine tails. Style bulbous at the base, the lobes subulate or slightly flattened, sometimes united to the top, papillose outside towards the end. Achenes nearly terete, silky-hairy. Pappus of scabrous denticulate or almost plumose capillary bristles.—Herbs, usually rigid and glandular-pubescent or hirsute. Leaves alternate, entire or toothed, sometimes decurrent. Flower-heads large or small, terminal, and usually forming terminal leafy corymbs.

The genus is exclusively Australian. Originally established by De Candolle as a section of *Erigeron*, it has been shown by A. Gray to form a very distinct genus, allied in many respects to *Pluchea*, but differing in the prominently bulbous base of the style, and usually in the irregularity of the ray-florets, which connect it with *Dicoma*, amongst *Mutisiaceae*. It ought perhaps to include *Coleocoma* and *Thespidium*, notwithstanding their anomalous pappus.

Flower-heads large, almost hemispherical.

Ray-florets ligulate, exceeding the involucre.

Leaves ovate, decurrent. Ray-florets not $\frac{1}{4}$ line broad . . . 1. *P. decurrens*.

Leaves narrow or obovate, not decurrent. Ray-florets fully $\frac{1}{2}$ line broad . . . 2. *P. liatroides*.

Ray-florets very slender, about as long as the involucre. Leaves oblong, stem-clasping or slightly decurrent . . . 4. *P. macrocephalus*.

Flower-heads ovoid.

Leaves decurrent. Ray-florets about as long as the involucre . . . 3. *P. odorus*.

Leaves not decurrent. Ray-florets very slender and shorter than the involucre.

Leaves mostly oblong. Flower-heads broadly ovoid, 6 to 8 lines long . . . 5. *P. microglossus*.

Leaves mostly linear. Flower-heads numerous, many-flowered, about 4 lines long . . . 6. *P. ascendens*.

Leaves filiform. Flower-heads narrow, 3- or 4-flowered, about 5 lines long . . . 7. *P. filifolius*.

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0. *P. ascendens*, *Donn.* A diffuse, ascending or erect, very much branched herb, with a hard almost woody base, glabrous or pubescent. Leaves linear or linear-oblong, narrowed into a petiole, entire or slightly toothed, not decurrent. Flower-heads numerous, rather smaller than in *P. odoratus*. Involucre ovoid, the bracts acute, usually but not always surrounded by a few floral leaves. Florets more numerous than in *P. odoratus*, those of the ray filiform, scarcely so long as the involucre, with 2 or 3 short linear lobes. Pappus-bristles very minutely denticulate.

Queensland. Suttor, Roper, and Flinders rivers, *F. Mueller*; Cape river, *Bowman*; Belyando river, *Mitchell*.

1. **P. decurrens**, DC. *Prod.* v. 293 (as an *Erigeron*). A rigid branching herb, glandular-pubescent and hirsute. Leaves ovate or oblong, coarsely and irregularly toothed or almost entire, the upper ones broadly decurrent. Flower-heads pedunculate, in a terminal leafy panicle, irregularly corymbose. Involucre ovoid when young, nearly hemispherical and $\frac{1}{2}$ in. diameter when fully out, the outer bracts herbaceous, surrounded by a few floral leaves, the inner ones lanceolate, scarious, very acute, 5 lines long. Ray-florets ligulate but very narrow, longer than the involucre; disk-florets numerous. Style undivided. Achenes clothed with long silky hairs. Pappus almost plumose.—*Streptoglossa Steetzii*, F. Muell. in *Trans. Bot. Soc. Edinb.* vii. 491 (partly?).

N. Australia. N.W. coast, *Bynoe*; Nichol Bay, *F. Gregory's Expedition*.

4. ***F. macrocephalus***, *Benth.* Glandular-pubescent or hirsute. Leaves oblong or linear-cuneate, irregularly undulate and toothed, stem-clasping, but only rarely and very slightly decurrent. Flower-heads large, almost hemispherical when fully out, $\frac{3}{4}$ in. long. Ray-florets not numerous, very slender, about as long as the involucre, 2- or 3-lobed at the end, but not usually ligulate; disk-florets very numerous. Achenes densely silky-hairy.—*Pluchea macrocephala*, *F. Muell. Rep. Babb. Exped. 12.*

N. Australia. Gulf of Carpentaria, *F. Mueller*; in the interior, lat. 19° 30', *M'Donnell Stuart's Expedition.*

P. r. microglossus, *Benth.* Glabrous or slightly glandular-pubescent, the stems rigid, erect, nearly simple or somewhat corymbose, often under 6 in. and none of our specimens above 8 in. high. Leaves from cuneate-oblong to linear-cuneate, entire or denticulate, under 1 inch long, rather rigid, narrowed towards the base, not decurrent. Flower-heads broadly ovoid, about $\frac{1}{2}$ in. long, the inner involucre bracts very acute. Florets numerous, not exceeding the involucre, those of the ray scarcely so long, with a small, narrow, entire or bifid concave lamina. Achenes less hairy than in *P. ligulatus*. Pappus almost plumose.

N. Australia. Sturt's Creek and Fitzmaurice rivers, *P. Mueller*.

3. **P. odorus**, *Benth.* Apparently perennial and in the normal form erect, rigid, more or less hirsute, with virgate branches, under 1 ft. high. Leaves sessile and more or less decurrent, the lower ones oblong or lanceolate, obtuse, irregularly toothed, above 1 in. long, the upper ones smaller and linear. Flower-heads mostly terminating very short branches, sessile within 2 or 3 floral leaves. Involucre narrow-ovoid, the bracts imbricate and rigid, the outer ones short, acute or almost obtuse, the inner ones 4 lines long and very acute. Ray-florets about 8 to 10, about as long as the involucre, slender, with 2 or 3, rarely 4 or 5 narrow lobes, more or less distinctly arranged in 2 lips. Style of the disk-florets 2-lobed, the branches slightly flattened and obtuse. Achenes silky-villous. Pappus-bristles denticulate, almost plumose. — *Pluchea odora*, F. Muell. Rep. Babb. Exped. 12.

N. Australia. Victoria river, *F. Mueller.*

Var. ? *major.* Flower-heads larger with more numerous florets. Both the florets and pappus seem to be rather those of *P. odorus* than of *P. adscendens*. The specimens are however very incomplete.—Albert river, *F. Mueller*; Suttor river, *Bowman.*

(Pumilo, *Schlecht.*; *Actinopappus*, *A. Gray.*)

Involucre hemispherical or ovoid, the bracts loosely imbricate, broad, very scarious, the inner ones with a broad more rigid base. Receptacle convex or small, without scales. Florets all hermaphrodite, tubular, 4- or 5-toothed. Anthers very shortly or not at all tailed. Style-branches truncate. Achenes oblong or obconical, scarcely compressed. Pappus of several chaffy scales entire jagged or divided into bristle-like lobes.—Annual or perennial herbs, usually woolly-tomentose. Leaves alternate, entire. Flower-heads terminal, pedunculate or rarely in small dense cymes.

The genus is limited to Australia. The involucre is much like that of *Podolepis*, in other respects the genus is allied to *Helichrysum*, but differs from both in the scale-like pappus.

Stock tufted with erect 1-headed stems.

- Leaves chiefly radical. Scapes under 6 in. high. Pappus-scales oblong-spathulate, obtuse 1. *R. leirolepis*.
 Stems leafy, slender, above 6 in. high. Pappus-scales lanceolate, acute, ciliate-plumose 2. *R. leptorrhynchoides*.
 Annuals or perennials, erect, branching and cottony.
 Leaves decurrent. Pappus-scales deeply divided into bristle-like lobes 3. *R. Brownii*.
 Leaves not decurrent. Pappus-scales undivided.
 Anthers much exerted. Pappus-scales 5 to 7, spathulate, quite entire. Flowers yellow 4. *R. helichrysoides*.
 Anthers not exerted. Pappus-scales about 10.
 Flowers white. Pappus-scales cuneate obtuse, scarcely denticulate 5. *R. leucantha*.
 Flowers yellow. Pappus-scales lanceolate, acute, ciliate 6. *R. Murchisonii*.
 Small diffuse annual of 1 to 3 in. Flower-heads numerous and small 7. *R. Pumilo*.
 (See also *Helipterum Pyrethrum* and *H. dimorpholepis*, in which the pappus-bristles are more or less scale-like.)

4. **R. helichrysoides**, DC. *Prod.* vi. 159. A perennial with a hard woody stock and erect branching stems of 1 to 2 ft., cottony-white as well as the foliage. Leaves linear or the lower ones oblong-spathulate, 1 to 2 in. long, or the upper ones smaller, obtuse or with callous points, not decurrent. Flower-heads on terminal peduncles. Involucre broadly hemispherical, in some specimens all under $\frac{1}{2}$ in. diameter, in others larger, the bracts cuneate at the base, with elegantly ciliate scarious transversely-wrinkled laminae, loose but scarcely radiating. Florets yellow, 5-toothed. Anthers exerted. Achenes glandular-papillose. Pappus of 5 to 7 spathulate scales, about as long as the achene.—*R. auricoma*, F. Muell. in *Linnæa*, xxv. 408.

N. S. Wales. Wet flats, Molle's Plains, *A. Cunningham*; Macquarrie river, *Mitchell*; from the Lachlan and Darling rivers to the Barrier Range, *Victorian and other Expeditions*.

Victoria. Murray river, *F. Mueller*; Wimmera, *Dallachy*.

S. Australia. Cudnaka and Flinders range, *F. Mueller*; Cooper's Creek and Wills Creek (with narrower and less ciliate involucral bracts), *Howitt's Expedition*.

74. **SCHŒNIA**, Cass.

Involucre turbinate or campanulate, the outer bracts adpressed, scarious, imbricate, the inner row with petal-like spreading laminæ. Receptacle without scales. Florets all tubular, 5-toothed, those of the circumference hermaphrodite, fertile. Anthers with fine tails. Style-branches terminating in a short cone. Disk-florets sterile, with an undivided style. Achenes of the circumference very flat, not beaked, those of the disk abortive. Pappus of numerous barbellate bristles.—Annual. Leaves alternate or the lower ones opposite, entire. Flower-heads in a loose corymb.

The genus is limited to a single species endemic in Australia. It differs from the section *Lawrencella* of *Helichrysum*, chiefly in the flat achenes of the circumference.

1. **S. Cassiniana**, Steetz in *Pl. Preiss.* i. 451. An erect corymbose-
branched annual of 1 to 2 ft., scabrous-pubescent or with more or less of
cottony wool. Leaves lanceolate or linear, or the lower ones oblong-spathu-
late, the longest above 2 in., the upper ones few and small. Flower-heads in
a loose terminal corymb. Involucre varying from 3 to 5 lines long without
the ray, the outer scarious bracts usually brown, the radiating laminae of the
inner bracts white or pink, oblong, 4 to 6 lines long. Perfect achenes in a
single row at the circumference, flat, with the edges ciliate with long hairs.
Sterile florets numerous.—*Helichrusum Cassinianum*, Gaud. in Freyc. Voy. Bot.

466. t. 87; *Helipterum Cassinianum*, DC. Prod. vi. 216; *Schœnia oppositi-
folia*, Steetz in *Pl. Preiss.* i. 480; Bot. Mag. t. 4560; *Pteropogon Cassinianus*
and *P. oppositifolius*, F. Muell. in *Linnæa*, xxv. 415.

S. Australia. Finke river, *M'Douall Stuart's Expedition*; in the scrub N.E. of
Lake Gairdner, *Herb. F. Mueller*.

W. Australia. Sharks' Bay (*Gaudichaud*), Champion Bay, Murchison river, *Oldfield*;
also *Drummond*, n. 70, *Roe*.

Flower-heads homogamous and discoid or heterogamous and radiate. Involucre of nearly equal bracts apparently in a single row, linear or very rarely ovate, the margins often scarious and imbricate, with or rarely without a few small ones at the base passing into the bracts on the peduncles. Receptacle naked or pitted, the borders of the pits rarely toothed or produced into a few short scales. Florets of the ray when present female or rarely neuter, ligulate. Disk-florets tubular, hermaphrodite, 5-toothed. Anthers obtuse at the base, the upper portion of the filament often thickened. Style-branches truncate, usually bearing a tuft of minute hairs and very rarely a short obtuse appendage. Achenes striate or angular. Pappus of numerous simple scabrous or denticulate bristles.—Herbs or very rarely shrubs, glabrous-pubescent or clothed with cottony wool. Leaves alternate, entire or divided, often rather thick. Flower-heads terminal, solitary, corymbose or paniculate. Florets usually yellow, rarely purple or white.

The largest genus among *Compositæ*, and ranging nearly over the whole world, although the individual species are often very local. Of the 28 Australian species 1 only extends to New Zealand, the others are all endemic. The rays are yellow in all of them except *S. leucoglossus*.

SERIES I. Radiati.—*Flower-heads radiate.*

Erect leafy annuals.

Flower-heads few, large. Involucres broadly campanulate.

Ligulæ of the ray longer than the involucre.

Leaves entire. Involucral bracts united above the middle. 1. *S. Gregorii*.

Leaves pinnatifid with toothed lobes. Involucral bracts united at the base only 2. *S. platylepis*.

Flower-heads small. Involucres cylindrical. Ligulæ of the ray very small and rolled back.

Ray-florets 3, white (or purplish?). Disk-florets under 10 19. *S. leucoglossus*.

Ray-florets 6 or more, very small, yellow. Disk-florets above 10 20. *S. brachyglossus*.

Tufted or shortly creeping perennials with leaves chiefly radical.

Flower-stems or scapes erect with 1 or rarely 3 to 5 heads.

Involucres broad. Rays long, spreading.

Leaves ovate, not cordate, nearly entire, tuberculate or mucronate above 3. *S. papillosus*.

Leaves ovate, cordate, nearly entire, glabrous or woolly underneath 4. *S. primulifolius*.

Leaves linear or oblong, entire crenate distantly toothed or pinnatifid 5. *S. pectinatus*.

Maritime much-branched spreading undershrub. Leaves mostly toothed. Involucres broad. Rays long spreading 6. *S. spathulatus*.

Glabrous erect shrubs (or in the first two species undershrubs?).

Flower-heads few, large. Involucres broad. Rays long.

Leaves oblong or oblanceolate, the upper ones stem-clasping. Flower-heads (including the ray) nearly 3 in. diameter 7. *S. megaglossus*.

Leaves obovate, the upper ones lanceolate, cordate-auriculate at the base. Flower-heads (including the ray) under 2 in. diameter 8. *S. magnificus*.

Flower-heads smaller, corymbose. Involucres campanulate.

Ligulæ scarcely longer than the involucre.

Leaves on long petioles, ovate, deeply-toothed 9. *S. insularis*.

Leaves sessile, broadly linear, entire 10. *S. centropappus*.

Herbaceous erect perennials (sometimes woody at the base).

Flower-heads corymbose or paniculate, few or numerous.

Flower-heads large or middle-sized. Involucres campanulate,

3 to 6 lines long. Ligulæ longer than the involucre.

Disk-florets numerous.

Leaves twice pinnate with filiform segments 13. *S. capillifolius*.

Leaves linear, entire toothed or pinnatifid.

Flower-heads including the ray above 2 in. diameter 11. *S. macranthus*.

- Flower-heads, including the ray, rarely exceeding 1 in diameter. Involucral bracts prominently 2-ribbed . . . 12. *S. laetus*.
- Leaves lanceolate, toothed 12. *S. laetus* var.
- Leaves stem-clasping, the lower ones toothed at the end, the upper ones entire, broadly cordate-auriculate 16. *S. velleioides*.
- Leaves all distinctly petiolate.
- Leaves large, deeply pinnatifid or pinnatisect with few lanceolate segments 14. *S. vagus*.
- Leaves ovate-lanceolate, toothed but undivided 15. *S. amygdalifolius*.
- Flower-heads small. Involucres cylindrical, 2 to 2½ lines long. Ligulæ not longer than the involucre. Disk-florets 10 to 15.
- Stems 1 to 3 ft. high. Leaves linear or lanceolate. Flower-heads numerous in a terminal glabrous corymb 17. *S. australis*.
- Stems 6 to 10 in. high. Leaves linear. Flower-heads few, usually hoary 18. *S. Behrianus*.

SERIES II. **Discoidei**.—*Flower-heads small, discoid. Involucres cylindrical.*

- Herbaceous perennials, sometimes woody at the base, or almost shrubby.
- Involucral bracts about 12. Florets above 20.
 - Leaves narrow, mostly petiolate, without auricles. Panicle corymbose. Involucre above 2 lines long 21. *S. Georgianus*.
 - Leaves deeply pinnatifid, very white underneath. Panicle corymbose. Involucre above 2 lines long 22. *S. Gilberti*.
 - Leaves auriculate at the base, much-toothed. Panicles large, subpyramidal. Involucre under 2 lines long 23. *S. ramosissimus*.
 - Involucral bracts usually 8. Florets under 20.
 - Leaves oblong or lanceolate, sessile or petiolate, with a dilated stem-clasping base 24. *S. odoratus*.
 - Leaves linear or lanceolate, narrowed at the base or petiolate, without any or with very small auricles 25. *S. Cunninghamii*.
 - Leaves ovate or lanceolate, very white underneath, on long petioles not auriculate 26. *S. hypoleucus*.
 - Leaves once or twice divided into long linear, almost filiform segments 27. *S. anethifolius*.
- Annuals.
- Glabrous. Leaves linear, entire 28. *S. Gardichaudianus*.
 - Slightly and loosely woolly. Leaves pinnatifid * *S. vulgaris*.

8. **S. magnificus**, *F. Muell. in Linnæa*, xxv. 418. An erect glabrous and glaucous shrub (or undershrub?). Lower leaves obovate-oblong, coarsely and acutely toothed, narrowed at the base, the upper ones lanceolate or ovate-lanceolate, deeply cordate-auriculate, stem-clasping and sometimes slightly decurrent, entire or nearly so, the larger ones $1\frac{1}{2}$ to 2 in. long. Flower-heads rather large, in a loose terminal leafless corymb. Peduncles scarcely dilated. Involucre broadly campanulate, the bracts 4 to 5 lines long, without any or with very minute outer ones. Receptacle not jagged. Ray-florets about 8 to 12, the ligulæ long and spreading; disk-florets numerous, scarcely exceeding the involucre. Achenes pubescent.—Sond. in *Linnæa*, xxv. 526.

Victoria. Grampians near Mount Zero, *Fisher*; Wimmera, *Dallachy*.

S Australia. Cudnaka, *F. Mueller*; Flinders Range, *Howitt's Expedition*, also in *M'Douall Stuart's Collection*.

21. SPHÆRANTHUS, Willd.

Flower-heads small, sessile in dense globular clusters or compound heads. Involucres ovoid, the bracts linear, imbricate in several rows. Florets not numerous, those of the circumference female filiform and minutely 2- or 3-toothed, hardened at the base; disk-florets very few, hermaphrodite but sometimes sterile, tubular, 5-toothed, thickened at the base. Anthers without tails or points at the base. Styles of the disk-florets bulbous at the base, simple or with 2 slender branches, papillose outside towards the end. Achenee oblong, somewhat flattened, without any pappus.—Coarse erect herbs. Leaves alternate, toothed, decurrent on the stem. Compound flower-heads terminal.

The genus comprises very few species, ranging over tropical Asia and Africa, the two Australian ones being the two most common over the whole area.

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| Pubescent or hirsute. Involucral bracts ending in a subulate ciliate point. Disk-florets (always?) sterile | 1. <i>S. hirtus</i> . |
| Glabrous. Involucral bracts scarious, often jagged at the end. Disk-florets (always?) fertile | 2. <i>S. microcephalus</i> . |

26. PTERIGERON, DC.

(Streptoglossa, Steetz; Oliganthemum, F. Muell.)

Involucre hemispherical or ovoid, the bracts imbricate in several rows, usually dry and rigid or the outer ones herbaceous, the innermost narrow, acute, often coloured at the tips. Receptacle without scales. Florets of the circumference numerous or few, female, ligulate or, if tubular, less regularly or more deeply lobed than those of the disk; disk-florets numerous or few, hermaphrodite, fertile or sterile, usually 5-lobed. Anthers with fine tails. Style bulbous at the base, the lobes subulate or slightly flattened, sometimes united to the top, papillose outside towards the end. Achenes nearly terete, silky-hairy. Pappus of scabrous denticulate or almost plumose capillary bristles.—Herbs, usually rigid and glandular-pubescent or hirsute. Leaves alternate, entire or toothed, sometimes decurrent. Flower-heads large or small, terminal, and usually forming terminal leafy corymbs.

The genus is exclusively Australian. Originally established by De Candolle as a section of *Erigeron*, it has been shown by A. Gray to form a very distinct genus, allied in many respects to *Pluchea*, but differing in the prominently bulbous base of the style, and usually in the irregularity of the ray-florets, which connect it with *Dicoma*, amongst *Mutisiaceae*. It ought perhaps to include *Coleocoma* and *Thespidium*, notwithstanding their anomalous pappus.

Flower-heads large, almost hemispherical.

Ray-florets ligulate, exceeding the involucre.

Leaves ovate, decurrent. Ray-florets not $\frac{1}{4}$ line broad . . . 1. *P. decurrens*.

Leaves narrow or obovate, not decurrent. Ray-florets fully $\frac{1}{2}$ line broad 2. *P. liatroides*.

Ray-florets very slender, about as long as the involucre. Leaves oblong, stem-clasping or slightly decurrent 4. *P. macrocephalus*.

Flower-heads ovoid.

Leaves decurrent. Ray-florets about as long as the involucre . . . 3. *P. odorus*.

Leaves not decurrent. Ray-florets very slender and shorter than the involucre.

Leaves mostly oblong. Flower-heads broadly ovoid, 6 to 8 lines long 5. *P. microglossus*.

Leaves mostly linear. Flower-heads numerous, many-flowered, about 4 lines long 6. *P. adscendens*.

Leaves filiform. Flower-heads narrow, 3- or 4-flowered, about 5 lines long 7. *P. filifolius*.

1. *F. decurrens*, DC. 1700. v. 250 (as an *Erigeron*). A rigid stoloniferous herb, glandular-pubescent and hirsute. Leaves ovate or oblong, coarsely and irregularly toothed or almost entire, the upper ones broadly decurrent. Flower-heads pedunculate, in a terminal leafy panicle, irregularly corymbose. Involucre ovoid when young, nearly hemispherical and $\frac{1}{2}$ in. diameter when fully out, the outer bracts herbaceous, surrounded by a few floral leaves, the inner ones lanceolate, scarious, very acute, 5 lines long. Ray-florets ligulate but very narrow, longer than the involucre; disk-florets numerous. Style undivided. Achenes clothed with long silky hairs. Pappus almost plumose.—*Streptoglossa Steetzii*, F. Muell. in Trans. Bot. Soc. Edinb. vii. 491 (partly?).

N. Australia. N.W. coast, *Bynoe*; Nichol Bay, *F. Gregory's Expedition*.

4. **P. macrocephalus**, *Benth.* Glandular-pubescent or hirsute. Leaves oblong or linear-cuneate, irregularly undulate and toothed, stem-clasping, but only rarely and very slightly decurrent. Flower-heads large, almost hemispherical when fully out, $\frac{3}{4}$ in. long. Ray-florets not numerous, very slender, about as long as the involucre, 2- or 3-lobed at the end, but not usually ligulate; disk-florets very numerous. Achenes densely silky-hairy.—*Pluchea macrocephala*, F. Muell. Rep. Babb. Exped. 12.

N. Australia. Gulf of Carpentaria, *F. Mueller*; in the interior, lat. 19° 30', *M'Douall Stuart's Expedition.*

3. **P. odorus**, *Benth.* Apparently perennial and in the normal form erect, rigid, more or less hirsute, with virgate branches, under 1 ft. high. Leaves sessile and more or less decurrent, the lower ones oblong or lanceolate, obtuse, irregularly toothed, above 1 in. long, the upper ones smaller and linear. Flower-heads mostly terminating very short branches, sessile within 2 or 3 floral leaves. Involucre narrow-ovoid, the bracts imbricate and rigid, the outer ones short, acute or almost obtuse, the inner ones 4 lines long and very acute. Ray-florets about 8 to 10, about as long as the involucre, slender, with 2 or 3, rarely 4 or 5 narrow lobes, more or less distinctly arranged in 2 lips. Style of the disk-florets 2-lobed, the branches slightly flattened and obtuse. Achenes silky-villous. Pappus-bristles denticulate, almost plumose.—*Pluchea odora*, F. Muell. Rep. Babb. Exped. 12.

N. Australia. Victoria river, *F. Mueller*.

Var. ? *major*. Flower-heads larger with more numerous florets. Both the florets and pappus seem to be rather those of *P. odorus* than of *P. adscendens*. The specimens are however very incomplete.—Albert river, *F. Mueller*; Suttor river, *Bowman*.

4. **VERNONIA**, Schreb.

Involucre ovoid-globular or hemispherical, the bracts imbricate, not longer than the florets, the inner bracts the longest. Receptacle without scales. Florets all tubular and equal, regular, with 5 narrow lobes. Anthers obtuse at the base. Style-lobes subulate. Achenes mostly striate or angular, rarely cylindrical. Pappus of numerous capillary bristles, usually surrounded by an outer row of very short often chaff-like bristles, which are rarely entirely wanting.—Herbs, or in species not Australian, shrubs or climbers. Leaves alternate. Flower-heads terminal or in the upper axils, in cymes or panicles or sometimes solitary. Florets usually purple.

A very numerous genus, widely spread over the warmer regions of the globe, but most abundant in America, where it extends beyond the tropics both to the northward and southward. In Australia it is represented by a single species, a weed of tropical Asia, differing slightly from the great mass of the genus in its habit, which is nearly that of a *Conyza*.

1. *V. cinerea*, Less.; DC. Prod. v. 24. Annual or forming a perennial rootstock, erect, 1 to 2 feet high, nearly glabrous, scabrous-pubescent, hirsute, hoary-tomentose or woolly. Lower leaves petiolate, ovate-oblong or lanceolate, often irregularly toothed or sinuate, the upper ones few and narrow, or occasionally nearly all ovate or nearly all narrow. Flower-heads small, on slender peduncles, forming a terminal leafless cymose panicle. Involucral bracts very acute. Achenes cylindrical, scarcely striate, hairy. Pappus white, the outer row very short, and sometimes reduced to very few bristles.—*V. erigeroides*, DC. Prod. v. 25; *V. cyanopioides*, Walp. in Linnæa, xiv. 509, and probably nearly the whole of the section *Tephrodes*, DC.

N. Australia. Victoria river and Macadam range, *F. Mueller*.

Queensland. Port Curtis, *M'Gillivray*; Rockingham Bay, Port Denison, Rockhampton, *Dallachy*; Brisbane river, Moreton Bay, and Peak Downs, *F. Mueller*; Keppel Bay, *Thozet*.

N. S. Wales. Port Jackson to the Blue Mountains, *Woolfs* and others; northward to Clarence and Hastings rivers, *Beckler*; New England, *C. Stuart*; southward to Twofold Bay, *Mossman*.

There are two principal varieties in Australia, one either nearly glabrous or rarely hirsute, with short rigid hairs, the other very hoary-tomentose or woolly, with softer more obtuse leaves, and usually smaller flower-heads, the corolla-lobes also appear shorter. The flowers very purple or white, but almost always purple in the more glabrous form.

13. VITTADINIA, A. Rich.

(Microgyne, Less.; Eurybiopsis, DC.)

Involucre hemispherical or campanulate, the bracts imbricate in several rows, with dry or scarious margins, without herbaceous tips, in the Australian species narrow and mostly acute. Receptacle pitted, without scales. Florets of the ray female numerous and crowded, so as to form more than one row, ligulate and spreading in the Australian species. Disk-florets numerous, but often not so many as those of the ray, hermaphrodite, tubular, dilated upwards, usually 5-lobed. Anthers obtuse at the base. Style-lobes somewhat flattened, with subulate tips or appendages papillose on the back. Achenes narrow, compressed or flat, with or without ribs on the faces. Pappus of numerous often unequal capillary bristles.—Perennial herbs or undershrubs, at length woody at the base, or in species not Australian shrubs. Leaves

alternate. Flower-heads terminal, solitary or forming loose leafy corymbs. Ray-florets white or blue. Disk-florets yellow.

The genus extends to New Zealand and extratropical S. America, and (in a slightly modified form) to the Sandwich Islands. Of the 4 Australian species one is also in New Zealand, and very closely allied to the S. American one; the others are endemic. As a genus, the group is nearly allied to *Eurybia*, *Aster*, and especially to *Erigeron*, but, as shown by A. Gray (Proc. Amer. Acad. v. 116), it cannot well be united with either. From *Eurybia* it differs in the more numerous ray-florets and the more flattened achenes, from *Erigeron* in habit, and from both in the subulate tips to the styles.

SECTION I. *Vittadinia vera*.—Achenes with 2 or more ribs on each face.

Involucre imbricate in several rows. Achenes shorter than the involucre, with 2 or 3 ribs on each face. Pappus not so long . . . 1. *V. brachycomoides*.

Involucre of 2 or 3 rows. Achenes nearly as long as the involucre, many-ribbed or finely striate. Pappus as long again . . . 2. *V. australis*.

SECTION II. *Eurybiopsis*. Achenes very flat, the margins slightly thickened, without prominent ribs on the faces.

Scabrous-pubescent or hirsute. Leaves oblong or cuneate. Ray-florets scarcely exceeding the pappus . . . 3. *V. scabra*.

Glabrous or scabrous-pubescent. Leaves linear or the lower ones linear-cuneate. Ray-florets longer than the pappus . . . 4. *V. macrorrhiza*.

1. **V. brachycomoides**, *F. Muell. Fragm.* v. 86, as an Aster. Stems from a thick woody stock, erect or decumbent, not much branched, $\frac{1}{2}$ to $1\frac{1}{2}$ ft. long, with more or less of a loose white woolly deciduous tomentum. Leaves in the original form linear or lanceolate, $\frac{1}{2}$ to $1\frac{1}{2}$ in. long, entire or rarely 3-toothed at the end. Flower-heads on long terminal peduncles. Involucre hemispherical, the bracts in several rows, the inner ones $2\frac{1}{2}$ to 3 lines long, the outer ones gradually shorter. Ray-florets narrow, elongated, spreading. Achenes narrow, much shorter than the involucre, flat, with 2 or 3 prominent ribs on each face. Pappus of fine white rather unequal and not very copious bristles, not so long as the achene.

N. Australia. Basaltic plains, Hooker and Sturt's Creek and Arnhem's Land, *F. Mueller*.

Queensland. Bustard Bay, *Banks and Solander*; Keppel Bay, *R. Brown, Thozet*; Percy Island, *M'Gillivray*; Rockhampton, *Dallachy*.

Var. (?) *latifolia*. Leaves broader, oblong, entire or toothed. Involucral scales broader and fewer.—Endeavour river and Northumberland Islands, *R. Brown* (the former specimens nearly glabrous, the latter very woolly); Albany Island, Cape York, *M'Gillivray*; Rockingham Bay, *Dallachy*; E. coast, *A. Cunningham, Bowman*; also Purdie's River in the interior of N. Australia, *M'Douall Stuart's Expedition*.—Possibly a distinct species.

4. *V. macrorrhiza*, A. Gray in Proc. Amer. Acad. v. 118. A perennial with a thick woody stock and slender erect not much branched stems of about 6 in., or 1 ft. when luxuriant, glabrous or scabrous-pubescent. Leaves linear, or the lower ones linear-cuneate, $\frac{1}{2}$ in. long or less, or rarely nearly 1 in., the upper ones small and distant. Flower-heads on long terminal peduncles, solitary or very loosely corymbose. Involucre hemispherical, the bracts narrow and acutely acuminate, the inner ones 3 lines long. Ray-florets not quite so numerous as in *V. scabra*, narrow but longer than the pappus, although usually revolute so as to appear shorter; disk-florets fewer, longer than the involucre. Achenes very flat, with thickened margins, without any or with a single short rib on their faces, sprinkled with appressed hairs. Pappus rather unequal.—*Eurybiopsis macrorrhiza*, DC. Prod. v. 260.

N. Australia. Brunswick Bay and Prince Regent's Harbour, N.W. coast, A. Cunningham; Providence Hill, F. Mueller; Port Essington, Armstrong; islands of the Gulf of Carpentaria, R. Brown.

Queensland. Broad Sound, R. Brown, apparently the same species, although with rather longer leaves.

3. **V. scabra**, DC. *Prod.* v. 281. A rigid herb of 1 to 2 ft. with erect branches, or rarely small, somewhat woody at the base and divaricately branched, scabrous-pubescent or hirsute. Leaves linear-oblong or cuneate, often above 1 in. long, and when broad stem-clasping at the base, entire or with a few coarse obtuse teeth. Flower-heads on peduncles longer than the leaves, usually forming a terminal corymb. Involucre almost hemispherical, the bracts numerous, narrow, acute or almost obtuse, the inner ones scarcely 3 lines long, the outer ones shorter. Ray-florets numerous, in some specimens all exceedingly narrow, almost filiform, and scarcely exceeding the pappus, in others rather broader and longer; disk-florets less numerous, at first but little longer than the involucre, but the ripe pappus much exceeding it. Achenes very flat, with thickened margins and no longitudinal ribs on the faces, sprinkled with appressed hairs. Pappus bristles unequal, scabrous. *V. hispidula*, F. Muell.; A. Gray in *Proc. Amer. Acad.* v. 118; *Erigeron Vit-tadinia*, F. Muell. *Fragm.* v. 87.

Queensland, *R. Brown*; Bustard Bay and Bay of Inlets, *Banks and Solander*; rocky hills, Cleveland and Rodd's Bays, *A. Cunningham*; Wide Bay, *Leichhardt*; Gilbert river and Peak Downs, *F. Mueller*; flats on the Maranoa, *Mitchell*; Curtis Island, *Henne*.

N. S. Wales. Port Jackson and Paterson's River, *R. Brown*.

ASTERACEAE

Vitadina spechtii N.T.B. var.
kimberlyensis N.T.B.

32. WEDELIA, Jacq.

(Wollastonia, DC.)

Involucre of about 2 rows of herbaceous bracts either all nearly equal or the outer ones larger and more leaf-like. Receptacle chaffy. Florets of the ray female, ligulate; disk-florets hermaphrodite, tubular, 5-toothed, mostly fertile. Anthers obtuse at the base. Style-branches with rather acute tips, usually hirsute. Achenes more or less flattened, or rarely 3-angled, with obtuse or acute rarely winged edges. Pappus none or more frequently consisting of minute scales united in a little cup and occasionally produced into 1 or 2 short bristles.—Herbs with opposite leaves. Flower-heads pedunculate or rarely almost sessile, terminal or in the forks of the branches or axils of the upper leaves. Ray yellow.

A considerable American genus with a few African and Asiatic species. Of the six Australian ones, three are widely spread over India and the Archipelago, one or perhaps two of them extending into Africa, a fourth is also found in Timor, the remaining two are endemic. The *W. biflora* and some other species without any pappus have been separated under the name of *Wollastonia*, but in *W. spilanthoides* the pappus is often so small as to be quite inconspicuous when the achene is ripe, and in every other respect the species are all too closely allied to be generically separated. It is probable that the several genera alluded to by A. Gray under *Lipochala* will have to be united also with *Wedelia*.

Five or six of the outer involucre bracts more leaf-like and longer than the others. Pappus cup-shaped.

Leaves oblong or lanceolate, narrowed into a short petiole or nearly sessile

1. *W. calendulacea*.

Leaves ovate or ovate-lanceolate, distinctly petiolate. Peduncles mostly longer than the leaves

2. *W. urticifolia*.

Outer involucre bracts not longer than the inner ones.

Pappus small and cup-shaped in the centre of the achene, and sometimes 1 or 2 teeth or small bristles from the angles.

Leaves lanceolate or linear, acuminate. Achenes compressed, not angled

3. *W. spilanthoides*.

Leaves ovate, oblong or lanceolate, obtuse. Achenes angled or winged

4. *W. verbesinoides*.

Pappus none or of 1 or 2 deciduous bristles.

Straggling perennial. Leaves ovate or broadly ovate-lanceolate

5. *W. biflora*.

Erect coarse annual. Leaves lanceolate

6. *W. asperima*.

O. v. asperina, Dene. Coarse and erect, 1 to 2 ft. high, but apparently annual, very scabrous, especially the foliage, with rigid appressed hairs. Leaves petiolate, from oblong-lanceolate to linear-lanceolate, mostly acuminate, 2 to 3 in. long, irregularly toothed, narrowed at the base. Flower-heads several, in a loose terminal leafy panicle on rigid peduncles longer than the leaves. Involucre nearly hemispherical, the bracts rather numerous, acuminate, the outer ones 4 to 5 lines long, the inner ones scarcely shorter. Scales of the receptacle very acute and rigid. Ray-florets 10 to 12 or even more, oblong. Achenes with obtuse edges, not at all winged and without any pappus.—*Wollastonia asperina*, Dene. Herb. Timor, Descr. 86, and DC. Prod. v. 547 (?), from the character given.

N. Australia. Victoria river and Sturt's Creek, *F. Mueller*. If the identification with DeCaisne's plant is correct it is also in Timor.

4. ***W. verbesinoides***, *F. Muell. Herb.* Erect, rigid, and very scabrous, especially the foliage, with appressed rigid hairs. Leaves petiolate, oblong-lanceolate or ovate-lanceolate, obtuse, slightly toothed or entire, narrowed at the base, 1 to 3 in. long. Flower-heads shortly pedunculate, in irregular terminal panicles. Involucre ovoid-globular, the bracts nearly equal, ovate-oblong, obtuse. Scales of the receptacle obtuse. Ray-florets few and small. Achenes flattened or 3-angled, the edges acute or almost winged, tuberculate, with 1, 2, or 3 unequal short bristles thickened at the base proceeding from the angles, and in the centre a small cup-shaped pappus occasionally emitting 1 or 2 small bristles but sometimes quite inconspicuous.

N. Australia, *F. Mueller*; Arnhem S. Bay, *R. Brown*; Finke river, *M' Douall Stuart's Expedition*.