

THE VASCULAR EPIPHYTE FLORA OF AUSTRALIA

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Appendix 1 to Ph.D. Thesis

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The Australian Vascular Epiphyte Flora

Preamble to Key

The geographic area that this flora covers is continental Australia, Tasmania and the islands of Bass Strait, as well as near offshore islands but not, e.g. Lord Howe and Norfolk Is, as these have a flora more related to that of New Caledonia.

The plants that the key is intended for use with includes all species that habitually grow on trees or rocks, as well as those terrestrials that climb and develop significant root system on trees. For a definition and discussion of these groups, see the section of the flora chapter on epiphyte classification. A few facultative lithophyte/terrestrial spp. are included in the key for the sake of completeness and comparison where there is only one or a few such in a large group of otherwise epiphytic spp. e.g. Hymenophyllaceae and *Asplenium*.

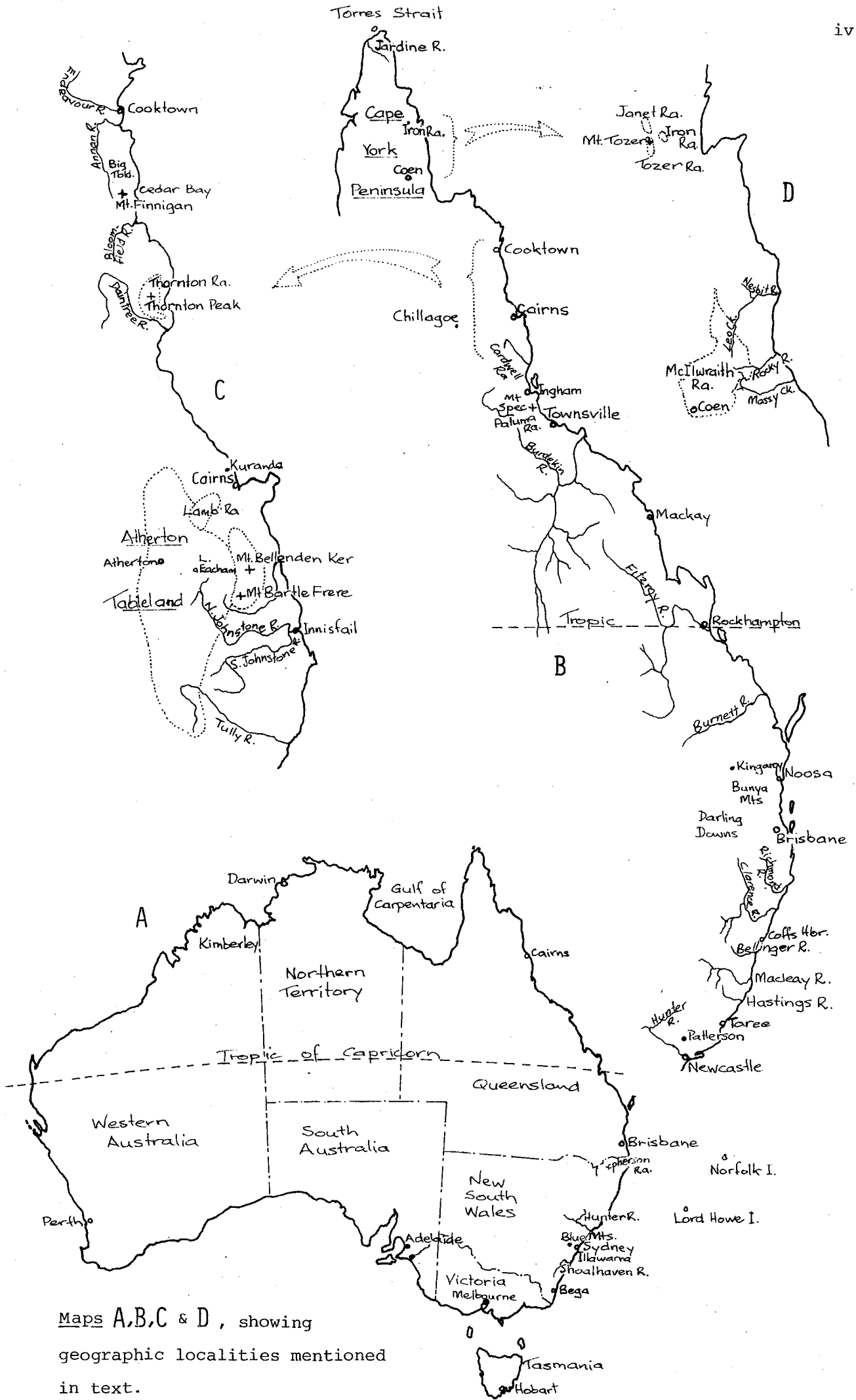
The key is an indented dichotomous one and is artificial, since wherever possible, it is based on features that are permanently present on the plant and readily observable, i.e. features that are often not important taxonomically. Taxa in the ultimate parts - the keys to the spp. - are arranged in systematic order as modified from various authors, e.g. Scagel (1965), Sporne (1970), Copeland (1947), Dressler (1981) etc.

The flora is arranged so that there is firstly a key to 8 major groups, viz., eusporangiate pteridophytes, filmy ferns, typical ferns with simple, entire fronds, typical ferns with lobed to compound fronds, dicots, non-orchid monocots, sympodial orchids and monopodial orchids. These groups are then keyed to genera and finally, in a third tier, species are keyed out (sub-specific taxa are mostly not keyed but are mentioned within the text of the species description). Each species is then briefly described to an extent* that should allow positive determinations and the name is accompanied by the sp. author and most recent taxonomic combination citation in standard abbreviation and a list of most of the synonyms. Diagrams are given for almost all spp. as an aid to identification, either as an inset of a key feature or on diagram pages; the great majority were

* Details given in family and generic descriptions or in preceding arms of the key are not repeated in each sp. description, therefore, refer back to these if necessary.

drawn from fresh or preserved field material, fresh greenhouse material or photographs of any of these.

It must be noted that family, generic and spp. descriptions apply only to the local flora and are not meant to cover exotic representatives.



Maps A, B, C & D, showing geographic localities mentioned in text.

THE VASCULAR EPIPHYTE FLORA OF AUSTRALIA

Key to the Major Groups

1. *Spore-bearing plants* (pteridophytes).
 2. *Sporangia massive, lacking an annulus* (eusporangiate - see Figs. 1b, e, i, j) sessile or virtually so and either solitary or fused into bi- or trilocular or spicate synangia; aerial stems, when present, bearing scattered scale-like, or crowded leaf-like microphylls less than 2 cm long and if branching, then dichotomously so. (Figs. 1a-j; p.2)
 -Group 1 (Fern allies & eusporangiate ferns)
p.6
 - 2*. *Sporangia of delicate structure, with an annulus* (leptosporangiate - see Figs. 2a, b) stalked and either grouped into discrete sori which may be protected by an indusium or naked, (see Figs. 2d-j; p.3) or ± covering the frond undersurface; stems bearing true leaves and not branching dichotomously.
 3. *Fronde lamina filmy, one or two cells thick; sporangia borne on a thread-like receptacle* and surrounded by a tubular or two-lipped indusium (Fig. 2k, l); plants mostly growing in particularly moist, humid, shaded sites.
 -Group 2 (Filmy Ferns - Hymenophyllaceae)
p.14
 - 3*. *Fronde lamina several to many cell layers thick; sori not as above;* plants growing in various microhabitats.
 4. *Fronde simple and entire* (margins may be sinuate or crenate - see Figs. 2e, m; p.3)
 -Group 3 (Typical ferns with simple, entire fronds) p.39
 - 4*. *Fronde lobed, dissected or compound* (Figs. 2n-q; p.3)
 -Group 4 (Typical ferns with with lobed, dissected or compound leaves) p.43
 - 1*. *Flowering plants.*

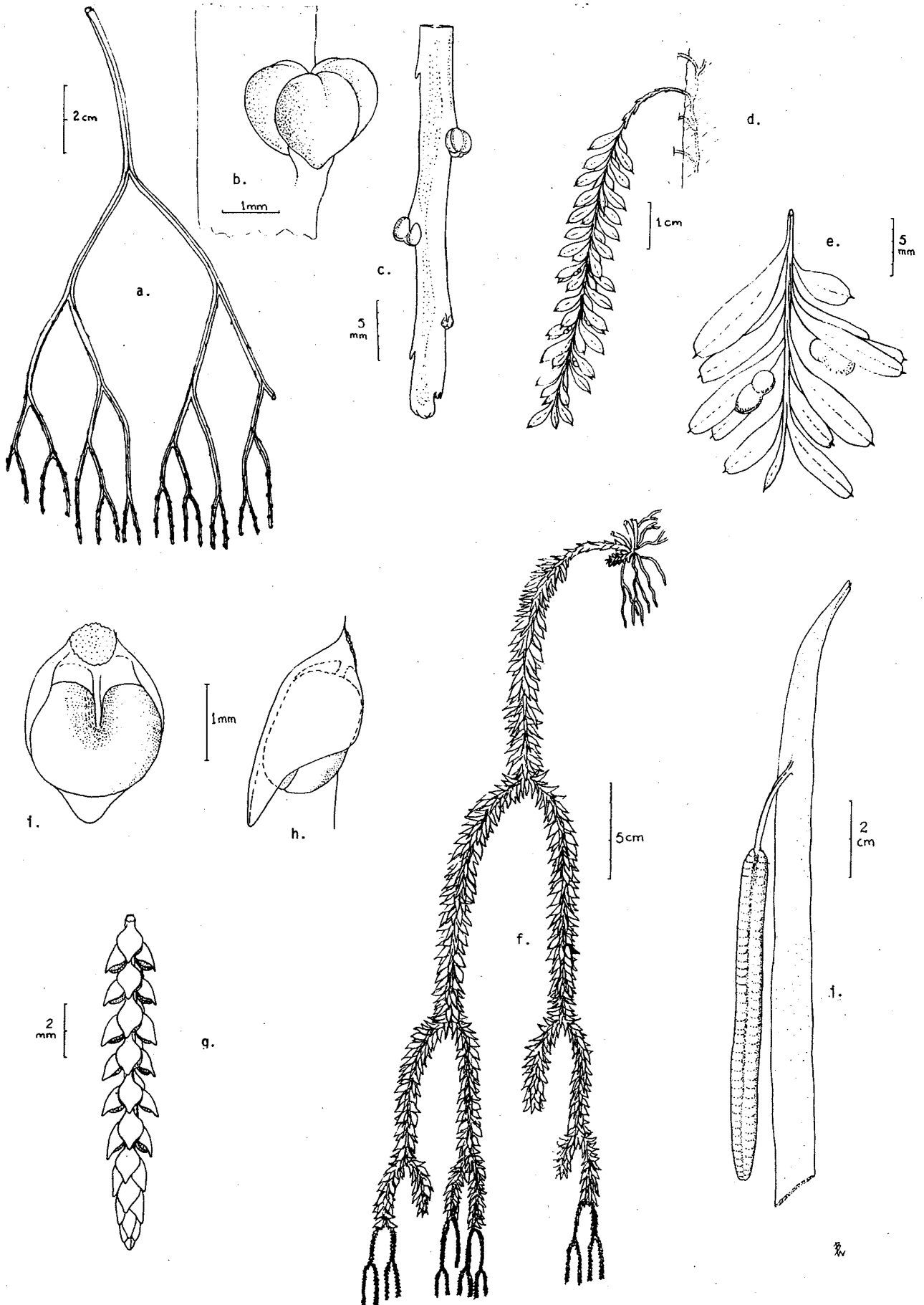


Figure 1. Eusporangiate Pteridophytes. a. *Psilotum nudum*, pendulous frond, showing typical, regular dichotomous branching. b. *P. complanatum* trilobular synangium in axil of bifid scale. c. aerial stem end, of same. d. *Tmesipteris ovata*, habit. e. terminal portion of aerial branch of *T. truncata* with two bifid sporophylls, each bearing a bilobular synangium. f. *Lycopodium phlegmaria*, habit, g. terminal part of strobilus, h. side view of sporangium and subtending sporophyll, i. underside of same. j. *Ophioglossum pendulum* - basal part of fertile frond with spicate synangium.

5. *Dicotyledons* : flower parts in whorls of 4 or 5; inflorescence not a spadix (except in *Peperomia* which lack spathes or special bracts - Fig. 3b); leaves with reticulate venation (Fig. 3a) and if fleshy, then opposite or whorled (Figs. 3a,b) and petiolate (alternate and \pm sessile in one or two *Peperomia* spp.); plants woody or herbaceous.

....Group 5 (Magnoliatae or Dicots) p.107

- 5*. *Monocotyledons* : flower parts in whorls of 3; EITHER, flowers orchidaceous (see Fig. 3k), OR, inflorescence a spadix subtended by a spathe (Fig. 3d) or several coloured, bract-like leaves (Fig. 3c); leaves with parallel venation or penniveined[†] and if fleshy then alternate and usually (except in Araceae and a few orchids) with sheathing bases, or, plants leafless; herbs.

6. *Growth monopodial* (Figs. 3o,p) or apparently so, OR, *plants leafless and virtually stemless*, OR, *fanplants* (i.e. very short-stemmed, leaves \pm radially arranged and conduplicately fused or flattened in at least the lower half or so).

7. *Inflorescence a spadix*, either spathate or bracteate; leafy, vine-like plants with long-creeping stems that are often closely appressed to the substrate (some may have free-standing or hanging, rootless, flowering branches); often with roots to the ground.

....Group 6 (Non-orchid Liliatae or Monocots.)
p.150

- 7*. *Inflorescence a raceme* (sometimes contracted to \pm umbellate or approaching spicate condition but never spathate or bracteate and the flowers relatively large); stems short- to medium-creeping but neither vine-like nor closely appressed to the substrate, or the plants vegetatively consisting simply of a fascicle of roots; rarely with roots to the ground.

....Group 8 (Monopodial and fanplant orchids)
p.228

- 6*. *Growth sympodial* (Figs. 3l,m,n), if leafless then with pseudobulbs (Fig. 3g).

....Group 7 (Sympodial orchids) p.156

† more or less reticulate in *Epipremnum*



Figure 3. Flowering Plants. a. whorled leaves (3-merous) & reticulate venation - *Rhododendron lochae*. b. *Peperomia tetraphylla* - inflorescence a spadix (naked) & leaves in 4-merous whorls. c. *Freycinetia excelsa* inflorescence - spadix surrounded by coloured bracts. d. spathate spadix - *Epipremum pinnatum*. e. *Scindapsus altissimus* leaf - penniveined with basally stem-clasping petiole. f. leaf with parallel venation & sheathing base - *Cymbidium madidum*. g.- i. leafless orchids - g. *Bulbophyllum minutissimum*, sympodial & pseudobulbous, h. *Taenio-phyllum glandulosum* & i. *Chiloschista phyllorhiza* - both monopodial & ± stemless. j. fanplant - *Oberonia palmicola*. k. orchidaceous flower (*Dendrobium gracilicaule*): ov, ovary; se, sepals; pe, petals (lateral); an, anther; st, stigma; & distinguishing characters, co, column, fusion structure of androecium, style & stigma; la, labellum, heavily modified media petal. l., m. Schematic diagrams of sympodial growth, l. with terminal inflorescences, m. with lateral inflorescences. n. Eq. of latter, *D. agrostophyllum*. o. monopodial growth p. eq. of latter, *Plectorrhiza tridentata*.

AUSTRALIAN VASCULAR EPIPHYTES : Key to the Genera

Group 1 : Fern Allies and Eusporangiate Ferns

1. *Leaves* (microphylls) *less than 3 cm long.*
 2. *Aerial stems dichotomously branched* (see Figs. 1a,f p.2)
 3. *Microphylls few, 1-2 mm long, scale-like, appressed and broadly attached; stems flattened, or triangular or square in cross section.* (Figs. 1a-c; p.2)
 -*Psilotum* (Psilotaceae) p. 7
 - 3*. *Microphylls numerous, 5-25 mm long, not scale-like, free standing and attached by a constricted section; stems ± round in cross section.* (Figs. 1f-i; p.2)
 -*Lycopodium* (Lycopodiaceae) p.10
 - 2*. *Aerial stems not branched, (rarely so in *T.elongata* Dang.) but bearing numerous oblong to falcate, decurrent, mucronate microphylls 5-25 mm long* (Figs. 1d,e ; p.2)
 -*Tmesipteris* (Tmesipteridaceae) p. 7
- 1*. *Leaves 15 cm to 2m long, 5-30 mm wide, ribbon-like, often with a dichotomous fork towards the distal end. Synangial spike branching from near the basal end of the fertile fronds* (Fig.1j; p.2)
 -*Ophioglossum* (Ophioglossaceae) p.13

Key to the species of Group 1

division PSILOPHYTA

family PSILOTACEAE 1 genus, pantrop. & subtrop.

genus *Psilotum* L., 3 spp., 2 Aust.; nidophilous epiphytes or lithophytes, rarely terrestrial.

Simple, irregularly sympodial, rhizomatous herbs. Rhizome buried, creeping and branching in an irregularly dichotomous manner, absorbing via numerous rhizoidal hairs which are probably mycotrophic. Some branches of the rhizome grow towards the substrate surface, becoming aerial and green and branching with regular dichotomy and bearing scattered, spirally arranged, small, appressed, scale-like appendages, the distal ones forked and bearing synangia in their axils. Synangia \pm sessile, usually 3-lobed, of 3 (2-4), fused, thick-walled sporangia.

1. *Aerial stems 3- or 4-angled*, about 10-30 cm (rarely to 60 cm) long. Mostly growing in open communities in rock crevices or rarely terrestrial, frequently in epiphyte nests etc. in rainforest, when plants are usually \pm limp and pendulous. Moist areas of NW & E Aust. (Fig. 1a; p.2)

....*P. nudum* (L.) Beauv., Prod. Fam. Aetheog. 112 (1805)
(Syn. *Lycopodium nudum* L., *P. triquetrum* Sw.)

1*. *Aerial stems flat*, 30-90 cm (sometimes to 2 m) long, always pendulous.

Nidophilous epiphyte in rainforests of N Qld, below ca. 750 m alt. (Fig. 1b,c; p.2)

....*P. complanatum* Sw., Syn. Fil., 188, 414, t.4, f.5
(1806) (Syn. *Lycopodium flaccidum* Spring)

family TMESIPTERIDACEAE 1 genus, Aust., NZ, SW Pac., Malesia

genus *Tmesipteris* Bernhardt, 8 spp., 6 Austr. nidophilous epiphytes or lithophytes, rarely terrestrial.

Small herbs, mostly growing with rhizome embedded in the fibre of treefern trunks. Rhizome fleshy, brittle and irregularly dichotomous, rootless but bearing mycotrophic rhizoidal hairs. Aerial stems \pm wiry and bearing spirally arranged microphylls which are small and scale-like near the base but over most of the length are leaf-like, decurrent and isobilateral rather

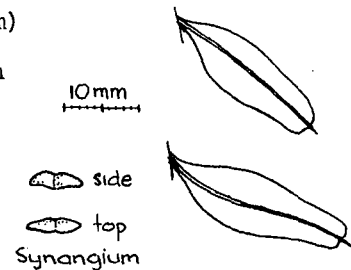
Tmesipteris

than dorsiventral, with a single vein and a midrib produced into a mucro at the tip. Some microphylls, mostly distal ones, are forked, each bearing a bilocular, sessile synangium in the fork. (Early taxonomists regarded this genus as monotypic, referring all specimens to *T. tannensis* (Spreng.) Bernh.).

1. *Tips of sterile leaves truncate or bilobed*, mucronate and often oblique. Synangia mostly with pointed ends.

2. *Leaves broadest in the basal third*, 2 or 3 per cm, 4-10 x 15-25 mm.

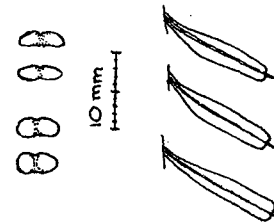
Aerial stems up to 60 cm (mostly to about 30 cm) long, the basal section smooth with a groove on the upper surface. Synangia tapering to an acute, finally blunt point at each end, up to 7 mm overall length. SE NSW, E Vic., Tas., Norfolk I.



....*T. billardieri* Endl., Prodr. Flor. Norf. I., 6 (1833)

2*. *Leaves broadest at about the middle, or parallel sided*, 4-6 per cm,

2-4 x 12-18 mm. Aerial stems up to 30 cm (mostly to about 10-20 cm) long and the bases with 3 or 4 ribs and grooves. Synangia with acute to obtuse ends, up to 6 mm long. Often in rock crevices.



NE Qld to SE NSW. (Fig. 1e, p.2)

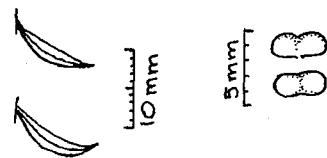
....*T. truncata* (R.Br.) Desv., Ann. Soc. Linn. Par.vi.192

1*. *Leaf tips acute to obtuse or rounded*, mucronate, (barely so in *T. parva*), mostly not oblique; synangia ends rounded (sometimes tending to pointed in *T. elongata*).

3. *Sterile leaves spirally arranged*.

4. *Leaves lanceolate/falcate with acute tips*,

2-3 x 10-15 mm, about 6 per cm; aerial stems 5-10 cm long. Synangia rounded, about 3 mm long. SE NSW, E Vic., also Malesia.

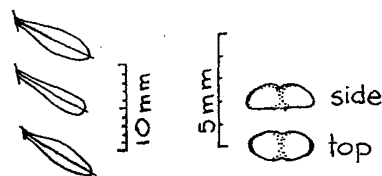


....*T. parva* N.A.Wakefield, Victn.Natlst.60:143 (1943)

4*. *Leaves either obovate or linear to broad linear*, mucronate.

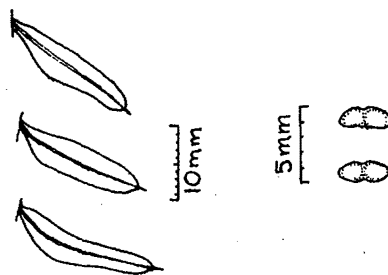
Tmesipteris

5. Leaves broadest in the middle or distal half, i.e. obovate, or oblanceolate to narrow elliptical, tips rounded or obtuse, 2-3 x 8-12 mm, ca. 5 per cm; aerial stems 6-12 cm long. Synangia ca 3 mm long. SE Qld to Vic. (Fig.1d, p.2)



....*T. ovata* N.A.Wakefield, Victn.Natlst. 60:143 (1943)

- 5*. Leaves either parallel-sided or slightly broader in the basal half, linear to broad linear, tips obtuse to acute, 3-5 x 20-30 mm, 3-5 per cm; aerial stems 25-40 cm long, sometimes dichotomously branched. Synangia rounded to ovoid, 1.5-2.5 mm long. E Vic., Tas., and NZ.



....*T. elongata* Dang., Le Botaniste II 213 (1890-91)

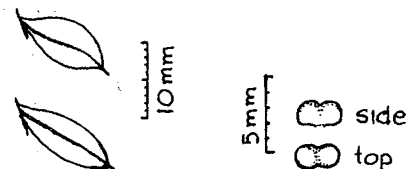
(Syn. *T. tugana* Barber, *T. tannensis* var. *elongata* (Dang.) Domin)

3*.Sterile leaves in two ranks.

6. Leaves oblong with truncate tips, sporophylls in the mid to apical part of the shoot.

....*T. elongata* Dang. (See descr. above)

- 6*.Leaves ovate to elliptical/falcate with acute tips, sporophylls usually located in the basal half of the shoot. Sterile leaves 2-3 per cm, 9-18 x 3-6 mm, dorsiventral, the upper surface glossy, dull underneath. Sporophylls spirally arranged, 4-6 per cm; synangia small, 2-4 x 1-2 mm, the lobes ± globular, proximal ones sometimes slightly smaller. Known in Aust. by a single collection from Mt Bellenden Ker , N Qld (K.Domin, 1910); in N Cal. & NZ.



....*T. lanceolata* Dang., Le Botaniste II :214 (1890-91)

(Syn. *T.tannensis* var. *lanceolata* Domin)

Group 1 cont.

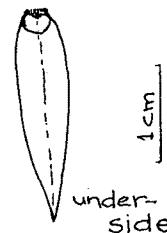
division LYCOPODOPHYTA

family LYCOPODIACEAE 2 genera, ± cosmop.

genus Lycopodium L. 450 spp., ca. 50 epiphytic; 15 Aust., 8 epiphytic

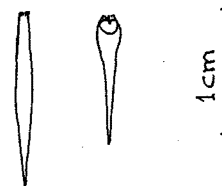
The Aust. epiphytic spp. are sympodial herbs with tufted, spreading to pendulous, dichotomously branching stems, lacking rhizomes. Plants anchored to the substrate by dichotomously branching, mycotrophic roots growing from the stem bases. Stems bearing crowded, sessile to shortly stalked, subulate to ovate, leaf-like microphylls which are usually spirally arranged but sometimes opposite and decussate. Sporangia of the massive type, unilocular, kidney-shaped, yellow when ripe and borne in the axils of (usually) modified microphylls on the distal branches (these called strobili). Some spp. may be proliferous, e.g. *L. proliferum*, *L. carinatum*, producing plantlets in place of microphylls. Nest-invading epiphytes of mostly moist, humid rainforest, occasionally lithophytic, more so in some spp. such as *L. squarrosum*, *L. myrtifolium*.

1. Sporophylls basically similar in shape to sterile leaves (may be smaller and at a lower angle to stem or with slightly dilated base).
2. Leaves lanceolate acuminate, glaucous blue-green, 15-25 mm long; stems up to 1.2 m long, sparsely branching. Sporangia reniform, in axils of leaves (which are ± identical to the sterile ones) of the ultimate branches. Rare, in rainforests of Cape York and as far south as about the Russell R., also Malesia. Blue Tassel Fern.



....*L. dalhousieanum* Spring, Mem.Acad.r.Belg.24:25 (1849)
 (Syn. *L. clarae* F.M.Bail.)

- 2*. Leaves linear subulate, yellow-green, up to 12 mm long, densely crowded; stems up to 60 cm long, moderately branched. Sporophylls slightly smaller, the bases somewhat cupped and at a lower angle than sterile leaves. Rare, in lowland rainforest and swamp-forest, often on rocks; from about the Herbert R. northward, also from Malesia to S.W. Pac. Rock or Water Tassel Fern.



....*L. squarrosum* Forst.f., Prod.86 (1786)

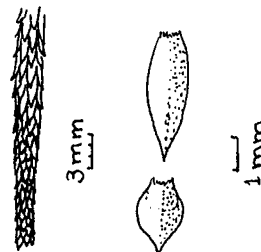
Lycopodium

1*. *Sporophylls markedly different from sterile leaves - shorter, broader and ± appressed.*

3. *Strobili 4 mm or more wide overall.*

4. *Sterile leaves ± appressed along most of the stem (the basal ones more free standing), giving a slender "rats-tail" effect; leaves lanceolate, about 5 mm long, densely crowded; dark to midgreen, stems up to 1.2 m long, limply pendulous, tapering gradually into the branched strobili. Sporophylls broad ovate, acuminate, overlapping. Rare and confined to rainforest above about 1000 m altitude in the Atherton Tableland district and nearby; also in Malesia.*

Rats-tail Tassel Fern.



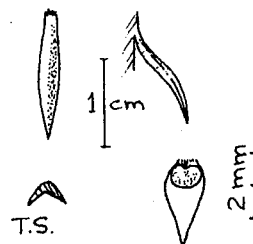
....*L. polytrichoides* Kaulf., Enum.Fil.6(1824)

4*. *Sterile leaves free-standing.*

5. *Sterile leaves, incurved, linear and tapering evenly from near their bases, somewhat keeled, in six vertical ranks, up to 12 mm long, and usually pale yellow-green.*

Stems up to about 60 cm long, sparsely branching; tapering gradually into the strobili which are up to 25 cm long; sporophylls ovate, keeled, much longer than the sporangia. Rainforests of

Cape York Peninsula, also S.E. Asia to S.W. Pacific. Keeled Tassel Fern.

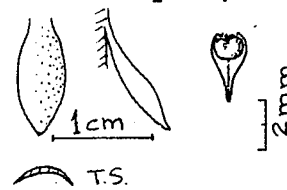


....*L. carinatum* Desv., in Lam. & Poir., Encycl.Suppl. 3:555(1814) (Syn.*L. laxum* Presl)

5*. *Sterile leaves otherwise.*

6. *Sterile leaves in four ranks, convexly rounded on the back (abaxial surface), broad lanceolate to narrow elliptic, acute, up to 10 mm long, commonly dark green and sometimes slightly glaucous.*

Stems mostly to about 45 cm-occasionally to 60 cm-long, limp and hanging straight,

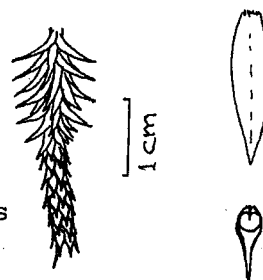


Lycopodium cont.

strobili to 25 cm long; sporophylls closely overlapping and so shaped and arranged as to give the strobilus a pronounced square prismatic shape. Rainforests of N.Qld, from near sea level to at least 1000 m altitude, also S.E. Asia to S.W. Pacific. Square Tassel Fern.

....*L. proliferum* Bl., Enum.Pl.Java 2:265 (1825)

- 6*. *Sterile leaves in six spiral ranks; lanceolate, spreading, and slightly twisted to about 15 mm long, crowded. Stems up to 30 cm long, strobili up to about 15 cm long; sporophylls overlapping, broad ovate with an acuminate tip about as long as the lamina, somewhat keeled. Also grows as a ± erect lithophyte; found in cool, moist, humid communities from Tas. to S.E. Qld and in isolated, high altitude localities in N.E.Qld; also in N.Z. Vegetatively very similar to some small forms of *L. phlegmaria* but strobilus details quite distinct. Long Clubmoss.*

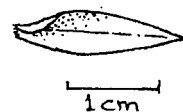


....*L. myrtifolium* Forst.f., Prod.87(1786)

(Syn. *L. varium* R.Br.)

3*. *Strobili less than 3 mm across.*

7. *Sterile leaves spirally arranged and in six vertical ranks, the blades ± dorsiventrally oriented, but often somewhat twisted, spreading and slightly glossy, broadest near the base and tapering ± evenly to an acute point, up to 2 cm long. Stems commonly to about 60 cm but occasionally to about 1m long, strobili to about 20 cm long; sporophylls broad ovate appressed, obtuse to acute, usually not completely covering the sporangia. (Fig. 1g,h,i.) N. Qld rft. from lowlands up to at least 1000 m altitude; this species is more drought tolerant than most other tassel ferns. Pantrop. Rough or Common Tassel Fern. (Fig. 1f-i.)*

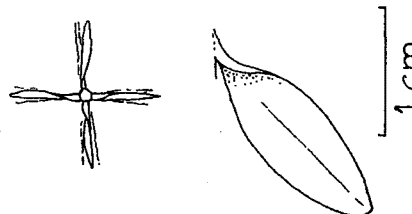


....*L. phlegmaria* L., Sp.Pl. 2:1101 (1753)

- 7*. *Sterile leaves opposite and decussate and in four vertical ranks, twisted basally but the blades flat and isobilaterally oriented, glossy, elliptical to ovate/falcate, up to 18 mm long. Stems usually up to about 45 cm (less commonly to 60 cm) long, spreading*

Lycopodium, Ophioglossum

to pendulous; strobili much branched, up to about 20 cm long, generally similar to that of the preceding sp., sporophylls broad ovate, shortly acuminate, appressed and barely covering the sporangia. Mostly growing in particularly humid, lowland rainforest and swamp forest in N. Qld, north from about the Herbert R., also Malesia to S.W. Pacific. Layered Tassel Fern.



....*L. phlegmarioides* Gaud., Freyc.Voy.Bot.1:281,
t.23(1828) (Syn. *L. tetra-*
pterygium F.M. Bail.)

division PTEROPHYTA
class EUSPORANGIATAE subclass OPHIOGLOSSIDAE
family OPHIOGLOSSACEAE
genus *Ophioglossum* L.

The epiphytic species occurring in Australia is a limply pendulous, nest-invading herb, typically growing from the underside of large, senescent specimens of *Platyserium* spp., but also from knot-holes, hollow limbs, etc. Roots lacking root-hairs, mycotrophic, pale coloured, of varying thickness, soft and brittle. Leaves tufted, developing with straight vernation, shortly (2-5 cm) petiolate, ribbon-like, 15-90 cm (rarely to 200 cm) long, 0.5-2 cm wide, soft and subsucculent, mid- to yellow-green, with obscured, reticulate venation; well developed ones often dichotomously forked towards the distal end; tips gradually tapering over the terminal few cm, then acute, finally blunt. Fertile spike stalked, up to ca. 20 cm long, branching from the centre of the lamina not far from the base; sporangia in two ranks, about 2 mm diam., sessile and coalescent, splitting horizontally to release the copious, yellow spores. Gametophyte prothallus tuberous, saprophytic, buried and long-lived. Occurs in the subcanopy zone, in wet monsoonal, tropical and sub-tropical rainforest, from Cape York to the Hunter R., N.S.W., mostly coastal in the subtropics. (Fig. 11, p.2) Ribbon Fern.

....*O. pendulum* L., Sp. Plant. 2nd ed., 2:1518(1763)

AUSTRALIAN VASCULAR EPIPHYTES : Group 2 : Filmy-Ferns

division PTEROPHYTA cont.

class LEPTOSPORANGIATAE subclass FILICIDAE

order Hymenophyllales

family HYMENOPHYLLACEAE 34/600, pantrop. to temp., Aust. 15/46

Small, fragile, poikilohydrous ferns, many with some "resurrection" capacity. Rhizome hairy, usually long-creeping and filiform but sometimes short-creeping and up to 2 mm thick, or the fronds tufted on a very short stem with stiltroots; roots sometimes lacking (e.g. *Crepidomanes*). Fronds mostly divided or compound, simple in a few spp., dimorphic in a couple, (e.g. *Hymenophyllum baileyanum* : Fig. 4k, l) 5mm to 60 cm long, the lamina filmy and with a few exceptions, only one cell thick and lacking stomates, glabrous or bearing simple or branched hairs (*Apteropteris* with a dense, stellate tomentum, Fig. 4a, b), the margins entire or denticulate. Ultimate leaf segments have a single central vein or *costa* (branched in *Polyphlebium*); false veins - non-vascular rows of somewhat thickened cells - are characteristic of some genera. The sporangia are borne on a terete receptacle which is continuous with the vein end and surrounded by an *indusium* or *involucre*, which may be tubular with entire margins, or divided into two separate lips or valves, either entire or toothed, or may be some condition intermediate between these. The receptacle may be *included* within the indusium, or exceed the length of the indusium (*exserted*). Sporangia are shortly stalked or sessile, delicate in structure, with a complete, oblique to almost transverse annulus. Gametophyte prothallus strap-shaped to filamentous. Mostly epiphytes or lithophytes of ± constantly moist, humid and shady microhabitats.

Key to the genera:

1. EITHER *Fronds covered with a stellate tomentum* OR *the margins bearing* (usually) *forked hairs*, or, if simple, then bristle-like, and non-septate and with the apical cell usually deflexed to some degree.
 2. *Fronds stellate tomentose* (Fig. 4a, b; p.15)
 -3. *Apteropteris* p.27
 - 2*. *Lacking a tomentum* but the frond margins bearing forked or simple, bristle-like, non-septate hairs. (Fig. 4c, d; p.15)
 -2. *Sphaerocionium* p.27

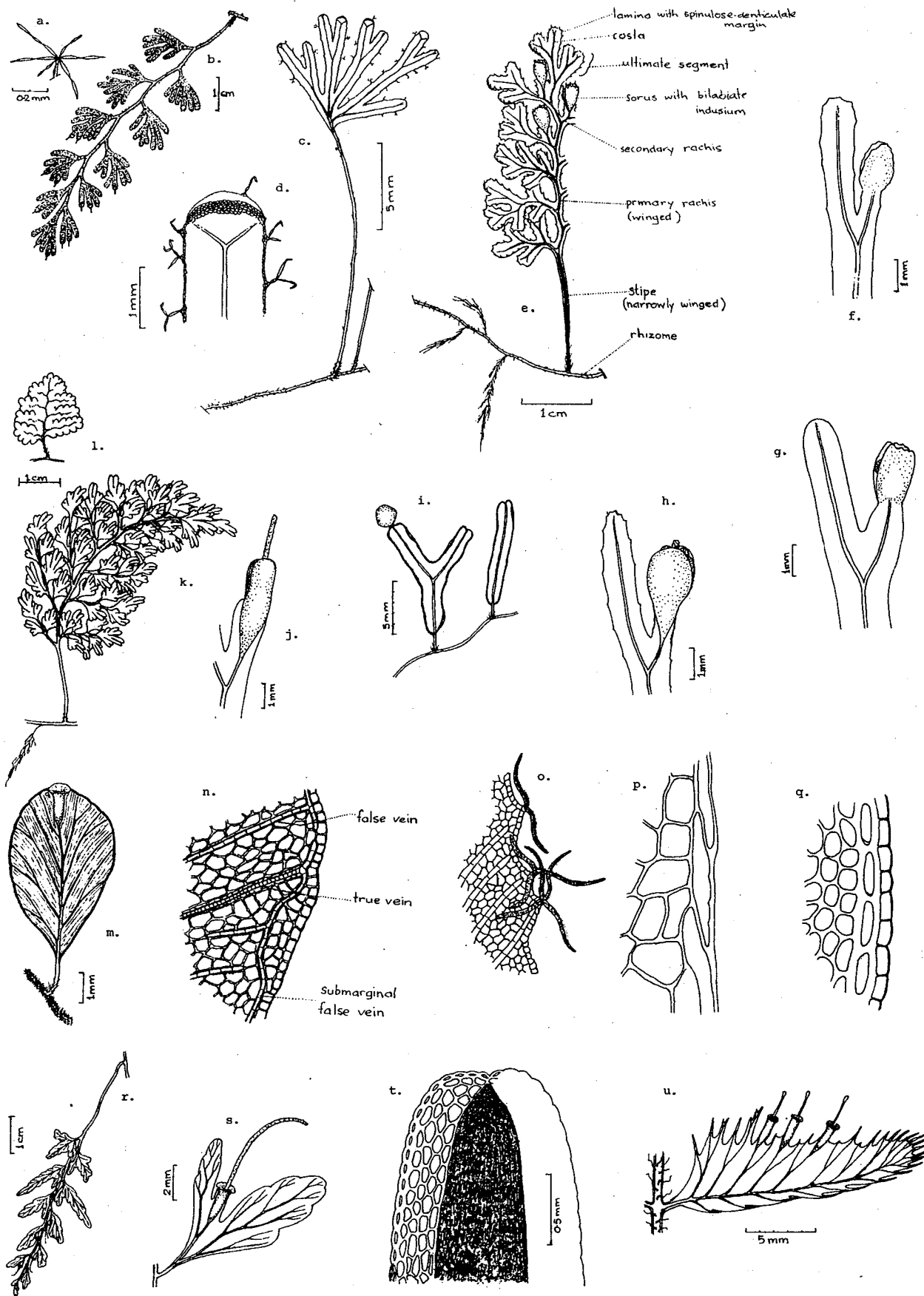


Figure 4. HYMENOPHYLLACEAE. a., b. *Apteropteris applanata*, stellate hair; frond. c., d. *Sphaerocionium lyallii*, habit study; tip of fertile segment showing sori and marginal, bristle-like hairs. e. *Hymenophyllum cupressiforme*, f. *H. samoense*, fertile ultimate segment. g. *H. australe*, (subg. *Meoodium*), fertile ultimate segment. h. *H. (Chilodium) bivalve*, fertile ultimate segment. i. *H. (Craspedophyllum) marginatum*, habit study. j., k., l. *H. (Hemicyatheon) batleyanum*, fertile segment; fertile frond; sterile frond. m., n. *Microgonium bimarginatum*, frond habit study; L.P. frond margin. o. *Didymoglossum exiguum*, L.P. frond margin, showing stellate hairs. p. *Reediella endlicheriana* H.P. frond margin (this and o. after Copeland, 1933). q. *R. humilis*, frond margin (adapted from Watts, 1914). r., s. *Polyphlebium venosum*, frond habit study; fertile pinna. t. *Pleuromanes pallidum*, tip of ultimate segment

Hymenophyllaceae

- 1*. *Lamina glabrous or bearing relatively few multicellular (septate) simple hairs which do not have the apical cell deflexed.*
3. *False veins present in the lamina.* (See Fig.4n,o; p.15)
4. *Fronds simple or shallowly lobed.*
5. *Lamina margin glabrous. Receptacle mostly exserted.* (Fig.4m,n;p.15)
-11. *Microgonium* p.34
- 5*. *Lamina margin with stellate hairs. Receptacle mostly included.*
(Fig.4o; p.15)
-12. *Didymoglossum* p.36
- 4*. *Fronds pinnately or sometimes palmately dissected.*
-10. *Crepidomanes* p.32
- 3*. *False veins not present.*
6. *Indusium clearly bivalvate, with or without a tubular basal section.* (Fig.4f-k; p.15)
-1. *Hymenophyllum* p.18
7. *Lamina margin entire (H. samoense with indistinct irregular teeth, esp. at segment apices - see Fig.4f, p.15)*
8. *Lamina simple, once or twice forked, marginal row of cells black.*
-subgenus 1e. *Craspedophyllum* p.27
- 8*. *Lamina pinnately divided, lacking a black margin.*
9. *Sporangial receptacle clearly exserted, fronds dimorphic - sterile ones rounded in outline and much smaller than the more elongate, less common fertile ones.* (Fig. 4k,l; p.15)
-subgenus 1d. *Hemicyatheon* p.26
- 9*. *Sporangial receptacle not exserted, fronds all ± similar.*
-subgenus 1c. *Mecodium* p.22

Hymenophyllaceae

7*. *Lamina margin denticulate.* (e.g. Fig. 4e; p.15)

10. *Indusium with a tubular base.* (Fig. 4h; p.15)

....subgenus 1b. *Chilodium* (*Meringium*). p.20

10*. *Indusium divided to the base.*

....subgenus 1a. *Hymenophyllum* p.18

6*. *Indusium tubular or obconic*, the margin may be flared or slightly two-lipped.

11. *Fronde tufted*, on an erect to short-creeping rhizome.

12. *Fronde more finely divided.*

....14. *Cephalomanes* p.37

12*. *Fronde more finely divided.*

13. *Ultimate segments very narrow and bristle-like.*

....13. *Macroglena* (in part) p.37

13*. *Ultimate segments broader, laminate.*

....15. *Selenodesmium* p.38

11*. *Fronde well separated* on a long creeping rhizome.

14. *Lamina bearing hairs* (may be restricted to the veins).

15. *Central part of the lamina more than two cells thick and opaque with a marginal, translucent band 3-8 cells wide and one cell thick; bi- or tri-pinnatifid; glaucous.*

(Fig. 4t; p.15)

....7. *Pleuromanès* p.30

15*. *Lamina uniformly one cell thick*, simple and entire to once or twice dichotomously forked, not glaucous.

....4. *Microtrichomanès* p.28

14*. *Lamina glabrous.*

Hymenophyllaceae

16. *Margin of lamina with one or two rows of cells thickened or elongated.*

(Fig. 4p,q; p.15)

....9. *Reediella* p. 31

16*. *Margin of lamina not as in 16.*

17. *Lamina pinnatifid to pinnate-pinnatifid or palmatifid or irregularly dissected.*

18. *Lamina pinnate to pinnate-pinnatifid and individual segments pinnately veined. (Fig. 4r,s; p.15)*

....6. *Polyphlebium* p. 30

18*. *Lamina palmatifid or irregular, the segments 1-veined.*

....8. *Gonocormus* p. 30

17*. *Lamina more finely dissected, regular.*

19. EITHER, *smaller, hair-like fronds present in the axils of the normal ones,* OR, *stipes winged and lamina dark green.*

....5. *Trichomanes* p. 29

19*. *Otherwise.*

....13. *Macroglena* (in part) p. 37

Key to the species : two references were important in the formulation of this key, viz. Croxall (1975) and Tindale (1963), particularly the former.

genus *Hymenophyllum* Sm.

subgenus A *Hymenophyllum*

25 spp., mostly temperate, Aust. 4.

Fronds well separated on a filiform, long-creeping, hairy rhizome. Lamina pinnately compound, glabrous, the margins spinulose-denticulate. Sori terminal on the ultimate segments or on short upper segments of the pinna close to the primary rachis; indusium bivalvate down to at least half length; receptacle included; sporangia relatively large, sessile.

1. *Sori terminal on the ultimate segments near the frond apex, one or two per frond.* Rhizome about 0.1 mm diam., dark, sparsely hairy.

Fronds 1-3 cm long, stipes 4-17 mm long, glabrous, partly winged

Hymenophyllum

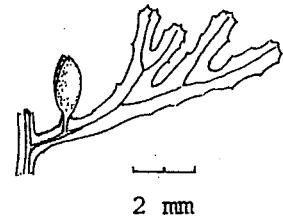
sometimes; lamina irregularly broad ovate or rhomboid in outline, veins black with scattered hairs. Sori as wide as , or wider than the supporting segments, sessile, ± rounded oblong, cleft to at least half length, lips minutely denticulate. Mat-forming epiphyte in warm temperate rft. of the Blue Mts., NSW and nearby areas.



....*H. pumilum* C.Moore, in Hk. & Bak., Syn. Fil. 464 (1874)

1*. *Sori lateral, on specialised pinnules on the upper side of the pinnae, close to the primary rachis, numerous.*

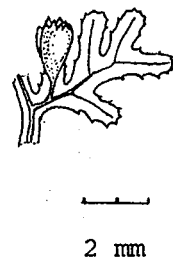
2. *Soral valve-margins entire; pinnae usually only branching on the upper side.* Rhizome ca. 0.2 mm diam., brown-hairy, much branched. Fronds up to 17 cm long but usually ca. half this; lamina elliptical to almost linear in outline, usually dark green; central rachis winged, narrowly at the base, widening upwards. Sori about as wide as, or slightly wider than the ultimate segments, shortly stalked, divided down to mid length or further, borne mostly in the upper part of the lamina. Mat forming epiphyte, particularly on logs, or lithophytic, in cool temperate rainforest, or other moist, montane communities, from extreme SE Qld to Vic and Tas; rare and localised in the northern half of this range; also S.Af., Masc. and NZ.



....*H. peltatum* (Poir.) Desv., Prodr. 333 (1827) (Syn. *H. unilaterale* Willd., *H. meyeri* Presl)

2*. *Soral valve-margins toothed or at least erose, pinnae branched on both sides.*

3. *Ultimate segments (0.5-) 1-1.5 mm wide; usually only one sorus per pinna; lip margins erose-denticulate.* Rhizome mostly ca. 0.2 mm diam., bearing scattered red-brown hairs. Fronds commonly 3-6 cm long (rarely to 9 cm), the lamina elliptical to oblong in outline, dark green, the main rachis usually narrowly winged in the upper half. Sori considerably



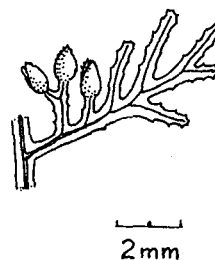
Hymenophyllum

wider than the ultimate segments, divided almost to the base, the valves obovate, with a rounded, erose or irregularly toothed apex. Ranging from extreme SE Qld. to Tas., it is the most frequently seen filmy fern often dominating the micro-community, forming dense mats, mainly on rock but also on trees and logs in various humid communities. Rare in NZ. (Fig.4e, p.15)

....*H. cupressiforme* Labill., Nov.Holl.Pl.Sp.II:102(1802)

(Syn. *H. antarcticum* Presl;
in error, *H. tunbridgense*
(L.) Sm.)

- 3*. *Ultimate segments rarely wider than 0.5 mm; usually several sori per pinna; lip margin dentate-denticulate.* Rhizome glabrous; fronds erect, 4-5 cm long, stipes glabrous, not winged, shorter than lamina, dark; lamina oblong-elliptical, bipinnate, ultimate segments somewhat limp, narrow linear, the margins denticulate. Sori numerous, produced in the upper half of the frond 1-4 per pinna, terminal on segments, esp. towards the pinna base; indusium cleft to the base into two ovate, apically denticulate lips. Known only by a few specimens from the Atherton Tbl. and Bellenden Ker. Ra.



....*H. gracilescens* Domin, Bibl. Bot.20(85):23 Taf.1,f.2,3.
(1915)

Subgenus B: *Chilodium* (Presl) Croxall, (Syn. *Meringium* (Presl) Copel.)
60 spp., old world tropics and
S. temperate.

Small to moderate sized epiphytic or lithophytic, rarely terrestrial filmy ferns with pinnately divided fronds and a medium to long-creeping, thin rhizome. Rachises and sometimes stipes winged; lamina often hairy, especially underneath, margins minutely serrulate. Indusium with a prominently tubular or obconic basal section, bilabiate above, sporangial receptacle well exerted (scarcely, or not so in *H. bivalve*).

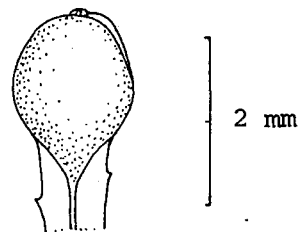
1. *Valve margins entire to slightly erose.*

2. *Sori ± equidimensional, immersed about one third of their length.*

Rhizome 0.3-0.8 mm thick with sparse, appressed, brown hairs, especially at the nodes. Fronds mostly about 10-15 cm long (extremes 8-35 cm), often pendulous or arched, stipes about

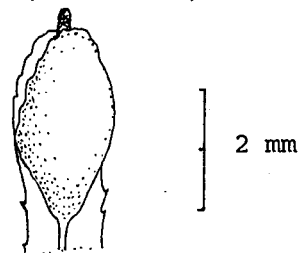
Hymenophyllum

half as long as the lamina, wingless; rachises narrowly winged, flexuose, lamina broadly triangular to lanceolate in outline, tripinnatifid, the ultimate segments narrow (less than 1 mm wide) with small, well spaced teeth. Sori wider than the supporting segments, the basal third or so obconical and immersed in the lamina, indusium bivalvate, the valves ± gibbous, semi-elliptical, split down to the basal part. An epiphyte, lithophyte, or occasionally, terrestrial in localised colonies in higher altitude, warm to cool temperate rainforests of the McPherson Ra., New Eng. N. P. and lower Central Coast of NSW; also NZ.



....*H. bivalve* (Forst.f.)Sw., Schrad.J.II (1800):99 (1801)

2*. *Sori at least twice as long as broad, immersed to half length.* Fronds 4-6 cm long, ovate to lanceolate, rachis veins and stipe with golden brown hairs, rachis broadly winged, stipe with a wing tapering down to the base; ultimate segments 1-1.7 mm wide, the margins spiny-toothed. Sori not numerous, in the upper half of the frond, on short, acroscopic segments, the basal half obconic, valves ± pointed, entire, cleft to the obconic part, receptacle exserted. Recorded from the rainforests of the Atherton Tabld. district and nearby areas.



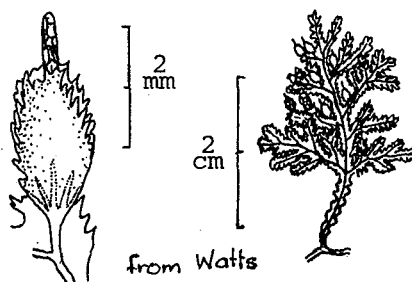
....*H. subdimidiatum* Rosenst., Meded. Rijks Herb. Leyden no. II: I (1912) (Syn. *H. tunbridgense* (L.) Sm. var. *exsertum* Bail.; *H. praetervisum* Christ var. *australiense* Domin; *H. pseudotunbridgense* Watts; *H. babindae* Watts; *H. viride* Rosenst. ex Copel.)

1*. *Valve margins clearly toothed.*

3. *Fronds bipinnatifid or more dissected, the segments very crisped; indusium valve surfaces striate; stipes clearly winged.* Rhizome filiform, flexuose, jointed, sparsely hairy mainly at the joints.

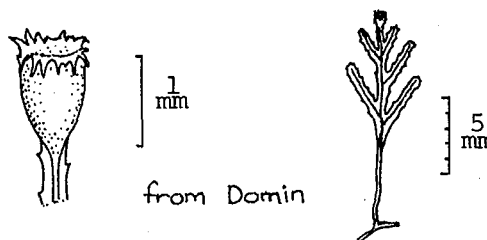
Hymenophyllum

Fronds 2-3.5 cm long, erect to arching, dark-green; stipes a little shorter than the lamina, winged throughout, wing wide at the top, tapering to the base, crisped and toothed; lamina ovate to lanceolate or oblong in outline, rachis broadly winged, ultimate segments c. 1-1.5 cm wide, margins very crisped and toothed. Sori 4-6 per frond on short segments near the rachis, basal half obconic and immersed, valves \pm semi-elliptical, lacerate; receptacle exserted. Known only from two localities in tropical rainforest - Mossman Gorge and near Babinda.



....*H. kerianum* Watts, Proc.Linn.Soc.NSW 39:767,pl.87
f.6a,b.

3*.Fronds pinnatifid to pinnate, the segments flat; indusium valve surfaces smooth; stipes wingless. Fronds about 10-15 mm long, stipes about as long as the lamina which is oblong to rhomboid in outline, the segments linear to oblong with toothed margins. Sori 1 or 2 per frond, terminal on the upper segments, not immersed or winged, indusium obconic or barrel-shaped, shallowly two-lipped, the margins deeply toothed. One collection only from Aust. - summit of Mt Bellenden Ker.



....*H. lobbiai* Moore in v.d.Bosch,Ned.Kruid.Arch.5(3):
176(1863); (Syn.*Trichomanes serratum* Bak.)

Subgenus *C. Mecodium* 100 spp., pantrop. and S. temp., Aust.9

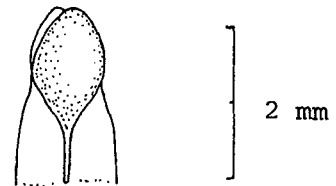
Epiphytic or lithophytic filmy ferns with a thin, long-creeping rhizome. Fronds mostly compound, pinnately divided, glabrous or occasionally, with a few, scattered hairs, the margins entire (except for *H. samoense* which is indistinctly toothed in parts). Indusium bivalvate and divided to the base, i.e. without a tubular part.

1. Stipe clearly winged for most of its length.

2. Wing of BOTH stipe and rachis plane throughout (sometimes slightly crisped in *H. australe*).

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3. *Sori distinctly immersed in the lamina of the segments, the valve margins entire; lamina margins one cell thick. Fronds long and narrow, to 20 cm, pendulous, mid-green, pinnules alternate, flabellately lobed. Sori terminal on the ultimate segments of the apical third of the frond, the broadly obconic bases immersed in the lamina; sori narrower than the supporting segments; indusium bivalvate, divided almost to the base, the apices obtuse and finally rounded or pointed. Epiphyte or lithophyte in tropical rainforest. Recorded only from Mossman Gorge and Leo Creek, N. Qld.*

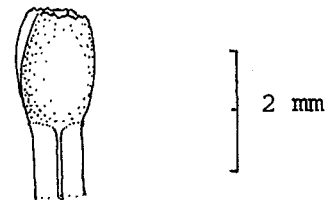


....*H. polyanthos* (Sw.) Sw. var. *contiguum* (D.A. Smith)

Croxall. Aust. J. Bot. 23: 521-522

(1975) (Syn. *Mecodium contiguum* D.A. Smith)

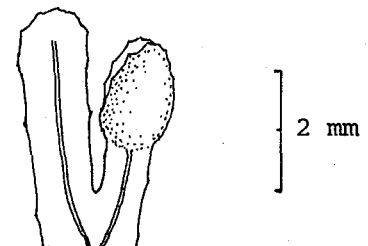
- 3*. *Sori not, or indistinctly immersed, the valve margins erose; lamina margins reinforced with 2-cell thickness, at least in places. Fronds up to ca. 20 cm long (usually less than half this), dark green, the lamina broad ovate to lanceolate or narrow oblong in outline. Sori terminal on ultimate segments (not on basal or apical ones), often "twinned"; indusium bivalvate, split to the base. Commonly on rocks, but also on trees, in various moist, humid communities - from the McPherson Ra. to Tas.*



....*H. australe* Willd., Sp. Pl. V: 527 (1810). (Bailey in error: *H. javanicum*)

- 2*. *Wing of stipe AND/OR rachis distinctly crisped.*

4. *Margins of ultimate segments irregularly and indistinctly toothed, particularly near their apices. Rachis and upper half of stipe with a crisped wing. Fronds to 20 cm long (mostly half this), pinnately dissected, ovate to lanceolate, usually with a drawn out apex, mid to dark green. Sori mostly as wide, or wider than the supporting segments, as wide as long, not immersed. Indusium divided into two lips to the base, the margins toothed. Lithophyte or epiphyte in*



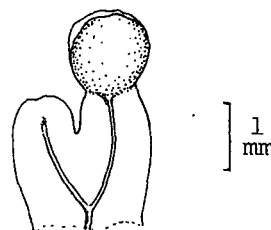
Hymenophyllum

high altitude rft of N. Qld; localised. Also in Fiji and Somoa.

....*H. samoense* Bak., J.Bot.14:10(1876) (Syn. *H. shirleyanum* Domin)

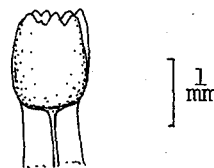
4*. *Margins of ultimate segments entire.*

5. *Sori ± globular, equidimensional, soral valve margins entire to slightly erose.* Fronds 10-18 cm long, stipes 3-5 cm long, nearly 1 mm diam., virtually glabrous, with a 1 mm, slightly crisped wing almost to the base. Lamina ovate to narrow oblong acuminate in outline. Sori borne on the apical third of the lamina, wider than the ultimate segments, indusia bilabiate, split to the base or nearly so, the margins sometimes slightly erose. Only recorded from Leo Creek, M^CIlwraith Ra., on mossy rocks in ravine rft at 420 m.



....*H. eboracense* Croxall, Aust.J.Bot.23:518-521(1975)

5*. *Sori ± oblong in outline, usually longer than broad, soral valve margins deeply toothed.* Fronds ca. 7-12 cm (to 25 cm) long, mostly lanceolate in outline, dark green, erect; stipes about $\frac{1}{4}$ to $\frac{1}{3}$ the length of the lamina. Sori terminal on basal segments of pinnae in the apical third or so, wider or narrower than the supporting segments; indusium bivalvate, divided almost to the base. Most commonly growing on rocks in rft at higher altitude from Cooktown to the Atherton Tblld vicinity and from Sri Lanka, Malesia and SW Pacific.



....*H. javanicum* Spreng., Syst.Veg.1V:132(1827) (Syn. *H. crispum* Nees & Bl.; Domin in error *H. australe*)

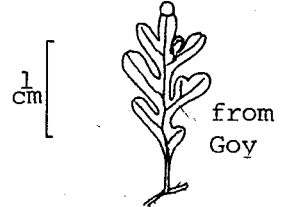
1*. *Stipes entirely wingless or inconspicuously winged towards the top.*

6. *Fronds ± pinnatifid, glabrous except perhaps for a few hairs at the stipe base.*

7. *Soral valves truncate, narrower than the supporting segments,*

Hymenophyllum

fronds usually less than 3 cm long. Fronds erect, simple, lobed or pinnatisect, the midrib prominent. Sori terminal on the lobes, narrower than them; indusium bivalvate and cleft to below half length. Epiphytic, recorded only from the type collection on Thornton Peak, NE Qld.



....*H. whitei* Goy, Qld.Nat.II:127(1941)

7*. *Soral valves pointed to rounded, wider than the supporting segments, fronds mostly more than 3 cm long (rarely as short as 2 cm).*

....*H. rarum* R.Br.(in part - see below)

6*. *Fronds bipinnatisect or more dissected, with hairs on rachis, veins or stipe, or glabrous but for a few hairs at the stipe base.*

8. *Stipes dark-tomentose; fronds less than 5 cm long and rarely more than twice as long as broad, the segments densely crowded and overlapping, dark green when fresh, broad ovate to ± circular in outline. Sori not numerous, on the upper segments of the uppermost pinnae, ± equidimensional, the valve-margins entire or slightly uneven. An epiphyte of rainforests above about 750 metres from Eungella Ra. to the Atherton Tbl. and nearby areas.*



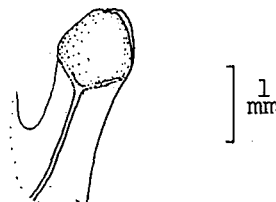
....*H. walleri* Maiden and Betche, Proc.Linn.Soc.NSW.
35:802(1910)

8*. *Stipes glabrous (sometimes with a few hairs at the base); fronds more than 5 cm long, usually proportionately longer and narrower than above and the segments not densely overlapping, light-green to yellow-green when fresh.*

9. *Lower part of the main rachis and stipe wingless. Stipes glabrous except for a few pale, lax hairs, mostly at the base. Fronds mostly pendulous and about 10-15 cm long, (extremes 5-35 cm), ovate to lanceolate, sometimes bearing a few silky hairs, pinnae pinnately divided, secondary pinnae flabellate, the frond apex and often the pinnae apices, drawn out. Sori numerous, varying*

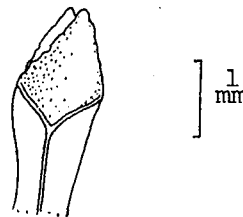
Hymenophyllum

in shape from almost spherical to pyriform, mostly with a broadly obconic base, variable in width; indusium bivalvate, split to the basal section, the margins entire. A common filmy fern over most of its range from extreme SE Qld. to Tas., also in NZ and S Pac. islands.



....*H. flabellatum* Labill., Nov. Holl. Pl. Sp. II, 101 (1806)
(Syn. *H. nitens* R.Br.)

9*. *Main rachis winged throughout* and sometimes part of the stipe as well. Fronds usually well spaced, but sometimes close, glabrous except sometimes for a few red-brown hairs at the stipe base, mostly about 4-8 cm long (extremes 2-14 cm); lamina narrow elliptical to broad oblong in outline, bipinnatisect. Sori relatively few, equidimensional, wider than the supporting segments with a broadly obconic base and the lips separated to the base part, ± semicircular, entire. Central and SE NSW, E Vic., Tas., and NZ; epiphyte in warm to cool temperate rainforests.



....*H. rarum* R.Br., Prodr. Fl. N. Holl. 159 (1810). (Syn. *H. semibivalve* Hook. & Grev., *H. imbricatum* Col., *H. gunnii* Bak.)

Subgenus D. *Hemicyatheon* Domin, 1 Aust., 1 N. Cal.

Rhizome filiform, long creeping, ± glabrous. Fronds of two types, viz., sterile, which are about 1.5 - 4 cm long, lamina broad ovate to ± circular in outline, bipinnately lobed, more crowded and much commoner than the fertile ones which are usually about 6-10 cm long with the lamina broad ovate to lanceolate, bi- to tripinnatisect. In both cases, the lamina is pale green to yellow-green with entire margins, the segments crowded and overlapping; the longer ones are usually arched to pendulous. Sori numerous, terminal on, narrower than and immersed in the apices of ultimate segments in the upper half of the lamina; indusium basally tubular, the upper half divided into two oblong lips; receptacle exerted up to 4 mm. A common and distinctive filmy fern, epiphytic or lithophytic in rainforests above about 750 m from near Cooktown to Eungella Ra., Central E Qld. (Fig. 4j,k,l;p.15)

....*H. baileyana* Domin, Bibl. Bot. 20(85):21 Taf. 2, f. 2, 3. (Syn. *H. trichomanoides* Bail.)

Hymenophyllum, Sphaerocionium

Subgenus E. *Craspedophyllum* (Presl) Copel., 2 spp., 1 Aust., 1 NZ.

Rhizome long-creeping, filiform, dark and shiny with scattered red-brown hairs. Fronds simple or once to three times dichotomously forked, mostly 1-2 cm long, the blade 1-2.5 mm wide, mid to dark green, the marginal 1 or 2 rows of cells black and glossy; stipes and costae also black and glossy. Tips of sterile segments rounded to emarginate, fertile ones constricted somewhat. Sori terminal, indusium bivalvate, split to the base or sometimes with a very short tubular base; receptacle not exerted. A mat-forming lithophyte mostly, occasionally on logs or tree butts in temperate rft from extreme SE Qld. to Tas., not recorded from Vic. (Fig. 4i, p.15)

....*H. marginatum* Hook. & Grev., Ic.Fil.1,Pl.34(1827)

Genus 2 : *Sphaerocionium* Presl 60 spp. pantrop. to S temp., mostly higher alt. Neotropics; 1 sp. Aust.

The Australian species is a very small, mat-forming epiphyte or lithophyte. Rhizome filiform (0.1-0.2 mm diam.), dark, long-creeping, bearing simple or forked, red-brown, bristle-like hairs, especially at the nodes. Fronds mostly 1-2 cm long, stipe similar in structure to rhizome, lamina triangular to ± circular in outline, flabellately divided into narrow-oblong, or linear segments 1-2 mm wide; the margins are sparsely and irregularly toothed, many of the teeth bearing simple or forked, reddish, bristle-like hairs of 2-6 cells. Sori terminal on, immersed in and about as wide as the ultimate segments, fan-shaped in outline, indusium bivalvate, the margins ± entire to unevenly crenate, cleft to about half soral length, the base broadly flattened obconic; receptacle not exerted. Warm temperate rft of the Blue Mts and near South Coast of NSW, at altitudes above about 400 m; also NZ. (Fig. 4c,d; p.15)

....*S. lyallii* (Hook.f.) Copel., Philipp.J.Sci.LXVII: 33(1938((Syn. *Trichomanes calvescens* v.d.Bosch, *T. digitatum* Sw. var. *calvescens* Domin).

Genus 3 : *Apteropteris* Copel., 1 sp. Tas., 1 NZ.

Rhizome long-creeping, filiform, wiry, brown with a reddish stellate pile. Fronds mostly 5-10 cm long, bipinnatisect, the lamina narrow oblong to linear

Apteropteris, Microtrichomanes

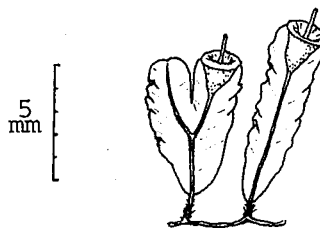
in outline, rachis narrowly winged; ultimate segments linear/oblong, length: width = 3-5 : 1, the lamina chlorophyllous — papillose, covered with a dense stellate tomentum and absorbent. Sori numerous, terminal on ultimate segments in the upper half or so of the lamina; indusium ovoid cupular, scarcely valved, with margins entire; receptacle usually exserted up to 1.5 mm, sporangia protrusive. Epiphytic, mostly on *Athrotaxis selaginoides*, in cool temperate rft., sometimes terrestrial, occasionally growing from fissures in rocks above the treeline; W.Tas. (Fig. 4a,b;p.15)

....*A. applanata* A.M.Gray & R.G.Williams, *Muelleria* 4
(2):169(1979). (Syn. *Apteropteris mal-*
ingii - this sp. now restricted to NZ)

Genus 4: *Microtrichomanes* (Mett. ex Prantl) Copel., 10 spp. Madag.
Malesia, SW Pac., NZ, Aust. 2 spp.

Small to very small epiphytic or lithophytic filmy-ferns with simple or digitately divided fronds that lack false veins. Rhizomes medium to long-creeping, tomentose. Sori terminal, the indusium obconic with a slightly flared, entire rim.

1. *Frond lamina simple or occasionally once-forked, the margins glabrous.* Stipes very short, ± wingless, tomentose. Lamina oblong to elliptical, up to about 12 mm long, pale green to yellow-green, the apex rounded, truncate or emarginate, the vein bearing a few reddish, appressed, simple hairs. Sori 1 or 2 per frond, the indusium obconic with a slightly flared rim, almost completely immersed in the lamina apex; receptacle may be shortly exserted. In humid sites in rft. from the Atherton Tbl. to NE NSW; also NG, N Cal, Fiji.

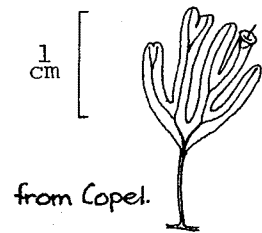


....*M. vitiense* (Bak.) Copel., *Philipp. J. Sci.* 67:37
(1938)

- 1*. *Frond lamina digitately divided, the margins bearing dark hairs, and a few small teeth; stipes usually as long as the lamina; lobes broad-linear, obtuse or emarginate. Indusium obconic, immersed in the apices of the lobes, the mouth slightly flared and entire. Receptacle exserted.*

Microtrichomanes, Trichomanes

In Australia, known from a single specimen from 100 m altitude near Hervey Ck., N Qld., also in Mauritius, Malasia. Superficially very similar to *Sphaerocionium lyallii* - with which it has been confused.

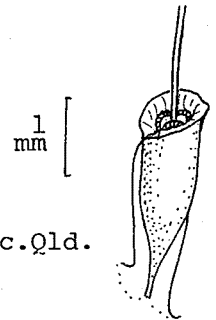


....*M. digitatum* (Sw.) Copel., Philipp.J.Sci.67:36(1938)

Genus 5 : *Trichomanes* L. (sensu Croxall, 1975) ca 60 spp.

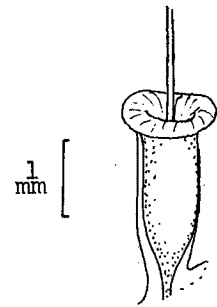
The two Aust. spp. are large filmy ferns, terrestrial, lithophytic or occasionally epiphytic, with thick (1-2 mm diam.), medium-to long-creeping rhizomes. Leaves finely divided, tripinnatisect. Indusium tubular with a flared mouth; receptacle exsert. They are referred by some authors to the genus *Vandenboschia* Copel.

1. *Indusium mouth scarcely flared; fronds not dimorphic.* Rhizome medium-creeping, rigid, somewhat gnarled, 1-2 mm diam., the surface rough and covered with short, dark scales interspersed with pale hairs. Fronds 10-25 cm long, stipes moderately to narrowly winged, approx. same length as lamina, which is \pm triangular to ovate in outline, dark green, alt. segments 0.5-1.0 mm wide. Sori numerous, terminal on ultimate segments and distributed over most of the lamina, about 2.5x1 mm, indusium tubular with an obconic base, the mouth very slightly two-lipped and scarcely flared; receptacle exserted to about 3 mm. (Fig. 2k.) Usually on creekside rocks, occasionally terrestrial or epiphytic on tree fern butts, in dark, humid sites in rft. in the Atherton Tabld. district.



T. johnstonense F.M.Bail., Proc.R.Soc.Qld.
1:14.pl.1 (1884)

- 1*. *Indusium mouth broadly flared; fronds of two types-* fertile ones 18-60 x 7-30 cm), finely tripinnatisect with ultimate segments about 1-2 mm wide and sterile, smaller ones 2.5-11 x 1-5 cm, the lamina of which consists of rachises and costae with very narrow wings of green tissue, borne in the axils of the fertile ones. Only once recorded in Aust. from the Daintree R. Qld., in dark, damp creekside



Polyphlebium, Pleuromanes, Gonocormus

rainforest. Also Malesia and SW Pacific.

....*T.aphlebioides* Christ, in C.Chr.Ind.Fil.635(1906)

Genus 6 : *Polyphlebium* Copeland, Monotypic; SE Aust. Tas. and NZ.

A moderate sized, densely matted epiphytic or lithophytic filmy fern with ultimate laminal segments pinnately veined. Rhizome long-creeping, filiform, densely reddish-tomentose, much branched. Fronds 5-12 cm long, pendulous; lamina pale green, pinnate to pinnate-pinnatifid, ovate to narrow oblanceolate in outline, often irregular; ultimate segments linear to oblong with obtuse, truncate or emarginate tips. Sori relatively few per frond, partly immersed on short lateral lobes of the segments, towards both base and apex of the lamina. Indusium tubular, tapering basally, mouth slightly two-lipped and flared; receptacle exerted up to about 8 mm. In warm to cool temperate rft. from SE Qld. to Tas., also NZ. (Fig.4r,s; p.15)

....*P.venosum* (R.Br.) Copel., Philipp.J.Sci.67:55(1938)

Genus 7 : *Pleuromanes* Presl; 3 spp. Sri Lanka, Malesia, SW Pac., 1 Aust.

Moderately small, lithophytic, glaucous, somewhat harsh-textured filmy fern. Rhizome filiform, wiry, long creeping, irregularly clothed with whitish hairs. Fronds 5-10 cm long, lamina bipinnatisect, ovate in outline, a band either side of the rachis and veins several cells thick and the margins also thickened, surface sparsely short-whitish-hairy. Sori lateral on segments at the pinnae bases, indusium tubular with flared margins, very slightly two-lipped. Known only from the Bellenden Ker Ra. at high altitude. (Fig. 4t, p.15)

....*P.pallidum* (Bl.) Presl, Epim.Bot.258(1849) (1851)

Genus 8 : *Gonocormus* van den Bosch; an ill-defined group of possibly
4 or 5 spp., SE Asia, Malesia, SW
Pac., 2 Aust.

Small to very small, mat-forming, epiphytic or lithophytic filmy ferns with proliferous buds on the rhizome or fronds and club shaped hairs on the stipes and veins. Rhizomes long creeping, filiform, with a tomentum of simple, dark hairs. Sori immersed, indusium tubular tapering, the mouth flared and margins entire; receptacle slightly exerted with age.

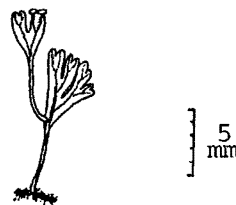
Gonocormus, Reediella

1. *Fronde lamina fan-shaped or semi-circular to circular in outline, palmately divided, about 1 cm long. Plant rarely, if ever, proliferous. Rainforests of C. York Pen. to extreme NE NSW; localised; SE Asia to SW Pacific.*



....*G. saxifragoides* (Presl) v.d.B., *Hymen. Javan. 9* (1861)
(in error : *G. minutus*, *T. parvulum*)

- 1*. *Fronde lamina pinnately divided, 2-4 cm long. Rhizome, stipe and rachis commonly proliferous, producing new rhizome or fronds. C. York Pen. to Atherton Tbl. - Bellenden Ker area. SE Asia to SW Pacific.*



....*G. prolifer* (Bl.) Prantl, *Hymen. 51* (1875) (Syn. *Trichomanes minutum* Bl., *T. diffusum* Bl., in error : *T. parvulum*)

Genus 9 : *Reediella* Pichi-Sermolli; 5 spp. Malesia - SW Pac. & NZ, Aust. 2

Small, epiphytic, pinnately divided filmy-ferns, characterised particularly by having the marginal or submarginal row of lamina cells thickened or lengthened, or of double thickness. Rhizome long creeping, filiform, tomentose; fronds well spaced and erect with stipe considerably shorter than rachis, the lamina lacking hairs and false veins and the margins entire. Sori borne laterally on the upper side of and near the bases of the pinnae, partly immersed or with narrow laminal wings. Soral indusium tubular, basally tapering, the mouth flared and slightly two-lipped; receptacle exserted.

1. *Marginal row of cells lengthened and translucent, submarginal row unthickened (Fig. 4p.); stipes narrowly winged in the upper half. Fronds 4-6 cm or so long, often unevenly pinnate. Known from a single recent collection from the Atherton Tbl.; also NG. Polynesia, NZ, Norfolk I. (Fig. 4p, p.15)*

....*R. endlicheriana* (Presl) Pic. Ser., *Webbia 24* :
719 (1970) (Syn. *Trichomanes wernerii* Rosenst.)

Reediella, Crepidomanes

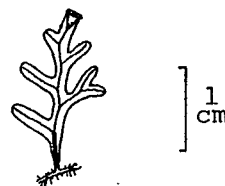
1*. *Marginal row of cells only slightly lengthened and clear, submarginal row two cells thick* and appearing as a false vein (Fig. 4 q). Stipes somewhat flattened; fronds 2-3 cm long; ± evenly pinnate. Lowland rft. from Bellenden Ker Ra. to at least the Thornton Ra. N Qld.; also Malesia & SW Pac. (Fig.4q, p.15)

....R. *humilis* (Forst.f.) Pic. Ser., *Webbia* 24:719 (1970)
(Syn. *Trichomanes wildii* F.M. Bail.)

Genus 10 : *Crepidomanes* Presl 20 spp. SE Asia to SW Pac., Aust. 5

Small epiphytic and lithophytic filmy-ferns with pinnately divided fronds that contain false veins (rows of sclerenchymatous cells). Rhizome filiform, medium-to-long creeping, tomentose, mostly lacking roots. Fronds pinnately divided, stipes and rachises winged, stipe considerably shorter than the lamina, lamina glabrous and margins entire. Sori mostly lateral, the indusium tubular to narrow urn-shaped, the apex two-lipped, occasionally flared and entire; receptacle mostly exserted to some degree.

1. *Submarginal false vein present, either continuous or interrupted.*
2. *Lamina regularly pinnatifid AND the submarginal false vein continuous.* Fronds 1-2 cm long; stipe winged for most of its length and with a tuft of brown hairs at its base. Sori terminal on the lamina lobes, bell-shaped and immersed, not or very indistinctly two-lipped but slightly flared, the submarginal false vein continuous around the mouth; receptacle not exsert. Recorded as an epiphyte in rfts. in the vicinity of the Atherton Tbl. and Bellenden Ker Ra.; also SE Asia - SW Pac.

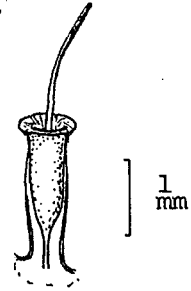


....C. *kurzii* (Bedd.) Croxall, *Aust. J. Bot.* 23:534 (1975)
(Syn. *Trichomanes nanum* v.d.B.,
T. nanum v.d.B. var. *australiense*
Domin, *Crepidopteris australiensis*
(Domin) Wakefield *Reediella aust-*
raliensis (Domin) Pic. Ser.)

- 2*. EITHER *lamina more dissected than pinnatifid*, OR/AND *submarginal false vein not continuous*.

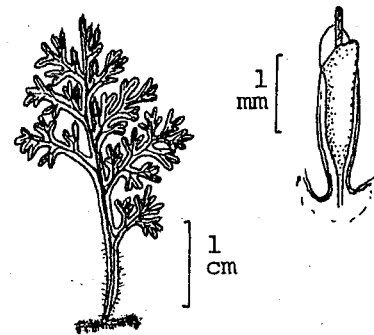
Crepidomanes

3. *Indusium* mouth broadly flared but not two-lipped. Sori mostly at the frond apex. Fronds usually about 1.5 - 2.5 cm long, the lamina ovate or broader in outline, dark green, pinnate-pinnatifid, stipes with ciliate wings, ultimate segments narrow-linear obtuse, entire. Sori tubular to urn-shaped, receptacle exerted, often long and curved. The type ssp. extends from Iron Ra. to the Atherton Tblld. and Bellenden Ker Ra., lithophytic; ssp. *christii* occurs through Malesia.



....C. barnardianum (F.M.Bail.) Tindale, Contr. NSW Natl.Herb.Fl.Ser.201: 36 (1963) (Syn. Tr. *barnardianum* F.M.Bail.)

- 3*. *Indusium* mouth clearly two-lipped. Sori not confined to the frond apex. Fronds 2-7 cm long, stipes somewhat flattened, ciliate-winged, the lamina ovate to ± circular in outline, pinnate-pinnatifid to bipinnate pinnatifid, ultimate segments linear, often acute and finally obtuse. Sori lateral on the upperside near the base of the pinnae, partly immersed and winged, tubular and basally tapering, the mouth two-lipped with obtuse to acute tips; receptacle often exerted. Epiphyte or lithophyte in humid lowland (below about 500 m) rft. from Tozer Ra. to Mt Spec. (Townsville). Also Madagascar, Mauritius, Malesia to SW Pac. The var. *venulosum* (Rosenst.) Croxall has many long accessory false veins often joining the submarginal one and occurs in NG and throughout the range of the sp. in Aust.

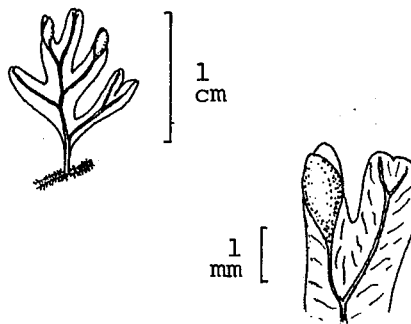


....C. bipunctatum (Poir) Copel., Philipp.J.Sci.67:59 (1938) (Syn. *Hym. filicula* Bory, Tr. *filicula* Bory ; Tr. *venulosum* Rosenst.) Copel. - Domin in error)

- 1*. *Submarginal* false vein absent.

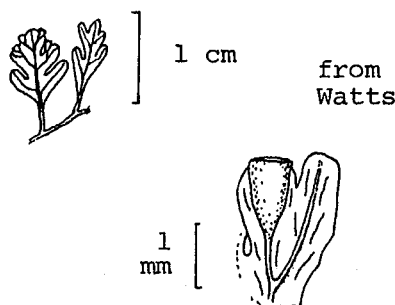
Crepidomanes

4. *Indusium obconic*, the mouth prominently two-lipped, false veins divergent from the main vein. Rhizome long-creeping and shortly branching. Fronds 1-4 cm long, the stipes usually considerably shorter than the lamina, ± wingless and bearing occasional glandular tipped hairs with simple hairs near the base; lamina pinnate-pinnatifid, broad ovate in outline, margins entire, veins bearing a few short, simple hairs or scales. Sori not numerous, borne on the upper side of the pinnae near the base, lips acute and finally blunt; receptacle not, or very shortly exserted. Lithophyte on mossy streamside rocks in rft. from the Atherton Tbl. to the McPherson Ra., endemic in Qld.



....*C. walleri* (Watts) Tindale, Contr. NSW Natl. Herb. Fl.Ser.201:4 (1963)

- 4*. *Indusium tubular* or narrowly bell-shaped, the mouth not, or very slightly two-lipped; false veins mainly parallel to the main vein. Fronds 0.5 - 1.2 cm long, the lamina pinnatifid; receptacle shortly exserted; otherwise, rather similar to the preceding sp.. Known only from three localities - two on and near the Atherton Tbl. and on Mt. Spec. near Townsville.



....*C. majorae* (Watts) Wakefield, Victn.Natlst.66:59 (1949)

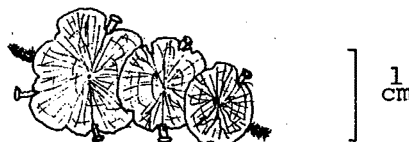
Genus 11 : *Microgonium* Presl; about 12 spp. paleotropics to Tahiti, 1 sp. Centr. Amer., Aust. 4 spp.

Very small epiphytic or lithophytic, usually mat-forming filmy ferns with simple, or occasionally lobed fronds which contain false veins and develop with straight vernation; veins pinnately or dichotomously branched. Rhizome medium-creeping, tomentose, usually lacking roots; stipe very short or lacking. Indusium narrowly tubular with a flared mouth, immersed or free; receptacle usually protruding.

1. Fronds peltate and sessile, overlapping, appressed to the substrate, ±

Microgonium

circular, mostly about 5 - 15 mm diam., the margins often uneven, glabrous above, underneath hairy on the veins, the surface marked with concentric lines; veins radiating from the rhizome attachment point, often forking. Sori 1 - 3 per frond, partly immersed in the lamina margin, indusium trumpet-shaped, the broadly flared margins slightly two-lipped; receptacle sometimes exerted.



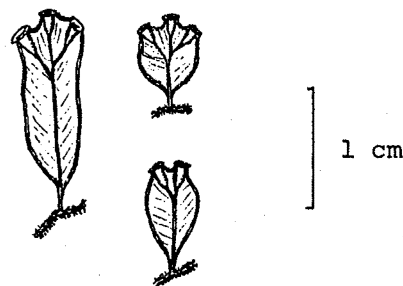
Mostly epiphytic on tree trunks in tropical and subtropical rft., Mossman Gorge, Atherton Tbl., extreme NE NSW; also China, Japan, Malesia, SW Pac. to Tahiti.

....*M. tahitense* (Nadeaud) Tindale, Contr.NSW Natl.
Herb.Fl.Ser.201:
4,pl.5f.3(1963)

1*.Fronds non-peltate.

2. Intramarginal false vein present; sori immersed in the lamina.

3. Veins and false veins numerous (5-10 per mm); frond irregular in shape, rarely with distinct lateral lobes near the apex; usually about 10-15 mm long. Lamina with an obtuse apex and tapering base, the margins usually undulate; stipe very short. Sori few and immersed in the lamina, the indusium margins broad and undulate. Mostly on tree trunk bases, sometimes rocks, in rft. at



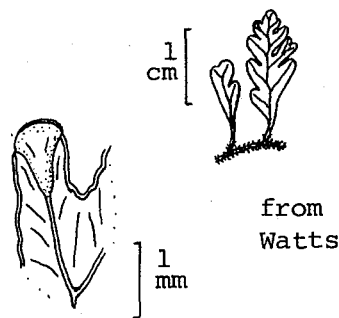
altitudes up to at least 800 m ranging from the M^cIlwraith Ra., C. York to Eudlo, SE Qld., also S Asia, Malesia, SW Pac. (Fig.4m,n

....*M. bimarginatum* v.d.B., Hymen.Javan.7 (1861) (Syn.
Tr. yandinense F.M.Bail.,
Bailey in error: *Tr. muscoides*)

3*.Veins and false veins sparse (2-3 per mm), frond shape regular, usually with distinct lateral lobes near the apex, fronds 1-2 cm long, stipe short, lamina rounded to tapering basally, somewhat

Microgonium, Didymoglossum

hairy below; glabrous above, margins minutely crenulate and undulate; false veins mostly joining the submarginal one. Sori few, terminal on and immersed in the apical lobes, indusium bell-shaped with a few false veinlets in the dilated part; receptacle may be shortly exserted. In Aust. known only by two collections from near Babinda; also occurs throughout Malesia.



....*M. mindorense* (Christ) Copel., Philipp.J.Sci.67:61 (1938) (Syn. *Tr. craspedoneuron* Copel., *Tr. baileyanum* Watts)

2*. *Intramarginal false vein lacking; sori free, not immersed in lamina.* Fronds ± sessile, overlapping, the lamina heart-shaped to ± circular, up to 8 mm long. Sori usually only one per frond, seated in a notch at the front apex; receptacle exserted shortly. An epiphyte, ranging from Iron Ra., C. York, south to the Atherton Tbl. and Bellenden Ker Ra.; also from Sri Lanka and Taiwan through Malesia to SW Pacific.



....*M. motleyi* v.d.B., Hymen.Javan.5,pl.1 (1861) (Syn. *M. beccarianum* (Cesati) Copel.; *M. cultratum* (Baker) Copel.; *Tr. sayeri* F. Muell. & Baker)

Genus 12 : *Didymoglossum* Desv.; 20+ spp. ± pantrop.; Aust. 1

The species recorded from Aust. is a very small epiphytic filmy-fern with simple, 5-10 mm long, short-stiped fronds on a long-creeping rhizome. Lamina oblong or ovate to circular with numerous, forked, false veins radiating from the costa, margins indistinctly toothed and bearing dark, stellate hairs (Fig.4c,p.15) Sorus solitary, terminal, largely immersed, indusium tubular/obconic, the mouth prominently bilabiate, the lips entire, rounded and with thickened, reddish margins; receptacle may or may not be exserted. Recorded once from the base of the Bellenden Ker Ra. (See Croxall 1975, pp. 540-41), also in S Asia. (Fig.4n,p.15)

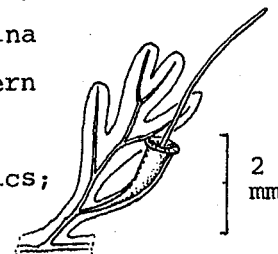
....*D. exiguum* (Bedd.) Copel., Philipp.J.Sci.67:78 (1938) (Syn. *Tr. paradoxum* Domin)

Macroglena, Cephalomanes

Genus 13 : Macroglena (Presl) Copel., 12 spp. Madag., Malesia, SW Pac., NZ; Aust. 2.

The two Aust. spp. are medium sized filmy-ferns with thick, short to medium-creeping rhizomes that are densely covered with dark, red-brown, bristle-like hairs. Frond laminas are finely divided and the ultimate segments fine to very fine. Sori numerous, mostly on the upper or outer side of 2^o pinnae, near their bases, indusium tubular, truncate, 0.5 - 1 mm long and narrow; receptacle exserted, often considerably.

1. *Ultimate segments clearly laminate, light to medium green; rhizome medium creeping* (fronds mostly more than 1 cm apart. Lamina 2 or 3-pinnate. Epiphytic, particularly on tree-fern trunks. Sori narrowly winged. From Atherton Tbl. to E Vic. - rare and at high altitudes in the tropics; also in SW Pac.



....*M. caudata* (Brack.) Copel., Philipp.J.Sci.67:84 (1938)

- 1*. *Ultimate segments bristle-like, the 'lamina' one cell wide and not visible to the naked eye, dark green; rhizome short-creeping* (fronds less than 5 mm apart). Lamina 4-6 pinnate. Lithophytic or terrestrial, often growing on rocks in creek beds and temporarily submerged. Tozer Ra., C. York to Eungella Ra., in dark, moist sites in high altitude fft; endemic.



....*M. brassii* Croxall, Aust.J.Bot.23:543(1975) (in error:Bailey,Domin:*Tr.parviflorum* Poir.;Tindale in error: *M.meifolia* (Bory ex Willd.) Copel.)

Genus 14 : Cephalomanes Presl; about 10 spp., Paleotropics; Aust. 1

This distinctive filmy-fern (and the next genus) is mostly terrestrial, sometimes lithophytic, but is included here for the sake of completeness. The rhizome is thick and erect or very short-creeping, roots thick (1 - 1.5 mm diam.), rigid and stilt-like. Stipe much shorter than the lamina, grooved, and sparsely clad with dark hairs as is the rachis. Lamina once pinnate, narrow oblong in outline, very dark green; pinnules harsh-textured, overlapping, margins lacerate, lamina on the lower side of the main vein

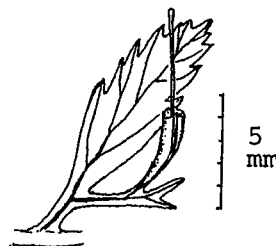
Cephalomanes, Selenodesmium

reduced. Sori numerous, free, on the upper, inner margins of most pinnules, indusium tubular, clothed with small, glandular hairs; receptacle much exserted and apically thickened. McIlwraith Ra. to Atherton Tbl. and nearby, usually in dark, moist sites. Also in Malesia and SW Pac. (Fig. 4u, p.15)

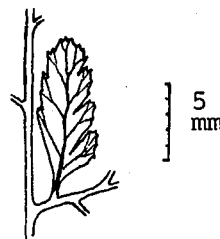
....*C. atrovirens* Presl, Hymen.18,p1.5 (1843) (Bailey & Domin in error: *Tr. javanicum*)

Genus 15 : *Selenodesmium* (Prantl) Copel., about 10 spp., tropics exc. Africa., NZ 1, Aust. 2.

The two Aust. spp. are mostly terrestrial, sometimes lithophytic or occasionally epiphytic on the bases of treefern trunks. Rhizome very short-creeping to erect, roots thick, rigid and often stilt-like. Stipes usually shorter than lamina, rigid, dark, glossy; lamina tripinnate, medium to narrow deltoid in outline, dark green, ultimate segments oblanceolate and apically denticulate. Sori numerous, lateral on short lobes at the base of ultimate segments, often reflexed, indusium narrow obconic and narrowly winged, hairy especially near the base, truncate; receptacle long exserted. The two spp. are very similar and occur in rainforest gullies, esp. near creeks.



1. *Ultimate segments flat (fresh material), basal 2^o pinnae more deeply dissected on the outer (acroscopic) margin than the inner (basiscopic) side.* Windsor Tbl. to extreme NE NSW; also NZ.



....*S. elongatum* (A.Cunn.) Copel., Philipp.J.Sci.67:82 (1938) (Bailey, Domin in error: *Tr. rigidum*)

- 1*. *Ultimate segment tips mostly curled to some degree (fresh material), basal 2^o pinnae ± evenly dissected on both sides.* Tozer Ra. to Bellenden Ker Ra., also India to Taiwan, Malesia and SW Pac.

....*S. obscurum* (Bl.) Copel., Philipp.J.Sci,67:81 (1938) (Domin in error : *Tr. cupressoides*)

AUSTRALIAN VASCULAR EPIPHYTES

Key to the Genera of Group 3 :

Typical ferns with simple, entire fronds (margins may be slightly sinuate or crenate)

1. *Internodes very short (< 5 mm) i.e. fronds tufted or in a rosette or fan and rhizome very contracted, ± absent.*
2. *Mature plants very small, i.e., fronds mostly less than 10 cm long and 6 mm wide AND sori superficial or sunken but not marginal.*
3. *Fronds c. 1 mm wide or less, 2-3 cm (rarely to 5 cm) long, slightly dilated near the apex where the central elongate sorus is located.*
4. *Soral paraphyses non-capitate; annulus of 14-16 cells; midvein emitting short, alternate lateral veins parallel to it.*
Vaginularia (Vittariaceae) p.50
- 4*. *Paraphyses capitate; annulus of c. 20 cells; lateral veins lacking.*
Monogramma (Vittariaceae) p.51
- 3*. *Fronds 2-6 mm wide, sori otherwise.*
5. *Fronds narrow oblong to spatulate, ± thickened and hard, very blunt, to c. 3 cm long; sori two, elongate, superficial, parallel to the margin, extending along approximately the apical quarter of the lamina.*
Scleroglossum (Grammitidaceae) p.65
- 5*. *Fronds linear and mostly herbaceous to ± membranous, not hard, tapering near the apex, or acute and finally blunt; sori more than two, superficial and either ± rounded or oblong to elongate and oblique to the midrib.*
Grammitis (Grammitidaceae) p.61
 OR
Ctenopteris (juveniles) (") p.66

Key to the Genera : Group 3

2*. EITHER, *Mature plants larger than in 2.*, OR, *sori apparently marginal.*

6. *Sori marginal or apparently so*, continuous along the majority of the frond. Fronds linear, 5-40 cm (rarely to 80 cm) long, shiny, leathery, with acute, finally blunt tips (often torn and truncate). (Fig.2c,d; p.3)

....*Vittaria* (Vittariaceae) p.49

6*. *Sori superficial*, fronds proportionately shorter and broader than in 6.

7. *Fronds obovate, dull green, leathery*, often wrinkled, pendulous, gradually tapering to the base without a distinct petiole, to c. 30 cm (rarely 45 cm) long, sori linear, superficial, along veins and often branched or reticulate.

....*Antrophyum* (Vittariaceae) p.49

7*. *Fronds and sori otherwise.*

8. *Sporangia enclosed in a ± terete, ericoid, apical extension of the frond lamina*; leaves distinctly petiolate, with a relatively thin and pale green, narrow oblong to oval lamina; apices acute in sterile fronds. (Fig.5b; p.75)

....*Belvisia* (Polypodiaceae) p.80

8*. *Sporangia arranged otherwise.*

9. *Sporangia densely covering ± the whole undersurface of the fertile fronds*, very dark and sparkling crystalline in appearance. (Fig.5m, p.75)

....*Elaphoglossum* (Lomariopsidaceae)
p.90

9*. *Sporangia in discrete sori.*

10. *Sori linear*, straight and oblique to perpendicular to the midvein.

....*Asplenium* (part) (Aspleniaceae)
p.91

10*. *Sori circular in outline.*

....*Microsorium* (part) (Polypodiaceae)
p.91

Key to the Genera : Group 3

1*. *Internodes 5 mm long or longer, i.e. rhizome short to long creeping.*

11. *Fronds (especially the undersurface) sparsely to densely covered with stellate hairs and ± fleshy to leathery; rhizome 3 mm diam. or less, medium to long creeping (internodes 10 mm long or longer).*

....*Pyrrrosia* (Polypodiaceae) p.81

11*. *Fronds lacking stellate hairs, not fleshy (leathery to membranous); rhizome 3 mm or more in width.*

12. *Fronds penniveined,* the lateral veins usually forking dichotomously once or twice (venation may be indistinct - hold up to a strong light).

13. *Fronds membranous* with the midrib prominent on both sides, distributed in clusters at intervals along the rhizome which is covered with closely appressed scales (light brown with a darker centre, giving a patterned effect) and held away from the substrate on stilt roots.

....*Oleandra* (Oleandraceae) p.55

13*. *Fronds leathery,* with midrib prominent below and either less prominent or sunken above, evenly distributed on a short rhizome which is loosely covered with ± spreading, pale brown to straw coloured scales; creeping on the substrate. (Fig. 5m; p.75)

....*Elaphoglossum* (Lomariopsidaceae) p.90

12*. *Fronds net-veined.* (e.g. Fig. 2m, p.3)

14. *Fronds moderately thick, leathery, shiny strap shaped, the margins often slightly sinuate; sori usually in two ± even rows.* (Fig. 2e, p.3)

....*Dictymia* (Polypodiaceae) p.71

14*. *Otherwise.*

15. *Sori located on the considerably narrowed apical half of the fertile fronds and covered with peltate*

Key to the Genera ; Group 3

paraphyses when young. (Fig. 5f, g, h ; p.75)

....*Lemmaphyllum* (Polypodiaceae) p.80

15*. *Fertile fronds may be narrower but evenly so, sori distributed over most of the length of lamina and lacking peltate paraphyses.*

16. *Fronde margins notched, shallowly toothed or crenate, lamina usually broadest below the middle but ranging to strap-shaped. (Fig. 1d; 5i, j ; p.75)*

....*Crypsinus* (Polypodiaceae) p.79

16*. *Fronde margins entire, broadest in the middle. (Fig. 2n; p.3)*

....*Microsorium* (part Polypodiaceae) p.72

OR

....*Colysis* (juveniles; Polypodiaceae) p.76

Key to the Genera of Group 4 :

Typical ferns with lobed, dissected or compound fronds

1. *Nest-forming plants with very distinctly dimorphic fronds, viz.,*
 - i. Sterile fronds which are relatively broad and short-lived but persistent and so arranged to catch falling litter and water an, ii. Fertile, spore-bearing fronds which are more dissected and free standing.
 2. *Fronds with a prominent midrib or rachis, pinnate to pinnatifid or with sinuate margins.*
*Drynaria* (Polypodiaceae) p.77
 - 2*. *Fronds lacking a midrib, the sterile ones broad and palmately veined, fertile ones narrower and forked.*
*Platycerium* (Polypodiaceae) p.85
- 1*. *Plants not nest-forming and having relatively uniform fronds*
 3. *Plants producing long-creeping stolons which bear proliferous buds and sometimes fleshy tubers.*
*Nephrolepis* (Oleandraceae) p.58
 - 3*. *Plants lacking stolons.*
 4. *Fronds tufted, or rosette- or fan-forming (less than 5 mm apart); rhizome very contracted.*
 5. *Fronds compound.*
 6. *Sori linear.*
*Asplenium* (in part; Aspleniaceae) p.91
 - 6*. *Sori round.*
 7. *Stipes pubescent*
*Oenotrichia* (Dennstaedtiaceae) p.48
 - 7*. *Stipes scaly to almost glabrous, lacking hairs.*

Key to the Genera : Group 4

8. *Stipes 2 mm or less wide, very sparsely scaly, scales less than 3 mm long; ultimate segments less than 3 mm wide mostly with a single sorus each. Streamside lithophyte.*

....*Lastreopsis* (Aspidiaceae) p.87

- 8*. *Stipes more than 3 mm wide, prominently scaly, especially towards the base, scales 5 mm or more in length, ultimate segments more than 5 mm wide, each with 6-8 sori. Nest-invading epiphyte or lithophyte.*

....*Polystichum* (Aspidiaceae) p.88

- 5*. *Fronds pinnatifid or pinnatisect.*

9. *Sori linear (Fig.2g; p.3)*

....*Asplenium* (in part; Aspleniaceae)
p.91

- 9*. *Sori rounded to oval, exposed or enclosed by folding of the frond lobes.*

10. *Sori enclosed by folding of the lobes of the lamina.*

....*Calymmodon* (Grammitidaceae) p.69

- 10*. *Sori exposed. (Fig.5a;p.75)*

....*Ctenopteris* (Grammitidaceae)

- 4*. *Fronds more than 3 mm apart on a wiry to fleshy, often climbing rhizome.*

11. *Fronds compound, i.e. lamina quite discontinuous between pinnae or pinnales.*

12. *Fronds pinnate-pinnatisect or more finely divided.*

13. *Indusium peltate, round ; stipes not jointed to the rhizome. (Fig.2j;p.3)*

....*Rumhora* (Davalliaceae) p.54

Key to the Genera : Group 4

13*. *Indusium cylindrical to obconical; stipes jointed to the rhizome.*

....*Davallia* (Davalliaceae) p.51

12*. *Fronde pinnate.*

14. *Rhizome fleshy and brittle, growing embedded in epiphyte nests and humus accumulations; only very rarely terrestrial.*

....*Schellolepis* (Polypodiaceae) p.70

14*. *Rhizome wiry, fibrous, climbing by adventitious roots (and sometimes twining) on the surface of tree-trunks, rocks etc., mostly terrestrially rooted vines.*

15. EITHER, *mature rhizome glabrous (young apical sections scaly)* OR, *rhizome wider than 5 mm; terminal pinna not jointed to the rachis. High-climbing or long-creeping/scrambling, several to many metres long.*

16. *Rhizome flattened, strongly dorsiventral, producing leaves above, roots below, up to 12 mm wide; pinnae entire, lacking glands. Restricted to altitudes above ca. 500 m.*

....*Lomariopsis* (Lomariopsidaceae) p.89

16*. *Rhizome irregular terete, producing leaves on all sides; pinnae finely toothed with a small gland on the upper margin very near the base. Mostly found at altitudes below ca. 500 m.*

....*Stenochlaena* (Blechnaceae) p.106

15*. *Rhizome ± persistent-scaly, not wider than 5 mm; terminal pinna either jointed or not; climbing, but usually not more than about 3 m or so.*

17. *Pinnae jointed to the rachis, evenly developed or not very one-sided (as in 17* below); sori, if submarginal, then on both upper and lower margins.*

Key to the Genera : Group 4

18. *Stipe bases somewhat swollen; pinnae of the lower, juvenile fronds (bathyphylls) proportionately shorter, wider, and blunter and with more prominent tothing than the upper fronds (acrophylls); fertile pinnae linear, the sporangia ± covering the undersurface.*

....Teratophyllum (Lomariopsidaceae) p.89

- 18*. *Stipe bases not swollen, bathyphylls not markedly different; fertile pinnae broader than linear and sporangia in discrete, round sori.*

....Arthropteris (Oleandraceae) p.55

- 17*. *Pinnae not jointed to the rachis and very uneven-sided, i.e., pinna mainvein running along or near the lower margin with lateral veins running upwards; sori submarginal and on upper margins only.*

....Lindsaea (Lindsaeaceae) p.47

- 11*. *Fronde simple and pinnatisect or pinnatifid, occasionally ± palmatifid.*

19. *Sori marginal, lamina ± triangular in outline, i.e., lobes longest at the base, decreasing upwards, small fronds sometimes ± palmatifid.*

....Humata (Davalliaceae) p.53

- 19*. *Sori superficial and lamina ± oblong to oval in outline.*

20. *Sori rounded to oval.*

....Microsorium (in part) (Polypodiaceae)
p.72

- 20*. *Sori linear.*

....Colysis (Polypodiaceae) p.76

Lindsaea

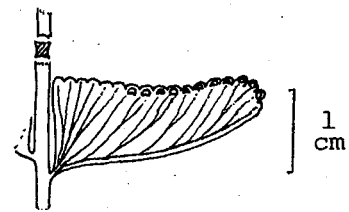
order Dicksoniales

family LINDSAEACEAE 9/250

genus *Lindsaea* Dryander ex Sm. 200 Old World trop. & subtrop.,
Aust. 14, 2 epi.

The two species included here are semi-epiphytic climbers that mostly begin life on or near the ground and have wiry, triangular-scaly (scales may be early deciduous), long-creeping rhizomes that climb on tree trunks or occasionally rocks, with the aid of adventitious roots. Fronds pinnate with a quadrangular rachis, pinnae assymetrical, ± triangular, numerous, toothed or lobed on the acroscopic (upper) margin; venation "one-sided", i.e. the primary vein running along the lower (basisopic) margin with secondary branches running to the upper (acroscopic) side (i.e. anadromous condition). Sori submarginal, usually one per tooth, on the acroscopic margin, served by one or two veins, roughly equidimensional; indusium flap-like, linear, crescentic to horseshoe shaped.

1. *Rhizome ca. 2 mm diam., chestnut-brown with a slight sheen, scales persisting for some time; 10-20 sori per pinna.* Stipes short (less than $\frac{1}{6}$ of frond length, rachis straw-coloured, pinnae 1.5 - 3 cm long by 5-10 mm wide at the base, thin textured, tootthing mostly not deeper than the sori (except sometimes the apical few). Wetter monsoonal and trop. rft. from C. York to the Bellenden Ker Ra. at altitudes up to about 300 m; rarer in the south; also Malesia and SW Pac. A number of varieties have been described, three of which have been recorded in Aust. - var. *sessilis* (Copel.) Kramer, (commonest); var. *marquesensis* E. Brown and var. *lingulata* Kramer.



....*L. repens* (Bory) Thwaites, Enum.Pl.Zeylaniae:338
(1864) (for synonymy see Flora
Males.Ser.II 1(3):237(1971)

- 1*. *Rhizome 0.5 - 0.7 mm diam., dark red-brown to black, shiny, scales early-deciduous, 4-6 sori per pinna.* Stipes about $\frac{1}{6}$ to $\frac{1}{4}$ of frond length, pinnae 7-12 mm long, by 3-6 mm wide, with 4 or 5 teeth or lobes, all cut to well below the



Oenotrichia

sori. Recorded once from "Rockingham, 4000 ft alt." - presumably the Cardwell Ra. N Qld. (See Tindale, 1976, p. 126.) This specimen is assigned to var. *blanda* (Mett. ex Kuhn) Kramer. Also Malesia.

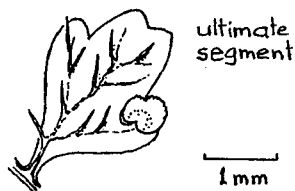
....L. *pulchella* (Sm.) Mett. ex Kuhn, *Linnaea* 36:81
(1869) (for
synonymy see *Flora Males.* Ser. II 1(3)
: 249 (1971)

family DENNSTAEDTIACEAE 7/ca. 200

Mostly large terrestrial ferns with creeping dorsiventral, hairy rhizomes. Fronds compound, highly dissected with marginal or submarginal, indusiate sori.

genus *Oenotrichia* Copel.; 4 NG, N Cal., Aust. 2

The Australian species included here is a moderately small, tufted fern with hairy, finely divided fronds, mostly growing on rocks in or beside mountain streams, occasionally epiphytic on treefern trunks and sometimes terrestrial on stream banks. Rhizome very short-creeping or upright; fronds 10-30 cm (-50 cm) long, the lamina ovate to deltoid in outline, mid to dark green, tripinnate, stipes half or less the length of the lamina, 1-2 mm diam.; all axes moderately densely hairy with 1-2 mm long, whitish, soft hairs. Ultimate segments spathulate to lobed, the veins bearing hairs. Sori 1 or 2 per ultimate segment, round, superficial, with a circular to broadly kidney-shaped indusium with an erose margin and attached at a point in the middle of the base. Found above ca. 1000 m. in the Bellenden Ker Ra. and mountains to the near north.



....O. *tripinnata* (F. Muell. ex Benth.) Kuhn, *Univ. Cal.*
Publ. Bot.
16:82 (1929) (Syn. *Davallia tripinnata*
F. Muell. ex Benth., *Leptolepia tri-*
pinnata (F. Muell. ex Benth.) Kuhn)

order Pteridales

family VITTARIACEAE 9/ca. 140

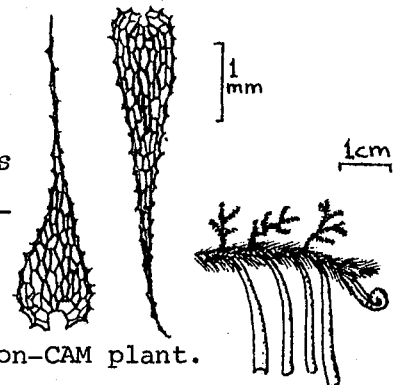
Medium sized to very small epiphytic ferns with latticed scales, simple leaves, linear sori along veins, lacking indusia but often sunken in grooves and protected when young by paraphyses.

Vittaria

genus *Vittaria* Sm., ca. 80 pantrop. and subtrop., all epiphytic.
Aust. at least 2.

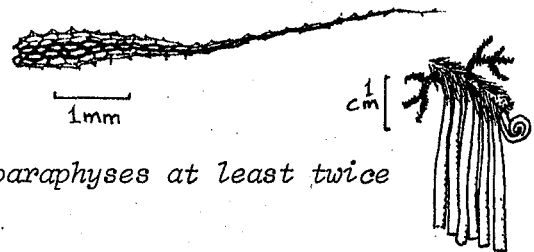
Rhizome very short, to short, to medium-creeping, thickly scaly with dark black-brown, strongly latticed narrow lanceolate to ovate, long acuminate hair-tipped, spiny toothed scales. Fronds linear, tapering gradually at both ends and \pm lacking a stipe, tips acute but often broken off and truncate, reddish colour when uncurling, dark green when mature, leathery, convex above, 10-60(-100) cm long. Sori linear, continual, submarginal, in a groove such that the edges \pm form a false indusium (Fig. 2c,d). Usually growing in crevices, small humus accumulations or on the peat of nest-forming epiphytes in the mid to lower epiphyte zones in monsoonal, tropical and subtropical rft. Both spp. are very similar and appear to have similar ranges - from C. York to NE NSW. (Fig.2c,d; p.3)

1. *Rhizome short-creeping to medium-creeping; rhizome-scales \pm uniform in colour, the cells towards the centre with slightly to moderately more thickened walls than those of the marginal areas; terminal cells of paraphyses as long as, to slightly longer than wide.. Non-CAM plant.*



....*V. elongata* Sw. in Hook. & Bak. Syn.Filic. 395 (1806)

- 1*. *Rhizome very short-creeping; central area of rhizome-scales with cell walls much thicker and darker than those of the marginal areas; terminal cells of paraphyses at least twice as long as wide.*



....*V. ensiformis* Sw., Ges.Naturf.Berlin Neve Schriften 2 : 134 t.7, f.1 (1799).

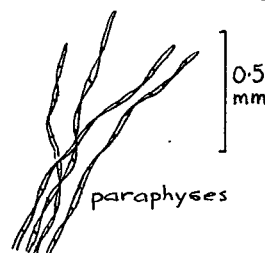
genus *Antrophyum* Kaulf., 40, Old World tropics, all epiphytic,
Aust. 3.

Moderately small to medium sized, pendulous, tufted epiphytes with a degree of "resurrection" ability. Rhizome very short-creeping; covered in lanceolate to ovate, acuminate, hair-tipped, latticed, toothed, sooty-brown scales and \pm covered with densely rusty-hairy roots. Fronds leathery, often limply so, dull green, \pm oblanceolate, glabrous; venation reticulate, visible and

Antrophyum

often prominent, especially in dried specimens. Sori linear, elongate in grooves along the veins, lacking indusia, from numerous and separate to a continuous network. Usually growing on tree-trunks or rocks in the lower, more sheltered epiphyte zones on substrates ± free of humus accumulation, in monsoonal and tropical rainforest.

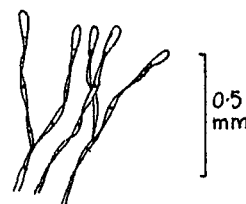
1. *Stipe less than one fifth of frond length or lacking (rarely, in very large fronds, to several cm long); paraphyses filiform, simple.* Fronds 5-20 (-45) cm long, 3-5 cm wide. From C. York to at least Mt Spec area, at altitudes up to 1000 m or so; also SE Asia to SW Pac. Non-CAM plant.



....*A. reticulatum* (Forst.) Kaulf., Enum.Fil.198(1824).
(Syn. *Hemionitis reticulata* Forst.,
A. callifolium Bl., *A. alatum* Brack.)

- 1*. *Stipe at least two fifths of frond length; paraphyses club-shaped and often branched.*

2. *Lamina wider than 3 cm.* Stipes narrowly winged, ca. two fifths of frond length, basally scaly. Lamina narrow elliptical to narrow obovate, 10-18 x 3.5-8 cm acuminate, basally tapering evenly into the stipe. NE Qld.; also Malesia and SW Pac.



....*A. plantagineum* (Cav.) Kaulf., Enum.Fil.197(1824).
(Syn. *Hemionitis plantaginea* Cav.,
Descr. 260, 1802(1802).)

- 2*. *Lamina narrower than 1.5 cm.* Stipe winged, about a third of frond length. Lamina up to 1.2 cm wide, gradually narrowing into the stipe, apex irregularly acuminate. Paraphyses branched. NE Qld., NG., Fiji.

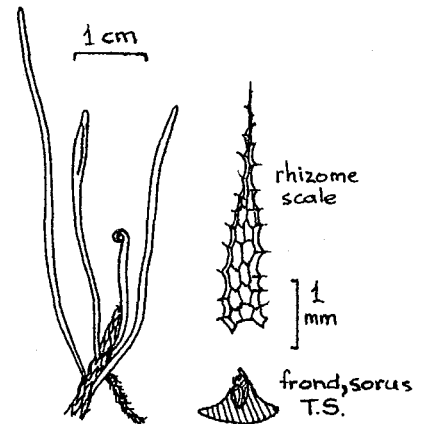
....*A. subfalcatum* Brack., *in* Wilkes, US Expl.Exp.16:
65 (1854).

genus *Vaginularia* Fee, 6 Sri Lanka to SW Pac.; Aust. 1

The sp. represented in Aust. is a small, mat-forming, grass-like epiphyte. Rhizome short-creeping, covered with dark, latticed, loosely appressed scales.

Vaginularia, Monogramma

Fronds linear/filiform, lacking a distinct petiole, 1.5-3(-5) cm long, 1-1.5 mm wide, slightly dilated in the fertile part, acute. Lateral veins v. indistinct, short and \pm parallel to midvein. Sori solitary, linear (sporangia actually arise from the lateral veins), in the middle at the apex of the frond, \pm protected by two unequal flaps; paraphyses simple, filiform. Growing on moist tree trunk and rock surfaces, often among mosses in sheltered, lower epiphyte zones in rft. mostly above about 500 m. alt. NE Qld.



....*V. acrocarpa* Holtt., Dansk bot. Ark.25(2):51(1967).
 (Syn. *Monogramme junghuhnii* (Mett.) Hook.;
 misapplied names: *Dichlidopteris angustissima*, *V. angustissima*, *Monogramma paradoxa*, *M. junghuhnii*.)

genus *Monogramma* Schkuhr., 2 Masc., Malesia; Aust. 1.

This genus is represented in Aust. on the basis of a single specimen collected by Domin from Mt Bellenden Ker early this century. The species is outwardly very similar to the preceding one except that the fronds are usually shorter and the sorus is protected by a single flap, this causing the sporangia to project \pm sideways; sporangia arise from the midvein as lateral veins are lacking and paraphyses have the terminal cell enlarged.

....*M. dareicarpa* Hook., Sp. Fil. 5:21(1864)

order Davalliiales

family DAVALLIACEAE 8/126

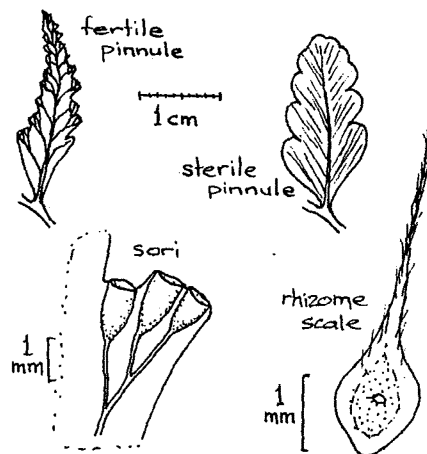
genus *Davallia* Sm., 40 Old World tropics and subtropics, mainly epiphytic; Aust 3.

Rhizome long- to medium-creeping, dorsiventral, fleshy and covered at least when young, with ciliate, peltate-based scales. Fronds \pm in two rows, jointed to the rhizome, from which point they are abscised after dying, glabrous except at the stipe base; stipes about half as long to equal to the length of the lamina, lamina 2 to 4 pinnate, triangular in outline, the segments mostly lobed or toothed, leathery and somewhat shiny. Sori submarginal on the ends of veinlets, with a basically 'U'-shaped indusium fused to the lamina except

Davallia

at the distal end, forming a tubular or bell-shaped, cupped structure. Mostly nest-invading epiphytes.

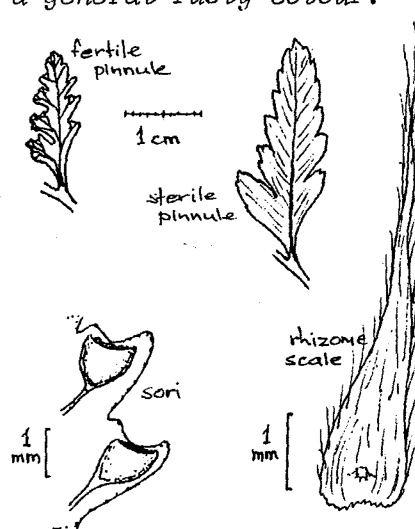
1. *Ultimate segments of sterile fronds with blunt or rounded apices, the margins entire, crenate, or with rounded lobes; sori at least $1\frac{1}{2}$ times as long as broad; young, expanding fronds purplish-bronze to olive brown in colour; scales broad ovate basally, long-tailed, dark brown with a pale margin giving an overall hoary, grey-brown appearance, but not long-persistent. Rhizome mostly creeping buried in or extending from epiphyte nests and humus accumulations, sometimes creeping on \pm clean surfaces and often lithophytic. Common in monsoon rainforests of Cape York, also reported to be rarely found as far south as Cairns.*



....*D. solida* (Forst.f.) Sw., in Schrad., J.Bot. 1800(2):87 (1801). (Syn. *Trichomanes solidum* Forst.f., Prod. 86 (1786)).

- 1*. *Ultimate segments of sterile fronds with acute apices, the margins toothed or with acute-tipped lobing; sori length less than $1\frac{1}{2}$ times the width; expanding fronds green; scales lanceolate/subulate, red-brown with darker centres, giving the rhizome a general rusty colour.*

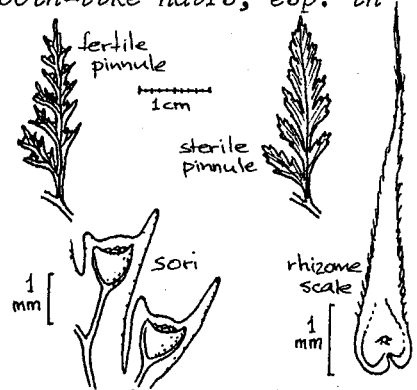
2. *Rhizome scale margins loosely long-hairy; lamina teeth associated with sori as long as wide, or shorter, rounded to obtuse (occasionally to acute), sorus-bearing lobes not or scarcely cut on the inner side of sorus. In general, the laminal lobing not as deeply cut as the following sp. Only very rarely terrestrial but often on rocks, sometimes forming large masses and in exposed situations. Rainforests and other moist communities from Cooktown to W. Vic. (rare in Vic.).*



....*D. pyxidata* Cav., Descr. 278 (1802). (Syn. *Humata pyxidata* (Cav.) Desv.)

Davallia, Humata

2*. Rhizome scale margins with short, recurved, tooth-like hairs, esp. in the lower half; lamina teeth associated with sori mostly longer than wide, (often considerably so), acute, sorus-bearing lobes mostly deeply cut on the inner side. Often terrestrial, most commonly lithophytic or epiphytic in rainforest and related communities of N. Qld., including C. York.

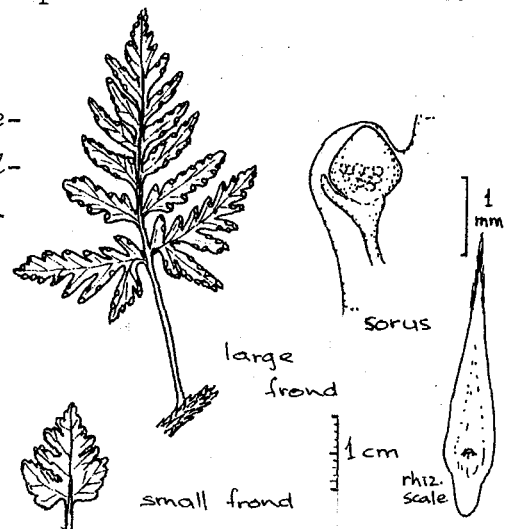


....*D. denticulata* (Burm.f.) Mett., in Kuhn, *Fil. Deck.* 27 (1867) (Syn. *Adiantum denticulatum* Burm.f., *D. elegans* Sw.)

Genus *Humata* Cav.; 50 Old World tropics, all epi.; Aust. 2.

This genus is very close to *Davallia*, the main difference being that in the latter the sides of the indusium are fused to the lamina to form a cupped structure, whereas in *Humata* they are free and the indusium is attached only by the middle of the base. Most species are dwarf size when compared with *Davallia*, as in the two species recorded from Australia - in these, fronds are about 3-15 cm long and rhizome 2-3 mm diam. Rhizome medium to long creeping, covered with brown, pale-margined, lightly ciliate, peltate scales which are also on the frond axes and veins in decreasing concentrations upwards; stipes grooved from $\frac{1}{4}$ to $\frac{1}{2}$ frond length; lamina leathery. Nest-invading epiphytes or creeping on mossy or lightly littered tree or rock surfaces, mostly in middle epiphyte zones in monsoonal and tropical rfts at altitudes up to about 800 m. Both spp. have a well developed "resurrection" ability and when curled up expose the abaxial or undersurface.

1. Lamina pinnate-pinnatisect to bipinnate-pinnatisect, broadly triangular in outline; sori submarginal (apparently marginal), subterminal on veins, indusia very broad ovate obtuse. Small fronds of this sp. tend to be simple pinnate but are broadly triangular and usually the pinnae have some degree of lobing. Mons., trop. and subtrop. rft. from

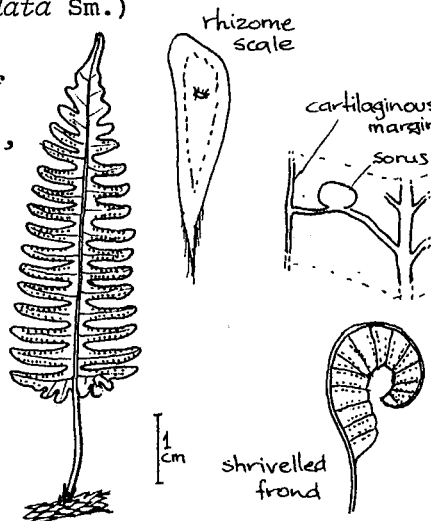


Humata, Rumohra

near Gin Gin, SE Qld, to Iron Ra., C. York; also Masc.Is., SE Asia, and Malesia.

....*H. repens* (L.f.) Diels, Nat.Pfl.1(4):209(1899).
(Syn. *Adiantum repens* L.f., *H. pedata* Sm.,
Davallia pedata Sm.)

1*. *Lamina pinnatisect to pinnate* (basal pair of pinnae with some lobing on the basal margin), narrowly triangular in outline; sori superficial, dorsal on secondary veins of the segments, indusia oval to kidney-shaped. Small fronds are pinnatifid with shorter, broader segments; lamina margins thickened with a "corded" edge. Restricted to the monsoonal rainforests of Cape York.



....*H. pectinata* (Sm.) Desv., Prod.232(1827). (Syn.
Davallia pectinata Sm.)

genus *Rumohra* Raddi; 6 spp.; 5 Mad., 1 S.Af., S.Am., N.G., S.E. Aust.,
N.Z.

Rhizome medium- to long-creeping, usually about 5-8 mm wide, dorsiventral, fleshy, ± covered with chaffy, pale to dark brown, peltate scales. Stipes mostly longer than lamina, not jointed to the rhizome and persisting after frond death, grooved lightly above, with scattered scales, more towards the base. Fronds mostly 20-50 cm long overall, lamina triangular to ovate in outline, tripinnate, ultimate segments leathery, dark green and somewhat glossy, lanceolate to ovate, toothed. Sori superficial, circular, indusium circular, peltate, 1-2 mm diam., brownish, sometimes relatively early deciduous, (Fig.2i,j.). Lithophyte or epiphyte on moderate to heavily littered surfaces, sometimes terrestrial, in tall wet sclerophyll forest, temperate rft. or in ectonal situations. This sp. has variously been placed in *Polystichum*, *Dryopteris* and *Aspidium*.

....*R. adiantiformis* (Forst.f.) Ching, in *Sinensia* V:
70(1934) (Syn. *Polypodium adiantiforme* Forst.f., Prodr. 82(1786),
P. coriaceum Sw., *Polystichum capense* (Willd.) Sm., *Aspidium cunning-*

Rumohra, Oleandra

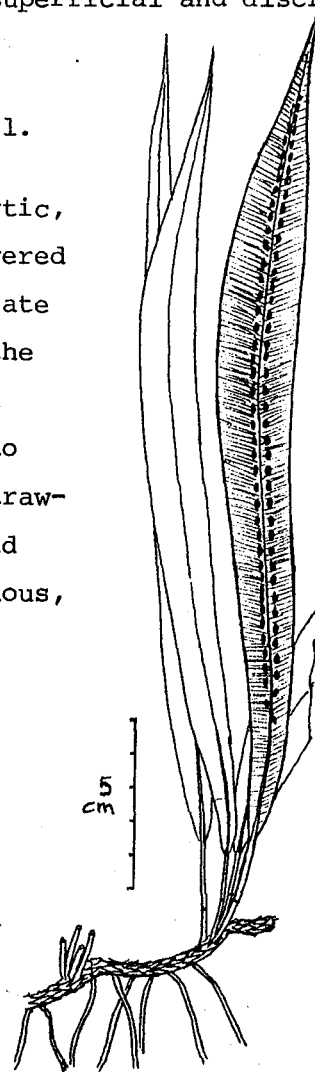
hamianum Colenso, *R. aspidioides* Raddi.

family OLEANDRACEAE 4/90

Mostly medium- to long-creeping epiphytes or semi-epiphytic terrestrials with slender rhizomes covered with \pm appressed, peltate-based scales. Fronds jointed to the rhizome or to phyllopodia, (neither in *Nephrolepis*), simple or pinnate, the pinnae jointed to the rachis. Sori superficial and discrete in Aust. spp.

genus *Oleandra* Cav., 40, pantrop., Aust. 1.

A very distinctive sp., usually epiphytic or lithophytic, occasionally on banks. Rhizome ca. 3-5 mm diam., covered with brown, pale-margined, closely appressed, lanceolate to ovate, peltate scales and usually held away from the substrate on stiltroots. Fronds 15-50 cm long, borne in clusters at intervals along the rhizome, jointed to phyllopodia 2 mm to 2 cm long, which have the same straw-like appearance as the 2-5 cm stipe; lamina simple and entire, pale green, thin and papery to almost membranous, linear, gradually tapering towards both ends with an acuminate apex, penniveined, the veins free and at a high angle to the midrib and often once forked near their bases. Sori numerous, one row either side of and 1-2 mm away from the midrib, rounded, ca. 1-2 mm diam. with a kidney-shaped indusium. An uncommon epiphyte or lithophyte, occasionally on banks, mostly in light-breaks in rft., usually at altitudes above 700 m from Innisfail to Cooktown.



....*O. neriiformis* Cav., Anal.Hist.Nat.1:115(1799)
(Misappl.: *O. cummingii*)

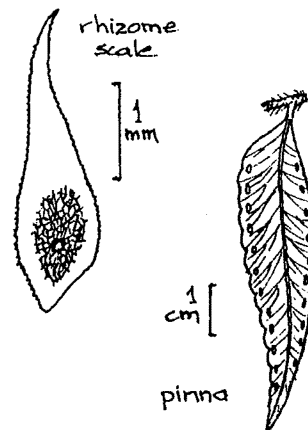
genus *Arthropteris* Sm. 20, Old World tropics, NZ, Aust. (4 spp.)

The Aust. spp. are semi-epiphytic climbers with narrow, rigid, scaly, medium- to long-creeping rhizomes. Fronds in two ranks, stipes much shorter than the rachises, jointed to short phyllopodia; lamina pinnate, the pinnae with

Arthropteris

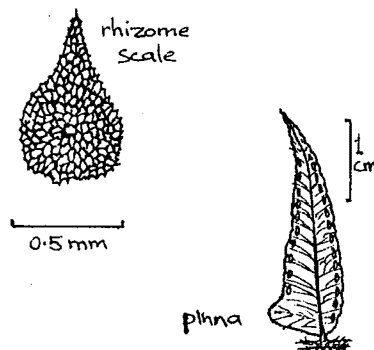
entire, crenate, or occasionally lobed margins, jointed to the rachis, veins free, forked. Sori superficial to submarginal, terminal on veins, round in outline and either with kidney shaped indusia, or, (in *A. tenella*) exindusiate.

1. *Mid and upper pinnae of fertile and well developed, adult, sterile fronds with acuminate (sometimes to acute) tips.* (Often rounded in stunted and juvenile forms.)
2. *Sori lacking indusia.* Rhizome 2-5 mm wide, densely clothed with brown, pale-bordered, lanceolate to ovate, toothed, peltate scales and a few limp hairs; scales are mostly spreading on young parts of the rhizome, with appressed remnants on older parts. Fronds 20-50 cm long (juveniles often much shorter), stipes 2-10 cm long, rachis straw-like, shortly hairy underneath, pinnate, narrow oblong to elliptical or obovate in outline. Pinnae about 10-20 on each side, 4-10 cm long, shortly petiolate, adult ones alternate, narrowly to broadly triangular, often with an oblique base, acuminate to acute with entire or crenate margins, juvenile and stunted ones broadly rounded triangular to \pm circular, often opposite. Sori circular, about 1 mm diam., in a row about 1-2 mm from the margin. Mostly climbing on tree trunk bases or rocks in various grades of rft. and related communities from N. Qld. to S. N.S.W.



....*A. tenella* (Forst.f.) Sm., in J.D.Hook.Fl.N.Z.43 (1854) (Syn. *Polypodium tenellum* Forst.f., *A. filipes* T.Moore.)

- 2*. *Sori with circular/kidney shaped indusia.* Rhizome 1.5-2.5 mm wide, moderately densely covered with dark brown, broad ovate, \pm latticed, largely appressed scales. Fronds 10-25 cm long, pinnate, elliptical to obovate in outline, rachis densely and shortly hairy, stipes 1-2 cm long; pinnae narrowly triangular, the upper side of the base



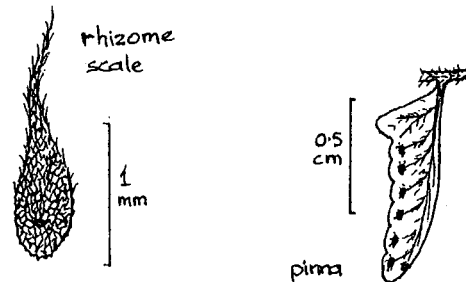
Arthropteris

more developed, crenate, acuminate, often falcate, 8-16 per side. Sori circular, 0.5-1 mm diam., about 0.5 mm from the margin, indusium dark red-brown. Climbing on tree trunk bases and rocks in rft above about 600 m, NE Qld.

....*A. submarginalis* Domin, *Bibl.Bot.*85:62 (1913)

1*. *Mid and upper pinnae of fertile and sterile adult fronds with rounded (sometimes to acute) tips.*

3. *Indusium and lamina, especially along veins, clothed with soft hairs (4-8 cells long).* Rhizome branched, often ± matted, 1-2 mm wide, lightly covered with lanceolate to ovate, long acuminate, ciliate-margined, pale brown, lightly latticed, peltate-based scales. Fronds 2-20 cm long, stipes less than 1 cm, narrow oblong to narrow elliptical in outline, rachis densely pubescent underneath; pinnae narrow to broad oblong, obtuse or rounded, the upper margin crenate, the lower usually ± entire. Sori about 1.5 mm diam. and 1 mm from the margin, often more numerous on the acroscopic side. Climber on tree trunk bases and rocks, occasionally on earth banks, in rft of various types from N Qld to S NSW.



....*A. beckleri* (Hook.) Mett., *Nov.Exp.Bot.*I:213 (1870)

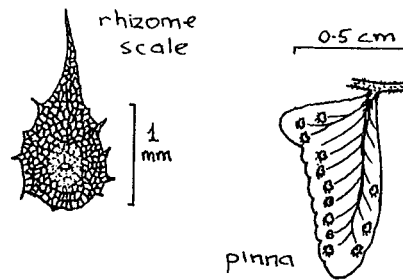
(Syn. *Polypodium beckleri*

Hook., *Aspidium eumundi* F.M.Bail., *Aspidium ramosum* Pal.-Beauv. var. *eumundi* F.M. Bail., *Nephrolepis altescandens* Leurss var. *tenuis* Moore)

3*. *Indusium glabrous, lamina almost so (a few 2-3 celled hairs on veins).* Rhizome branched, 1.5-3 mm wide, covered with dark brown (often colourless around the point of attachment), latticed, lanceolate to broad ovate, acuminate, toothed, peltate scales. Stipes 0.5-3 cm long, densely tomentose and scaly, especially near the base; rachises densely and shortly tomentose; fronds 10-30 cm long, lamina narrow oblong in outline, pinnate, the

Arthropteris, Nephrolepis

pinnae ± triangular, the upper side of the base lobate, tips rounded to obtuse, margins crenate. Sori about 1 mm diam. 1-2 mm from the margin. Uncommon, on tree trunk bases and rocks in tropical and subtropical rft. from N Qld to N NSW, where rare.



....*A palisotii* (Desv.) Alston, *in* Bol.Soc.Broter XXX, Ser.2a,6(1956) (Syn.

Aspidium palisotii Desv., Berl.Mag.V:320 (1811), *Aspidium ramosum* Pal.-Beauv., *Nephrolepis ramosa* (Pal.-Beauv.) Moore, *Arthropteris ramosa* (Pal.-Beauv.) Mett.)

genus *Nephrolepis* Schott; 30 spp. pantrop., Japan, NZ; Aust.6.

Mostly facultatively terrestrial or epiphytic, medium to large ferns with fronds tufted on short, erect or oblique, fimbriate-peltate-scaly rhizomes that give rise to proliferous root-bearing stolons. Stipes not jointed to the rhizome, scaly; lamina pinnate, the pinnae jointed to the rachis, veins simple or forked, free, often ending in lime glands on the upper surface. Sori circular to crescentic, submarginal, indusiate (rarely confluent and apparently marginal). Some species apparently hybridise resulting in "blurring" of character boundaries between spp.

1. *Sori confluent and linear, continuous along most of the upper and lower margins of the pinnae.* Fronds 30-90 cm long, rachis and stipe densely tomentose, the tomentum ultimately deciduous. Pinnae narrow oblong, often ± falcate, acuminate, acute (or blunt to rounded in the lower, sterile ones) basally truncate, often tending to auriculate on the upper side, tomentose underneath, at least when young. Nest-invading epiphyte in rft. of NE Qld; also Old World tropics.



....*N. acutifolia* (Desv.) Christ, Verh.Naturf.Ges.Basel. II(1895) (misappl.name:

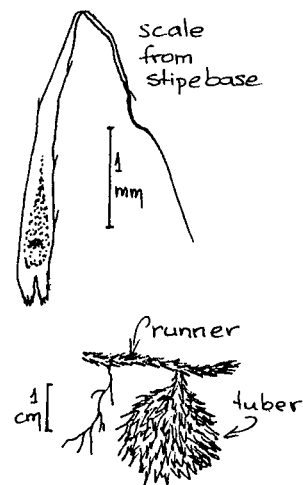
Lindsaea lanuginosa Wall.)

Nephrolepis

1*. *Sori discrete, round, submarginal to somewhat distant from the margins.*

2. *Pinnae less than 4 cm long.*

3. *Scales of stipe base fawn to light rusty-brown, ± free-standing, linear, hair-pointed. Runners thin 1-1.5 mm diam., often wiry, often bearing tubers; indusia crescentic to kidney-shaped with a broad sinus. Fronds 10-60 x 2-5 cm, stipe very much shorter than the rachis, both scaly to some extent. Pinnae gradually shortening towards both base and apex of lamina, oblong to narrow oblong, often slightly falcate, margins obliquely toothed to indistinctly crenate, apex blunt to rounded, base truncate and unequal-sided, the upper usually with a lobe. Sori submarginal. Nest-invading epiphyte, lithophyte or terrestrial in moderately to well-lit sites in various moist communities in NT, E Qld & NE NSW; also Old World tropics, NZ, W Indies.*

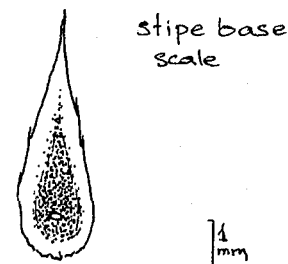


....*N. cordifolia* (L.) Presl, Tent. Pterid. 79 (1836). (Syn.

Polypodium cordifolium L.,

N. tuberosa (Bory ex Willd.) Presl).

3*. *Scales of stipe base blackish with pale margins, appressed, narrow ovate, acute. Runners thick, 2-3 mm diam. and wiry, not bearing tubers, indusia broad kidney shaped to round with a narrow sinus. Stipes much shorter than the lamina, basally scaly. Lamina thin textured, very narrow elliptical in outline, up to 1 m long (often considerably shorter), pinnae shortly stalked, oblong, finely crenate, with a rounded apex and truncate base. Sori submarginal. A climbing scrambler, lithophytic; known only from near Chillagoe, NW Atherton Tbl, the Australian material has been named var. *cavernicola* Domin, Bibl. Bot. 85:66 (1913), other varieties also in NG.*



....*N. radicans* (Burm.f.) Kuhn, Ann. Mus. Bot. Lugd. Bat.

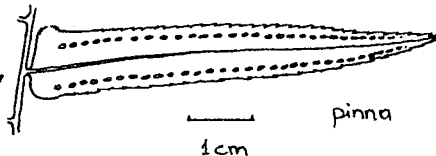
4:285 (1869). (Syn.

Polypodium radicans Burm.f.)

Nephrolepis

2*. *Pinnae longer than 4 cm.*

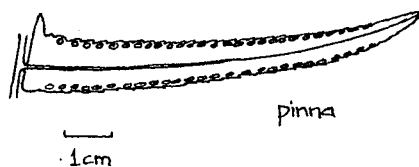
4. *Sori distant from the margins - from about a third to almost half way in from margin to midvein.* Rhizome short and \pm erect, giving off narrow runners; scales up to 5 mm long, narrow lanceolate, spreading, dark brown with paler, hairy margins. Fronds up to about 2 m long, the stipe about a quarter the lamina length; pinnae narrow oblong, acuminate, basally \pm rounded to slightly lobed, margins crenate to toothed, fertile pinnae narrower. Indusium round kidney-shaped. Lithophyte, terrestrial or epiphyte of moderately to well exposed sites, NE Qld; also pantropical.



N. biserrata (Sw.) Schott, Gen.Fil.sub.,t.3(1834). (Syn. *Aspidium biserratum* Sw., *A. exaltatum* (L.) Sw. var. *longipinna* Bth.)

- 4*. *Sori close to margins - not more than about a quarter the distance from margin to midvein.*

5. *Pinna base with a prominent narrow lobe on the upper side; fronds longer than 50 cm.* Stipe and rachis rusty hairy-scaly tomentose; scales of the rhizome and lower stipe lanceolate, shortly fringed and with a dark brown central part and colourless margins, on the upper stipe, rachis and pinna midveins broad ovate acuminate with a long-fringed margin, rusty coloured centrally with paler margins. Pinnae narrow triangular, often falcate, acuminate/acute, margins shallowly and obliquely toothed to crenate; fertile ones narrower; lamina hairy-scaly. Indusia broad kidney shaped. Terrestrial or lithophytic in moist gullies of open forest or epiphytic in rainforest margins; NW Aust. & E Qld; also SE Asia to SW Pac.

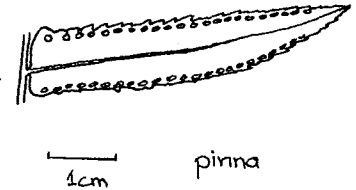


...*N. hirsutula* (Forst.f.) Presl, Tent.Pterid.39(1876).
(Syn. *Polypodium hirsutum* Forst.f.)

Nephrolepis, Grammitis

5*. *Pinna base not thus lobed, or slightly so; fronds less than 50 cm long.*

Fronds erect, tufted on an erect rhizome, runners numerous. Pinnae narrow oblong to linear, obtuse to rounded, bluntly and often irregularly toothed, sometimes \pm falcate, becoming more distantly spaced and reduced towards the base. Sori small, submarginal; indusium kidney-shaped. Terrestrial, lithophytic or epiphytic in rft, especially the margins. Kimberleys and NT, NE Qld, NG, SW Pac.



N. obliterata (R.Br.) Carr., in Seem., Fl. Vitiense 362 (1873). (Syn. *Nephrodium obliteratum* R.Br.)

order Polypodiales

family GRAMMITIDACEAE 12/c.460

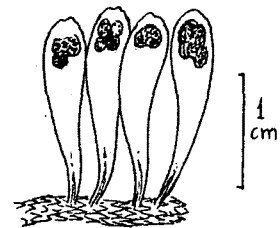
genus Grammitis Sw. 160 spp. pantrop. to S. temp. Aust. 10, all epiphytic or lithophytic.

Small to very small ferns with narrow, simple, entire fronds. Rhizome short-creeping to erect (medium-creeping in *G. queenslandica* and in *G. poeppigiana*) and clothed in simple scales. Stipes much shorter than the lamina and often indistinct. Veins free and forked, oblique to the midrib. Sori superficial to sunken, lacking indusia, circular to linear in outline, mostly in a single row either side of the midvein. Gametophyte elongate. Epiphytes or lithophytes, rarely terrestrial, in cool, moist forests, particularly in the mossy, mist forests.

The following key is largely adapted from Parris (1975).

1. *Stipes glabrous.*

2. *Rhizome medium- to long-creeping, scales lanceolate to broad lanceolate, acute. Stipes indistinct, winged, narrowly towards the base. Lamina spatulate to broad oblanceolate, obtuse commonly 1.5-3 cm long by 2.5-3.5 mm wide, glabrous or sparsely and shortly hairy on the midrib, leathery, the veins not visible. Sori rounded, towards*



Grammitis

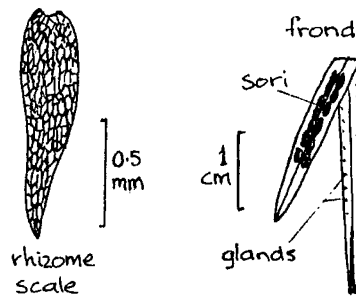
the apex, often confluent with age. Lithophytic in subalpine communities, above 1200 m in S Alps and in Tas.; otherwise circum-antarctic.

....*G. poeppigiana* (Mett.) Pic.-Ser.,

G. billardieri Willd. var. *magellanica* f. *nana*, *G. kerguelenensis* Tard., *G. armstrongii* Tindale; misappl. names: *G. crassium*, *G. nana*, *G. pumila*.

2*. Rhizome short-creeping to erect, i.e. fronds tufted.

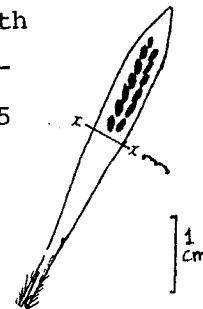
3. Veins ending in a usually dark gland on the abaxial surface; indurated annulus cells 7-10 in number. Rhizome scales lanceolate, acute. Stipe indistinct, winged over most of its length. Lamina oblanceolate, obtuse to acute, 2-5 cm long by 2-3 mm wide, glabrous, thinly leathery, veins visible with the endings darkened (hydathode) on the upper surface. Sori oval to oblong, 2-25 pairs in the upper $\frac{2}{3}$ of frond. In rft above c. 600 m E Qld & E NSW.



....*G. stenophylla* B.S. Parris, Bot. J. Linn. Soc. 70:35, Fig. 1G, H (1975)

3*. Vein-endings not dark; indurated cells of annulus 9-16.

4. Lamina oblanceolate acute to obtuse and usually with inrolled margins; spores mostly 25-38 μ m diam. Rhizome scales lanceolate, acute. Stipe indistinct, winged almost to the base, usually with whitish to pale red-brown hairs when young, deciduous with age. Lamina mostly 3.5-7 cm long by 2.5-5.5 mm wide, glabrous, thinly leathery. Sori oblong \pm parallel or slightly oblique to the mid-vein, in the mid and upper parts of the lamina, usually 8-16 pairs. Above c. 500 m lithophytic or epiphytic in temperate rft and its ecotones, SE Qld - Vic. & Tas.



....*G. meridionalis* B.S. Parris Bot. J. Linn. Soc. 70:33, Fig. 1E, F (1975)

4*. Lamina narrow oblanceolate, acute to broad acute, the margins flat;

Grammitis

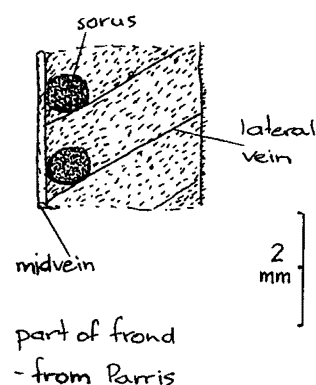
spores mostly 34-48 μm diam. Lamina usually 3-8 cm long by 2.5-4 mm wide. Otherwise very similar to the preceding sp. In Aust. known only from Hastings Caves, Tas.; also NZ.

....*G. magellanica* Desv. ssp. *nothofagei* B.S. Parris,
NZ J.Bot.14:100(1976)

1*.*Stipes hairy.*

5. *Stipe hairs whitish to pale red-brown.*

6. *Lamina membranous and translucent, veins visible in transmitted light, frond \pm evenly clothed in whitish hairs about 0.1 mm long. Lamina lanceolate acute, the margins slightly crenulate. Sori \pm round, up to 32 pairs in mid-frond. Known here from only one collection - on mossy tree trunks and rocks, 1100 m on Mt Finnigan, near Cedar Bay, N Qld.*

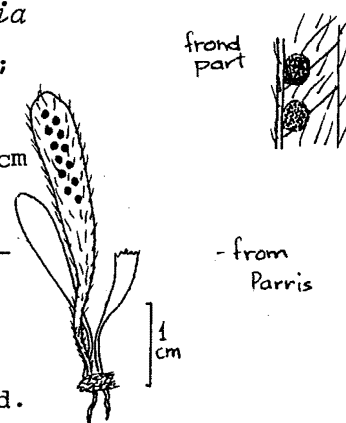


....*G. adspersa* (Bl.) Bl., Flora Javae 2:115 (1830)

(Syn. *G. leonardii* Parris, at press)

6*.*Fronds leathery, opaque, veins not visible in transmitted light.*

7. *Sori, up to 6 pairs, \pm round; sporangia setose. Rhizome scales ovate, obtuse; stipes 2-15 mm long, whitish-velvety. Lamina spatulate-oblongate, 2-3.5 cm long by 3-5.5 mm wide, clothed in whitish hairs, sometimes more persistent on the midrib, thinly leathery, veins not visible. Sori 1-2 mm diam. Known only from Mt Bellenden Ker, N Qld.*



....*G. albosetosa* (F.M. Bail.) B.S. Parris, Bot.J.Linn.

Soc.70:36,

Fig.11,J.(1975) (Syn. *Polypodium albosetosum* F.M. Bail.)

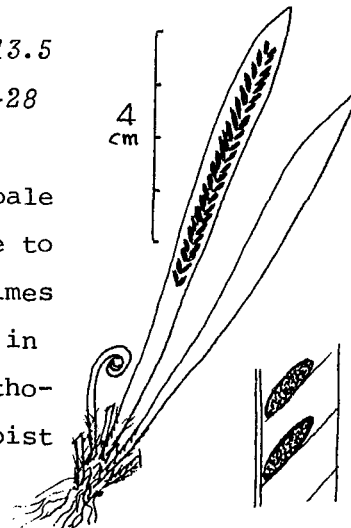
Grammitis

7*. *Sori more than 6 pairs, round to oblong; sporangia naked.*

8. *Stipe hairs sparse; lamina usually 3-7 cm long by 2.5-5 mm wide; spores usually 25-38 μ m diam.*

G. meridionalis B.S. Parris (See above.)

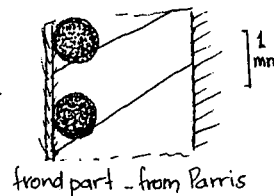
8*. *Stipe hairs \pm abundant, lamina usually 6.5-13.5 cm long by 4.5-7 mm wide; spores usually 22-28 μ m diam. Rhizome scales lanceolate, acute, stipe 1-2 cm long, clothed with whitish to pale red-brown hairs. Lamina narrow oblanceolate to \pm linear, acute to obtuse, rounded or sometimes notched, \pm leathery. Sori oblong, oblique, in 8-27 pairs in the mid to upper regions. Lithophyte or epiphyte in cooler rft and other moist forests of NSW, Vic. & Tas. also in NZ.*



....*G. billardieri* Willd., Sp.Pl.5:19(1810) (Syn. *G. australis* R.Br.)

5*. *Stipe hairs dark red-brown.*

9. *Hairs on lamina restricted to midrib and margins; veins visible in transmitted light. Rhizome scales lanceolate, acute; stipes abundantly dark red-brown hairy. Lamina narrow elliptic, acute, 3-9 cm long by 4-7 mm wide, membranous, translucent; veins visible. Sori round, 1-2 mm diam., 20 or so pairs in the frond mid region. Known in Aust. from one collection on Mt Finnigan, near Cedar Bay, N.Qld; also Sri Lanka to Taiwan, Malesia & SW Pac.*



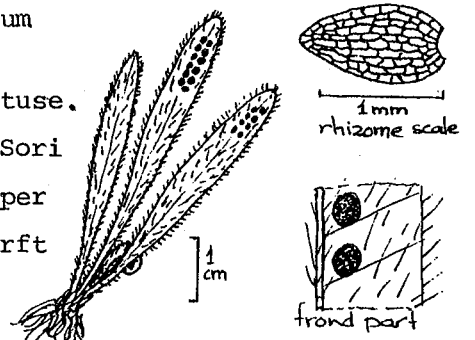
....*G. reinwardtii* Bl., Enum.Addend.:114, Pl.48, fl.(1828)

9*. *Hairs on all parts of frond; veins not visible in transmitted light.*

10. *Rhizome erect, fronds tufted; stipe hairs usually longer than 0.6 mm; lamina 3.5-7 cm long by 3-5.5 mm*

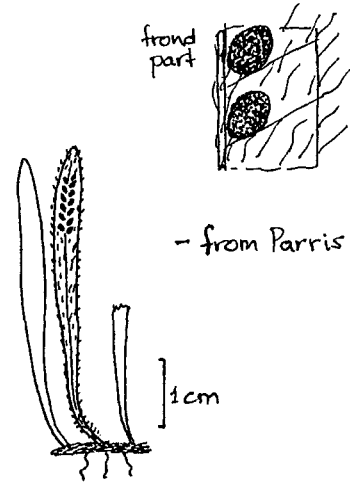
Grammitis, Scleroglossum

wide. Rhizome scales ovate to lanceolate, obtuse. Lamina oblanceolate, acute, quite leathery. Sori \pm round, 0.5-2 mm diam., 9-20 pairs in the upper part of frond. Epiphytic and lithophytic in rft at higher altitudes in NE Qld.



...G. wurunuran B.S. Parris, Bot.J.Linn.Soc.70:40, Fig.5G, H(1975) (Syn. *Polypodium hookeri* sens. Bailey, Lith.Ferns Qld.)

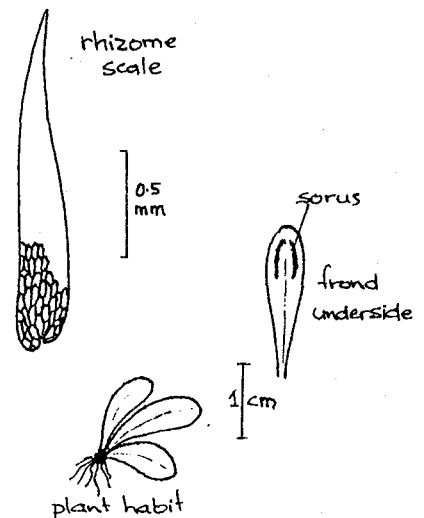
10*. *Rhizome medium-creeping, fronds not tufted; stipe hairs usually shorter than 0.6 mm; lamina usually 1.5-3.5 cm long by 2-3 mm wide*. Rhizome scales ovate to lanceolate, obtuse. Lamina oblanceolate, obtuse, quite leathery. Sori \pm round, 1-1.5 mm diam., as many as 10 pairs, in the upper frond. Epiphytic and lithophytic in rft from 90 m to 900 m, from the M^CIlwraith Ra. to Paluma Ra., endemic in N Qld.



...G. queenslandica B.S Parris, Bot.J.Linn.Soc.70:40, Fig.5E,F(1975) (Syn. *Polypodium hookeri* sens. Bail.,Lith. Ferns Qld.)

genus *Scleroglossum* v.Ald. v. Ros., 6, Sri Lanka, Malesia, SW Pac.; Aust.1

The Aust. sp. is a very small, tufted fern growing on mossy trees and rocks. Rhizome short, erect to short-creeping, densely scaly with lanceolate, light brown, soft, non-peltate scales about 1-2 mm long, roots thin, wiry and numerous from the frond bases. Fronds tufted, usually 2-4 alive at once, 1-4 cm long by 2-5 mm wide, harshly leathery to \pm fleshy, linear to narrow oblong or spatulate, gradually tapering to the base, apex obtuse or rounded, entire, smooth and glabrous except for scattered, rusty, stellate hairs on young fronds. Sori 2, linear, in submarginal grooves in the apical



Scleroglossum, Ctenopteris

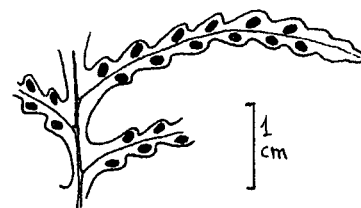
third, to almost the apex of the frond. Mostly growing in moderately exposed microhabitats in rft at altitudes above about 1000 m in N Qld.

- S. woornooran (F.M. Bail.) C.Chr., Citn.Gdns.Bull.
Str.Settl.4:407
(1929) (Syn. *Vittaria woornooran* F.M.
Bail.)

genus *Ctenopteris* Blume ex Kunze, 200 pantrop., Aust. 6

The Aust. representatives are small to moderately small ferns with tufted fronds in two close rows on a very short-creeping rhizome. Rhizome clothed in brown, \pm latticed, non-peltate scales; stipes distinctly undulate-winged, lamina \pm leathery, scantily clothed with brown or reddish, stiff hairs, lanceolate to elliptical in outline, pinnatifid or pinnatisect (to bipinnatifid in *C. heterophylla*), narrowing at base and apex; veins free, simple or forked, pinnate in the segments. Sori naked, terminal on veins, submarginal to superficial, impressed or in crater-like receptacles, round or elliptical. Epiphytes or lithophytes of lightly littered, to \pm clean or often mossy surfaces in more sheltered, shaded epiphyte zones in rft and related communities.

1. *Lamina segments crenate to obliquely pinnatifid along their entire length, widely spaced (spaces much wider than segments); lamina not usually more than about 4 times longer than stipe. Restricted to temperate rft of Vic. and Tas. (& NZ). Rhizome scales not prominently latticed, lanceolate with entire margins. Stipes scaly at the base, sparsely lax-hairy above, mostly about $\frac{1}{4}$ to $\frac{1}{3}$ the length of the lamina, with narrow, tapering wings almost to the base.*



part of frond

Fronde mostly 5-25 cm long by 2-6 cm wide, arching, lanceolate to elliptical in outline with a drawn out tip and narrowing to a flexuose wing basally, from thin textured to almost leathery. Lamina segments somewhat oblique and basally decurrent, often irregular in length. Sori elliptical, up to about 20 per segment, about 1.5-2 x 1 mm. Epiphyte (& lith.) of mid to lower zones.

- *C. heterophylla* (Labill.) Tindale, Amer.Fern J.41:
100(1951) (Syn.

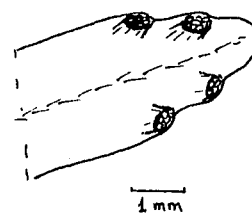
Grammitis heterophylla Labill.;
Polypodium grammitidis R.Br.)

Ctenopteris

1*. Lamina segments entire or crenate only in the apical $\frac{1}{4}$ or so, closely spaced, (spaces not wider than segments); lamina more than 5 times longer than stipe; growing in rft of tropical Qld.

2. Sori in crater-like depressions.

3. Soral craters marginal to submarginal, the opening \pm at right angles to the lamina surface and directed laterally (i.e. directed \pm parallel to the surface of the lamina); apical quarter of pinnae crenate. Rhizome scales darkly latticed, the margins prominently bristled. Stipe (and rachis) moderately densely clothed with brown, erect bristles, very much shorter than the lamina, with tapering wings to near the base. Fronds mostly about 10-25 cm long by 1.5-3 cm wide, narrow elliptical to almost linear in outline, tapering gradually basally into sinuate wings and less gradually apically, sometimes with a short, drawn out tip, lamina sparsely bristley. Pinnae 2-3 mm wide, crenate in the apical quarter or so, each crenation with a single sorus; crater margins bristled. MCIlwraith Ra.



tip of frond lobe

to as far south as at least the Johnston R. and above ca. 300m. SE As. to Pac.

.... *C. contigua* (Forst. f.) Holttum, Rev. Fl. Mal. 2:230, f.

130 (1955) (Syn. *Trich-*

omanes contiguum Forst. f., *Prosaptia contig-*
ua (Forst. f.) Presl).

3*. Soral craters distant from margins to submarginal, opening in a plane parallel to, or oblique to the lamina surface and directed upwards or obliquely upwards from the surface; pinnae apices entire or slightly sinuate. Fronds mostly 10-20 cm long by 2-5 cm wide; otherwise very similar to the preceding sp. Mostly at altitudes above ca. 500m; NE Qld, endemic.



tip of frond lobe

.... *C. maidenii* (Watts) S. B. Andrews, *Austrobaileya* 1:12

(1977). (Syn. *Poly-*

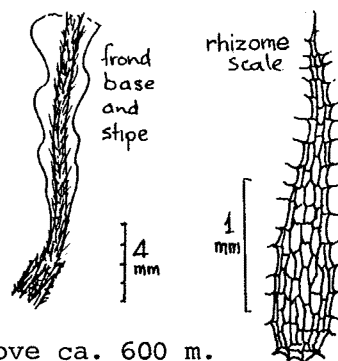
podium maidenii (Watts).

Ctenopteris

2*. *Sori superficial, not in craters.*

4. *Sori circular in outline.*

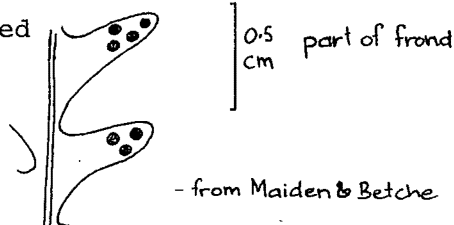
5. *Stipes and rachises conspicuously, densely hairy; fronds 6-25 cm long, suberect to arching or pendulous. Rhizome scales narrow lanceolate, latticed and bristle-margined. Stipe and rachis hairs pale to dark brown, or red-brown, erect and bristle-like. Lamina ± leathery, moderately densely red-brown-hairy on the underside, sparsely so above, narrow lanceolate in outline, pinnae reducing gradually towards the frond base to short lobes and thence to brief, sinuate wings which narrow and end 2-3 mm from the stipe base. Sori 2-6 or so per pinna, in the apical $\frac{2}{3}$, round, about 1 mm diam., more hairy than the surrounding lamina surface. Endemic, Atherton Tbl-d-Bellenden Ker Ra.*



district and adjacent areas at altitudes above ca. 600 m.
(Fig. 5a, p.75)

....*C. fuscopilosa* (F. Muell. & Bak.) S.B. Andrews, *Austro-baileya* 1:12 (1977) (Syn. *Polypodium fuscopilosum* F. Muell. & Bak.)

5*. *Fronde glabrous, 2.5-5 cm long, lanceolate in outline. Rhizome scales pale brown, lanceolate. Lamina segments blunt with slightly recurved margins, the lower ones shortening gradually into a sinuate wing, the upper shortening into the lobed, blunt, frond apex. Lamina texture almost herbaceous. Sori 1-4 per segment. Atherton Tbl-d; endemic.*



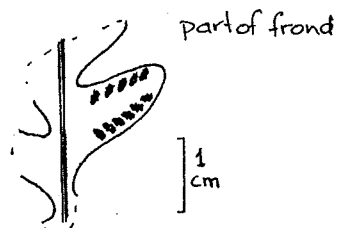
....*C. walleri* (Maiden & Betche) S.B. Andrews, *Austro-baileya* 1:12 (1977) (Syn. *Polypodium walleri* Maiden & Betche)

4*. *Sori elliptical to oval (sometimes tending to round with age).*

6. *Sori twice as long as wide with a few short, dark hairs on the*

Ctenopteris, Calymmodon

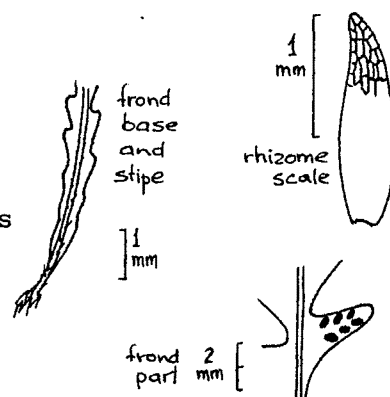
margins; 10-14 on the larger lobes. Fronds up up to about 25 cm long by 2.5 cm wide; lamina very narrow elliptical, dark green above, paler beneath, veins not prominent. Stipe 1 cm or so long, black, narrowly winged, sparsely and shortly hairy. Lithophyte. NE Qld.



....*C. blechnoides* (Grev.) Wagner & Grether, Univ. Cal.

Publ. Bot. 23:61(1948)

6*.Sori less than twice as long as wide, lacking such hairs, 4-8 on larger lobes. Fronds 3-12 cm long by up to 2 cm wide, narrow oblong to narrow lanceolate; stipe less than 1 cm long, scantily beset with stiff, brown hairs, rachis black, veins indistinct. M^CIlwraith Ra. to the Atherton Tbl'd and Bellenden Ker Ra. and nearby, mostly at altitudes above ca. 500 m.



....*C. gordonii* (Watts) S.B. Andrews, Austrobaileya

1:12(1977) (Syn.

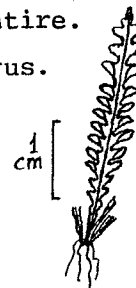
Polypodium gordonii Watts)

genus *Calymmodon* Presl, 25, Sri Lanka to Tahiti, Aust. 1.

The species in Australia is a very small lithophytic or epiphytic fern usually growing among bryophytes in sheltered, shaded epiphytic zones in rft at altitudes above about 1000 m. Rhizome very short, ± erect, covered with lanceolate, pale brown, blunt, non latticed, entire scales; stipes crowded, glabrous, very short. Fronds 2-3 cm long, 3-4 mm wide, pinnatisect, the segments oblique, oblong with obtuse or round apices, alternate, decurrent, forming a wing down to the next, reducing in size towards the base to form sinuate wings, one or two reduced at the apex; lamina glabrous, ± herbaceous, margins of segments entire. Segments folded in half upwards to enclose the single, central sorus. Above ca 1000m; Atherton Tbl'd, and nearby mountains.

....*C. luerssenianus* Domin, Bibl.Bot. 85:71

(1913)



Schellolepis

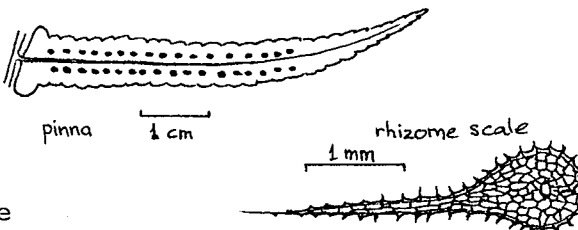
family POLYPODIACEAE about 50/600, mostly epiphytes

Small to large ferns, with rhizome contracted to elongate, peltate-scaly, stipes mostly jointed to short phyllopodia. Lamina simple to pinnate, venation free or reticulate, veinlets often ending in hydathodes in areoles (enclosed spaces). Sori round and on vein junctions, linear along veins or acrostichoid (sporangia spread \pm evenly over a relatively large area).

genus Schellolepis Sm., 20, SE Asia, Malesia, SW Pac; Aust. 2.

Moderately large nest-invading epiphytes or lithophytes with fleshy, medium-creeping rhizomes. Rhizome scales latticed, basally bilobed, ciliate or spiny-toothed, acuminate and deciduous, rhizome often glaucous. Fronds pinnate, pinnae obliquely toothed, jointed to the rachis, herbaceous, veins conspicuous, forking and joining to form areoles against the midvein (costa) and again to form smaller ones. Sori in a row either side of the midvein, terminal on veinlets in the costal areoles, sunken, prominent above.

1. *Pinnae with rounded truncate to lobed (auriculate) bases, tapering gradually to the apex, closely spaced (usually as broad as or broader than the spaces between them); soral paraphyses few, simple, hidden beneath the sporangia; rhizome scale margins spiny-toothed.* Rhizome glaucous, scales relatively early-deciduous. Fronds commonly 30-100 cm long (to 3 m rarely), 5-15 cm wide, arching to pendulous, hairy (particularly in small and juvenile fronds) to almost glabrous, usually also with scattered, small scales. Sori about 1-1.5 mm diam. C. York, south to at least Rockhampton; in rft and related communities of the lowlands and up to at least 1000 m; also SE Asia, Malesia, SW Pac.



....*S. subauriculata* (Bl.) Sm., in Hook. & Bauer Gen.

Ferns Br. & For. 82 (1866)

(Syn. *Polypodium subauriculatum* Bl.,

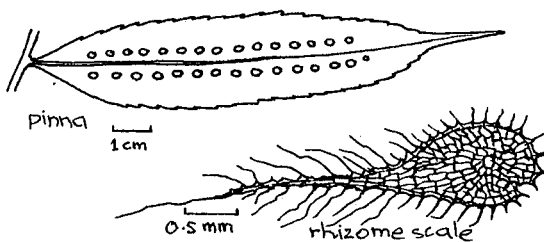
Goniophlebium subauriculatum (Bl.) Presl)

- 1*. *Pinnae with tapering bases, narrow oblong to linear, with and acuminate tip, widely spaced (spaces much wider than pinnae), soral paraphyses*

Schellolepis, Dictymia

branched or latticed and darker than the sporangia, in a ring around the sorus; rhizome scale margins ciliate, particularly towards the apex.

Rhizome not usually glaucous, scales semi-persistent. Fronds up to about 2 m long, 10-25 cm wide, arching to pendulous, ± glabrous in adults, juveniles hairy and may have pinnae up to about 30x4 cm, but few of them, or solitary (i.e. frond simple). Sori 1-1.5 cm diam. Lowland trop. rft, up to about 500 m; C. York to Cardwell Ra.; also Malesia.



....*S. percussa* (Cav.) Pic.-Ser., *Webbia* 28 : 470 (1973).

(Syn. *Cyathea percussa* Cav., *Polypodium verrucosum* Sw., *Goniophlebium verrucosum* Sm.)

genus *Dictymia* Sm., 4 SW Pac., Aust. 1

The genus is typified by irregular aereoles without (or only very rarely with) free included veins and by the absence of soral paraphyses as well as some microscopic sporangial features. The Aust. sp. is an epiphyte or lithophyte growing on lightly littered or mossy surfaces of mid epiphyte zones in warm temperate, subtropical and highland tropical rft, from the Atherton Tbl to S NSW.

Rhizome medium-creeping, 2-6 mm diam., ± densely covered with lanceolate to ovate, dusky brown, latticed, scales that are entire or with a few marginal processes and ± persistent. Fronds 10-60 cm long by 0.5-2 cm wide, strap-shaped, apically acute, basally gradually tapering into a short stipe, dark green, leathery, shiny, the margins recurved slightly, entire or sinuate, midvein prominent on both sides, venation obscure. Sori in a single row either side of the midvein, oval, 3-6 x 2-3 mm, sunken, impressed above (Fig. 2e, f, p.3)

....*D. brownii* (Wikstr.) Copel., *Univ. Cal. Publ. Bot.*

16:14 (1929). (Syn.

Polypodium brownii Wikstr., *P. attenuatum* R.Br., *P. brownianum* Spreng., *Drynaria browniana* (Spreng.) Fée, *Dictyopteris attenuata* (R.Br.) Presl)

Microsorium

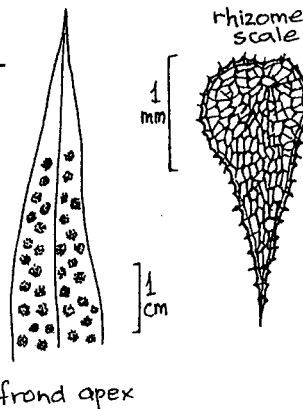
genus *Microsorium* Link, 60, Old World tropics & subtropics; Aust. 7

Mostly medium sized epiphytes, 2^o hemi-epiphytes, semi-epiphytic climbers or lithophytes. Rhizome short- to medium-creeping, ± covered with peltate-based, latticed scales. Stipes jointed to short phyllopodia; lamina simple to pinnatifid, membranous to leathery, the margins entire and often recurved or somewhat thickened, glabrous or with scattered peltate scales on main veins, net-veined, with free veins ending (often hydathode tipped) in the spaces. Sori lacking indusia, round to oval, superficial to ± deeply sunken, in rows or scattered.

1. Sori scattered (moderately densely), confined to the apical half, or less, of the lamina, up to 1.5 mm diam.; fronds simple and entire (rare lobed forms occur and are more common in cultivation.)

2. Fronds 1.5-3.5 cm wide, with acute to acuminate apices, ± thin-textured, up to 50 cm long. Rhizome about

5-8 mm diam., fleshy, to almost woody, short-creeping, scales very dark brown, ± free standing; stipes very short, narrowly winged or angular. Lamina narrow lanceolate, glabrous, margins recurved and entire, mid-rib prominent above and below, venation obscure. Sori light to pale brown, 1-1.5 mm diam., usually restricted to the apical



third of the lamina. Epiphyte or lithophyte of lightly littered surfaces or minor humus accumulations in middle epiphyte zones of rft of trop. Qld, up to ca 1200 m altitude,

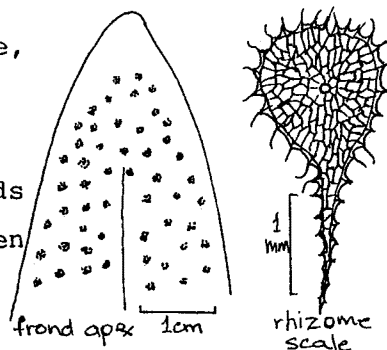
....*M. superficiale* (Bl.) Ching var. *australiense* (F.M.

Bail.) S.B. Andrews, *Austro-baileya* 1:12 (1977) (Syn. *Polypodium superficiale* Bl. var. *australiense* F.M. Bail.)

2*. Fronds 4-10 cm wide with obtuse to almost acute apices, ± leathery, up to 120 cm long. Rhizome about 6-10 mm wide, short- to medium-creeping, scales dull brown, appressed to somewhat free-standing; stipes very short and winged virtually to the base. Lamina ob-lanceolate to narrow lanceolate, bearing scattered scales similar

Microsorium

to, but smaller than those of the rhizome, margins slightly decurved and coarsely undulate, midrib equally prominent above and below, veins obscure. Immature fronds yellow-green and often all leaves are when growing in exposed sites. Sori 1-1.5 mm



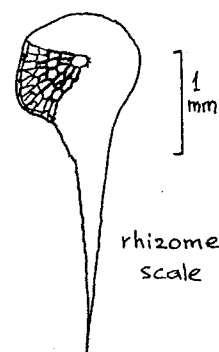
diam., in distal third of lamina. Most commonly lithophytic in rft margins and in more open communities near creeks, the sea, etc., often quite exposed. Non-CAM plant. Cape York to near Kingaroy, Qld; up to ca 1000 m; also Old World tropics & SW Pac.

....*M. punctatum* (L) Copel., Univ.Publ.Bot.16:111(1929)

(Syn. *Acrostichum punctatum* L.,
Polypodium irioides Poir.)

1*.Sori in a single or double row each side of the midvein of the frond or segment, over most of the lamina, 2 mm or more in diam; lamina mostly pinnatifid (sometimes some fronds simple and entire in *M. membranifolium*, *M. scandens* and *M. diversifolium*).

3. Sori closer to frond margin than midvein; rhizome tough and wiry, mostly 2-4 mm wide, ± covered with free-standing, persistent scales; stipes mostly a third or less of lamina length. Rhizome scales lanceolate to narrow lanceolate, with dilated bases, dark brown. Stipes winged down to at least half length usually. Lamina dark green, thin-



textured, segments mostly long acuminate, the margins entire to crenate, flat, not or slightly thickened; musk-scented when fresh or freshly dried; veins at least moderately conspicuous. Sori round to oval, usually 1 or 2 mm long. Atherton Tbl'd to E Vic.; also NZ, Norfolk I. (Fig.5k, p.75)

....*M. scandens* (Forst.f.) Tindale, Amer.Fern J. 50:241

(1960) (Syn. *Polypodium*

scandens Forst.f., *Phymatodes scandens*
(Forst.f.) Presl, *Drynaria scandens* (Forst.f.)
Fée; in error : *Polypodium pustulatum*,

Microsorium

Pleopeltis pustulatum, *M. pustulatum*.)

3*. Sori either about halfway between margin and midvein or closer to the latter; rhizome mostly wider than 4 mm and fleshy, scales mostly appressed and/or deciduous; stipes mostly at least a third as long as, to longer than lamina length.

4. Rhizome scales deciduous, rhizome often glaucous; lamina lobes acute to obtuse, the terminal one usually much longer than the others; fronds mostly 10-35(-50) cm long. Rhizome 3-7 mm wide, scales appressed, lanceolate, acuminate, brown with a dark centre and lighter margins, entire or minutely hairy towards the apex. Lamina light green, with veins conspicuous, ± leathery, the margins entire or undulate, thickened noticeably, the terminal lobe considerably longer than the lateral ones.

Sori 2-5 mm diam., mostly approx. midway

between margin and midvein, somewhat impressed. Semi-epiphytic climber, epiphyte or lithophyte of subtropical to temperate rft and related communities, in a variety of microhabitats; from extreme SE Qld to Tas. (Fig. 51, p. 75)

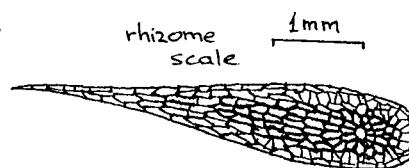
....*M. diversifolium* (Willd.) Copel., Univ. Cal. Publ.

Bot. 16: 114 (1929)

(Syn. *Polypodium diversifolium* Willd.; *P. billardieri* R.Br.; *Pleopeltis diversifolia* (Willd.) Melvaine; *Pl. billardieri* (R.Br.) Moore; *Phymatodes diversifolia* (Willd.) Pic.-Ser.; *Ph. billardieri* (R.Br.) Presl; *Chrysopteris billardieri* (R.Br.) Link; *Drynaria billardieri* (R.Br.) Sm.)

4*. Rhizome scales persistent, rhizome green, never glaucous; lamina lobes acuminate to acute, the terminal ones usually shorter to not much longer than the others; fronds mostly 25-80(-120) cm long.

5. Sori closer to midvein than margin or in two rows each side, moderately impressed; rhizome scale margins prominently toothed; veins



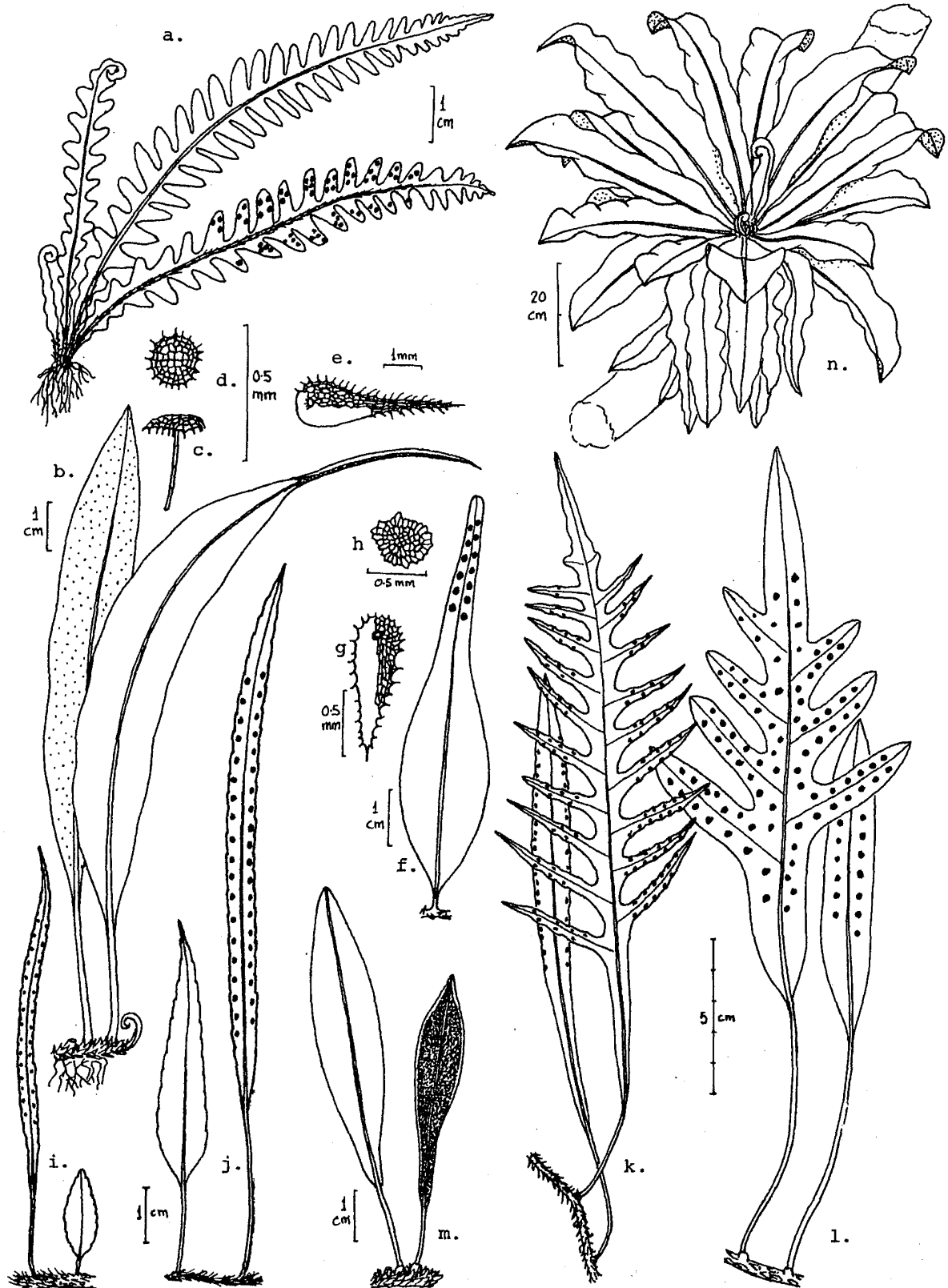
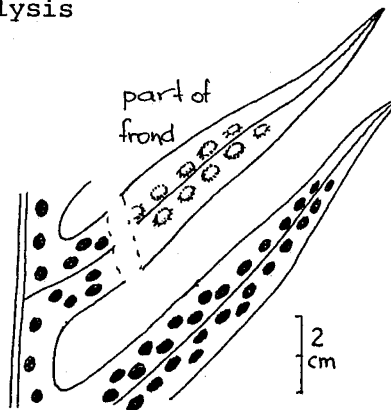


Figure 5. a. *Ctenopteris fuscopilosa* habit study. b, c, d, e. *Belvisia mucronata* habit, soral paraphysis side view & top view, rhizome scale. f, g, h. *Lemnaphyllum accedens* fertile frond, rhizome scale, top view of deciduous soral paraphysis. i, j. *Crypsinus simplicissimus* habit study of two variants with one sterile & one fertile frond each. k. *Microsorium scandens* showing lobed & entire frond. l. ditto *M. diversifolium*. m. *Elaphoglossum queenslandicum*, a sterile & fertile frond. n. *Asplenium australasicum* or *A. nidus* habit.

Microsorium, Colysis

inconspicuous. Rhizome 4-8 mm wide, medium-creeping, scales ovate, light brown, the margins prominently toothed. Fronds mostly 30-60(-90) cm long, light green, the margins thickened and undulate. Sori 2-5 mm diam., in one or sometimes two rows either side of the midvein, sunken, prominent above. Lithophyte or epiphyte in moderately to well exposed sites, mainly coastal; NW Aust., NE Qld; ± pantropical.

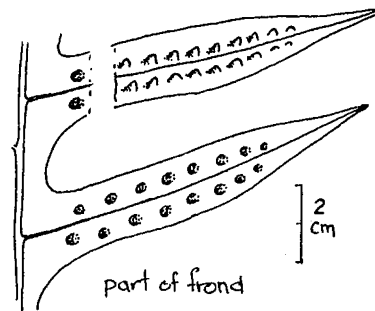


...*M. grossum* (Langsd. & Fisch.) S.B. Andrews, Handb.

Ferns Fern Allies Qld

Append. 1 (1982) (Syn. *Polypodium grossum* Langsd. & Fisch.; misappl. : *M. scolopendrium*, *P. phymatodes*)

5*. Sori about midway between midvein and margin, deeply sunken; lamina lobes acute to shortly acuminate; rhizome margins ± entire, veins conspicuous. Rhizome short-creeping. Fronds often > 1 m long, the margins not markedly thickened. Sori 3-5 mm diam., in a single row each side of the midvein, deeply sunken and very prominent above. Lithophyte or epiphyte of lower zones in drier rft or more open communities. NE Qld.



...*M. membranifolium* (R.Br.) Ching, Bull. Fan. mem. Inst.

Biol. 10:239 (1941)

(Syn. *Polypodium membranifolium*

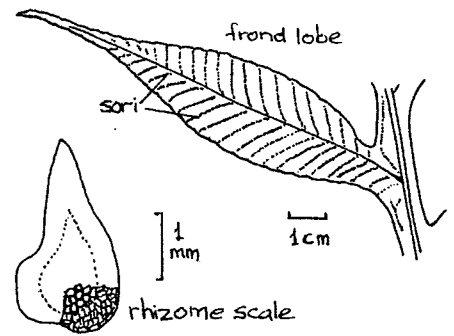
R.Br.; *M. nigrescens* (Bl.) Copel.)

genus *Colysis* Presl, 30 Old World Tropics, Aust. 2.

This genus is very closely related to *Microsorium*, especially the *M. scandens* group and is very similar to them in habit and rhizome and frond details. The character that separates them is the form of the sorus, which in *Colysis* consists of a row of sporangia along main lateral veins of the segments. Pinnatifid fronds are commonest but entire ones are not uncommon. Semi-epiphytic climbers on tree trunk bases, logs and rocks or becoming secondarily epiphytic by death of the basal parts.

Colysis, Drynaria

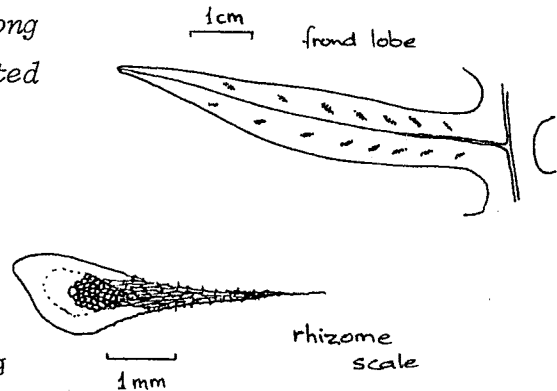
1. Sori extending from the midvein almost to the margin; lamina segments 6-20 cm long by 2-35 cm wide, apically long-narrow-tailed, basally conspicuously narrowed. Rhizome considerably flattened, 5-10 mm wide, scales ovate acute, brown, centrally darker, margins entire, partially erect. Fronds usually arching, 20-60 cm long, dark to bright mid green, venation conspicuous, stipes about half as long as the lamina, narrowly winged almost to the base. In rft from lowlands to at least 1000 m altitude; from Iron Ra. to at least the Bellenden Ker Ra.



....*C. ampla* (F. Muell. ex Benth.) Copel., Gen. Fil. 199 (1947) (Syn.

Grammitis ampla F. Muell. ex Benth., *Poly-podium queenslandicum* C. Chr.)

- 1*. Sori short, (1-2 mm long) on veins connecting segment lateral veins, slightly closer to the margin than midrib; lamina segments 3-7 cm long by 0.5-1.5 cm wide, not constricted basally, apically acuminate and finally blunt. Rhizome slightly flattened, 2-5 mm wide, scales broad ovate, long acuminate, partially erect, dusky brown, darker centrally, margins tending to toothed. Fronds suberect to arching, light green to grey-green, venation conspicuous, stipes about a third of lamina length or less, winged almost to the base. Highland rft of NE Qld.



....*C. sayeri* (F. Muell. & Bak.) Copel., Gen. Fil. 199 (1947) (Syn. *Gymnogramme*

sayeri F. Muell. & Bak.; F.M. Bail., misappl. : *Grammitis membranacea*)

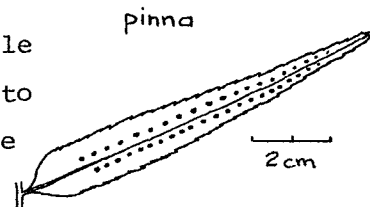
genus *Drynaria* (Bory) Sm. 20, Old World tropics; Aust. 3

Large epiphytes or lithophytes, sometimes terrestrial, with distinctly

Drynaria

dimorphic fronds and very thick and fleshy, medium creeping, densely ciliate-scaly rhizome. Sterile ('nest', 'basket' or 'shield') leaves, relatively short and broad, cordate based and shallowly pinnatifid or sinuate-margined, \pm sessile, early drying to brown and stiff, papery texture; these catch and accumulate litter which on decay forms a mass of humus, providing mineral nutrients and a peaty, sponge-like water reservoir. Fertile leaves much longer than sterile ones, projecting, deeply pinnatisect (pinnate in *D. rigidula*) the segments leathery and eventually deciduous; veins \pm prominent; stipes, rachises and main veins scaly to some degree. Sori superficial, round, exindusiate, lacking paraphyses (except in *D. rigidula*). Often form the substrate for micro-communities of nest-invading epiphytes.

1. Fertile fronds pinnate; sori in a single row either side of the pinna midvein, possessing paraphyses. Rhizome 2-3 cm wide, scales narrow lanceolate acuminate, ciliate with an appressed, darker centred peltate base and a free standing apex, brown to red-brown. Nest leaves about 15-30 cm long by 5-8 cm wide with scattered stellate hairs and scales. Fertile fronds pinnate, up to 1.5 m long, narrow oblong to oblanceolate in outline, pinnae narrow lanceolate obliquely and indistinctly toothed, the rachis scaly/hairy. Sori 0.5-2 mm diam., slightly sunken. Rainforest, monsoon forests, usually in upper, more exposed zones, or on rocks in more open communities. Non-CAM plant. From C. York to extreme NE NSW and up to over 1000 m alt.; also SE Asia - SW Pac.

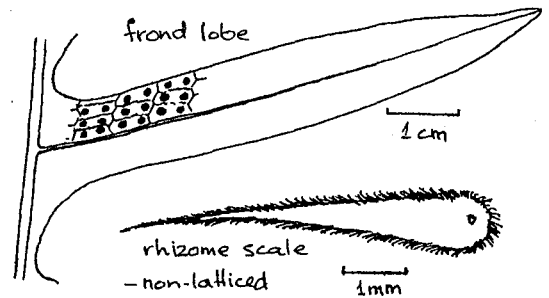


....*D. rigidula* (Sw.) Bedd., Ferns Br. India 314 (1869)
 (Syn. *Polypodium rigidulum*
 Sw., *P. diversifolium* R.Br., *P. gaudi-*
chaudii Bory, *D. gaudichaudii* (Bory)
 Gaud., *Phymatodes gaudichaudii* (Bory)
 Presl)

- 1*. Fertile fronds pinnatifid; sori either scattered or in rows either side of secondary veins, lacking paraphyses.
2. Sori in a row either side of the secondary veins (may appear irregular at a glance due to failure of some sori to develop), rhizome 2-4 cm wide, slightly flattened \pm regular in width, densely persistent-scaly,

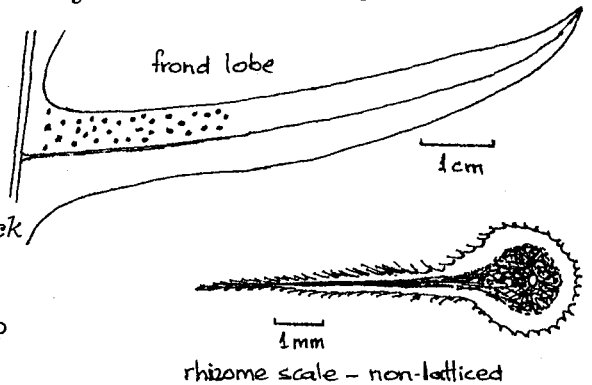
Drynaria, Crypsinus

the scales very narrow lanceolate to linear, ciliate, light brown, slightly darker at the peltate base. Sterile fronds up to 30x40 cm. Fertile fronds pinnatifid, lanceolate to narrow lanceolate in outline, margins entire. Sori about 0.5-1.5 mm diam., slightly sunken. Most commonly a lithophyte in relatively open communities or rainforest margins; NW Aust., NT, C. York to northern Atherton Tbl.; also SE Asia & Malesia. (Fig.20,p.2)



....D. quercifolia (L.) Sm., in Hk. J. Bot. 3 : 398
(1841) (Syn. *Polypodium quercifolium* L.)

2*. Sori not in rows, scattered; rhizome 1-5 cm wide by 1-2 cm thick, considerably flattened, usually alternately narrow and broad, the scales moderately dense and eventually at least partly deciduous, ciliate, with an ovate to round, peltate base and a long acuminate apex, light brown, the centre darker and the apex with a black stripe in the middle. Fertile fronds oblong to narrow oblong in outline, up to 1.5 m long, margins entire. Sori about 1 mm diam., superficial to slightly sunken; sterile fronds 10-25 x 5-15 cm, crenate and lobed. The rhizome of this sp. often climbs vertically. Lithophyte or epiphyte of rainforest, monsoon forest or ecotonal communities, often in lower, shady zones, from C. York to as far south as the vicinity of Gin Gin, SE Qld.; also Malesia.



....D. sparsisora (Desv.) T. Moore, Ind.Fil.348 (1862)
(Syn. *Polypodium sparsisora* Desv., Ges. nat. Fr. Berl. Mag. 5 : 315 (1811); *P. quercifolia* var. *linnaei* F.M. Bail.)

genus *Crypsinus* Presl, 40 SE Asia, Malesia; Aust. 1

Small to medium sized epiphytic or lithophytic ferns, set apart from their near

Crypsinus, Lemmaphyllum

relatives by one key feature - that of the frond margin being cartilaginous and notched. The Aust. representative is as follows : rhizome long-creeping, green-glaucous, 2-4 mm wide, scaly, the scales ovate to lanceolate acuminate, peltate based, dull red-brown, not latticed, entire and deciduous. Fronds 2-20 cm long, stipe half as long, to as long as the lamina, jointed to very short phyllopodia, lamina oval acute to lanceolate acuminate, fertile ones usually narrower, to linear, the margins cartilaginous and notched, shallowly crenate; venation reticulate, conspicuous, with many included free, hydathode-tipped endings. Sori superficial, round, naked, in a single row either side of the midvein along most of the lamina. C. York to at least as far south as the Eungella Ra.; endemic. (Fig. 5i,j; p.75)

....C.simplicissimus (F. Muell.) S.B. Andrews, Austro-
baileya 1:12(1977) (Syn.
Polypodium simplicissimum F.Muell.;
P. lanceola F.Muell.; *Pleopeltis*
lanceola F.M. Bail.)

genus Lemmaphyllum Presl, 5, S & E Asis, Malesia, Aust. 1

Small epiphytes typified by the possession of dimorphic fronds and peltate, latticed paraphyses. Rhizome slender, long-creeping, scales ovate to lanceolate, latticed, dentate-ciliate, eventually deciduous; stipes very short, jointed to rhizome. Fronds 3-15 x 1-2.5 cm ovate to lanceolate, blunt, fertile ones with an acuminate apex; when young ± covered with ovate, peltate scales, these persisting for a time on the midvein (beneath) and margin. Lateral veins not very conspicuous. Sori superficial or slightly sunken, in a row either side of the midvein on the drawn out apex; paraphyses fairly early deciduous. Known only by one specimen from Atherton Tbl; also Malesia to SW Pac. (Fig. 5f,g,h; p.75)

....L. accedens (Bl.) Donk, Reinwardtia 2 : 409(1954)
(Syn. *Polypodium accedens*
Bl., *Weatherbya accedens*
(Bl.) Copel.)

genus Belvisia Mirbel, 15, Old World trop. & subtrop.; Aust. 1

Medium sized epiphytic or lithophytic ferns, typified by the narrowed, awl-

Belvisia, Pyrrosia

shaped, fertile frond apex. The sp. in Aust. has a short-creeping rhizome, scales lanceolate, ± peltate-based, strongly latticed with a spiny-toothed margin, sooty-brown. Fronds 15-45 x 1.5-3.5 cm; narrow lanceolate to oblanceolate, leathery, the upper surface hydathode pitted, tips acute in sterile fronds, linear subulate in fertile ones, basally gradually tapering into narrowly winged stipes about a fifth of lamina length, venation indistinct. Sporangia in two coenosori, one either side of the midvein, in the narrowed apical, ± ericoid part of the lamina; peltate, latticed paraphyses present, deciduous as the sporangia ripen and dehisce. Growing on relatively clean, often mossy substrates in mid to lower zones in rft, from C York Pen. to extreme NE NSW, mostly above 500 m in the north; also SE Asia, Malasia and SW Pac. Non-CAM plant. (Fig. 5b,c,d; p.75)

....B. mucronata (Fée) Copel., Gen. Fil. 192(1947) (Syn.
Hymenolepis mucronata Fée,
H. mucronata f. *australiensis* C. Chr.,
Macroplethus mucronatus (Fée) Tagawa; incorr-
 ectly as : *H. spicata*, *Acrostichum spicatum*)

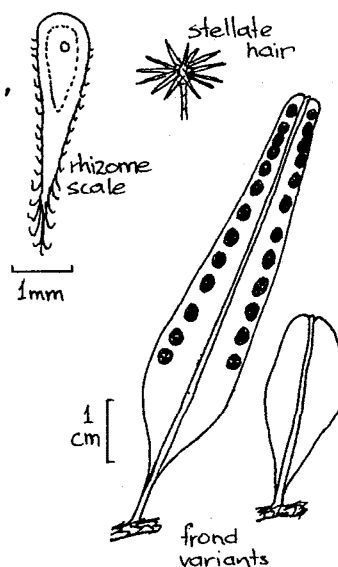
genus *Pyrrosia* Mirbel, 100 Old World trop., subtrop. to temp.;
 Aust. 5.

Rather small to medium sized epiphytic or lithophytic ferns with simple, entire fronds, particularly characterized by this and the possession of abundant, stellate hairs. Rhizome moderately short- to medium-creeping, covered with dark centred peltate scales. Stipes jointed to short phyllo-podia, usually considerably shorter than the lamina. Lamina thick and leathery to fleshy, stellate tomentose, often densely so, often deciduous to some degree; venation obscured; fronds sometimes dimorphic. Sori lacking indusia, superficial or slightly sunken, round to oval, sometimes confluent with age; paraphyses stellate. A number of species have been confirmed as possessing Crassulacean Acid Metabolism.

1. *Sori at least 2 mm wide or confluent into one or two apical patches*
 (some with smaller sori may be ± confluent with age.)
2. *Sori discrete and in a single submarginal row* (occasionally two or even three rows; sometimes tending to merge with age), *usually extending over at least the apical third of the lamina; frond surfaces*

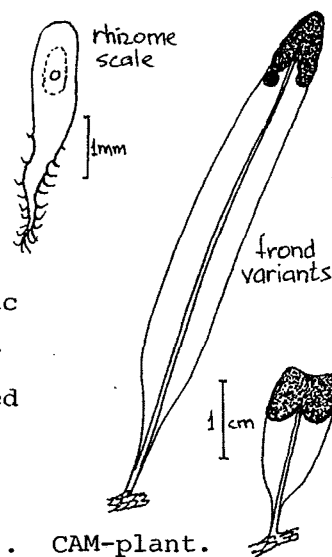
Pyrrosia

mealy grey-white, especially underneath. Rhizome about 2 mm diam., covered with appressed lanceolate, round based, peltate scales with a hairy apex, dark chestnut centre fading to colourless at the margins which are bordered with recurved teeth or short hairs. Stipes 1-2 cm long, mostly 2-7 cm apart; sterile frond lamina 2-8 cm long, obovate-truncate or notched, fertile ones 4-12 cm long, ovate to lanceolate, obtuse to notched. Epiphyte of mod. clean surfaces in moderately to well exposed sites at altitudes above about 500 m between Cooktown and Innisfail; endemic. CAM-plant.



-*P. dielsii* (C. Chr.) Tindale, Contr. NSW Nat. Herb. Flora Series 210 : 32 (1961) (Syn. *Cyclophorus dielsii* C. Chr., *Polypodium serpens* Forst. f. var. *grande* F. M. Bail., *Cyclophorus intermedius* Goy)

2*. *Sori confluent in two (or these united into one) oval patches at the extreme apex of the frond; tomentum light rusty-grey.* Rhizome 1-2 mm diam. covered with appressed or partly spreading scales very similar to those of the preceding sp.. Stipes mostly 1-4 cm long and 2-4 cm apart. Lamina elliptical or ovate to obovate or strap-shaped with acute to rounded or sometimes truncate apices. Epiphytic or lithophytic on lightly littered, mossy or lichen encrusted surfaces in microhabitats ranging from lower, sheltered to upper, more exposed zones, but more commonly in the latter. From C. York Pen. to the Hunter R., NSW: also N. Cal. and Norfolk I. (ssp. *scytopteris*). CAM-plant.



-*P. confluens* (R. Br.) Ching, Bull. Chin. Bot. Soc. 1:49 (1935) (Syn. *Polypodium confluens* (R. Br.), *Nipholobus confluens* (R. Br.) Spr., *Cyclophorus confluens* (R. Br.) C. Chr., *Scytopteris acrostichoides* Sieb. ex Pr., *Polyp.*

Pyrrosia

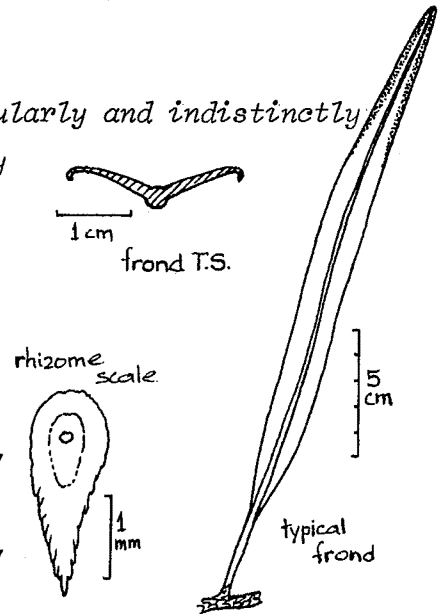
glabrum Mett., *Drymoglossum cunninghami* Moore, *Cycl. spicatus* Domin.)

1*. *Sori up to 2 mm wide (rarely to 3 mm in P. rupestris), usually discrete, or if confluent then not thoroughly so, or extending over at least the apical third of the lamina.*

3. *Rhizome scales ovate and entire or irregularly and indistinctly toothed, closely appressed; fronds mostly 20-50 cm long, the midrib very prominent below, margins often recurved or rolled; not markedly dimorphic. Rhizome 2-3 mm*

diam., stipes very short, ca 2-10 cm apart, becoming dark and polished with age. Lamina light green to yellow-green, the upper surface often shiny in older ones, whitish stellate-tomentose beneath, narrow lanceolate to linear, acuminate/

acute. Sori up to 1 mm diam., crowded in several rows each side of the midvein in the apical quarter to half of the lamina, the fertile section often slightly narrowed. Epiphyte or lithophyte of upper, more exposed zones in monsoon and tropical rft of Qld.; also Malesia and SW Pac. CAM plant.



....*P. longifolia* (Burm.f.)Morton, J. Wash. Ac. Sci., 36:168(1946) (Syn.

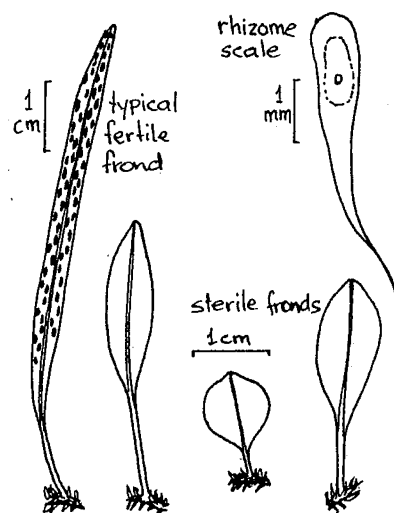
Acrostichum longifolium Burm.f., *Polypodium acrostichoides* Forst.f., *Cyclophorus acrostichoides* (Forst.f.)Presl, *Pyr. acrostichoides* (Forst.f.)Ching

3*. *Rhizome scales lanceolate or narrow triangular, acuminate with a long drawn out hair tip, either entire or shortly hair-fringed, spreading at least in the apical half; fronds less than 20 cm long, midrib not very prominent below, margins flat, markedly dimorphic.*

4. *Rhizome scales with entire margins; sterile fronds mostly less than 3 cm long, fertile fronds proportionately narrower than sterile ones over their whole length. Rhizome 1-2 mm diam., much*

Pyrrosia

branched; stipes mostly 0.5-1 cm apart. Sterile fronds : stipes mostly less than 1 cm long, lamina very variable in shape, elliptical to spatulate or to \pm round, mid to dark green, occasionally to yellow-green with a whitish tomentum, especially below; fertile fronds mostly up to 10 cm long (rarely to 20 cm), linear to narrow lanceolate or oblanceolate, obtuse; sori 1-2 mm diam. crowded in irregular rows over the apical $\frac{1}{4}$ or so of the lamina. A mat-forming epiphyte or lithophyte of moderately to well exposed zones in various moist communities from NE Qld to NE Vic.; also recorded from NG.



....*P. rupestris* (R.Br.)Ching, Bull. Chin. Bot. Soc. 1:

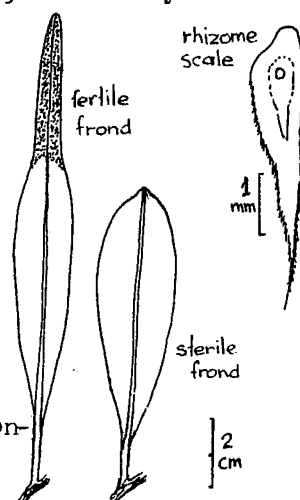
49 (1935) (Syn. *Polypodium*

rupestre R.Br., & in the following

genera by these authors : Spr., *Niphobolus*; Link, *Craspedaria*; C. Chr., *Cyclophorus*; *Cycl. serpens* (Forst.f.)C.Chr.

var. *rupestris* (R.Br.)Domin

4*. *Rhizome scale margins shortly and finely hair fringed; sterile fronds mostly at least 5 cm long, fertile fronds narrower than the sterile, more particularly in the apical, fertile half of the lamina.* Rhizome 1.5-2.5 mm diam.; stipes 1-2 cm long and 1-4 cm apart. Lamina elliptical to obovate obtuse or rounded, to spatulate, mid to dark green, stellate hairy, more thickly underneath; sterile fronds 5-10 cm long, fertile, 8-15 cm. Sori ca 0.5-1 mm diam., crowded. Epiphyte or lithophyte of moderately exposed zones in monsoon rft north of Cooktown; also Old World Tropics.



....*P. lanceolata* (L.) Farwell, Amer. Midl. Natlst.

12:245 (1931) (Syn.

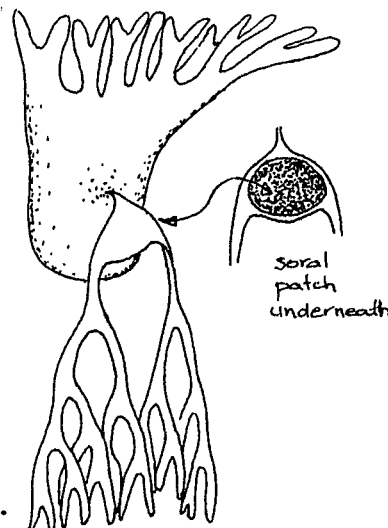
Acrostichum lanceolatum L.; *P. adnascens* (Sw.)Ching, *P. varia* (Kaulf.) Farwell)

Platycterium

genus *Platycterium* Desv. 17, Old World trop., 1 S. Am., Aust. 4

Large, distinctive, nest-forming epiphytes or lithophytes. Rhizome short and embedded within the next, bearing narrow lanceolate to ovate, acuminate, scales with dark midribs. Fronds of two markedly different types : a. *sterile*, *nest*, or *shield fronds*, which are very broad and almost perfoliate, sessile, stiff and erect with the upper margin flared outwards to catch falling litter and water; these are usually relatively short-lived but persistent; in the basal regions they are somewhat thickened and after dying become spongy, holding water, and b. *fertile* or *strap fronds* which are narrow, forked and pendulous to semi-erect and bear the sporangia in large patches (acrostichoidally) in given areas. The fronds are densely stellate tomentose in all parts and this is usually deciduous to some degree. These are often the substrate species of epiphytic microcommunities. N.B. A plant photographed and briefly described by Williams (1979) from NE Qld may represent a fifth Australian species; it is of the single rosette type with long, pendulous, much divided fertile fronds, possibly near the NG species *P. willinkii* Moore.

1. *Soral patches one per frond, broad, and located at the first (basal) fork of the fertile fronds which are mostly rather limply pendulous; shield fronds relatively long-lived; strap fronds not usually developed in juvenile plants; rhizome scales lacking dark midrib, margins shortly hairy, toothed or ± entire, 1-3 cm long. Shield leaves up to 60 cm or more wide, the upper margins deeply and irregularly lobed. Fertile fronds 0.3-2 m or so long, stalked, mostly twice forked, the ultimate segments strap-shaped.*



On trunks, larger branches or rocks in mid epiphyte zones from NE Qld to the Hunter R., NSW; also Malesia. Non-CAM plant.

....*P. superbum* Jonch. & Hennip., Brit. Fern Gaz. 10(3)
: 114 (1970) (Syn.

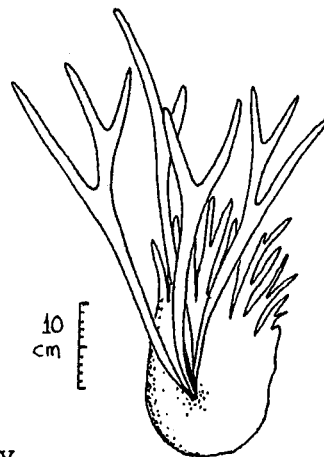
P. grande var. *tamburinense* Domin; misappl.
name : *P. grande*)

- 1*. *Soral patches on or near ultimate segments; fertile fronds suberect or arching mostly; shield fronds rather short-lived turning brown and papery strap fronds developed early; rhizome scales with a dark, contrasting*

Platycerium

midrib, margins glandular hairy.

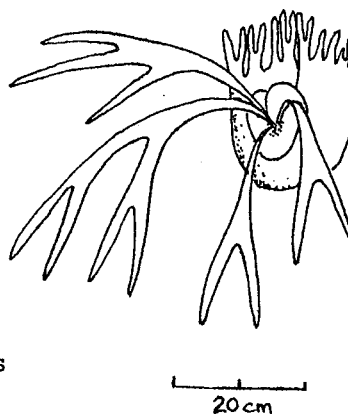
2. Fertile, strap fronds persistently and densely white tomentose, stiffly erect to suberect; nest fronds deeply lobed on the upper margins, the lobes often forked; \pm strictly lithophytic in dry, open communities on the western slopes of Qld from NW Atherton Tblld to near Chinchilla. Shield leaves commonly up to c. 20 cm wide; fertile, strap fronds 20-50 cm long, 2-3 cm wide, mostly only once forked, the fertile section taking up half or more of the area of the ultimate segments, which are 5-15 cm long, and acute, acuminate or narrowly triangular and finally blunt. Colonies of many dozens of plants develop on some rock faces. Non-CAM plant.



....P. *veitchii* (Underw.) C. Chr., Ind. Fil. 497 (1906)
(Syn. *Alaicornium*
veitchii Underw.)

- 2*. Strap fronds white tomentose but not densely so and this not long-lasting, especially above, suberect to arching or subpendulous; nest fronds with wavy to fairly shallowly and bluntly lobed, the lobes usually not forked; mostly found in closed, sometimes \pm open, almost always moist communities on the eastern slopes and highlands from C. York to S NSW.

3. Upper margins of nest fronds on mature plants shallowly to fairly deeply lobed; strap fronds suberect when developing, spreading to subpendulous when mature mostly very narrowly wedge-shaped in the basal, undivided section. Nest fronds 15-30 cm wide, often wider than long; strap fronds 20-90 cm or more long, mostly twice divided; sororal patches occupying most or all of the ultimate segments which are strap-shaped, acuminate and finally blunt. Mostly on trees, sometimes on rocks, in

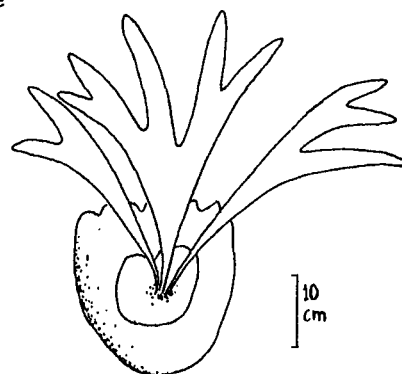


Platycterium, Lastreopsis

mid epiphyte zones, in rft, swamp forest or wet sclerophyll forest from S. Cape York to SE NSW; in the tropics it occurs mostly above about 500 m; also in N. Cal. and Lord Howe I. Very large clonal colonies develop where support is adequate. Non-CAM plant.

....*P. bifurcatum* (Cav.) C. Chr., Ind. Fil. 498 (1906) (Syn. *Aerostichum bifurcatum* Cav., *Alcicornium bifurcatum* (Cav.) Underw., *P. angustatum* Desv.; misappl. name: *P. alcicorne*)

3*. Upper margins of nest fronds entire or wavy to shallowly lobed; strap fronds mostly suberect to spreading, relatively broadly wedge-shaped in the basal section. Nest fronds 10-30 cm wide strap fronds 30-60 cm or more long, once or twice divided, soral patches occupying the distal half or the ultimate segments which are triangular to short strap-shaped, acute, finally blunt. Single plants sometimes develop into clonal colonies of more than a tonne weight. Epiphyte or lithophyte of mid zones in monsoon and tropical rft, swamp forest etc., mostly below ca. 700 m altitude in tropical E. Qld. Non-CAM plant.



....*P. hillii* T. Moore, Gard's Chron. Ser. 2, 10:51, f. 6; 429 f. 74-75 (1878) (Syn. *P. alcicorne* var. *hillii* (T. Moore) F. M. Bail., *P. bifurcatum* v. *hillii* Domin)

order Aspidiales

family ASPIDIACEAE

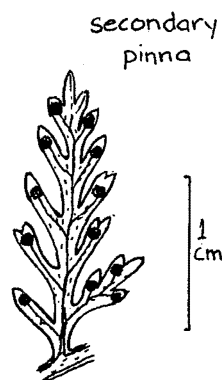
This is a large worldwide family, the taxonomy of which has long been confused and disputed. In most classifications almost all species are typical terrestrial ferns.

genus *Lastreopsis* Ching, ca. 30. pantrop., NZ; Aust. 11

The single sp. included here is a lithophyte on rocks in and by streams in

Lastreopsis, Polystichum

the mountains near the Atherton Tbl. Rhizome short-creeping, clothed with ovate, light brown scales that are entire or with a few \pm glandular hairs towards the apex which is sometimes darker. Stipes 1-2 mm dia. basally scaly, mostly slightly shorter than the lamina; fronds up to 40 cm long \pm erect, lamina finely dissected, quadripinnate or tripinnate with the ultimate segments pinnatifid, each lobe with a single sorus, glabrous except for scattered, very small hairs on or near the veins; ultimate segments ca. 1 mm wide, oblong acute. Sori without indusia, round, ca. 1 mm diam., terminal on veins. Mostly occurring above ca. 1000 m or more.

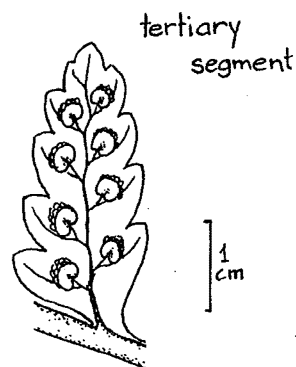


....*L. tinarooensis* Tindale, *in* S.B. Andrews, Handbk.
Ferns & Fern Allies Append.
2 (1982)

genus *Polystichum* Roth, ca. 200, cosmopolitan, Aust. 5

The sp. included here is a large, nest-invading epiphyte or lithophyte which is at least, rather aberrant in this genus; it is generally considered that it constitutes an undescribed monotypic genus.

Rhizome short-creeping to erect, clothed with 1-2 cm, lanceolate, acuminate light brown, papery scales that are apically paler. Stipes 30-60 cm long, channelled above, basally scaly and rough surfaced; lamina triangular to ovate in outline \pm leathery, dull, light green; 60-80 cm wide, bipinnate-pinnatifid, pinnules lanceolate or the lower ones pinnatifid and 2-3 cm wide basally, veins indistinct, rachis and midveins glabrous, channelled above. Sori 8 per pinnule or one per lobe, superficial, \pm in the middle, terminal on veins, indusium round with a deep, narrow cleft at the attachment point, early deciduous; paraphyses white, intermixed with sporangia. Rare, Atherton Tbl and nearby mountains.



....*P. fragile* Watts, Proc. Linn. Soc. NSW 39 : 775-776 (1915)

Lomariopsis, Teratophyllum

family LOMARIOPSIDACEAE

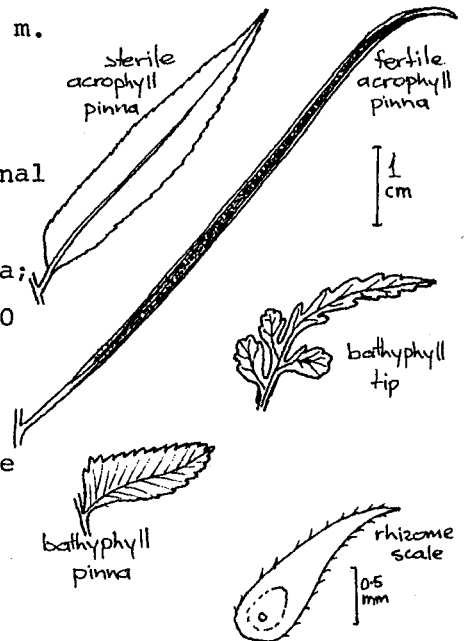
genus Lomariopsis Fée, 40 pantrop., Aust. 1

A high climbing vine-like fern with a flattened rhizome up to 12 mm wide, climbing by adventitious roots. Rhizome scales brown, lanceolate, peltate-based, thin with hairy margins especially when young, \pm deciduous. Fronds pinnate, pinnae jointed to the rachis (except the terminal one), with entire, cartilaginous margins, veins free, joining the margin; sterile pinnae up to 20 x 3 cm, lanceolate, fertile, linear, to 20 x 0.3 cm. Uncommon, in rft above ca. 500 m., Bellenden Ker Ra. and nearby; also Malesia.

....*L.kingii* (Copel.) Holtt., Gard.Bull.Str.Settl.5:273
(1932) (Syn. *Stenochlaena kingii* Copel.)

genus Teratophyllum Holtt., 9, Malesia, SW Pac., Aust. 1

The Aust. sp. is endemic; it begins life epiphytically, low on trunks or exposed tree roots, sending roots down into the ground. Rhizome long-creeping, irregular, angular-terete, climbing several m. by adventitious roots, dark brown-scaly, scales partially deciduous, narrow triangular, round peltate-based, not strongly latticed, with marginal hairs. Fronds pinnate, stipes slightly swollen near the base, $\frac{1}{3}$ or less the length of the lamina; basal, juvenile fronds (bathyphylls) up to ca. 20 cm long, the pinnae 1-2 x 0.5 cm, assymetric triangular, the lower ones jointed to rachis, blunt or rounded, prominently toothed, at the base more developed on the upper side and cut away below, apical pinnae decreasing in size, the rachis here winged, finally coalescent into a toothed tail; upper, mature fronds (acrophylls) up to 60 cm or more long, pinnae all jointed to rachis and \pm equal sized, 3-6 x 0.5-0.8 cm, lanceolate acuminate, crenate to bluntly toothed, only slightly unequal-sided; lamina thin, herbaceous, veins visible, not reaching the margins (which are not cartilaginous); fertile pinnae narrow linear, to 15 cm long; sori acrostichoid. Rft, particularly at mid and higher altitude, NE Qld.



....*T. brightiae* (F.Muell.) Holtt., Gard.Bull.Str.Settl.

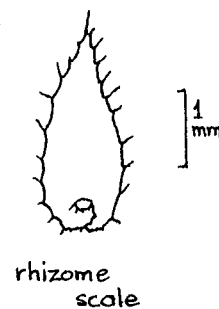
Elaphoglossum

5:301 (1932) (Syn. *Acrostichum
brightiae* F.Muell., *Lomariopsis
brightiae* F.Muell.; misapplied name :
A. sorbifolium)

genus *Elaphoglossum* Schott , 400 pantrop. & subtrop.; Aust. 2

Rhizome very short-creeping or almost lacking, densely scaly, the scales straw coloured to chestnut-brown, papery, spreading, not latticed, basally attached, ovate to triangular, fairly persistent. Stipes jointed to short bulbous-based phyllopodia, terete, usually considerably shorter than the lamina, deciduous-scaly; lamina narrow elliptical, acute to obtuse, leathery, dark green above, paler beneath, with scattered, small, red-brown, stellate scales or hairs, margins entire, cartilaginous; veins indistinct, free, mostly once forked near the base, almost reaching the margins, thickened slightly near the tips. Fertile fronds shorter and proportionately narrower; sporangia evenly and densely covering most of the undersurface, often sparkling crystalline in appearance.

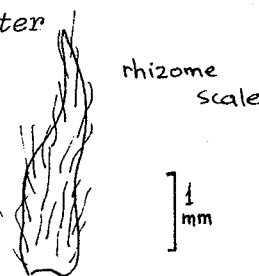
1. *Sterile fronds less than 3 cm wide, midrib impressed above, prominent below, lamina tapering into long narrow wings over ca. the basal ¼ of the frond, almost to the base; rhizome scale bases deeply heart-shaped, the margins bearing multicellular hairs on the tips of irregular teeth.* Fronds up to ca. 20 cm long. Epiphytic or lithophytic in mid epiphyte zones of wetter rft at altitudes



above ca. 800 m; SE C. York to at least the Eungella Ra. Endemic. (Fig. 5m, p.75)

....*E. queenslandicum* S.B. Andrews, Handbk. Ferns F. Allies
Qld., Append. 1 (1982)
(Misappl.: *E. conforme*, *Acrostichum
conforme*)

- 1*. *Sterile fronds more than 3 cm wide, midrib prominent above and below (more so below) stipe wing much shorter than in 1. above; rhizome scale bases not heart-shaped, the margins entire or occasionally with one or two hairs.* Fronds up to ca. 40 cm long. Epiphytic in mid epiphyte zones in wetter rft of



Asplenium

NE Qld, at altitudes above ca 800 m; also Malesia and SW Pacific.

....*E. callifolium* (Bl.) T. Moore, Ind. Fil. 7 (1857) (Syn. *Acrostichum callifolium* Bl., misappl. names: *E. conforme*, *Acrostichum conforme*.)

family ASPLENIACEAE, ca 9/700

genus *Asplenium* L., 650+, ± cosmopolitan; Aust. 28

Mostly epiphytic or lithophytic, some facultatively terrestrial, large to small ferns. Rhizome short- to very short-creeping or ascending, the fronds tufted and often rosette forming; rhizome scales mostly narrow, drawn out into a hair tip, latticed, attached basally or in a basal cleft. Stipes at least basally scaly, usually considerably shorter than the lamina, non-jointed. Lamina simple and entire to much dissected, mostly firm to leathery in texture; veins forked, free. Sori elongate along lateral veins with a narrow flap-like indusium. (Fig. 2g,h; p. 3)

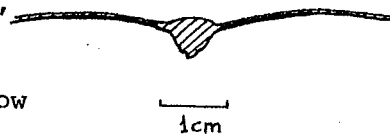
1. *Fronde lamina simple and entire or the basal third or so pinnatifid* (very rare forms, more common in cultivation, may be wholly pinnatifid or pinnate, or forked.)

2. *Fronde 4 cm or more wide.*

3. *Midrib of frond much more prominent and ridged on the underside, only slightly raised, rounded above;*

frond bases mostly with a sharp upward curve and the rest ± straight and at an angle of ca 30-45°. Rhizome short, thick and erect; stipes crowded, very short. Fronds 4-20 x 30-200 cm, narrow oblanceolate, acute, arranged radially

T.S. of frond centre



in a litter-catching rosette. Sori linear, extending from near the midrib to about $\frac{3}{4}$ of the distance to the margin, in the apical half of the frond. The impounded litter is held between the fronds and is formed into a ball by the sagging of the dead fronds; this peaty sponge forms a reservoir for water and nutrients released on decay and many of the roots grow into it for these. Most commonly on relatively clean trunks and larger branches in mid epiphyte

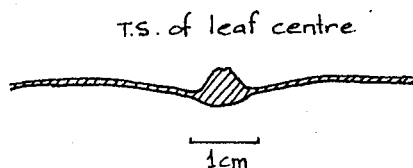
Asplenium

zones and is often the primary coloniser and substrate in epiphytic micro-communities; also on rocks and rarely terrestrial. Occurs in rft and related moist, \pm closed communities from N Qld to SE NSW. Non-CAM plant. Until recently this sp. was universally confused with *A. nidus* L. (Fig. 5n, p.75)

....*A. australasicum* (Sm.)Hook., *Filic.Exot.*, t.88 (1859)

- 3*. *Fronnd midrib only slightly raised and rounded on the underside but prominently ridged on the upper side.*

Fronnds mostly at a low angle in the basal section and gradually curving upwards towards the tips; otherwise generally very similar to the pre-

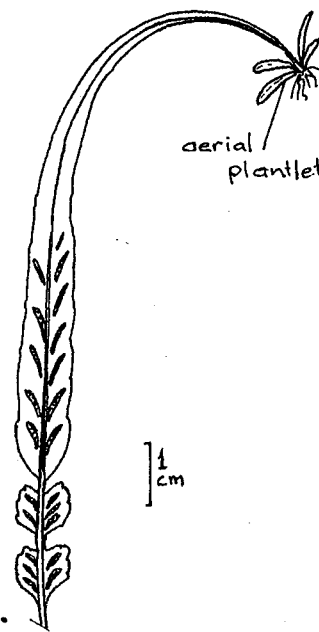


ceding sp. Tropical and wetter monsoon rft from the tip of C York south to the lower altitude eastern slopes of the Bellenden Ker Ra.; also Old World tropics. (Fig. 5n, p.75)

....*A. nidus* L., *Sp. Pl.* 1079 (1753)

- 2*. *Fronnds less than 4 cm wide.*

4. *Lateral veins at a low angle (ca 20-45°) to the midrib; lamina widest in the basal half with a long, narrow, gradually tapering apex, often with proliferous buds or plantlets at the tip; base of lamina commonly pinnatifid or pinnate, rarely wholly so - some such cultivars have been given varietal names. Rhizome very short-creeping to erect, densely covered with dark red-brown, very narrow-triangular, shortly hair-tipped, latticed scales 1-2 mm long; stipes up to half as long as lamina, moderately densely scaly with scales like those of the rhizome. Lamina dark green, firm to thinly leathery, ca 10-20 x 1-2 cm, margins entire or indistinctly and irregularly toothed, the lobes or pinnae more so, midrib and lateral veins with small, irregular star-shaped, latticed scales.*



Sori 2-3 mm apart, not reaching either midrib or margin. Lithophytic

Asplenium

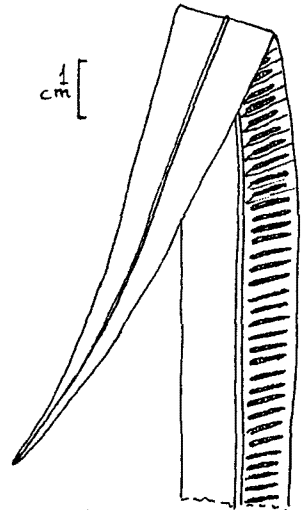
in small humus collections or sometimes terrestrial on banks, in rft, especially moister ones, from N. Qld to S. NSW. Sometimes proliferates into large clonal colonies.

....*A. attenuatum* R. Br. Prod. Fl. N. Holl. 150 (1810)

4*. *Lateral veins at a high angle (ca 60-80°) to the midrib; lamina widest in the apical half or middle, with a relatively short, acute, to acuminate, non-proliferous apex.*

Rhizome short, erect, densely covered with dark brown latticed, narrow lanceolate, acuminate, spreading scales, 0.5-1.5 cm long. Stipes short, basally scaly as the rhizome; fronds ca 30-60 x 1.5-3 cm, lamina leathery, linear to ob-lanceolate, the margins entire, midvein and some laterals with sparse stellate, latticed scales; lateral veins gland-tipped. Sori considerably shorter than the lateral veins, closely spaced, in the apical half of the frond. This is a litter-catching, nest-forming sp., much in the manner of *A. australasicum*. Usually in mid to lower epiphyte zones on relatively clean trunks or larger branches, or on rocks of rft in tropical Qld from the lowlands up to at least 1000 m altitude. Non-CAM plant. Rare, abnormal forms with forked fronds and lobed margins are known.

apical half of frond



....*A. simplicifrons* F. Muell., Fragm. Phyt. Aust. 5 : 74 (1865)

1*. *Fronds deeply lobed or compound.*

5. *Lamina thick and succulent, brittle; plants growing on or among rocks close to the ocean.* Rhizome short and thick (up to 1 cm diam.) erect or oblique, often branched and forming a prominent crown, densely scaly. Stipes brittle, sparsely scaly, ca half frond length. Fronds 10-25 cm or more long, once pinnate to bipinnate-pinnatisect, spreading,



pinna of var. *obtusatum*



pinna of var. *difforme*

Asplenium

sparsely scaly beneath on veins, triangular to ovate in outline; pinnae ovate to diamond shaped in outline, margins crenate or toothed. Sori 1-4 mm long, one per tooth or lobe. Forms with pinnatifid pinnae or more divided are referred to *A. obtusatum* var. *difforme* (R.Br.) Benth. SE Qld to Vic. and Tas., S WA, many offshore islands, mostly on cliffs; also NZ, S Am. and many islands of the southern oceans. Non-CAM plant.

A. obtusatum Forst. f., Prodr. 80 (1786)

5*. *Otherwise.*

6. *Fronds once pinnate (pinnae may be shallowly lobed).*

7. *Pinnules fan-shaped, their bases \pm symmetrical (Fig. 2g) AND fronds glabrous; plants usually lithophytic or semi-terrestrial, mostly in open communities.*

8. *Rachis produced into an extension lacking pinnae, the tip often proliferous; pinnae well spaced (at least pinna width apart), rachis usually greenish.*

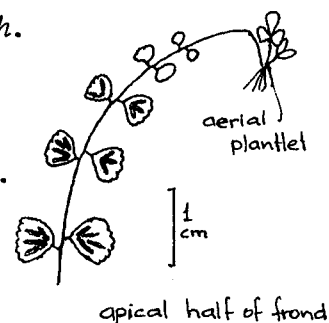
Rhizome very short, erect, densely scaly with linear/narrow triangular, dark red-brown-latticed, shortly hair-tipped scales.

Fronds straggling, commonly up to about 30 cm long, the pinnae about 4-8 mm wide and

long, outer margins toothed or crenate, occasionally larger ones with one or two

lateral lobes. Sori 2-5 per pinna, rad-

iating from the base, often coalescing with age. Moist areas of subtropical and temperate Aust.; also NZ & Fiji. Lithophyte or semi-terrestrial in soil or humus collections, sometimes a low-grade epiphyte.

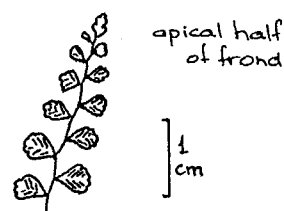


....*A. flabellifolium* Cav., Descr. Pl., 257 (1802)

8*. *Rachis not produced as above and not proliferous;*

pinnae closely spaced (not more than a pinna width apart); rachis usually dark red-brown.

Rhizome and scales similar to the above except that the scales of this sp. often have a dark central stripe. Fronds semi-erect,



Asplenium

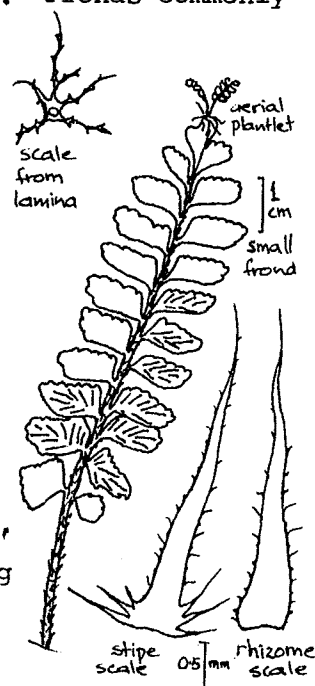
up to ca 15 cm long but usually about a third of this; pinnae mostly about 4-5 mm long and wide, the outer margins crenate. Uncommon lithophyte or semi-terrestrial on cliffs and stony banks, often associated with limestone in cooler areas of Aust. and similar conditions ± world-wide.

....A. trichomanes L., Sp. Pl. 1080 (1753)

7*. *Pinnules mostly longer than wide, mostly considerably so and more developed on the upper (acroscopic) side of the midvein AND/OR, fronds scaly or hairy to some degree; epiphytes or lithophytes of rft and related communities.*

9. *Stipes mostly not more than a quarter of total frond length AND frond linear to very narrow oblong/elliptical in outline.*

10. *Stipe and rachis dull, densely scaly. Rhizome very short-creeping to erect, scales brown linear/triangular, drawn out to a short hair apex, with some short marginal processes. Fronds commonly to 30x3 cm, lamina linear to narrow oblong, semi-erect to pendulous, dull, dark green, veins ± prominent, especially above, paler beneath; rachis scales shorter and tending to have large basal processes; pinnules oblong-obtuse or rounded apically, reducing in size to both ends of lamina, and tending to fan-shaped, outer margins toothed, laminal scales irregular star-shaped. Rachis apex often producing plantlets, sometimes clonal colonies developing. Sori mostly 4-6 mm long, ± radiating from the base centre, not reaching the margins; indusium pale. Lithophyte, or sometimes terrestrial, of various closed communities, sometimes in dry monsoon scrubs; it has considerable 'resurrection' ability. C. York south to at least near Townsville, particularly above c. 500 m.*

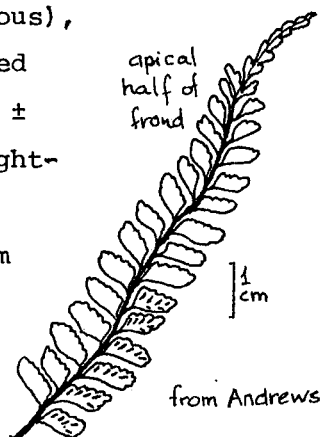


....A. palaeaceum R.Br., Prodr. 150 (1786)

10*. *Stipe and rachis glossy, glabrous. Rhizome short, erect to oblique; scales narrow triangular; entire, up to ca 5 mm long. Stipes*

Asplenium

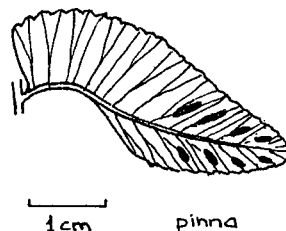
wiry, dark purple-brown, 3-10 cm long. Lamina 10-20 x 1-2 cm, with a tapering pinnatifid apex (sometimes proliferous), glabrous, thin and firm; pinnae \pm oblong rounded to diamond shaped, the base truncate above and \pm cut away below, closely spaced, lower ones slightly reduced, more widely spaced, upper margins bluntly toothed. Sori to ca 3 cm long; indusium dark. Growing on rocks and logs in rft on the Atherton Tbl'd; rare; also Old World tropics generally.



....*A. normale* Don, Prodr. Fl. Nepal, 7 (1825)

9*. *Stipes at least a quarter of total frond length AND/OR frond proportionately broader than in 9.*

11. *Basal pinnae with lower side cut away to the midvein along the basal third or more, usually somewhat recurved.* Rhizome apically scaly, about 3-4 mm diam., scales brown, very narrow triangular, entire, 2 or 3 mm long. Stipe and rachis dark, shiny, glabrous, 10-20 cm long; lamina pale green, herbaceous, ca 10-30 cm long, triangular in outline, pinnae narrow triangular/falcate, \pm at right angles to the rachis, the longest 6-9 cm long, the apical ones abruptly reducing to the lobed apex. Sori 2-5 mm long, located midway between margin and midvein. Lithophytic, terrestrial, or on logs in shady, moist sites in rft at lower altitudes from about Tully north at least to Mossman; also Old World tropics. *A. unilaterale* Lam., a closely allied sp. may also occur in N Qld. It differs thus: lamina oblong-lanceolate in outline, pinnae ascending at an angle to the rachis, basal ones scarcely recurved and ca 2-4 cm long.

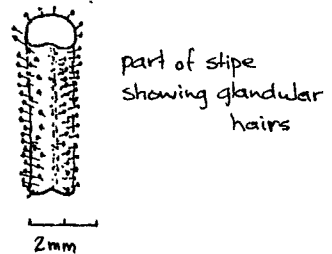
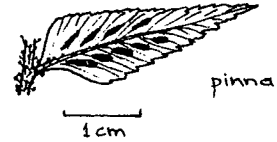


....*A. excisum* Presl, Epim. Bot. 74 (1849) (Syn. *A. unilaterale* var. *australiense* F.M.Bail., *A. resectum* Sm, var. *australiense* F.M. Bail.)

Asplenium

11*. *Pinnae neither cut away thus, nor recurved.*

12. *Stipe and rachis densely glandular-hairy.* Rhizome short-creeping to erect, scales dark brown, narrow triangular with long drawn-out, hair-tipped apices, the margins with a few gland-tipped, hair-like processes. Fronds 8-25 x 2-6 cm, stipes much shorter than lamina; lamina herbaceous, light green when young, brownish with age, glabrous above, glandular hairy below, apex drawn-out-pinnatifid; pinnae 1.5-4 cm long, ovate, margins of the apical two-thirds toothed, veins \pm radiating from the stalk, giving a striate appearance. Sori 2-5 mm long, confined to veins of the pinna centre, becoming confluent with age. Epiphyte on tree trunk bases or nest-invading or lithophytic, in moist rainforests of Atherton Tbl'd, Bellenden Ker Ra. and nearby; also NG.

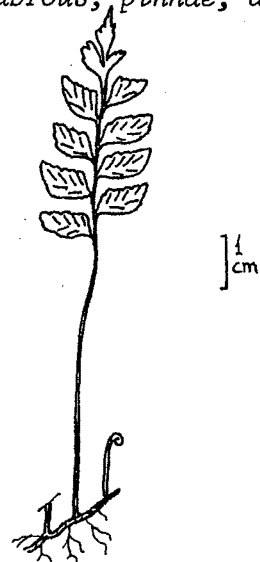


....A. *parvum* Watts, Proc. Linn. Soc. NSW 39:784 (1915)

12*. *Stipe and rachis either scaly or glabrous.*

13. *Pinnae mostly less than 2 cm long.*

14. *Stipe and rachis almost, to quite glabrous; pinnae, about 5 pairs per frond (excluding lobes of the pinnatifid frond apex); distal ends of sori less than half soral length from margin.* Rhizome scales 1-2 mm long, narrow triangular, entire or with a few marginal processes, reddish-brown. Fronds ca 8-20 x 2-4 cm, stipes dark, thin, wiry and about half total frond length; lamina broad lanceolate in outline, the apex pinnatifid and drawn-out; pinnae 1-2 cm long, membranous, ovate to diamond-shaped, base wider on the upper side of the midvein,

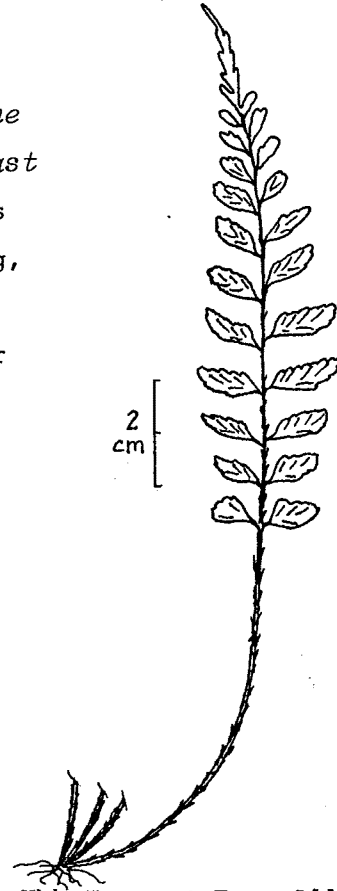


Asplenium

outer margins bluntly toothed, darker above, glabrous. Sori 2-6 per pinna, 2-5 mm long, indusium brownish. On mossy rocks, especially near creeks in higher altitude rft of the Atherton Tblld and nearby.

....*A. wildii* F.M.Bail., Bot.Bull.Dept.Ag.Qld 4:20 (1892)

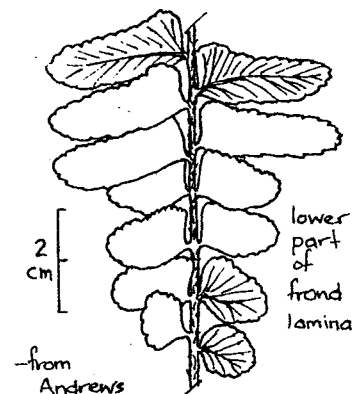
- 14*. *Stipe and at least the lower rachis scaly; pinnae, about 9 pairs per frond (excluding the lobes of the pinnatifid frond apex); distal ends of sori at least half soral length from the margin. Rhizome scales as for the above species. Fronds ca 15-20 cm long, stipes ca $\frac{1}{3}$ of frond length, dark brown, thin, wiry, sparsely scaly, the scales narrow triangular with hair-like apices and a few hair-like basal processes; lamina narrow ovate in outline, the apex pinnatifid acuminate and often proliferous; pinnae narrow ovate, up to ca 1.5 cm long, membranous, darker and glabrous above, paler and with small, scattered scales beneath, outer margins coarsely toothed. Sori 1-3 per pinna, 3-4 mm long, indusium pale brown. Epiphytic and lithophytic in cooler, moist, lower epiphyte zones of rft of Atherton Tblld, Qld.*



....*A. athertonense* S.B. Andrews, Hbk.Ferns & Fern Allies Qld App.1 (1982)

- 13*. *Pinnae longer than 2 cm (mostly at least 3 cm).*

15. *Rachis ± densely scaly, especially underneath; lower pinnae (4 pairs or so) much shorter than those of the mid region, the lowest pair about as long as wide. Rhizome very short-creeping; scales to 1 cm long, very dark, very narrow triangular with a long, drawn-out apex and a few marginal processes. Fronds ca 20-40 x 4.5-5.5 cm, stipes to ca 2 cm long, purple-brown, grooved above, the scales with long hair-tips and several narrow basal processes; lamina tapering at both ends, rachis similar to stipe, apical segment pinnatifid; pinnae apices rounded, bases more developed*



Asplenium

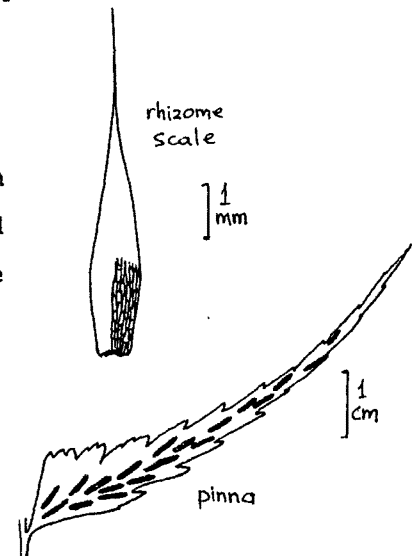
on the upper side of the midvein, margins bluntly toothed, papery, dark green and glabrous above, paler and sparsely hairy beneath. Sori 2-5 mm long, ca three either side of the midvein, distant from margins, located in the apical two-thirds or so of the lamina, indusium pale. Epiphytic or lithophytic in cooler, moist sites near creeks; recorded from the Johnstone R., N Qld; also Malagasy, SE Asia and Malesia.

...*A. pellucidum* Lam., in Lam. & Poir., Encycl. 2:
305 (1786)

15**Rachis glabrous or almost so, lower pinnae not considerably shorter, and longer than wide.*

16. *Stipe and rachis grooved above, black to purple-brown; rhizome scales ca 5-10 mm long, evenly dark brown, narrow triangular with a long, drawn-out, hair tip, margins entire, bases truncate or somewhat lobed.* Rhizome short-creeping. Fronds from

less than 30 cm to in excess of 1 m long and ca 5-20 cm wide, arching to pendulous, stipe ca a third to half as long as the lamina, lightly scaly at the base; pinnae narrow triangular, somewhat falcate, shallowly and obliquely lobed and toothed, the apex often drawn-out, the base more fully developed on the upper side, thinly leathery in texture,



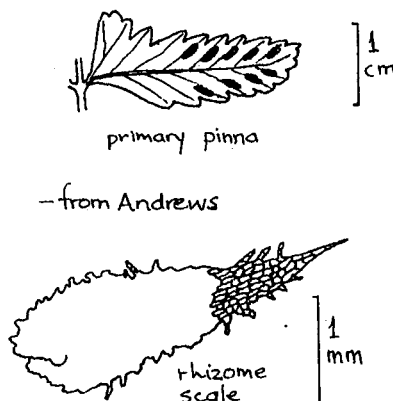
glabrous, striate above; terminal segment pinnatifid, reducing to shortly drawn-out. Sori ca 4-10 mm long, up to 20 or so per pinna, mostly near the centre. Spores ca 30x20 μ m. Nest-invading epiphyte of mid to lower epiphyte zones, occasionally in rock crevices and rarely terrestrial, in rft and related communities from C York to E Vic. (very rare in the latter); also SE Asia, Malesia, SW Pac. and NZ.

...*A. polyodon* Forst.f., Prodr. 80 (1786) (Syn. *A. falcatum* Lam.; *A. adiantoides* (L.) C. Chr.)

16**Stipe and rachis not grooved, green; rhizome scales less than 4 mm long, brown to blackish brown, the marginal areas thinner and paler, ovate, acute, margins shortly hairy, the bases heart-shaped with the*

Asplenium

lobes overlapping. Rhizome short, erect; stipes ca half to two-thirds the length of the lamina, with some basal scales and a few with basal processes scattered above. Lamina 10-20 x 4-5 cm, the basal pinnae longest, gradually lessening in the apical third, suddenly decreasing near the apex to a narrow, pinnatifid segment; pinnae roughly triangular, apically rounded, margins shallowly lobed, basally unequal sided, the lower half cut away at a shallow angle, the upper half ± prominently lobed. Sori slightly closer to the margin than midvein but reaching neither, confined to ca the distal half of the pinna, indusium pale. In rft, on rocks in or near creeks; NE Qld.

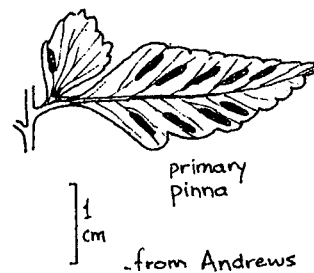


....A. *tenerumoides* S.B. Andrews, Hbk. Ferns & Fern Allies Qld., App.1 (1982)

6*. *Fronde pinnate with deeply lobed pinnae, or more divided than this.*

17. *Fronde pinnate with a single deeply cut lobe (or a pinnule) on the upper side of the base of the pinnae, especially the lower pinnae.*

18. *Upper surface of lamina dark green, very much paler beneath; middle pinnae up to 3.5 times longer than wide (including the stalk length but excluding the large basal lobe or pinnule from the width). Rhizome short, erect, scales ca 2 mm long, lanceolate, apex drawn-out, margins entire; stipes ca half lamina length. Lamina lanceolate/triangular in outline, apex pinnatifid and sometimes proliferous; pinnae shortly stalked (except for the higher ones), the larger ones 3-4 x 0.9-1.7 cm, apices acute, margins crenate to shallowly lobed in the distal half or so, texture herbaceous to leathery. Sori 3-5 mm long, up to ca 8 per pinna, slightly closer to midvein than margin; indusium brown,*



Asplenium

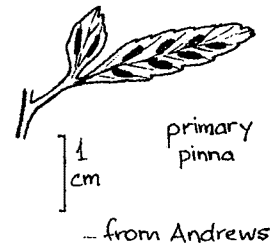
rolled back at maturity. Lithophytic in cooler, moist rft of higher altitudes, NE Qld.

....A. lewisense S.B. Andrews, Hbk. Ferns & F. Allies
Qld., App. 1 (1982)

18*. *Upper surface of lamina mid-green, only slightly paler beneath; middle pinnae up to ca 5 times longer than wide (including the stalk length but excluding the large basal lobe or pinnule from the width). Rhizome short, erect, scales*

ca 3 mm long, blackish brown, lanceolate with a heart-shaped base, margins entire; stipes ca half to two thirds lamina length, with basal scales like those of the rhizome, and scattered smaller ones with basal processes higher up. Lamina lanceolate/tri-

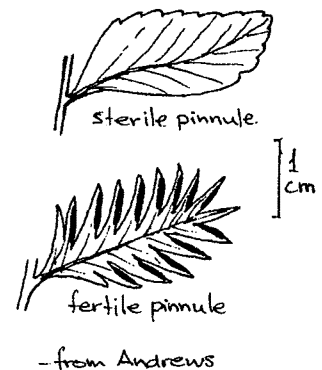
angular in outline, 10-20 cm long, tapering gradually from the base to the pinnatifid and finally drawn-out apical segment; pinnae (minus the basal lobe) narrow elliptical, acute, the margins coarsely and obliquely toothed to shallowly lobed. Sori 2-4 mm long, diverging from the midvein at a shallow angle, ca halfway between midvein and margin, up to ca 10 per pinna; indusium brown, rolled back at maturity. Lithophyte in rft, especially near water; NE Qld.



A. tinarooense S.B. Andrews, Hbk. Ferns & Fern Allies
Qld., App. 1 (1982)

17*. *Fronde pinnate-pinnatisect (i.e. with pinnae cut into a number of lobes) or more dissected.*

19. *Fertile lamina much more finely divided than sterile. Rhizome short, thick and scaly. Stipes up to as long as the lamina, basally scaly. Lamina 2-3 pinnate, to 35 x 25 cm, ovate in outline, papery; sterile pinnules ovate to rhomboid, 15-25 x 10-15 mm, with toothed outer margins; fertile pinnules (secondary pinnae) deeply pinnatisect or pinnate, the lobes linear, to 10 x 1.5 mm, with one or two sori per*



Asplenium

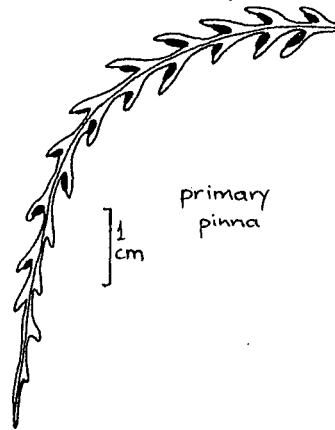
per lobe; some fronds entirely fertile, or sterile, others basally sterile and apically fertile with intermediate dissection between. Terrestrial or in rock crevices near creeks. Native to Norfolk I., cultivated in Qld. and has become feral at Kuranda (Andrews, 1980).

A. *dimorphum* Kunze, Linn. 23 : 233 (1850)

19*. *Fertile and sterile laminae dissected ± similarly.*

20. *Fronde pendulous, the ultimate segments linear and leathery each with a single, apparently marginal sorus.*

Rhizome short-creeping, thick; scales brown to dark purplish, narrow triangular with a narrow, drawn-out tip, the margins sparsely and irregularly hairy. Stipes ca half to a third of lamina length, angular, glabrous excepting a few rhizome-type scales at the base and scattered smaller ones, often with basal hair processes. Lamina bipinnate, up



to 45 cm or more long, the basal pinnae longest, to ca 20 cm, all limply pendulous; pinnules 5-10 x 1-2 mm, all sparsely scaly with small scales like those of the stipe, or ± star-shaped. An epiphyte growing in small humus accumulations, or sometimes nest-invading, in mid to lower epiphyte zones in moist, cooler rft, from SE Qld to Vic. and Tas; also NZ and some S. Pac. islands.

....A. *flaccidum* Forst.f., Prodr. 80 (1786)

20*. *Fronde and ultimate segments otherwise.*

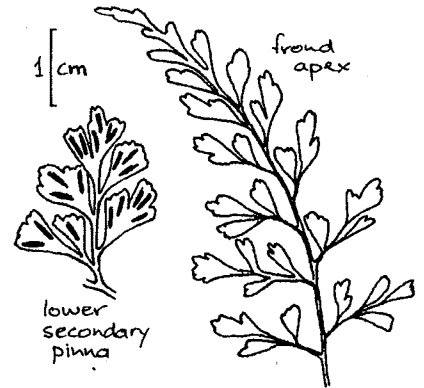
21. *Mid region of stipe more than 1 mm wide (usually at least 2 mm); fronds 20 cm or more long (rarely less).*

22. *Stipe and rachis wholly dark brown to almost black.*

23. *Most of lamina 3 to 4 pinnate; rhizome scales 1-2.5 cm long, wavy and/or curly, thin, brown, very narrowly triangular, entire with a drawn-out tip; rhizome thick, short-creeping. Fronde up to more than 2 m long but commonly half this or so, arching to pendulous, stipe*

Asplenium

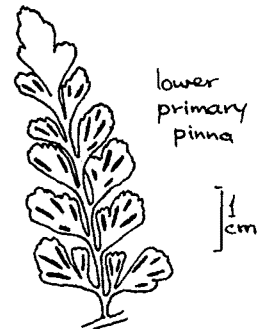
less than half frond length, usually shiny; lamina ovate in outline, ultimate segments \pm wedge-shaped, ca 3-6 x 6-12 mm, the outer margin toothed, leathery, somewhat glossy, striate. Sori 1-3 mm long, 1-3 per pinnule, towards the base of the segment. Typically a nest-invading epiphyte in mid level epiphyte zones of tropical lowland and monsoon rft of NE Qld; also Malesia and SW Pac.



....*A. laserpitiifolium* Lam., in Lam. & Poir., Encycl. 2 : 310 (1786) (Syn. *A. cuneatum* var. *laserpitiifolium* (Lam.) F. Muell.)

23*. *Lamina bipinnate except sometimes the lower parts tripinnate in large fronds; rhizome scales 2-3 mm long, not curly or wavy, dark brown, very narrow triangular, entire with*

a drawn-out apex; rhizome short-creeping; stipes with a few early deciduous scales, ca half to two thirds lamina length. Lamina 15-35 cm long, ovate to broad triangular in outline, \pm leathery, apex pinnatifid/acuminate; pinnules spatulate or broad obovate, rounded apically, with the distal margins toothed, glabrous except for a few small \pm star-shaped scales on



-from Andrews

the smaller rachises. Sori elongate, not reaching the margins. Epiphytic, lithophytic or sometimes terrestrial, in rft, NE Qld; also Malesia, SW Pac. Two forms occur in Aust., one with broader and basally more divided fronds.

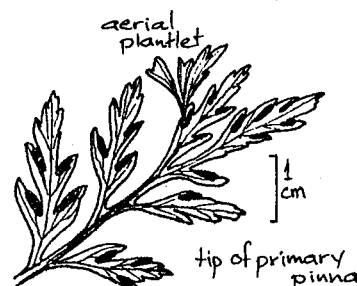
....*A. cuneatum* Lam., in Lam. & Poir., Encycl. 2 : 309 (1786) (misappl. : *A. affine*)

22*. *Stipe and rachis all green, or green with the lower stipe dark or the under-(abaxial) surface dark.*

24. *Sori 2-3 mm (to 4 mm) long, the indusia \pm hemi-elliptical; fronds*

Asplenium

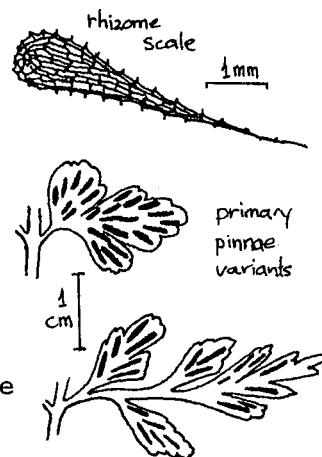
bi- to tripinnate ovate to broad tripinnate, ovate to broad triangular in outline, often proliferous. Rhizome thick, short, erect or creeping, scales to 15 mm long, lanceolate, entire, brown. Stipe bases brown, green above, decreasingly scaly upwards, ca a third to a half the length of the lamina. Fronds arching, pinnules broad ovate and lobed or toothed, apex blunt, herbaceous in texture, rachises and veins sparsely scaly with small ovate or triangular scales with a few basal processes. Sori 2-6 per pinna, often near the edge of a lobe and appearing marginal. Terrestrial, lithophytic in humus collections, or epiphytic in lower zones in cooler rft and other moist, humid, sheltered communities from SE Qld to Vic., Tas., SA, & WA; also SE Asia, Malesia, SW Pac. & NZ.



....*A. bulbiferum* Forst.f., Prodr. 80 (1786)

24*. *Sori 4-10 mm long, indusium narrow linear; fronds pinnate-pinnatifid to bipinnate, lanceolate to narrow triangular in outline, not proliferous.*

Rhizome short, thick, erect or creeping; scales 2-4 mm long, lanceolate with a drawn-out hair tip, margins denticulate, dark brown. Fronds to ca 40 cm long, semi-erect to arching, stipes from a third to half frond length, basally dark brown, the rest (& the rachis) green above and dark brown below, \pm deciduous scaly, the scales like those of the rhizome but smaller and often with a number of narrow, basal processes; ultimate segments wedge-shaped to fan-shaped, the distal margins irregularly toothed or shallowly lobed, texture \pm leathery. Sori 4-6 per pinnule or lobe, spores ca 50 x 30 μ . An uncommon fern of sporadic occurrence, usually lithophytic in smaller humus accumulations in wet sclerophyll forest from SE Qld to Vic., SA & WA, more common and often epiphytic in the latter; also Old World tropics. It is commonly regarded as a form of *A. polyodon*.



....*A. aethiopicum* (Burm. f.) Bech., Candollea 6 : 23

(1935) (Syn. *Tri-*

chomanes aethiopicum Burm.f., *A.*

adiantoides (L.) C.Chr., *A. praemorsum*

Asplenium

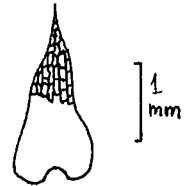
Sw., *A. furcatum* Thunb.,
A. falcatum Lam. var. *bi-*
pinnatum W.A. Sledge)

21*. Mid region of stipe 1.5 mm wide or less (usually not more than 1 mm); fronds up to ca 25 cm long (rarely more).

25. Stipes dark brown, sparsely scaly; lower rachis dark brown beneath, green above, upper rachis green; plants growing in N. Qld rft.

26. Rhizome scales to 2 mm long; lamina dark green, often proliferous near the apex; stipe mostly less than half lamina length. Rhizome short-creeping, scales ovate, entire.

Lamina bipinnate, ca 10-20 cm long, narrow triangular or lanceolate in outline with a drawn-out apex; ultimate segments wedge-shaped with a rounded, irregularly toothed or shallowly lobed apex, sparsely branched-glandular-hairy beneath. Sori 1-3 per pinnule, 1-3 mm long, narrow. Lithophytic or terrestrial in mountain rft, especially near streams, N Qld.



rhizome scale

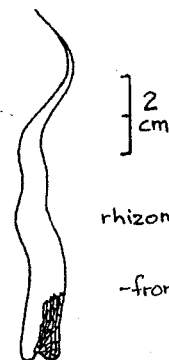
....*A. bailey anum* (Domin)Watts, Proc. Linn. Soc. NSW
 39 : 783 (1915) (Syn.

A. hookeranum Col. var. *bailey anum*
 Domin, misappl. : *A. hookeranum* Col.)

26*. Rhizome scales to 8 mm long; lamina pale green, not proliferous; stipe mostly more than half lamina length.

Rhizome erect, scales very narrow triangular, subulate, entire, wavy.

Lamina bipinnate, triangular to lanceolate in outline, 6-8 x 2.5-3 cm (possibly up to twice this) with a pinnatifid apex, thin but firm in texture, the upper surface striate; rachis bearing scattered, very small, narrow scales with long basal processes. Pinnules



rhizome scale

-from Andrews

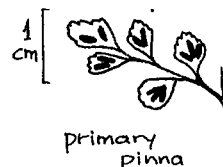
Asplenium, Stenochlaena

ca 4-7 mm long, obovate or wedge-shaped, the apical margin toothed, ± glabrous. Sori 1 or 2 per segment; indusia pale. Epiphytic or lithophytic, sometimes on logs or in litter. NE Qld.

....*A. macilwraithense* S.B. Andrews, Hbk Ferns & Fern Allies Qld, App.1 (1982)

25*. *Lower stipe only brown, upper stipe and rachis green or yellow-green; plants of open, subalpine communities of the S Alps of NSW and Vic.*

Rhizome short, erect, scales brown, lanceolate, acuminate scales with margins sparsely, shortly and irregularly toothed or hairy, up to ca 10 x 2 mm. Fronds 5-25 x 1-12 cm, stipes from ca ½ to equal the length of the lamina; all axes



moderately densely scaly; lamina lanceolate to diamond-shaped, dark green, pinnate-pinnatifid to bipinnate-pinnatifid; ultimate segments obovate to wedge-shaped, outer margins toothed, or pinnatifid, usually stalked, (distinctly so in NZ material), up to ca 10 mm long, but usually 4-8 mm. Sori 1-4 per pinnule, 1-3 mm long, coalescing with age and the indusia becoming obscured. Very rare in Australia, not recorded from Tasmania but may well occur there; ± common in NZ.

....*A. hookerianum* Colenso, Tasm.J.Nat.Sci.2:169(1846)

order Blechnales

family BLECHNACEAE 8/260

genus *Stenochlaena* Sm. 5, Old World tropics, Australia 1.

A coarse, mostly terrestrially-rooted, casually epiphytic, long-creeping, high-climbing or scrambling fern, climbing by adventitious roots and twining. Stem irregular, angular, not flattened, glabrous except for the brown-peltate-scaly, growing apical region. Fronds up to 1 m long, pinnate, pinnae shiny, jointed to rachis (except terminal one), ovate or lanceolate to narrow oblong-acute, tips drawn out, bases obtuse to rounded, slightly more cut away on the lower edge, margins cartilaginous and finely toothed. Fertile fronds uncommon, produced in the upper parts, pinnae narrow linear, sori acrostichoid. Common in trop. lowland swamp forests and rft margins; NW Aust., NT, NE Qld; trop. Asia.

....*S. palustris* (Burm.f.) Bedd., Ferns Br. Ind. Supp. 26 (1876)
(Syn. *Polypodium palustre* Burm.f., *Acrostichum scandens* (Sw.) Hook.)

AUSTRALIAN VASCULAR EPIPHYTES

Key to the Genera of Group 5 : Magnoliatae (Dicots)

1. *Woody plants.*
2. *Erect, free-standing shrubs, mostly with a single main stem.*
3. *Leaves compound.*
4. *Leaves palmately compound.*
 -*Schefflera* (Araliaceae) p.126
- 4*. *Leaves pinnately compound (sometimes 3-foliolate)*
 -*Polyscias* (Araliaceae) p.128
- 3*. *Leaves simple.*
5. *Leaves alternate, lacking stipules or with a single, early deciduous, sheathing stipule.*
6. *Developing leaves enveloped in an early deciduous, sheathing stipule which leaves a linear, stem encircling scar; plants with milky latex.*
 -*Ficus* (Moraceae) p.115
- 6*. *Lacking ochreate stipules and milky latex.*
7. *EITHER, leaves lanceolate and hairy underneath, OR, leaf shoot buds covered with large scales, stems prominently marked with lenticels and leaf margins usually undulate. When epiphytic, usually in larger humus accumulations or epiphyte nests.*
 -*Pittosporum* (Pittosporaceae) p.112
- 7*. *Otherwise; when epiphytic, growing on tree fern trunks.*
 -*Quintinia* (Escalloniaceae) p.129
- 5*. *Leaves opposite, with stipules which are paired and either small, rounded and persistent or interpetiolar, acuminate and early deciduous.*

Key to the Genera : Group 5

8. *Leaves broad obovate* with very shortly drawn out apices, thick and leathery, dark green and glossy, with small, persistent, appressed, rounded stipules.

....*Fagraea* (Potaliaceae) p.133

- 8*. *Leaves lanceolate to oblong or elliptical acute*, almost herbaceous to thinly leathery with early-deciduous, lanceolate, interpetiolar stipules, which leave prominent interpetiolar line-scars.

....*Timonius* (Rubiaceae) p.133

2. *Scrambling or climbing shrubs or semi-epiphytic climbers*, often with several to many main growth-leads.

9. *Leaves compound*, 2-5 foliolate (sometimes unifoliate in adults), the leaflets toothed in juveniles, mature ones entire or with few teeth; semi-epiphytic climber.

....*Motherwellia* (Araliaceae) p.126

- 9*. *Leaves simple*; scrambling shrubs, sometimes climbing by layering.

10. *Leaf margins entire* (tips may be notched).

11. *Leaf tips acute or acuminate*, lamina broad ovate to oval, prominently 3 or 5 veined from the base; stems layering on contact with a suitable substrate.

12. *Leaves alternate*.

....*Agapetes* (Ericaceae) p.132

- 12*. *Leaves in whorls of 3 or 4*.

....*Medinilla* (Melastomataceae) p.130

- 11*. *Leaf tips obtuse to notched*.

13. *Leaves whorled, sometimes opposite, broad obovate, the tips obtuse, occasionally notched*.

....*Rhododendron* (Ericaceae) p.131

- 13*. *Leaves alternate*; leaf tips emarginate, hemi-epiphyte or terrestrial climber, sometimes litho-phytic, climbing by adventitious roots and at

Key to the Genera : Group 5

maturity forming a woody lattice on or around the phorophyte
(N.B. juvenile vegetative form markedly different - see later
in key.)

....*Quintinia* (Escalloniaceae) p.129

10*. *Leaves with toothed margins.*

14. *Leaves glabrous, stiffly leathery, alternate, elliptical to narrow elliptical, 1-2 cm long, venation basically 3-veined, subparallel.*

....*Prionotes* (Epacridaceae) p.132

14*. *Leaves hirsute, soft herbaceous, opposite but usually appearing alternate due to inhibited development of one of each pair, ovate to oval, 3-7 cm long, venation pinnate-reticulate.*

....*Fieldia* (Gesneriaceae) p.147

1*. *Herbaceous plants.*

15. *Climbers, i.e. medium to long-creeping. Hoya and Dischidia often have some growth short-creeping or spreading.)*

16. *Leaves alternate, glabrous, with blunt or slightly emarginate tips, soft to leathery, not fleshy.*

....*Quintinia* (juvenile) (Escalloniaceae)
p.127

16*. *Leaves opposite, (may appear alternate by inhibited development of one member of each leaf pair), glabrous or hirsute, with acute to acuminate tips, or, if blunt, then fleshy.*

17. *Leaves hairy, toothed, herbaceous, usually with one member of each pair very reduced in size.*

....*Fieldia* (Gesneriaceae) p.147

17*. *Leaves glabrous, entire, leathery to fleshy or hollow, pair members ± equally developed.*

Key to the Genera : Group 5

18. *Flowers 5 mm diam., or less; leaves fleshy and orbicular to broad ovate or bladdery and often ant-infested.*

....*Dischidia* (Asclepiadaceae) p.143

- 18*. *Flowers more than 5 mm diam., leaves thick and leathery to fleshy and elliptical to broad ovate.*

....*Hoya* (Asclepiadaceae) p.139

15. *Sedentary plants - may be single stemmed and bushy but sometimes layering.*

19. *Stem base tuberous, fleshy and in adults, honeycombed with tunnels and almost invariably housing colonies of small plants. Strictly epiphytic.*

20. *Stem above the tuber (i.e. leaf-bearing stem) thick, rough, with very short internodes (less than 1 cm); inflorescences sunken, in depressions between raised, shield-like leaf scars.*

....*Myrmecodia* (Rubiaceae) p.135

- 20*. *Stem above tuber thin and smooth; internodes more than 1 cm; inflorescences not sunken and leaf scars not as above.*

....*Hydnophytum* (Rubiaceae) p.134

- 19*. *Stem bases not tuberous; epiphytes or lithophytes.*

21. *Leaves forming a rosette; old flowering and fruiting structures persistent; lithophytes, rarely terrestrial.*

22. *Dehisced capsules less than 1 cm long, the segments lanceolate and not spirally twisted together. Inflorescences hairy in fresh specimens.*

....*Didymocarpus* (Gesneriaceae) p.146

- 22*. *Dehisced capsules more than 1.5 cm long, the segments linear and twisted together in a helix of 2-3 revolutions. Inflorescences glabrous.*

....*Boea* (Gesneriaceae) p.145

Key to the Genera : Group 5

21*. *Leaves cauline*, internodes relatively long, facultative epiphyte/litho-
phyte, occasionally terrestrial.

23. *Leaves bluntly serrate, alternate*, herbaceous to almost leathery.

.... *Procris* (Urticaceae) p.126

23*. *Leaf margins entire, opposite or whorled* (alternate in *P. bellendenker-*
ensis), leathery to (mostly) fleshy.

.... *Peperomia* (Piperaceae) p.112

AUSTRALIAN VASCULAR EPIPHYTES Group 5 : Dicots

division ANTHOPHYTA

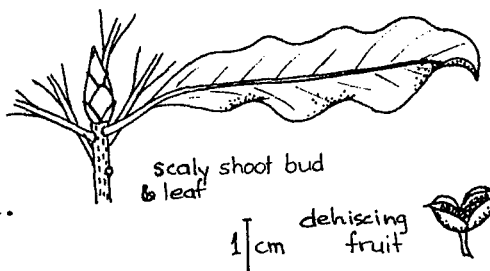
class MAGNOLIATAE

family PITTOSPORACEAE 9/200 epi. 1/5

genus *Pittosporum* Banks ex Solander, 150, Old World trop. & subtrop. Aust. 9 spp., 2 casually epiphytic.

Shrubs (when epiphytic) with leaves simple, alternate or clustered to almost whorled. Flowers solitary or clustered, axillary or terminal; ovary one-celled with 2-5 septal or parietal placentas; petals in a tube, anthers ovate to oblong, shorter than filaments, dehiscent by longitudinal slits. Capsules fleshy, becoming leathery, dehiscent loculicidally, the valves thick and hard, seeds sticky, often angular. Casual or facultative epiphytes and lithophytes in larger humus collections and epiphyte nests such as of *Platyserium* spp.

1. Leaves glabrous, often shiny, ovate to elliptical or obovate, margins usually undulate, petioles 12-15 mm long. Flowers in terminal compound clusters, sepals ovate, often basally united, petals white, 10-12 mm long incl. tube; capsule ± globular, smooth.



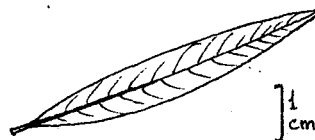
In rft, esp. marginal sites and other,

moist, more open communities; mostly terrestrial. SE Qld to Vic. and Tas.

....*P. undulatum* Vent., Jard. Cels. t.76

2. Leaves hairy, esp. beneath, with pale, appressed, T-shaped hairs, lanceolate or narrow elliptical to linear, margins not undulate, petioles to ca 5 mm long to almost sessile. Flowers solitary or clustered, axillary, petals yellow and pink, ca 10 mm long, sepals lanceolate to narrow oblong, free.

Capsule rounded, somewhat compressed, hairy. Ecology similar to the above;



SE NSW, E Vic. & Tas., up to 1200 m altitude.

....*P. bicolor* Hook., J.Bot. 1 : 249 (1834)

family PIPERACEAE 9/3000, epi. 2/710

genus *Peperomia* Ruiz & Pavon, 1000 pantrop. & subtrop., Aust. 6+

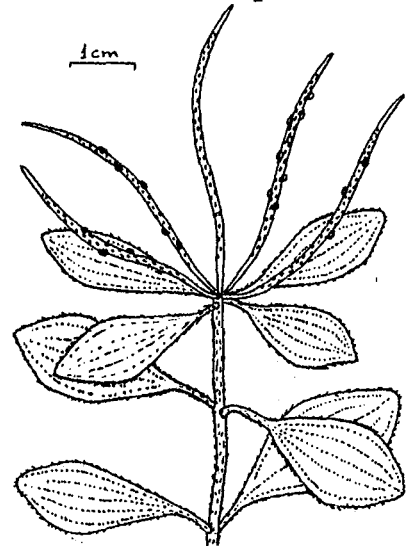
Moderately small, soft herbs with stems erect or spreading to decumbent, rooting at nodes which touch a suitable substrate. Leaves herbaceous to

Peperomia

succulent, lacking stipules, opposite and decussate or in whorls of 3 to 5 (alternate in *P. bellendenkerensis*); where succulent, water storage tissue is separate from and usually above the green tissue - plants tested have not indicated CAM physiology. Inflorescence a spadix, terminal or axillary flowers minute, very reduced, lacking perianth, ovary at least initially usually sunken in the spadix, subtended by a peltate, rounded bract which often covers the ovary, stigma very short and knob-like, papillose or terminated by bunched hairs; anthers two. Fruit a sticky, papillose drupe, sessile, becoming \pm raised on a 'receptacle'. Mostly lithophytic in minor humus accumulations or low-grade epiphytes, sometimes terrestrial, in rft and related communities and some more open but moist communities. Though leaf-succulent spp. of this genus are not CAM plants.

1. *Leaves opposite and decussate* (except for some terminal whorls of three or four.)

2. *Leaves and stems shortly pale-hairy* (pubescent). Stems up to ca 8 mm thick, dark red basally to pink above, erect or spreading, up to at least 30 cm high. Leaves mostly broad obovate to almost circular somewhat channelled or dished above with broadly acute to obtuse tips, \pm dimorphic : a) in the lower, sterile parts 1-1.5 cm long, ca 1 cm apart, \pm succulent, 3-nerved, dark green and suffused red beneath and b) in the upper, fertile regions, 2-4 cm long, 2-3 cm apart, leathery, often 5-nerved, mid

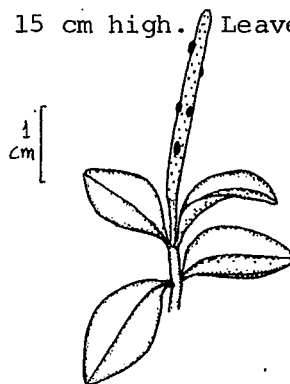


to pale green. Inflorescences mostly terminal and in groups of 2-5 or occasionally solitary and axillary, rarely forked from near the base, spadix 2 mm diam, up to ca 12 cm long, tapering in the apical third, peduncle 1-2 cm long. Drupes ca 0.7-0.8 mm diam. Mostly a lithophyte, occasionally terrestrial in rft in relatively open sites, or ecotonal or similar communities. C. York to SE NSW. Some specimens from N. Qld which are particularly robust, totally lack red pigment and may represent a separate taxon. Non-CAM plant.

....*P. leptostachya* Hook. & Arn., Bot. Beech. Voy. 96 (1841)

Peperomia

- 2*. *Plants glabrous, the leaves shiny.* Stems ca 4 mm diam. at the base, dark pink, erect to decumbent, up to ca 15 cm high. Leaves 5-20 mm long, succulent, slightly channelled, circular or oval to (mostly) \pm diamond-shaped with broadly acute and finally rounded tips, pale green with pink petioles. Inflorescences terminal and solitary, spadix to ca 3 cm long and ca 1.5 mm diam., tapering slightly near the apex. Drupes ca 0.7 mm diam. Lithophyte in tropical/monsoon rft; known from the southern McIlwraith Ra. Qld.



....*P. sp.*

N.B. Domin (Biblioth.Bot.89:5,1921) mentioned another species with opposite leaves from the lower slopes of Mt Bellenden Ker, that is otherwise similar to *P. bellendenkerensis*, but half size.

1*. *Leaves either whorled or alternate.*

3. *Leaves in whorls of 3 to 5.*

4. *Leaves very broad ovate to diamond-shaped (to oval or broad oval), consistently in whorls of 4; spadix papillose.* Lamina (4-)6-8 (-10) mm long, thickly fleshy to subsucculent or thinly leathery, light to dark green, sometimes glaucous. Stems semi-erect to trailing, green, often reddish at the nodes, 1-2 mm thick. Petioles ca 1 mm long. Inflorescences terminal and solitary, spadix ca 1-2 cm long, 2 mm diam., not tapered, peduncle 8-15 mm long. Lithophyte or epiphyte in lower, mossy, sheltered zones in rft and related communities, from N Qld to SE NSW: also \pm pantropical. Non-CAM plant. (Fig. 3b, p.).

....*P. tetraphylla* (Forst.f.) Hook. & Arn., Bot.Beech.

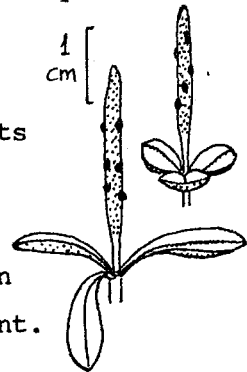
Voy.96(1841)

(Syn. *P. reflexa* A. Deitr., *P. affinis* Domin)

- 4*. *Leaves oblanceolate to very broad obovate, mostly in whorls of 3 but with some of 4 or 5 towards the stem base; spadix not papillose.* Plant glabrous. Stems up to 7 mm diam., at the base, greenish pink to dark pink, semi-erect to spreading or decumbent, up to ca 30 cm long. Leaves 1-2.5 cm long, the petiole 1-2 mm long, slightly channelled above, dark to pale

Peperomia, Ficus

green, tips obtuse to rounded, quite fleshy, especially the lower ones. Inflorescences terminal and mostly solitary, but sometimes paired, ca 3-4 cm long, the peduncle ca 1 cm; spadix tip shortly tapered; flowers and fruits not very distinct from those of congeners. Lithophyte or low grade epiphyte, sometimes nest-inhabiting, in lower epiphyte zones in rft of the Atherton Tableland and Bellenden Ker Ra. area. Non-CAM plant.



....*P. johnsonii* C.DC., Ann. Conserv. & Jard. Bot.
Genève : 286 (1898) (Syn.
P. enervis F.Muell.)

3*. *Leaves alternate*, almost circular, 10-18 mm long, petioles ca 2 mm, slightly fleshy, glabrous except for the hairy margins. Stems brown, moderately thick basally, becoming slender and angular/grooved apically, decumbent, rooting adventitiously, then ascending, curved, branching angularly. Inflorescences branching from near stem apices, solitary or sometimes paired; spadices 2.5-3 cm long, slender, on peduncles as long or longer than the spadices. Recorded from mid altitude rainforest, Mt Bellenden Ker, N Qld.

....*P. bellendenkerensis* Domin, Biblioth. Bot. 89:5
(1921)

family MORACEAE 53/1400, epi. 3/ca. 550

genus *Ficus* L. 900, pantrop. & subtrop.; Aust. 35, 19 hemi-epiphytic

Hemi-epiphytic or lithophytic trees or shrubs, semi-epiphytic climbers or terrestrials with ochreate, early-deciduous stipules and milky sap, particularly in green parts. Mostly germinating epiphytically or lithophytically and sending down one thin, aerial or creeping root to the ground which becomes the main nutrient supply-line; more are then sent down, branching and anastomosing to form a lattice around the support. Bark mostly finely corky-rough, grey or brownish; aerial roots often produced from smaller branches. Leaves alternate, leathery, entire. Flowers very small, unisexual, enclosed in a false fruit, the fig, (syconium - an invaginated floral axis) usually in pairs in the axils; ♂ perianth of 1-5 tepals, stamens 1 or 2, opposite the tepals; ♀, 0-5 tepals, ovary sessile or

Ficus

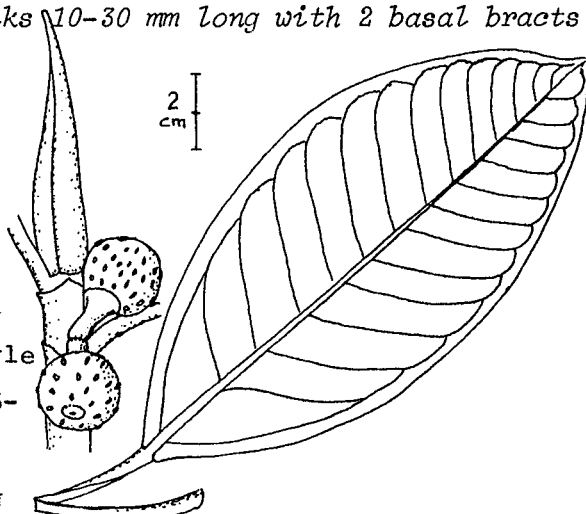
stalked, style simple, terminal or lateral, ovule solitary, pendulous; true fruit an achene. The stranglers and semi-epiphytic climbers belong to the subgenus *Urostigma*, distinguished by being monoecious, having interfloral bracts and solitary stamens.

1. Shrubs or trees, mostly hemi-epiphytic stranglers.
2. Leaves rusty brown to some extent, especially the young ones and often more so beneath.
3. Leaves mostly larger than 15x7 cm with more than 12 main lateral veins; stipules 5 cm or more long; fig wider than 14 mm.
4. Young developing leaves initially finely white-felted between the small veins; cystoliths on upper leaf surface only; stomates not or slightly sunken; fig subglobose, the tip rounded, lacking a nipple; on stalks 10-30 mm long with 2 basal bracts.

Lamina elliptical or oblong to ovate, apices acute, 8-20 cm long, bases broad wedge-shaped to rounded; petioles 5-12 cm long; basal lateral veins at a much lower angle than the others. Figs 15-25 mm diam., purplish.

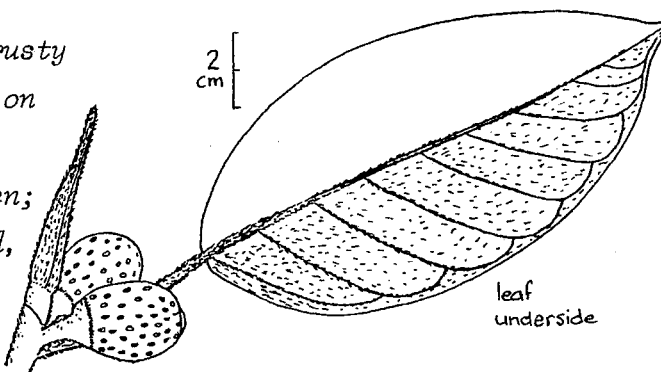
Large tree with spreading

branches, emergent when well grown; in subtropical rft and related communities from Illawarra to N Qld; commonly planted; Moreton Bay Fig. Mature figs late winter to early summer.



....*F. macrophylla* Desf., Cat.Pl.Hort.209(1804)

- 4*. Developing leaves rusty scurfy; cystoliths on both leaf surfaces, stomates well sunken; fig broad ellipsoid, 2-2.5 cm long, the apex with a nipple,



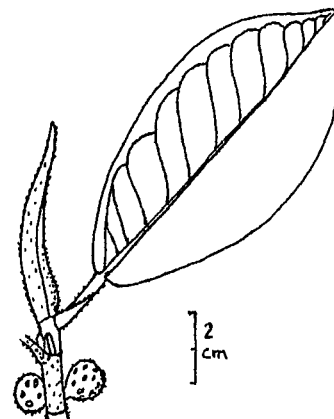
Ficus

on broadly flared, hairy stalks 6-13 mm long with 3 basal, early deciduous, ciliate-margined bracts. Leaf petioles hairy (twigs also) about half as long as lamina (6-15 cm), lamina elliptical to obovate or oblong, broadly acute, slightly drawn-out, hairy (pubescent), more so beneath; stipules 4-6 cm long, pubescent. Rft and related communities of subtropical Qld.; strangler.

....*F. baileyana* Domin, *Bibl.Bot.*89:13(1921) (Syn. *F. macrophylla* Desf. var. *pubescens* F.M. Bail.)

3*.Leaves smaller and with fewer main lateral veins; stipules and figs smaller.

5. Leaf blades up to 2.5 times as long as wide, 5-10 cm long, elliptical or oval to obovate or broad obovate or occasionally ovate, the tips rounded or obtuse, occasionally very slightly drawn out; petioles 1-3 cm long, ± terete or grooved above, main lateral veins 10-14 per side, basal one or two pairs opposite and at a lower angle, ± parallel to the margins. Stipules, leaf stalks and twigs usually shortly and finely hairy; stipules 4-6 cm long. Figs 5-10 mm diam., squat-globose, yellowish, often somewhat warty, on stalks 2-5 x 1.5-2 mm, produced ± year round. Most commonly a lithophyte in ± open communities, often much wider than high, esp. on coastal cliffs where it tends to layer and creep; sometimes a typical strangler of rft. SE NSW to N Coast and Darling Downs. In N NSW specimens tend to lack the rusty colour and hairiness and the sp. appears to intergrade there with *F. platypoda*. Port Jackson or Rusty Fig.

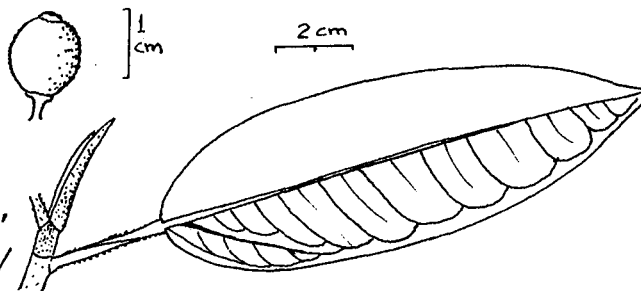


....*F. rubiginosa* Desf. ex Vent., *Jard.Malm.*t.114.

5*.Leaf blades 2.5 times or more longer than wide, 10-15 (-20) cm long, narrow elliptical or narrow oblong to elliptical or lanceolate, the tips moderately drawn out and finally rounded, petioles 3-6 cm long, bases slightly heart-shaped and tending to peltate; main lateral

Ficus

veins 8-12, the basal pair prominent, opposite and \pm parallel to the margins. Stipules 4-5 cm long, pale and rusty hairy as well as the leaf stalks and young twigs. Fig on a short, slightly flared stalk, orifice two-lipped, globular/broad ovoid, with a slight nipple, ca 8-12 mm long, orange-yellow; autumn, winter. Hemi-epiphytic strangler of rfts and related communities from C. York south to the Eungella Ra.



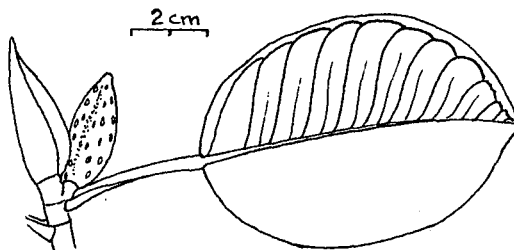
F. destruens F. Muell. ex C.T. White, *Contr. Arn. Arb.*, 4:16(1933)

2. Leaves green, not rusty brown in any part.

6. Leaves, twigs and stipules noticeably hairy.

7. Lamina ovate to oval or ovate-oblong to almost circular, i.e. less than twice as long as wide.

8. Twigs near the tips 8-10 mm wide, figs \pm cylindrical, bluntly 3 or 4 angled with a 4-7 x 3 mm apical beak; stipules 4-9 cm long, red; leaves 12-22 cm long, petioles 5-7 cm long, tips obtuse or rounded, bases rounded, thickly leathery, shiny, basal main-veins prominent, \pm parallel to the margins and extending for ca a quarter of the lamina length. Fig body 40-65 x 13-20 mm, yellow, purple-spotted, stalk short and thick, often broader than long. Hemi-epiphytic strangler of tropical rft. NE Qld. Non-CAM plant. Round-leaf Banana Fig.



....*F. crassipes* F.M. Bail., *Rep. Exped. Bell. Ker*, 60(1889)

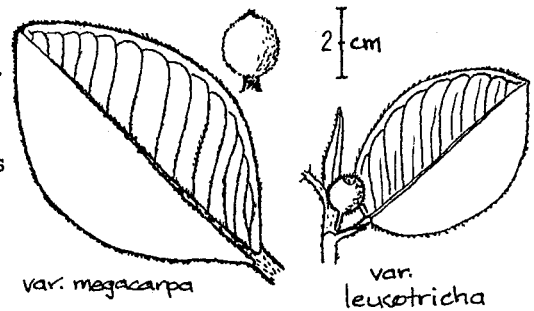
8*. Twigs less than 5 mm wide, hairy; figs globular, not beaked; stipules 1-3 cm long; leaves 5-13 cm long, petioles 1-2 cm long, tips obtuse to acute, bases broadly wedge-shaped, rounded

Ficus

or slightly heart-shaped, main lateral veins 8-11 per side (12-15 in var. *megacarpa*), the basal pair similar and parallel to the others.

Figs globular, axillary, solitary or paired, 1-1.5 cm diam. on stalks 3-10 x 1 mm (to 3 cm diam. on shorter, thicker stalks in var. *megacarpa*). Spreading shrub

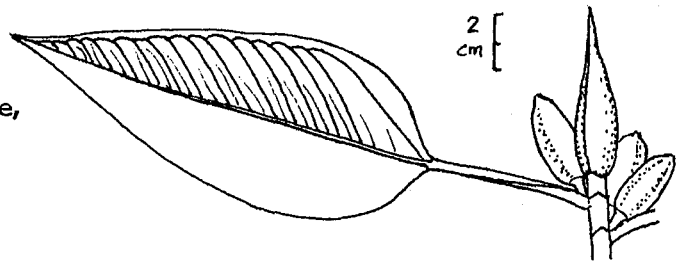
or small tree producing aerial roots from the branches; mostly litho-phytic, in monsoon woodland, NW Aust., NT.



....*F. leucotricha* Miq., Ann.Mus.Lugd.Bat.3:285(1867)

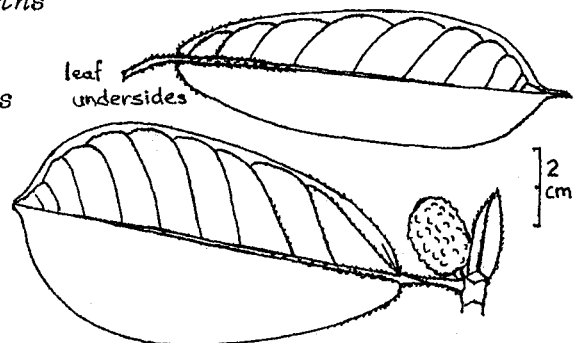
7*. *Lamina lanceolate to ovate or elliptical to oblanceolate or obovate, i.e. more than twice as long as broad.*

9. *Lamina lanceolate to ovate, acute, often finally obtuse, 15-20 main lateral veins which are relatively fine and somewhat impressed above, leathery, glossy above, paler and with the mid-vein slightly hairy beneath; petioles 5-10 cm long; stipules 5-10 cm long and hairy at the base, the apex at least, bright red; basal lateral veins relatively short. Fig cylindrical or slightly conical, 3.5-5 x 1.5-2 cm, longitudinally ribbed yellow, stalk thick, hairy, apically broadening. Hemi-epiphytic strangler in rft. N Qld. Banana Fig.*



....*F. pleurocarpa* F.Muell., Fragm.8:246(1873)

- 9*. *Lamina oblanceolate to obovate with a 0.5-2 cm, drawn-out tip, 10-20 cm long with 9-12 main lateral veins which are somewhat raised above, not much paler beneath, ± glabrous above, soft hairy beneath esp. on the midvein and main laterals, basal lateral veins slightly lower angled and longer than the*



Ficus

others; leaf base obtuse to rounded; petioles 10-20 x 1.5-2 mm, hairy; stipules 1-2 cm long, hairy. Fig broad ovoid, 1.5-2 cm long, almost sessile, paired, orange-red, warty, with a slight, apical boss. Hemi-epiphytic strangler in rft and related communities, mostly lowland, from C York Pen. to ca Cardwell; also NG and Torres Str. Is.

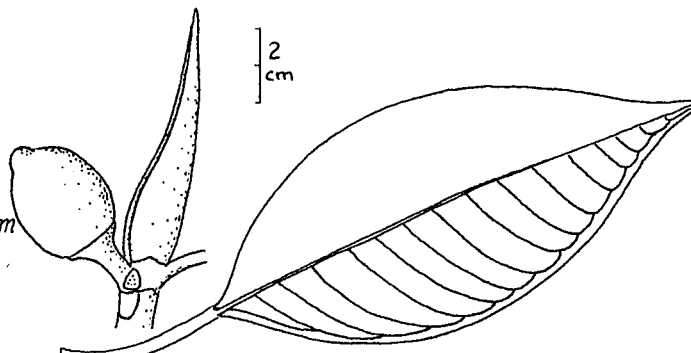
F. drupacea Thunb., Diss.Fic.II (repr.1800) (Syn. *F. pilosa* Reinw ex Bl.)

6*. *Leaves, twigs and stipules not conspicuously hairy.*

10. *Fig at least 14 mm diam. and with an apical nipple; lamina longer than 7 cm and EITHER apically acute and basally rounded or truncate, OR, apically drawn-out and basally wedge-shaped.*

11. *Lamina 10-20 cm long, lanceolate to elliptical with a short, drawn-out, finally blunt apex and wedge-shaped base, glabrous, petioles*

2-4 mm wide, 4-7 cm long; fig broad ovoid, 3-4 x 2-2.5



cm, with a prominent nipple at the apex, purple when ripe. Lamina main lateral veins 12-18, the basal one or two pairs at a lower angle, ± parallel to the margins. Whole plant glabrous. Stipules 4-7 cm long. Fig stalk 1.5-2 cm x 0.5 cm, the apex broadly flared to 10-15 mm wide. Becoming a large, spreading and often emergent hemi-epiphytic strangler with grey bark and broadly buttressed trunk in moister tropical and subtropical rfts as far south as the Bellinger R. NSW. Figs ripe spring and summer.

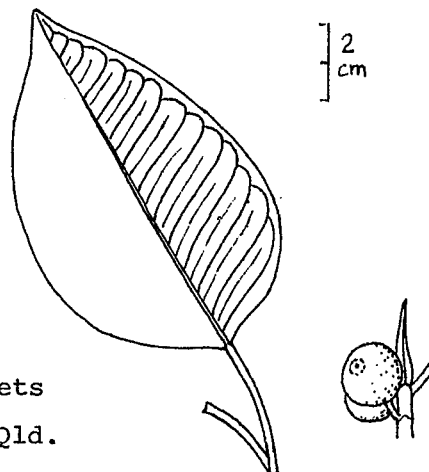
....*F. watkinsiana* F.M. Bail., Dept. Ag. Qld. Bot.
Bull. 2 : 18 (1891)

11*. *Lamina 7-14 cm long, EITHER, broad ovate or oval, acute, OR, obovate-elliptic, obtuse.*

12. *Lamina thinly leathery, margins ± flat, broad ovate to oval,*

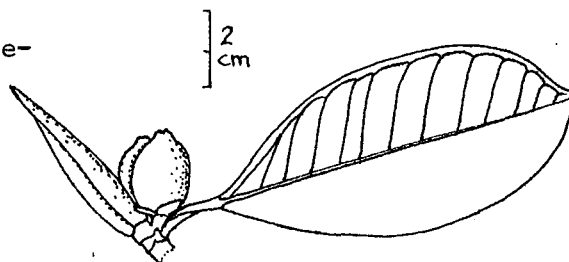
Ficus

acute, bases broadly obtuse to truncate or round, both surfaces densely and microscopically papillose/short-hairy, petioles 3-7 cm long, 1.5-2 mm wide, ± terete; fig ± globular ca 15 mm diam with a ± prominent apical nipple, yellowish when ripe. Leaf main lateral veins 10-14, the basal ones parallel to the others, lamina 7-12 cm long. Stipules 1.5-2 cm long. Fig stalk 5-10 x 2 mm, apically flared to ca 4 mm wide. Small tree, typically on rock outcrops in monsoon woodland and deciduous vine thickets of the Kimberleys, WA, NT, and N Qld.



....*F. subpuberula* Corner, Gard.Bull.Singap.17:(403)
(Syn. *F. puberula* A.Cunn.ex Miq.)

12*. *Lamina rigid, leathery, the margins down-curved, obovate-elliptical, subacute and shortly drawn-out, basally wedge-shaped, glabrous, petioles 1.5-3 cm long, somewhat flattened; fig truncate subconic or barrel-shaped with 3 large, rounded, persistent bracts, 18-22 x 14-17 mm, ostiole deeply triradiate, somewhat nipple-like. Leaf main lateral veins ca 6-10 each side, raised above, basal pair opposite, slightly elongated and parallel to the margin. Stipules to 6 cm long, red. Figs axillary in pairs, stalks 4-6 x 5-6 mm, apically thickened to 10 mm wide, yellowish. Large hemi-epiphytic strangler of higher altitude rft; Bellenden Ker Ra. to ca Mt Finnigan.*

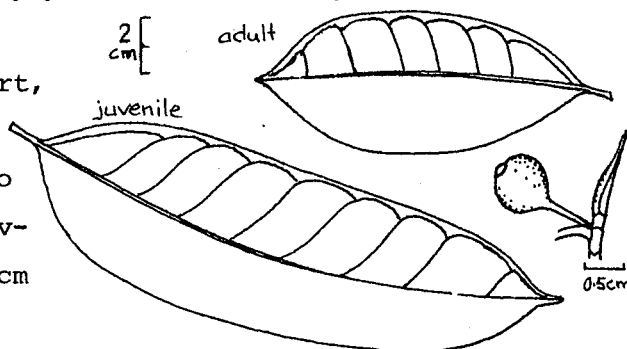


....*F. triradiata* Corner, Gard.Bull.Singap.17:401(1960)

10*. *Fig smaller and not nipped and EITHER, lamina shorter, OR, apex drawn-out to some extent.*

Ficus

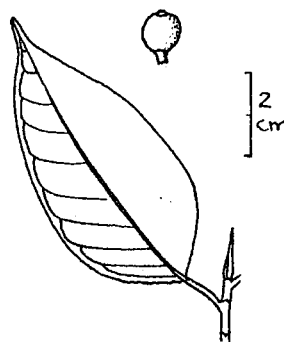
13. *Pale green, flat gland in axil of first lateral vein; main lateral veins 3-7. Branches somewhat droopy; leaves oblong obtuse with a short, drawn-out driptip, bases often oblique, broadly wedge-shaped to ± rounded, to ca 10 cm long (juveniles narrow oblong, to ca 30 cm long); main lateral veins at a high angle the basal pair ± parallel to the margins, petioles short, 5-10 mm long; stipules narrow, 1-2 cm long, slightly hairy basally, sometimes tinged red. Figs solitary or paired, in the axils, globose with a small, flattened, apical nipple, 6-8 mm diam., orange-yellow, stalk as long as or slightly longer than fig. Strangler of rft, up to 1000 m alt., C York Pen. to ca Cardwell; also Malesia.*



....*F. virgata* Reinw. ex Bl., Bijdr.452 (1826) (Syn.
F. esmerelda F.M. Bail.,
F. pinkiana F. Muell.)

13*. *Gland not present, main lateral veins 6 or more.*

14. *Numerous minute oil dots in lamina (lens needed); leaves ovate i.e. broadest in the basal half, tips with a prominent, moderately long, drawn-out driptip, ripe figs bright red; smaller branches and twigs pendulous, giving a willowy effect. Lamina ovate with a blunt or round base, main lateral veins 12-18, the basal ones not distinctive, ± leathery, 5-12 cm long; stipules 1-1.5 cm long. Figs mostly in pairs, ± globular to broad obov-oid, ca 8-10 mm diam. A hemi-epiphytic or lithophytic strangler, or sometimes a rampant semi-epiphytic climber; branches with aerial roots. Monsoon semi-deciduous vine forest of N NT & NE Qld, C York to about Townsville. Ripe figs summer (wet season).*

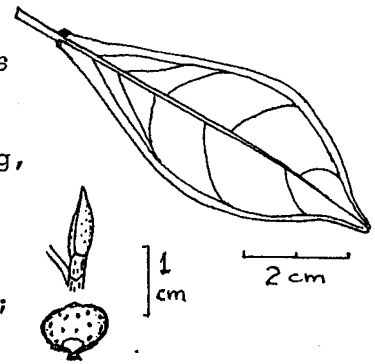


....*F. benamina* L., Mant.(1767)

- 14*. *Vegetatively otherwise; figs coloured otherwise (may be rosy-red with whitish dots).*

Ficus

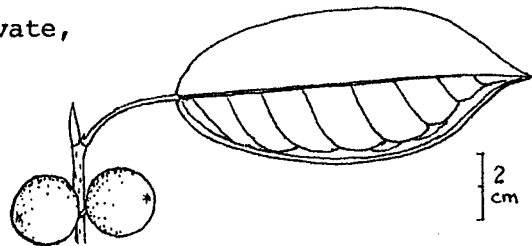
15. Leaves mostly broadest in the apical half, tapering to a wedge-shaped base, the lamina ending in small, glandular lobes; figs rosy red with whitish dots; twigs thickly dotted with white lenticels. Outer branches often pendulous; leaves 5-10 cm long, obovate, apices shortly acuminate, obtuse, rounded or notched, leathery, glossy above, somewhat paler beneath; petioles 1-2 cm long; stipules 1-2 cm long. Figs sessile, with 4 rounded, persistent bracts, globular, ca 8-12 mm diam. Strangler or banyan of rft and related communities, C York Pen. to at least the tropic (possibly S Qld); also Malesia & SW Pac.



....*F. microcarpa* L.f., Suppl.442(1781) (Syn. *F. hillii* F.M. Bail., *F. retusa* L.)

15*.Otherwise.

16. Fig 15-25 mm diam. on 4-6 mm stalks; small joint or swelling under the junction of petiole and lamina. Deciduous leaves, mostly elliptical to oval, oblong or obovate, i.e. broadest in the middle or apical half, the bases wedge-shaped to broad wedge-shaped and finally rounded but sometimes ovate to broad ovate with the bases truncate or round; apices mostly with a shortly drawn-out driptip; texture thinly leathery; main lateral veins 6-10, the basal ones similar and parallel to the others. Stipules 1-1.5 cm long. Large strangler with buttressed trunk in rft and related communities from NT and NE Qld to SE NSW; also SE Asia & Malesia. A sp. of several varieties, only one native to Aust. which is endemic here.



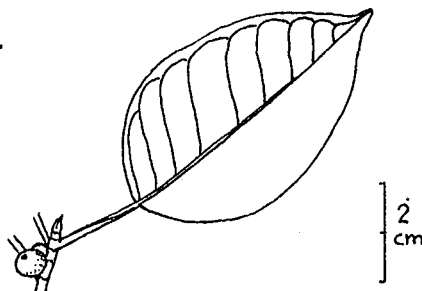
....*F. superba* Miq. var. *henneana* (Miq.) Corner, Gard. Bull. Singap. 17 : 367(1959) (Syn. *F. henneana* Miq., *F. gracilipes* F.M. Bail.)

- 16*.Fig smaller and mostly on shorter stalks; petioles lacking an apical joint.

Ficus

17. Leaves deciduous, broad oblong or oval to broad ovate, the bases round, truncate or somewhat heart-shaped, apices shortly drawn-out and finally rounded, rather thin-textured; petioles thin (1.5-2 mm wide) and $\frac{1}{4}$ to $\frac{1}{2}$ lamina length; stipules not more than 5 mm long. Main lateral veins 8-11 per side, the basal ones \pm similar and parallel to the others.

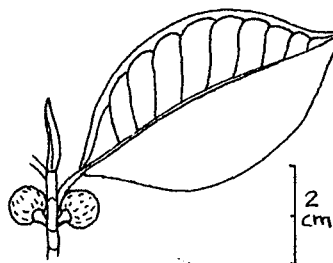
Fig \pm globular, up to ca 1 cm, sessile or shortly stalked, green-yellow with red dots when ripe. Strangler or lithophyte in rft and monsoon forest but typically a spreading banyan with many prop-roots; NW Aust., NT, E Qld and extreme NE NSW; also SE Asia, Malesia, SW Pac.



....*F. virens* Ait., Hort.Kew.ed.1., 3:451(1789) (Syn. *F. infectoria* Miq., *F. nesophila* (Miq.) F.Muell., *F. cunninghamii* Miq.)

- 17*. Leaves not deciduous, shaped differently, esp. bases and tips; stipules longer than 1 cm.

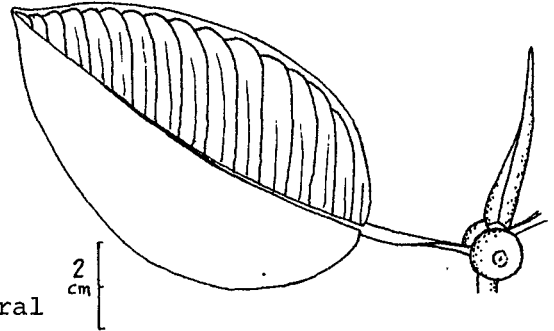
18. Lamina with basal pair of main lateral veins at a lower angle than the rest; leaves glabrous; fig subtended by two bracts. Lamina oblong lanceolate to elliptical or oval tips acute or slightly drawn-out, bases wedge-shaped often finally rounded, 5-10 cm long, \pm leathery, petioles somewhat flattened, 1-3 cm long (3-5 mm in var. *puberula*); stipules 1.5-3 cm long. Figs globular, 6-9 mm diam., sessile or on stalk up to 4 mm long (to 14 mm diam., on a 3-10 mm stalk in var. *petiolaris*) yellowish with a few dark spots, sometimes with a slight apical nipple. Hemi-epiphytic or lithophytic strangler, growing into a large, emergent tree with a broad, spreading crown and buttressed trunk. NW Aust., NT, E Aust. as far south as N NSW; in rft, monsoon forest and similar habitats. Small-leaved Strangler Fig.



....*F. obliqua* Forst f., Prodr.77(1786) (Syn. *F. eugenioides* F.Muell. ex Miq.)

Ficus

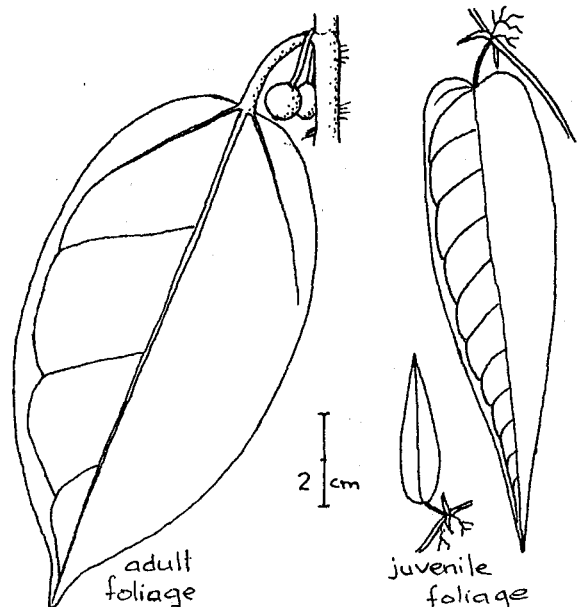
- 18*. Basal pair of main lateral veins parallel to the rest; leaves, twigs, stipules and figs sometimes slightly short-soft-hairy, otherwise glabrous; fig subtended by three deciduous bracts. Leaf blade elliptical to ovate, oval or lanceolate, 6-12 cm long, leathery, tips acute, sometimes slightly drawn-out, bases broadly wedge-shaped to rounded or somewhat heart-shaped, petioles distinctly flattened, 1-3 cm long; stipules 1-2 cm long; 7-14 main lateral veins each side. Figs globular, 10-14 mm diam., often with a \pm prominent apical nipple, on stalks 1-8 mm long. Mostly a lithophyte of open communities, extending into the arid zone; occurring \pm throughout the northern half of Aust.; Sumba, Temate and NG. A sp. of at least five varieties, distinguished on leaf shape, size and vestiture. It is very similar to *F. rubiginosa* and appears to intergrade with it in far N NSW & S Qld. The latter sp. has the basal pair of main lateral veins at a noticeably lower angle than the rest, obtuse leaf tips and \pm terete, grooved petioles which are often somewhat flattened towards the apex, whereas this present sp. does not have oblique basal veins, has acute tips and often distinctly flattened petioles. Small-leaved Moreton Bay Fig.



....*F. platypoda* A. Cunn. ex Miq., Ann. Mus. Bot. Lugd. Bat. 3:287 (1867)

1*. Rampant climbers.

19. Leaves with 4-6 main lateral veins per side (up to 9 in juvenile foliage), lacking oil dots, undersurface with a slight rusty tomentum; figs 5-8 mm diam., yellowish, on stalks shorter to slightly longer than the figs. Adult leaves oblong to ovate, 5-12 cm long, basally rounded, apically broad acute with a



Ficus, Procris

drawn-out driptip; juveniles lanceolate, often with a heart-shaped base, 2-10 cm long. Rft margins of lowlands mainly from C York Pen. to ca Innisfail.

....*F. pantoniana* King, J.As.Soc.Beng,55(2):407(1887)
(Syn. *F. scandens* Roxb. var. *australis* F.M. Bail., *F. nugentii* Domin)

19*.Leaves with 12-18 main lateral veins per side, with numerous minute oil dots, glabrous; figs 8-10 mm diam., bright red when ripe, shortly stalked to almost sessile. Facultative climber.

....*F. benamina* L. (See above for description etc.)

family URTICACEAE 45/550, epi. 4/41

genus *Procris* Comm. ex Juss., 20 Old World tropics; Aust. 1

The Aust. representative is a spreading to straggling or pendulous, layering, soft-woody shrub up to at least 2 m high. Bark smooth, finely and horizontally, mealy ridge/callused to the small twigs. Leaves opposite, up to ca 10 cm long, often one of each pair suppressed to a greater or lesser degree, obovate with a shortly acuminate and finally blunt driptip; petioles ca 3-7 mm long, shortly pale-hairy, the lamina slightly so above and glabrous beneath; margins bluntly and indistinctly toothed or crenate. Inflorescences in leaf axils some distance back from tips; flowers few, whitish, unisexual; ♂ in shortly peduncled cymes, 5-merous, ovary vestige globose; ♀ crowded on a sessile, fleshy receptacle, 4- or 5-merous, tepals obovate, staminodes lacking, stigma linear, shed early. Lithophyte in humus accumulations or nest-invading epiphyte of mid or lower zones, NE Qld, up to at least 800 m alt.; also NG & SW Pac. Non-CAM plant. (Fig.6k, p.136)

....*P. cephalida* Comm. ex Poir., Encycl. V : 629

family ARALIACEAE 55/700, epi. 6/75

genus *Schefflera* J.R. & G. Forst., 60/200 pantrop. & subtr.; Aust. 3

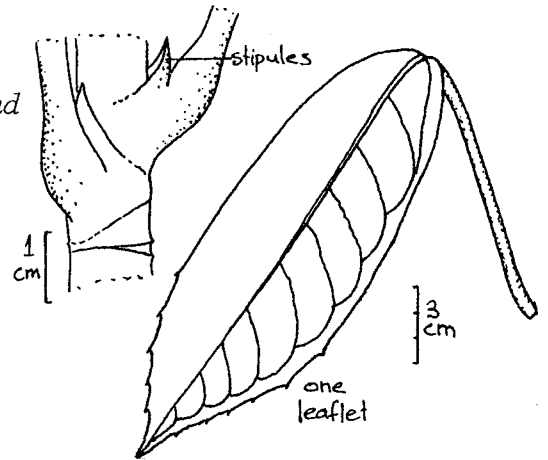
Hemiepiphytic shrubs or trees with large, palmately compound, stipulate leaves.

Schefflera

Leaflets 3-16, stalked, 10-30 cm long, ovate, oblong or elliptical to obovate, glabrous, usually shiny, with acuminate driptips; leaf petioles longer than leaflets, with a pulvinus, the bases stem claspings, stipules forming a short sheath and united into an acute, upright, 'axillary' projection. Inflorescence terminal and compound; flowers in umbels arranged racemosely on 3-6 or more rachises radiating from a central axis terminating the branch. Calyx \pm lacking, petals 5, valvate, stamens 5, disc large and undulate-margined; ovary with 5 or so locules, styles as many as locules, joined in the basal part, one seed per locule; fruit fleshy. Usually germinating in humus accumulations and epiphyte nests, or in rock crevices; mid epiphyte zones, growing into the canopy and above or into light breaks where flowering commonly takes place.

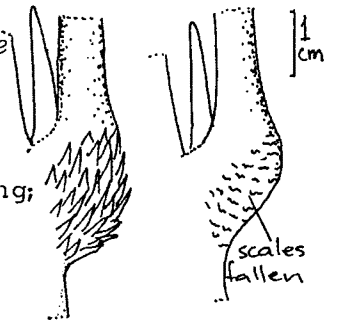
1. Leaflets (10-)15-30(-45) cm long, usually toothed at least near the apex, obovate elliptical or oblong acute.

2. Petiole base and surrounds smooth and glabrous; flowers capitate, i.e. sessile, red; inflorescence primary axis short and contracted, the radiating rachises often almost embellate and 50-100 cm long; wide-spread in NE Qld rft and related communities. Non-CAM plant.



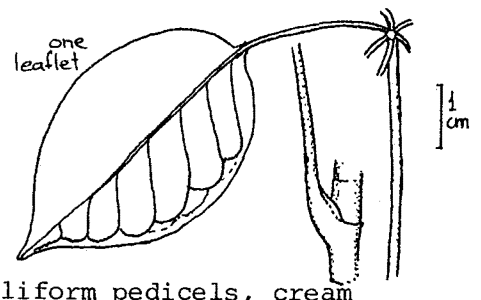
....*S. actinophylla* Harms, in Engl. & Prantl. Nat. Pfl. 3:36 (1894)

- 2*. Petiole base and surrounds beset with prickly-like projections; flowers on 3-4 mm stalks, whitish; inflorescence primary axis not contracted, the radiating rachises well separated and 20-40 cm long; flowers with 3-4 mm pedicels, perianth whitish. Wetter monsoon rft of C York Pen., also NG.



....*S. versteegii* Harms, in Lorentz, Nov. Guin. 8:272 (1910)

- 1*. Leaflets mostly 6-10 cm long, entire, broad ovate to elliptical acute with a drawn-out driptip, 3-7 per leaf. Stipules narrow and wing-like on the petiole bases. Inflorescence an irregular 'raceme' of compound umbels, the flowers on 3-4 mm, filiform pedicels, cream



Schefflera, Motherwellia

coloured; fruits orange, Hemi-epiphytic shrub or small tree, or, under some conditions becoming ± vine-like; rft and semi-deciduous vine thickets from the Bellenden Ker Ra. to C York & NG. Fl. spring.

....S. elliptica (Bl.)Harms

genus Motherwellia F.Muell. 1, NE Qld.

A semi-epiphytic ± woody vine, very similar in habit to Common Ivy, climbing by adventitious roots on tree trunks, logs and rocks. Leaves alternate, palmately compound in juvenile with 3-5 leaflets that are diamond shaped to obovate and ± coarsely toothed; adult leaves with 1-3 leaflets, each with 1 or 2 teeth or quite entire. Petioles about as long as the leaflets or slightly shorter, stipules joined, with a lacerate tip and forming a short sheath on the stem-clasping petiole base; lamina glabrous, shiny dark green. Inflorescence terminal, umbellate, ca 20 flowers per umbel, flower stalks 5-15 mm long, filiform. Calyx 2-3 mm long, petals 5, cap-like, dark red, ca 3 mm long; stamens 5, alternate with petals, filaments very short, anthers dorsifixed, 2-celled, style conical, subulate, persistent. Fruit with two, one-seeded loculi, pericarp somewhat fleshy. Restricted to rfts above ca 1000 m in the Bellenden Ker Ra., Lamb Ra. and areas to the north of this. (Fig. 61-p; p.136)

....M. haplosciadea F.Muell., Fragm. 8 : 107 (1870)

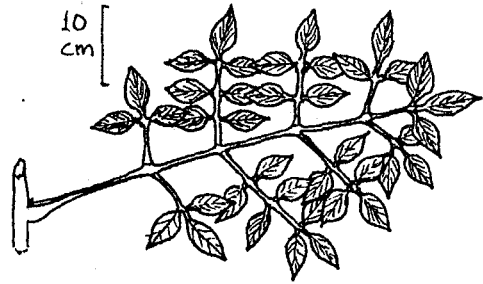
genus Polyscias J.R. & G. Forst., 5/80, Old World tropics; Aust.5,
two spp. epi.

Casual or facultative epiphytes in humus accumulations or nests. Tall shrubs or trees to ca 30 m high. Branchlets robust and few, leaves crowded near their apices, pinnately compound with 5 or 3 leaflets or bipinnate; petioles ca 10-20 cm long, slender, stipules largely united or absent, leaflets opposite, elliptical to ovate or lanceolate, acuminate, with entire, often undulate margins, ca 10 cm long and on 4 cm stalks (shiny, papery, dark green on both sides, veins indistinct). Inflorescence shorter than the leaves, compound, terminal; flowers 5 merous, petals valvate, style simple or divided, disc depressed; fruit somewhat succulent.

1. Leaves bipinnate (in juveniles may be pinnate) stipules absent, leaflets

Polyscias, Quintinia

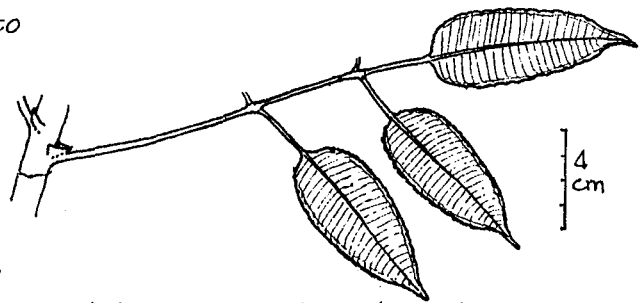
ovate, tips acute or drawn-out into a driptip; inflorescence a panicle of ultimate racemes. All joints of leaf swollen, leaves to ca 1 m long. Tall shrub or tree to ca 30 m high, occasional epiphyte. Illawarra district, NSW to N Qld and NG. Fl. irreg.



....*P. elegans* (C.Moore & F.Muell.)Harms, in Engler & Prantl, Nat.

Pflanz. 3, 8 : 45 (1894) (Syn. *Panax elegans* C.Moore & F.Muell., *Teighemopanax elegans* (C.Moore & F.Muell.) Viguiet)

1*.Leaves pinnate, stipules adnate to the petiole base except for the apex, leaflets narrow elliptical to lanceolate with a driptip; inflorescence a panicle of umbels or compound umbels.



Leaves with 3-5 leaflets, dark green, somewhat glossy, thin. Shrub or tree to ca 10 m high, frequently epiphytic. Trop. Qld. rft.

....*P. wilmottii* (F.Muell.)Philipson, Austrobaileya 1:24(1977) (Syn. *Pentapanax wilmottii* F.Muell.)

family ESCALLONIACEAE 7/150, epi. 1/3

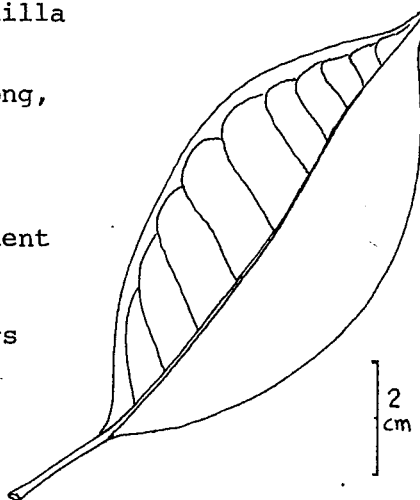
genus Quintinia A.DC. 20, Malesia, SW Pac., NZ; Aust. 4

Trees, shrubs or semi-epiphytic, woody climbers with exstipulate, alternate leaves. Inflorescences axillary or terminal, simple or paniculate racemes. Flower parts in 5-merous whorls, ovary 3 or 5 locular with several ovules each, style 3 or 5 furrowed with a 3 or 5 lobed stigma. Fruit a capsule opening by terminal teeth.

1. Leaves with a shortly acuminate driptip; erect, free-standing shrub hemi-epiphytic on treefern trunks, lithophytic, or terrestrial. Leaves

Quintinia, *Medinilla*

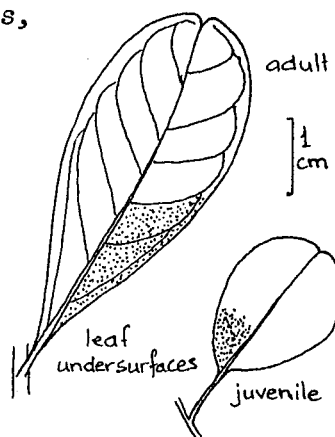
with petioles grooved above, ca 1-2 cm long, lamina 6-10 cm long, elliptical to broad elliptical, acuminate, veins prominent, midrib slightly sunken above, very prominent beneath, glabrous, entire, paler beneath. Inflorescence a terminal panicle. Flowers numerous, ca 5 mm diam., whitish. Warm temperate rft from the Shoalhaven R. NSW, north to the MCPerson Ra.



....*Q. sieberi* A.DC., Monog. Camp. 92

1*. *Leaf tips blunt in juvenile growth to prominently notched in adults; semi-epiphytic climber on tree trunks, rocks,*

logs, earth banks, etc. Vegetative growth markedly dimorphic : juvenile herbaceous, vine-like, the stems very thin and leaves 1-2 cm long, on 5-7 mm petioles, oval to circular, scarcely notched, bright green above, pale and mealy, with gland dots below, and held \pm close to the substrate; adult stems become woody and thickened and may form a lattice around trees, branchlets



also woody, holding foliage away from the substrate, leaves 3-6 cm long, petioles 5-10 mm, prominently grooved above, obovate, with prominently notched apices, mid to darker green above, pale mealy and red-gland-dotted below; in both forms margins otherwise entire and surfaces glabrous. Inflorescence an axillary raceme 5-8 cm long, flowers ca 4-5 mm diam., whitish. NE Qld rft above ca 1000 m altitude.

....*Q. fawkneri* F.Muell., Fragm. 6 : 92 (1867)

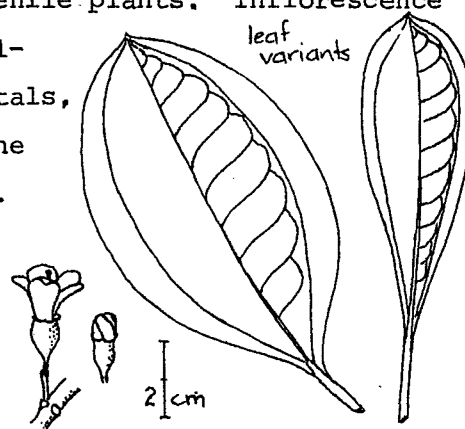
family MELASTOMATACEAE 240/3000, epi. 22/483

genus *Medinilla* Gaud., 400, Old World tropics, Aust. 1

A scrambling, layering, vine-like, glabrous, semi-woody epiphyte, lithophyte or semi-epiphytic climber. Leaves in whorls of 3 or 4, elliptical or lanceolate to ovate, prominently 3-veined from the base, entire, often bluish

Medinilla, Rhododendron

or mauve coloured, esp. underneath and on juvenile plants. Inflorescence umbellate sometimes compound, floral tube bell-shaped, cream, calyx margin almost entire, petals, 4 or 5, whitish or pale pink, stamens twice the petal number, ovary 6-locular; seeds numerous. Epiphyte in lower, up to lower middle zones, also lithophyte or terrestrial in rfts up to 1200 m altitude or more, from C York to at least the Bellenden Ker Ra.

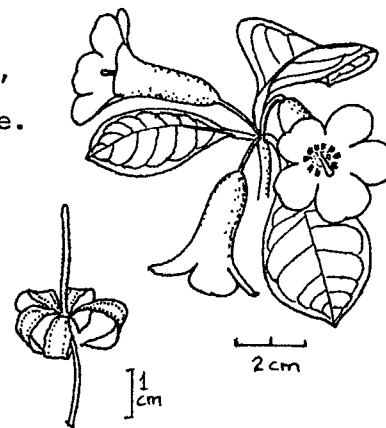


....*M. balls-headleyi* F.Muell., Australas.J.Pharm.2: 125(1887)

family ERICACEAE 50/1350, epi. 28/483

genus *Rhododendron* L. 500, mostly N Temp. & high alt. Malesia; Aust. 1.

The Aust. sp. is a somewhat scrambling, glabrous shrub up to ca 5 m high. Leaves mostly in whorls of 3, occasionally opposite or scattered, leathery, dark ± shiny green above, much paler and minutely reddish gland-dotted beneath, oval to broad obovate, obtuse and often very slightly and shortly acuminate. Flowers in terminal, umbel-like clusters of 2-7, pedicels 1.5 - 3 cm long, calyx vestigial, corolla tubular, scarlet, ± bell-shaped, the lower part ca 1-2 cm diam. and 3 cm long, then spreading and dividing into 5 broad, blunt lobes, ca 5 cm across; stamens 10, slightly longer than the tube; style slightly shorter than filaments, stigma indistinctly lobed. Capsule 5-locular, narrow ellipsoid, ca as long as the pedicel. Mostly a straggling lithophyte, sometimes epiphytic, in low rft above ca 1400 m from Mt Bartle Frere to Mt Finnegan, N Qld. White and yellow-flowered *Rhododendron* plants have been reported but have not been investigated fully. (Fig. 3a)



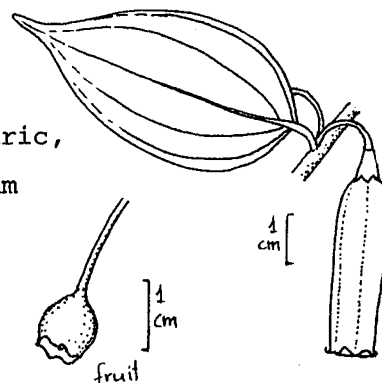
....*R. lochae* F.Muell., Victn. Natlst. 3 : 157 (1887)

Agapetes, Prionotes

genus *Agapetes* D. Don ex G. Don, 80, SE Asia & Malesia, high alt.,
Aust. 1.

A spreading to pendulous, multi-stemmed, layering, glabrous shrub. Roots often become ± tuberous and in elevated plants, a few grow to the ground as in typical hemi-epiphytes. Leaves alternate, on curved petioles 3-10 mm long, oval to broad ovate with a prominent, drawn-out driptip, with 5 prominent longitudinal veins from near the base, shiny, pitted beneath, dark green when mature; in new growth leaves are first orange then light green, twigs red. Flowers ±

pendulous in axillary clusters of 2-5 or solitary; pedicels ca 2 cm long, ovary inferior, hypanthium bluntly 5 angled, inverted pyramid-shaped, sepals broad deltoid, ± mucronate, corolla tubular/cylindric, ca 3-5 X 0.5 - 1 cm, the petal lobes deltoid, 2-3 mm long and recurved; stamens 10, shorter than the corolla, epipetalous, filaments & anthers ca equal length, anthers basifixed & two-celled, the cells ± free & dehiscent by longitudinal slits; style filiform, about as long as the anthers, stigma simple; ovary 5-locular.



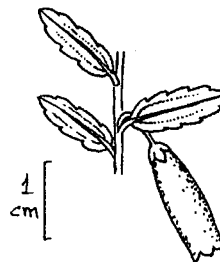
Fruit globular/urn-shaped, pericarp fleshy, red and later black. True epiphyte or eventually hemi-epiphytic, or lithophytic, often forming big clumps on granite boulders; in mid to lower epiphyte zones in cooler, moist rft, esp. low, more open grades at altitudes above ca 1200 m from the Bellenden Ker Ra. north to Mt Finnegan, Qld. Non-CAM plant.

....*A. meiniana* F. Muell., Victn. Natlst. 3:158-9 (1887)

family EPACRIDACEAE 30/400, epi. 1/1

genus *Prionotes* R. Br. 1 sp., Tas.

A scrambling semi-epiphytic climber or true epiphyte, much branched, the twigs lightly and shortly hairy. Leaves alternate, short-stalked, 1-2 cm long, narrow elliptic, paler beneath, glabrous, bluntly and obliquely toothed with broadly acute to obtuse tips and three ± prominent longitudinal veins from the base, venation otherwise subparallel/reticulate.



Prionotes, Fagraea

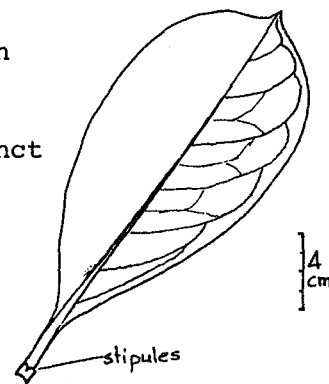
Flowers solitary, axillary near the branch tips on a slender pedicel ca 1 cm long; sepals broad ovate, broadly acute, overlapping, the margins fringed; corolla tubular/cylindric, crimson, 2-2.5 cm long, 6-8 mm diam., petal lobes 1-2 mm long, blunt and recurved; stamens 5, ca as long as the tube, free; nectary disc of 5 small scales; style filiform, slightly longer than the tube, gynobasic, stigma simple. Ovary hairy, 5-locular; fruit a loculicidal capsule. Climbing in lower epiphytic zones in cool temperate rfts of Tasmania.

....*P. cerinthoides* (Labill.) R.Br., Prodr. 553 (1810)

family POTALIACEAE 4/70, epi. 1/20

genus *Fagraea* Thunb. 35, SE Asia, Malesia, SW Pac.; Aust. 4,
1 hemi-epi.

Hemi-epiphytic shrub or small tree with opposite leaves and branchlets with prominent encircling leaf scars. Leaves obovate with very shortly drawn out tips, 15-30 cm long on petioles 1-4 cm long, with paired, small, rounded stipules, dark green and shiny with veins indistinct above, paler and dull with veins obscure below, thickly leathery to subsucculent. Inflorescence a short, terminal, di- or trichotomous corymb; corolla tubular, 6-8 cm long, the tube elongate and enlarged above the middle, lobes 5, rounded; calyx about a third the length of the corolla; ovary bilocular, style filiform; fruit succulent, orange, ovoid, to 6 cm long. Nest-invading hemi-epiphyte or lithophyte of mid epiphyte zones in monsoonal rft of C York; also SW Pac. Non-CAM plant. (Fig. 6h, i; p. 136)



- see also Figure 6

....*F. berteriana* A. Gray ex Benth., J. Linn. Soc. 1: 98
(1857)

family RUBIACEAE 500/6000, epi. 21/220

genus *Timonius* DC., ca 150 Malesia, SW Pac., few Ind. Ocean islands;
Aust. 2, 1 epi.

Hemi-epiphytic shrub or small tree, sometimes lithophytic or terrestrial. Leaves opposite with early-deciduous, narrow lanceolate, acuminate, 2-4 cm

Timonius, Hydnophytum

long, interpetiolar stipules, lvs. 5-20cm long elliptical to ovate with shortly acuminate tips, glabrous, entire, darker and moderately shiny above, paler, dull and minutely pale-gland-dotted below, venation obscure, petiole ca one fifth length of lamina or less. Flowers unisexual : ♀, solitary, axillary, glabrous, white; calyx tubular, ca 5 mm long with 2 mm, truncate lobes, corolla tube 6-7 mm long with 6-9, 4 mm, eventually recurved lobes, stamens 9, subsessile, attached to the middle of the tube; nectary disc annular, irregularly lobed, style shortly exserted, stigma 9-branched; ♂, 3-5 on a shortly peduncled, axillary cyme; calyx tube ca 3 mm long, corolla 1-2 cm long, the 4 lobes reflexed or revolute and papillose; stamens 4, anthers ca 4 mm long; style and stigma simple, ca 4 mm long. Mid epiphytic zones in rft from ca 300 m to at least 1000 m altitude, from Bellenden Ker Ra to McIlwraith Ra., possibly Iron Ra. also; apparently endemic. Non-CAM plant. (See Fig. 6j, p.136)

....*T. singularis* (F.Muell.) L.S.Smith, Proc.Roy.Soc.
Qld., 68:50
(1957) (Syn. *Abbottia singularis*
F. Muell.)

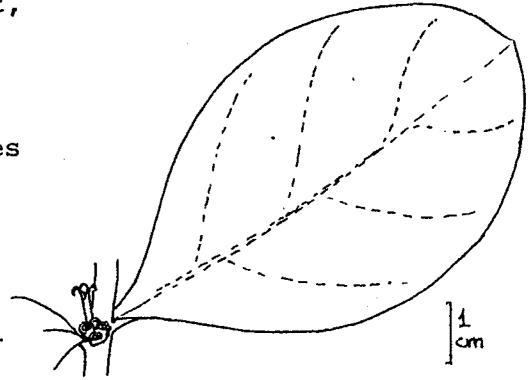
genus *Hydnophytum* Jack, 80, SE Asia, Malesia, SW Pac.; Aust. 2+

Medium sized, semi-woody, epiphytic shrubs with the stem-base tuberous and honeycombed with tunnels and chambers which are almost invariably inhabited by small ants; upper, leaf-bearing stems ± normal. Tubers smooth, up to 30 cm or more across, wrinkled or ridged, or beset with non-rigid, filiform processes. Leaves opposite, leathery to sub-succulent and some possessing CAM ability, from elliptical to oval to circular, tips obtuse; stipules small, interpetiolar, or obsolete. Flowers axillary, sessile, produced on small, perennially bud-bearing knobs - one each side of the petiole base of one leaf at each node. Calyx tubular, the lower half fused to the pericarp, the upper free and entire or shredded into hairs; corolla tubular, white, apically split into 4 short, acute, recurved or revolute lobes, the throat of the tube hairy; stamens 4, filaments short and inserted in the throat; anthers 2-celled, relatively large; ovary inferior, bilocular, one basal ovule per side, style simple, stigma 2-branched, papillose above;

Hydnophytum

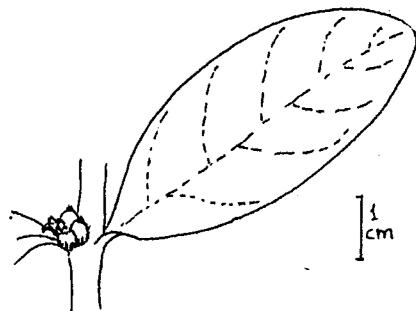
fruit a drupe, bird dispersed. There are at least two spp. in Aust., possibly more - the genus urgently needs investigation to clarify this.

1. *Inflorescence knobs not hairy; corolla tube 7-8 mm long, calyx entire (inflorescence bracts irregularly but not prominently fringed); leaves mostly broad oval or broad obovate to \pm circular with obtuse or sometimes rounded tips; stems semi-erect, spreading or arching to pendulous. Tuber dull grey, often beset with narrow, elongated, non-spiny processes (aerial adv. roots?) esp. in the lower half, \pm smooth, not ridged, tunnel entrances relatively few. Leafy stems not prominently constricted at the nodes. Growing in mid to lower epiphyte zones of rft, swamp forest, mangroves, etc. from N C York to ca Cardwell but very rare south of ca Cooktown; also Malesia. CAM plant. (Fig.6a, p.136)*



....*H. formicarium* Jack, Trans.Linn.Soc.,14:124(1823)

- 1*.*Inflorescence knobs red-brown-woolly; corolla tube 4-5 mm long, calyx (?) shredded into red-brown hairs; leaves mostly elliptical but ovate to obovate with broadly rounded tips; stems erect to spreading. Tuber glabrous, brown-grey, sometimes with a marbled appearance, with numerous radial, irregular ridges and rounded tunnel entrances on the upper surfaces. Leafy stems with a \pm sharply prominent constriction of the nodes after leaf abscission, esp. in life. Old inflorescences become prominently reddish-woolly. In mid to upper epiphyte zones in monsoon rft of higher altitudes in the M^CIlwraith Ra.(Fig. 6b,p. 136)*



....*H. sp.*

genus *Myrmecodia* Jack ,45, Malesia, SW Pac.; Aust. 5 +

Medium sized, semi-woody epiphytes with tuberous stem bases; upper leaf-bearing stems thick and contracted. Tubers up to 30 cm or more in the

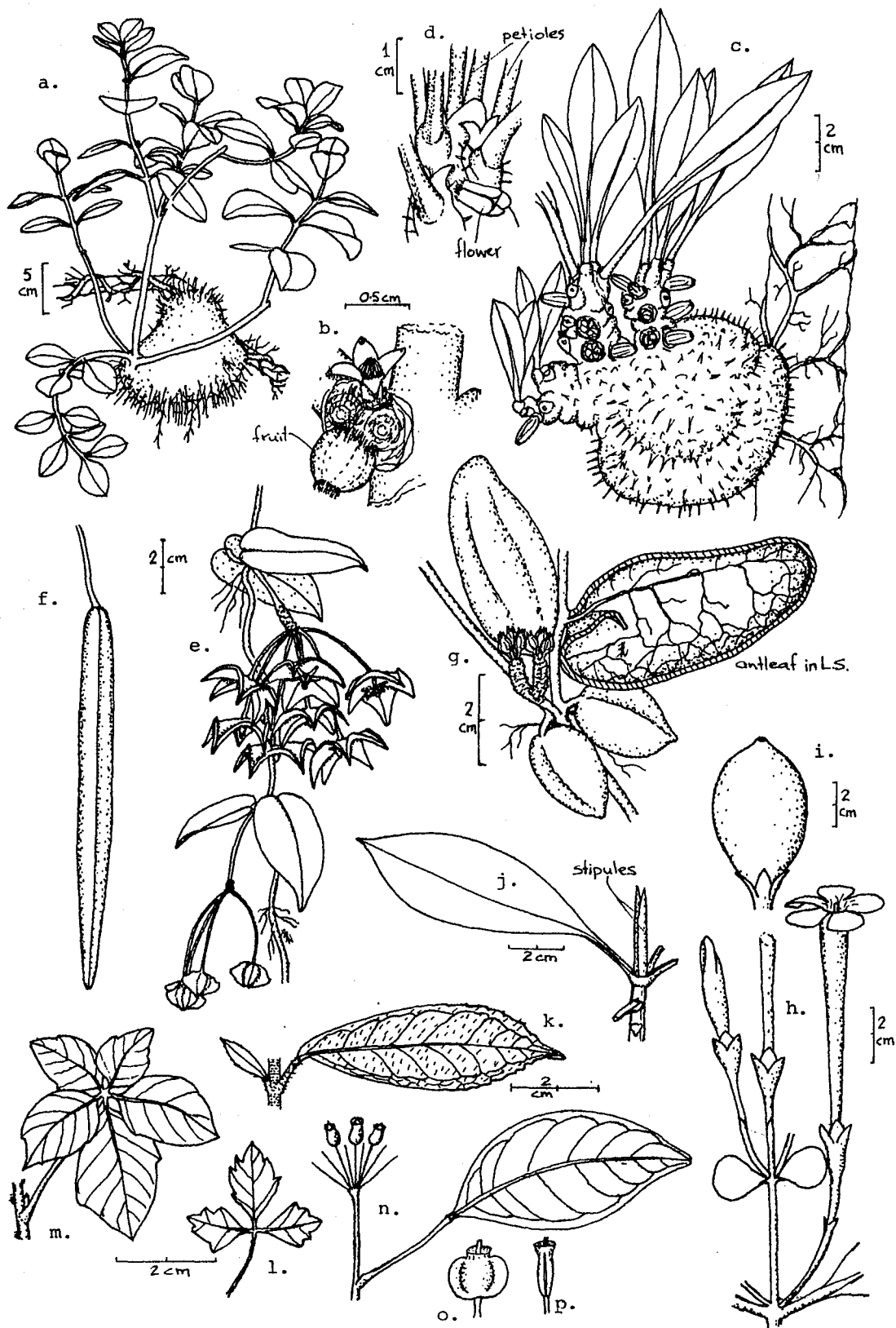
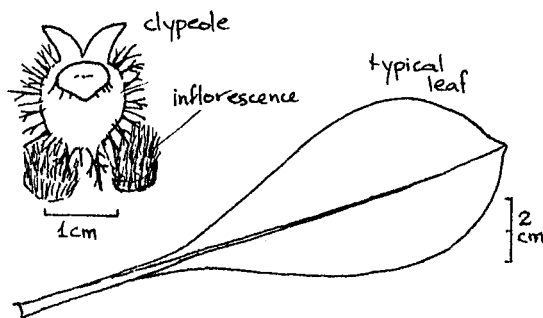


Figure 6. a. *Hydnophytum formicarium*, habit. b. *H. sp. Leo Ck.*, inflorescence. c. *Myrmecodia beccarii*, habit. d. *M. muelleri*, stem, inflor. etc. e, f. *Hoya macgillivrayi*, habit & inflor., fruit. g. *Dischidia major*, habit, showing antleaf in L.S., button lvs., inflor. h, i. *Fagraea berteriana* inflor., fruit. j. *Timonius singularis*, shoot apex & leaf. k. *Procris cephalida*, lvs. l, m, n, o, p. *Motherwellia haplosciadea*, juvenile & intermed. lvs., adult leaf & inflor., front & edge view of fruit.

Myrmecodia

major dimension, irregular spherical or ovoid, usually pimply-spiny, sometimes ridged, the spines simple or branched. Leaves opposite, crowded near the apex, jointed on expanded prominences (clypeoles) which may be flattened and spine-rimmed, thin to thick leathery or subsucculent, some with CAM ability, stipules triangular, \pm on top of the petiole base and remaining on the clypeole after leaf abscission. Inflorescences similar to *Hydnophytum* except that they are sunken in depressions (alveoles) between the clypeoles. Corolla tubular, split into four scarcely opening, ovate lobes which are apically thickened or with an inner flap, a band of hairs occurs around the middle, inside of the tube; stamens 4, alternate with corolla lobes, on short dorsifixed filaments fused to the tube ca a third of the way down, dehiscing inwards; ovary inferior, 4-locular with 2 or 4 pendulous ovules per locule, style terete, stigma 4- or 8-lobed, papillose. Fruit drupaceous, translucent red or white, bird dispersed (e.g. *Dicaeum*). This genus requires considerable study to clarify the taxa involved and their characteristics; the following key is \pm tentative.

1. *Inflorescence bracts densely and conspicuously red-brown-hairy; clypeole margins moderately densely spiny with multi-branched and simple spines; leaf laminas broad obovate and shortly acuminate, thinly leathery, 10-15 cm or more long, petioles at least a third of lamina length, roughly triangular in cross-section, grooved above. Fruit orange-red, 8-seeded. Commonest in humid lowland communities such as wetter monsoon rft and swampforest, usually in lower epiphyte zones; Cape York and Torres Strait Is.*

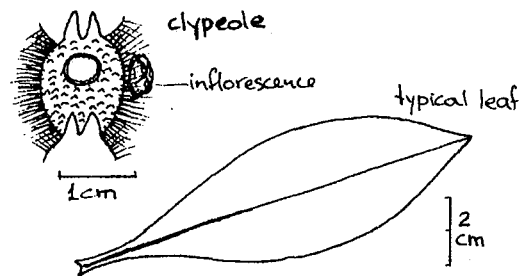


....*M. muelleri* Becc., Malesia 2:102(1884)

- 1*. *Inflorescence bracts not conspicuously red-brown-hairy; clypeole margins if densely spiny, then spines mostly simple; leaves not as large or thus proportioned, petioles hemi-terete and flat above or channelled.*
2. *Clypeoles broad, flat and overlapping above and below, finely warty, the margins densely fringed with radiating, mostly simple spines; tuber spines dark brown, contrasting with the pale grey tuber and mostly on small, irregular ridges. Leaf petioles 2-3 cm long,*

Myrmecodia

channelled above, blades ca 8-15 cm long, oblanceolate or elliptical, shortly acuminate, leathery. Fruits orange-red, 4-seeded. C. York monsoon rft, in mid to upper epiphyte zones, also ecotonal communities and *Melaleuca* woodland near rft; also Torres Str. Is.



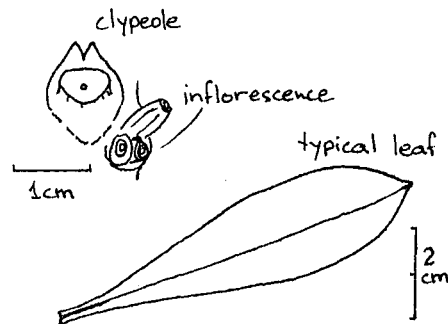
...*M. antonii* Becc., Malesia 2 : 116, Tab. xix, figs. 2-4 (1884)

2*. *Clypeoles* narrower, more humped, smooth, not overlapping and either devoid of spines or with a few \pm irregularly placed spines; tuber spines much the same colour as the tuber, mostly on tubercles, not ridges.

3. *Tuber* spiny, roughly equidimensional, irregularly bulbous, leafy stems of well grown specimens

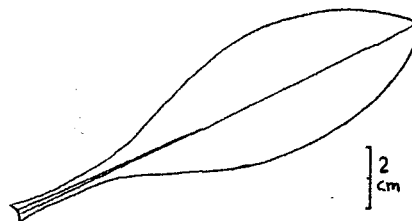
usually not longer than tuber, petioles ca. one fifth of lamina length, lamina narrow elliptical to oblanceolate, acute or shortly acuminate, 6-10 cm long; stipules ca. 1-2 mm long. Mostly found in mid to upper epiphyte

zones of swamp forest and mangroves at least from Cooktown to Cardwell; also recorded by J.D. Hooker from the Gulf of Capentaria. CAM plant. (Fig. 6c,d; pl36)



...*M. beccarii* Hook. f., Bot. Mag. 42(112) : t.6883 (1886)

3.* *Tuber* spineless (sometimes a few scattered spines at the base), irregularly conical in general shape, leafy stems of well grown specimens often longer than the tuber; petioles usually at least a third of lamina length, lamina elliptical, acute, 6-15 cm long. Corolla tube with a narrow band of



hairs inside, in the lower half. Growing in swamp forest or sclerophyll forest, in mid epiphyte zones, from ca. Cairns to Cardwell.

....M. sp. aff. *beccarii*

family ASCLEPIADACEAE 130/2000, ep. 6/135

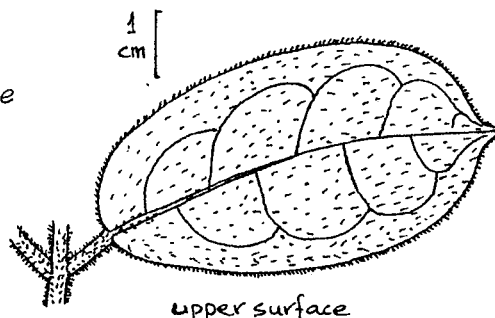
genus *Hoya* R.Br. 200, S & E Asia, Malesia, SW Pac.;
Aust 7.

Semi-woody shrubs or vines with milky sap, climbing by adventitious roots and twining; lithophytic, epiphytic, semi-epiphytic climbers or terrestrial. Stem growth of two types: a. with short internodes, often gnarled, producing a shrubby effect, then usually giving rise to b. elongated, long-travelling, twining, vine-like growth, which, on contact with a suitable substrate, strikes root and begins short shrubby growth again. Flowering occurs on either but perhaps more commonly on the long growth. Leaves opposite, leathery to fleshy, petioles short and often with the lamina deflexed as a climbing aid. Inflorescence a simple, interpetiolar, pedunculate umbel, the peduncle and receptacle perennial. Flowers mostly \pm fleshy and long-pedicelled; sepals free or shortly united; corolla widely opening, united and disc-like and distally cut into 5 \pm triangular petal lobes which are valvate in bud and often reflexed or with rolled margins during anthesis. σ and ρ parts \pm united into a column (gynostegium) to which an extra, 5-lobed structure, the corona is attached; anthers 5, bilocular, the pollen fused into pollina and joined in pairs to pollinator adherence devices (translators). Ovary of two free carpels, one of which usually aborts; fruit a follicle, seeds numerous with an expanding silky pappus for wind dispersal. Three spp. *H. australia*, *H. nicholsoniae* and *H. keysii* are known to possess CAM; probably all the Australian spp do, as indicated by their succulence and ability to resist drought.

1. *Leaves conspicuously (if shortly) hairy, at least on the underside.*
2. *Plant persistently hairy on all surfaces - i.e. on mature parts also.*

Hoya

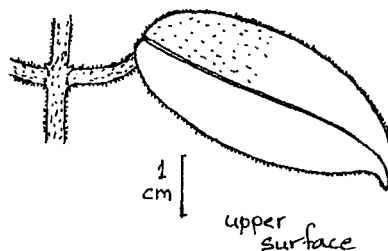
3. Flowers 10-30 per umbel, on relatively long, thin pedicels 1-1.5 cm diameter, white with some red at the corolla base, peduncles several times petiole length; leaf venation fairly conspicuous with 3 or 4 main laterals each side, clearly anastomosing at ca. a third to half way in from margin to



midrib. Leaves 4-8 cm long, obovate with a rounded base to \pm circular with a shallowly heart-shaped base, tips obtuse to very shortly drawn out. Mostly on rocks in sclerophyll forest or in rainforest ecotones and related communities; N.E. Qld. Fl. autumn (end of wet season). CAM plant.

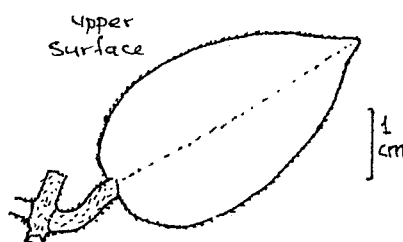
....H. *keysii* F.M. Bail., Proc. Roy. Soc. Qld. 1:87
(1884)

- 3*. Flowers 3-10 per umbel, on relatively short, thick pedicels 3-4 cm diameter, brick red with a cream and red corona, peduncles up to ca. twice petiole length; leaf venation usually obscure, 5 main laterals, anastomosing at ca. a quarter of the distance in from margin to midrib. Leaves 4-12 cm long, elliptical to oblong or ovate, bases rounded, tips moderately shortly, but prominently, drawn out and down-curved. Lithophytic, terrestrial, semi-epiphytic or epiphytic in and around monsoon rainforest and vine thickets of C York. Fl. autumn, (early dry season).



....H. sp. aff. *rubida* Schltr.

- 2*. Plants persistently hairy on the leaf underside only. Leaves broadest in the basal half, velvety below, glabrous above, ovate, shortly and acutely drawn out, 3-6 cm long, quite fleshy, bases \pm rounded; young developing leaves usually



Hoya

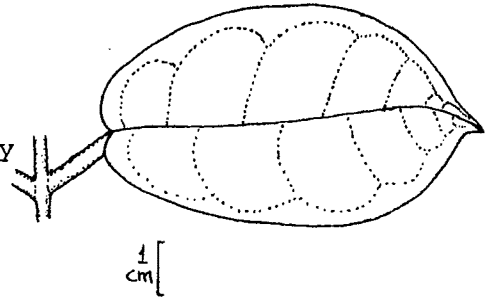
pink. Recorded from coastal heathy communities north of Cooktown.

....H. sp.

1*.Leaves glabrous or almost so.

4. Venation typical pinnate/reticulate, i.e. with the midvein most prominent and laterals \pm evenly spread and at an angle of ca. 50° or more to the midvein (laterals may be \pm obscure but midvein quite prominent).

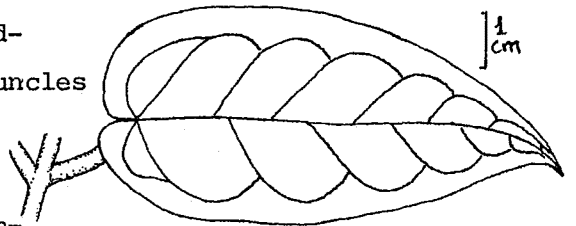
5. Leaf obovate to broad obovate or oval to almost circular (i.e. broadest in the apical half or middle), AND lamina \pm flat with bases blunt or rounded to slightly heart-shaped, leathery to moderately fleshy, tips shortly acuminate. Flowers 15-30 or more per umbel, white with some red at the corona base; peduncles usually not much longer than the petioles. Epiphytic in midzones, lithophytic or terrestrial in and around rainforest or monsoon forest or related communities from C. York to ca. Port Macquarie, N.S.W. Fl. spring. CAM plant.



....H. australis R.Br., in Traill., Trans. Hort. Soc.
7:28 (1930)

5*.Leaves otherwise.

6. Leaf-blades with strongly heart-shaped bases, ovate (i.e. broadest in the basal half), tips somewhat drawn out, leathery to moderately fleshy, commonly dark green. Flowers 3-10 or so, 3-5 cm diameter, red-purple to pale mauve, peduncles much longer than petioles. Lithophytic, epiphytic or terrestrial in monsoon rain-

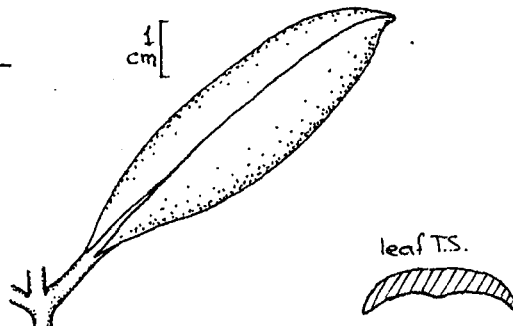


Hoya

forest and swamp forest, C. York. Fl. spring (mid dry season).
(Fig.6e,f; p.136)

...H. macgillivrayi F.M. Bail. Qld. Ag. J., n.s.
1:190 (1914)

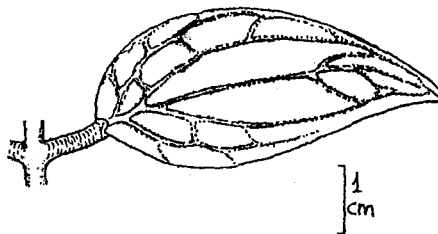
- 6*. Leaves elliptical to narrow oblong or obovate, tips acute to obtuse, bases wedge-shaped, very thick and fleshy, venation obscure except for midvein, light green to grey green, strongly convex above and concave below, held \pm erect. Inflorescence peduncle ca. twice as long as petioles, hairy, flowers 10-25, rather similar to those of *H. australis* but segments narrower and pedicels and calyces hairy. Lithophyte/terrestrial in rocky or sandy areas in open communities N.W. Aust., N.T. and C. York Pen. Fl. autumn or end of wet season.



...H. sana F.M. Bail, Qld. Ag. J. 1:229 (1893)

- 4*. Venation subparallel, i.e., one or two pairs of basal lateral veins prominent, at a low angle to the midvein and extending along most of the lamina.

7. Veins clearly visible; leaf base broadly wedge-shaped to rounded, lacking the small projections mentioned in 7*, petioles whitish, mealy textured; lamina normally green, becomes coppery to almost chocolate colour on exposure to strong light, the veins remaining pale, ovate to broad ovate, tips somewhat drawn out. Inflorescence peduncle several to many times the length of the petioles; flowers ca. 15-30 per umbel, creamy yellow with the petals \pm strongly reflexed. Epiphyte

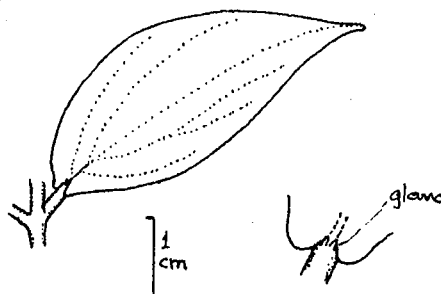


Hoya, Dischidia

of mid zones, often nest-invading, lithophyte or terrestrial in rainforest or ecotonal communities; N.E. Qld, incl. C. York. Fl. spring or mid to late dry season. CAM plant.

....H. nicholsoniae F. Muell., *Fragm.* 5:159 (1866)

7*. *Veins ± obscure, leaf base wedge-shaped but finally two-lobed, with two small projections in the notch between the lobes; petioles green; lamina turns light red-brown on exposure to strong light; narrow to broad ovate, or elliptical, tip drawn out. Inflorescence peduncle several times the length of petioles; flowers ca. 6-12 per umbel, white with a partly red corona, petals not reflexed. Lithophyte, terrestrial or semi-epiphytic climber of monsoon rainforest and related communities of Iron Ra, C. York. Fl. spring (mid-late dry season). Also in N.G.*



....H. poolei C.T.White & Francis, *Proc. Roy. Soc. Qld.* 39:69
1928

genus *Dischidia* R.Br. 80, S.E. Asia, Malesia, S.W. Pac.;
Aust 3.

This genus closely resembles *Hoya* in all but the following aspects:

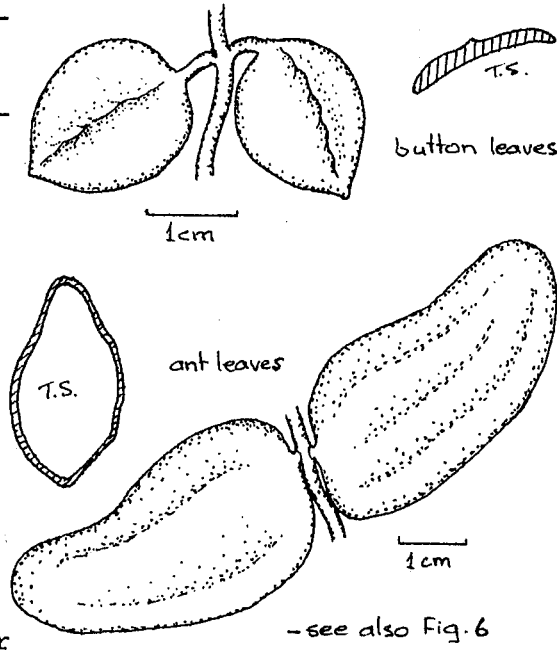
- a) the corolla is urn-shaped and only slightly opening
- b) the leaves are mostly smaller, thicker and more fleshy and covered with powdery or flaky wax bloom
- c) they are more strictly epiphytic, being uncommon on rocks and almost never terrestrial
- d) the older perennial inflorescence receptacles are usually forked
- e) one sp. reaching Aust. is an antplant and develops hollow ant-leaves.

1. *Leaves EITHER, hollow and bladdery, ca. 5-10 cm long and flattened, angular, irregular ovoid/pyriforme, AND/OR, circular, even mid green, 2-3 cm diam., convex above with the midrib raised above, the margins deflexed and the lower surface concave, tips bluntly mucronate. Each ant-leaf has an adventitious root entering the interior via the opening*

Hoya, Dischidia

which is adjacent to the petiole; most ant leaves become ant inhabited and partially filled with debris; most do not catch water although the inner lining is impervious. Ant-leaf-bearing stem usually short-creeping for 30-50 cm then changing to elongate or twining stem with well spaced button-leaves and then another section of short-creeping ant-leaves etc. occasionally hangs free.

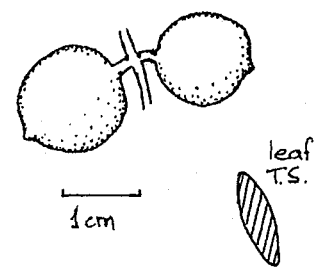
Flowers 6-12 per umbel, ca. 5-7 mm long on pedicels of similar length, yellow-green with dark petal tips; sepals blunt triangular, ca. a third of petal length, petals fleshy, triangular in T.S. Fruit a follicle 5-8 cm long, linear, tapering. Growing on various rough-barked trees in rainforest ecotones, vine thickets, swamp forest and woodland near these, in various sites but does best in moderately to well exposed situations. C. York; also Malesia. CAM plant. Fl. spring or mid-late dry season. (Fig.6g, p.136)



....D. major (Vahl.) Merr., Interpr. Rumph, 437 (1917)
 (Syn. *D. rafflesiana* Wall., *D. clavata* Wall., *D. timorensis* Decne.,
D. bauerlenii Schltr.)

1*. Leaves not hollow and if circular then not concave below, nor with raised midrib above and coloured differently.

2. Leaves ± circular, ca. 8-15 mm diam., mealy greenish white or green-glaucous, veins quite obscure, both upper and lower surfaces convex. Stem growth alternating between short and long internodes but not as markedly as the previous sp., but more often has long, pendulous aerial growth. Flowers white, 3-7 per umbel, ca. 4 mm long, petal segments acute, moderately

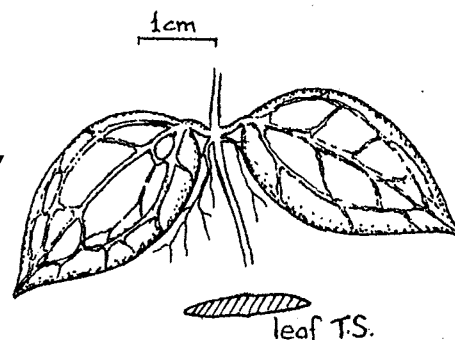


Hoya, Dischidia

spreading, ca. 1.5 mm long, tube throat with a band of upward-pointing bristles. Similar in ecology to the previous sp. NE Qld incl. C. York; also Malesia. Fl. spasmodic, partic. autumn or post wet season. CAM plant. "Button Orchid".

....D. nummularia R.Br., Prodr. 461 (1827) (For full synonymy see Rintz, *Blumea* 26:98, 1980)

2*. Leaves mostly ovate, but lanceolate to almost circular, up to 4 cm long, mid green to yellow-green to brick red, venation always pale whitish and conspicuous, upper and lower surfaces convex, sometimes the underside flat. Growth mostly medium to long creeping or pendulous, often forming festoons. Flowers 2-10 per umbel, ca 6 mm long on pedicels half that length, the bulbous base green and dark red striped, the 2.5 mm petal segments yellow-green and thick, \pm triangular in T.S., only slightly spreading in anthesis; tube throat with a band of upward-pointing bristly hairs. Mostly growing in mid to lower epiphyte zones in monsoon rainforest, swamp forests and sometimes in ecotonal margins of these. Fl. spring or mid-late dry season. CAM plant.



....D. ovata Benth., in Hook., Lond. J. Bot. 1843, p. 226.

family GESNERIACEAE 120/2000; epi. 30/550

genus Boea Comm. ex Lam., 25, trop. Asia; Aust. 1+

Moderately small, hairy, lithophytic herbs with leaves in a rosette. Roots fibrous; stem thickening slightly to form a basal stock. Leaves opposite, spreading to drooping, the petiole base edges continuous across the stem, petiole and lamina base underside rusty long-soft-hairy, the rest \pm densely white-hairy; leaves 5-20 cm long, petioles ca. a third to half or more of lamina length, lamina ovate to obovate, tips obtuse, bases \pm heart-

Boea

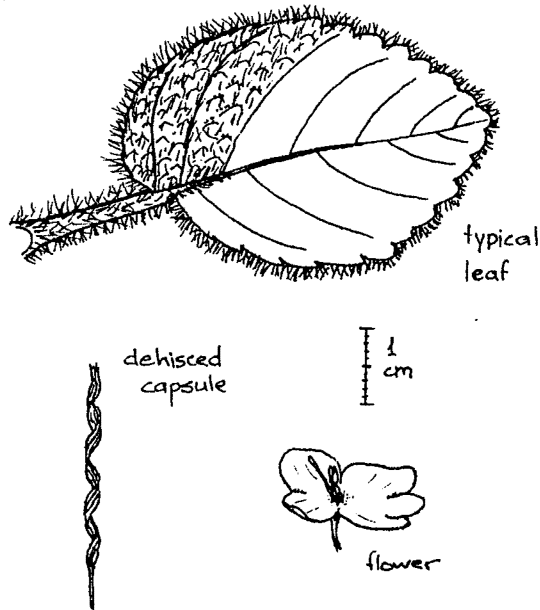
shaped, often oblique, margins toothed, venation pinnate/reticulate, deeply impressed above, incl. secondary veins, mid to yellow-green, texture soft herbaceous. Inflorescences axillary,

basically dichasial cymes, often \pm subumbellate, glabrous or almost so.

Flowers deep purple-blue, 1.5-2 cm across; sepals \pm oblong, rounded \pm free, 2-3 x 0.5 mm, glabrous; corolla, very shortly tubular, then flared and widely opening, two-lipped, the upper deeply split into two \pm circular petal lobes, the lower into 3 lobes to almost half length, middle lobe \pm circular, lateral ones \pm oblong, rounded; flower centre, incl.

stamens, bright yellow; stamens 2

+ 2 staminodes, filaments somewhat sigmoid and thickened in the middle, solidly dorsifixed, the ends tapering; ovary superior, unilocular but appearing 4-locular owing to extended placentas; style linear terete, mauve - as for ovary, stigma simple, papillose, white. Fruit a capsule, when dehisced, the 4 valves twisted in a helix of ca. 3 revolutions, ca. 3 cm long and 2 mm wide. Lithophytes, occasionally terrestrial, in moderately sheltered to somewhat exposed sites in rainforest and related communities, mostly above ca. 600 m altitude; NE Qld. Endemic. FL summer. There is probably more than one sp. involved here - research is needed to clarify this problem. Non-CAM plant.



....*B. hygrosopica* F. Muell., *Fragm.* 145-7, (1864)

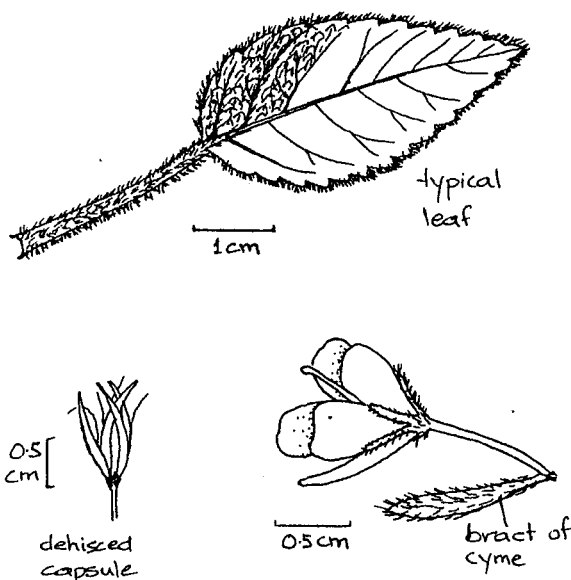
genus *Didymocarpus* Wall. 120, Old World tropics, partic.

high alt.; Aust. 1.

The Aust. sp. very closely resembles the preceding, differing thus: generally about half the size of the former sp.: leaves 3-8 cm long, petioles proportionally longer - to as long as lamina, lamina lanceolate to ovate, acute; inflorescences hairy up to and incl. sepals; sepals proportionally longer - half length of corolla; flowers white with a pale lilac flush when newly

Didymocarpus, Fieldia

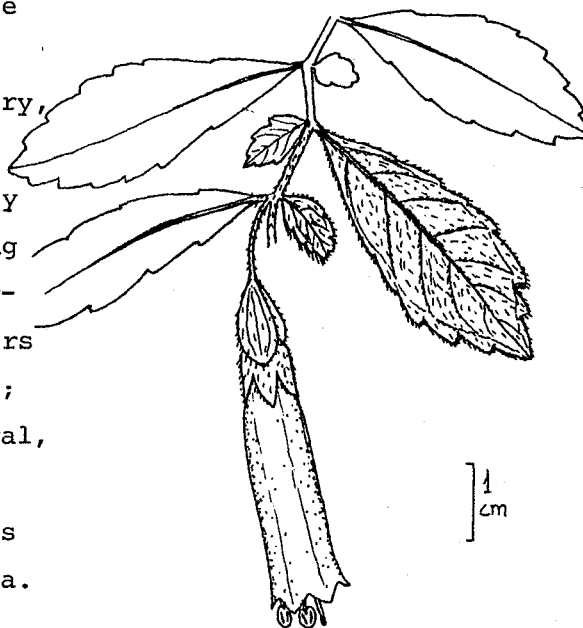
opened, corolla lobes more nearly equal, ca. 1 cm or less across and not as widely opened as *Boea* (\pm flat in *Boea*, included angle of ca. 90° - 110° in *Didymocarpus*); dehiscent fruits less than 1 cm long, the 4 valves \pm cupped lanceolate, not, or somewhat twisted individually but not as in *Boea*. Restricted to altitudes above ca. 1200 m, from the Bellenden Ker Ra. north to ca. Mt Finnigan N. Qld. Similar in ecology to *Boea*. Endemic. Fl. summer.



....*D. kinnearii* F. Muell., Victn. Natlst. 3:159-60 (1887) (Syn. *Roettlera kinnearii* (F. Muell.) Fritsch)

genus *Fieldia* A. Cunn. 1 sp., SE Aust.

A slightly woody, hairy, semi-epiphytic climber with soft, toothed, opposite leaves. Mostly beginning terrestrially-rooted and climbing by adventitious roots over rocks logs and up tree trunks to a height of 2 to 4 metres. Branchlets usually flexuose. Leaves ca. 3-6 cm long on petioles 3-5 mm long, lamina elliptical to obovate, the distal half more coarsely toothed, moderately densely white- to rusty-hairy, softly herbaceous, mid to dark green above, pale below; pair members usually very unequally developed, one remaining a cm or less in length, these on alternating sides from pair to pair. Flowers solitary, axillary, on filiform stalks; floral bracts large, ca. 1 cm long, oval, acute; calyx 9-12 mm long, hairy, tubular in the lower half, sepals lobes 5, acute; corolla glabrous, tubular, ca.



Fieldia

2-3 cm long, 5-8 mm wide, petal lobes 5, 2-3 mm long, triangular, acute; stamens 4, ca. as long as the corolla, inserted on or near the receptacle, filaments basally winged, anthers two-celled, short and broad, basifixed, dehiscing by splitting, with a marginal wing; ovary 2-locular, superior, placentas axile. Fruit a whitish, brown-dotted berry. In warm to cool temperate rainforests from McPherson Ra. to E. Vic. Fl. winter.

....*F. australis* A. Cunn., N.S. Wales, 363-4, t2
(1825)

AUSTRALIAN VASCULAR EPIPHYTES

Key to the Genera of Group 6 : Non-orchid Liliatae (Monocots)

1. *Leaves in three distinct ranks*, bases sheathing and not petiole-like, oblong to linear with prickly margins; dioecious, the inflorescence consisting of 1-3 spadices surrounded by a number of red to yellow or white, bract-like leaves. Mostly semi-epiphytic climbers. (Fig. 3c, p.5)

....*Freycinetia* (Pandanaeae) p.150

- 1*. *Leaves in two ranks* (sometimes apparently one), sessile or with a long petiole which may be basally sheathing, lanceolate to almost circular the margins entire or pinnatisect; inflorescence a spatulate spadix, bisexual. Mostly hemi-epiphytes or semi-epiphytic climbers.

2. *Leaves with a pronounced constriction* approx. midway along the lamina. (See p.152)

....*Pothos* (Araceae) p.152

- 2*. *Leaves lacking such a constriction.*

3. *Leaves EITHER sessile, or shortly stalked and broad ovate to almost circular OR distinctly stalked and narrow oblong to lanceolate*; ovary with numerous ovules.

....*Rhaphidophora* (Araceae) p.152

- 3*. *Leaves with distinct petioles AND laminae broad elliptical to oblong or ovate in outline*; ovary with less than 5 ovules.

4. *Lamina entire (often torn in a pinnate manner)*; ovary with a solitary ovule.

....*Scindapsus* (Araceae) p.155

- 4*. *Lamina pinnatisect* (entire and ovate acuminate in some juvenile growth); ovary with 2-4 ovules.

....*Epipremnum* (Araceae) p.154

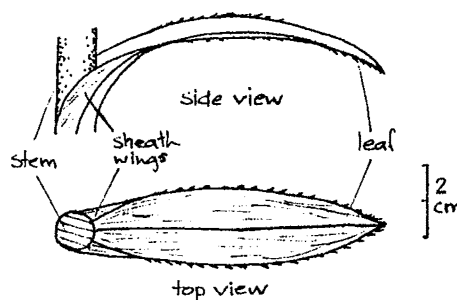
class LILIATAE (MONOCOTS)

family PANDANACEAE 3/700; epi 2/50

genus Freycinetia Gaud. 200 SE Asia, Malesia, SW Pac., NZ.;
Aust. 4.

Tough, semi-epiphytic climbers with strap-shaped spirally arranged leaves in 3 well defined ranks. Stems fibrous, \pm cylindrical, climbing trees for several to many metres, branching often, esp. at higher levels. Leaves tough, stiff and leathery, linear/strap-shaped, apices acute to subulate and sometimes drawn out, bases \pm sheathing, the sheaths formed from often thinner, wing-like extensions; margins and sometimes midrib beneath, finely spiny-toothed or rarely entire; venation truly parallel. Plants dioecious, flowers small and arranged on terminal spadices which are subtended by several large, brightly coloured, leafy bracts; spadices usually 3 but often less by abortion or often of differing sizes. Fruit a berry, borne closely packed, forming a multiple fruit with the spadix.

1. *Leaves narrow oblong, acute to narrow elliptical acute, finally shortly drawn out, 8-12 cm long, tapering basally; inflorescence bracts white or creamy, 3-4 cm long. Stems ca. 0.5-1.5 cm diam., climbing several to many metres, remaining leafy, much-branched, often forming dense thickets. Leaf-sheath wings narrow, tapering upwards; venation clearly visible. Ripe multiple fruits ca. 5 x 3 cm, red. In and near rain-forests and related, moist communities from C. York to the Tropic. up to at least 1000 m alt. Fl. spring and early summer.*



....*F. scandens* Gaud., in Freyc. Voy. Bot. 432, t.43
(1827) (Syn., Bailey in error,
F. gaudichaudii R. Br.)

- 1*. *Leaves linear, strap-shaped with long, narrow apices, more than 15 cm long, not tapered basally; floral bracts yellow, orange or red.*
2. *Leaves 15-30 cm long and 1-1.5 cm wide AND with finely spiny toothed margins. Stems ca. 0.5-1 cm diam., climbing for several metres, often branching. Leaf tips tapering \pm evenly, ultimately blunt; leaf-*

Freycinetia

sheath wings broad, toothed, stipule-like with rounded apices; leaves long persistent.

Inflorescence bracts

bright red, the "star"

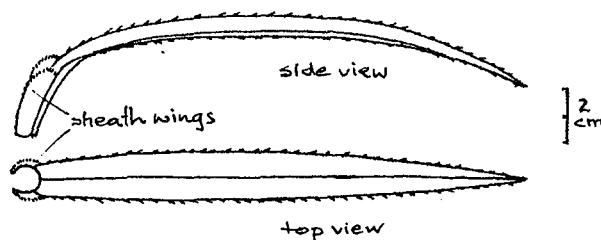
10-12 cm diam.; flowering

occurs on short, lateral,

aerial branches. In

rainforests and ecotonal

communities, esp. in light-breaks, up to at least 1000 m alt. from C. York to SE Qld. F. winter and early spring. (Fig. 3c, p.5)



....*F. excelsa* F. Muell., *Fragm.* 5:39 (1865)

2*. Leaves 30 cm or more long, more than 2 cm wide, either toothed or entire.

3. Leaves 3-4 cm wide, 30-50 cm long, margins entire; inflorescence bracts orange, forming a "star" 15-20 cm diam. Leaves gradually tapering with very long narrow apices, the sheath-wings broad and rounded; stems 2-3 cm diam., long climbing with leaves clustered near the apex, older ones deciduous. In rainforest, mostly lowland and up to ca. 300 m, from Daintree R. north to Iron Ra. Fl. spring or late dry season.

....*F. sp. aff. excelsa*

- 3*. Leaves 5-8 cm wide, 60-120 cm long, the margins (and midrib underside) finely spiny-toothed; inflorescence bracts orange, turning red basally, the inner ones pink/yellow, forming a "star", 40-50 cm diam. Leaves leathery/rigid, the apices long and narrow, sheath-wings tapering upwards. Stems 3-5 cm diam., climbing 20 m or more, often branched. Lowland rainforest, NE Qld., sporadic. Fl. winter.

....*F. australiensis* Warb., in *Engl. Pflanzenr.*,
Pand. 32 (1900)

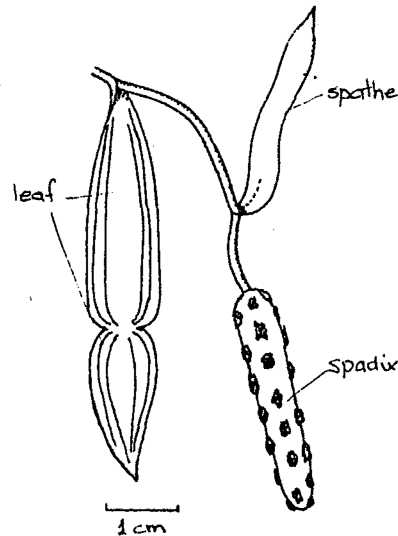
(Syn.: Bailey in error:
F. insignis Bl.)

Pothos

family ARACEAE 115/2000, epi. 15/850

genus *POTHOS* L., 75, Malagasy, SE Asia, Malesia, SW Pac.;
Aust. 1.

A glabrous, sympodial, semi-epiphytic climber reaching many metres up tree trunks, also on rocks, climbing by adventitious roots. Stems up to ca. 1 cm thick giving rise to roots on the underside. Juvenile growth, besides being smaller in all parts and having proportionately shorter broader leaves, is more compact and has leaves appressed against the substrate. Functional lamina divided into two parts - the basal section, derived from the petiole, linear to narrow oblong, sessile and stem-clasping; lamina proper lanceolate to broad ovate or heart-shaped, acute or somewhat drawn out usually shorter than the basal part and separated from it by a pinched-in narrowing, altogether ca. 5-25 cm long in adult form. Inflorescences terminal, borne on secondary stems which grow into the air and usually become \pm pendulous, spathe persistent, 2-5 cm long lanceolate to narrow oblong acute, becoming reflexed with time; spadix 2-5 x ca 0.5 cm, cylindrical; perianth 3 + 3, obovate, truncate; stamens 6, filaments broad and flat; ovary ovoid, 3 locular with 1 basal ovule in each; fruit a red, ovoid berry ca. 1 cm long with 1-3 seeds. Lower epiphyte zones of moister rainforest N Qld to N NSW. Fl. most of year. Non-CAM plant.



....*P. longipes* Schott, Aroid. 23. t. 47 (1856).

(Syn., Bailey in error:

P. loureiri Hook.; *P. australasicus*
F. Muell.)

genus *Rhaphidophora* Hassk., 100, Old World trop.; Aust. 4

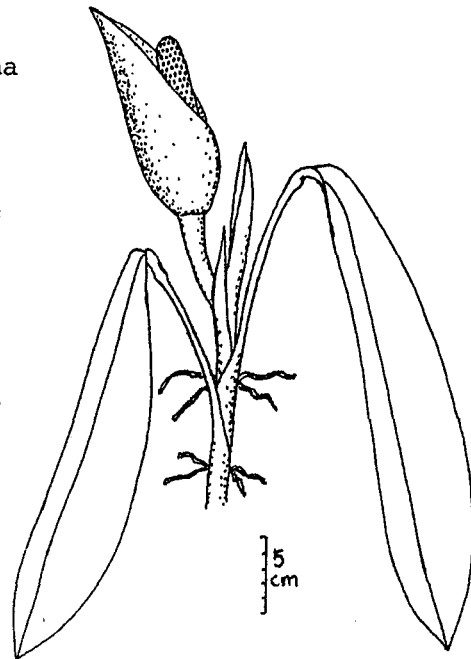
Glabrous, sympodial, high-climbing, semi-epiphytic climbers, or hemi-epiphytes clinging by adventitious roots from the stem underside. Leaves entire in the Aust. spp., either lanceolate to oblanceolate, with petioles a quarter to a half the lamina length, or, very broad ovate or heart-shaped on very

Rhaphidophora

short petioles; petioles winged and stem sheathing at least when young later withering, petiole and lamina connected by a joint which articulates the lamina. Lamina penniveined, the lateral veins \pm equal or with more prominent ones at regular intervals, all parallel and with numerous cross connections. Spadices \pm cylindrical on short to moderately long stalks, surrounded by a \pm enfolding spathe which falls after flowering. Flowers lacking perianth; stamens 4, inserted on the ovary wall; ovary unilocular with two parietal placentas, ovules numerous. Spathe and spadix with trichosclereids.

1. *Lamina lanceolate to oblanceolate, often \pm falcate; petiole ca. a third to half lamina length.*

2. *Lamina 20-45 x 5-15 cm; stems to ca. 2 cm wide; flowering from long, climbing stems. Larger lateral veins evident but lamina \pm smooth and shiny. Spadices sometimes two from close nodes, 8-10 x ca. 1.5 cm, to 3 cm wide in fruit; spathe pale green, slightly longer than spadix; peduncle 10-15 x 1.5-2 cm, cylindrical. Commonest in lowland tropical rainforest and mesophyll swamp forest, but extending to at least 1250 m; N Qld. F. spring and summer.*



....*R. australasica* F.M.Bail, Qld. Ag. J., 1:452 (1897)

2* *Lamina 10-30 x 2-4 cm; stems to ca. 6 mm wide; flowering from numerous aerial, side branches. Lamina usually noticeably undulate with main lateral veins slightly sunken. Spadix ca. 1 x 6 cm, usually apically tapered. Wetter rainforest of mid and upper altitudes of Bellenden Ker Ra, Atherton Tbl d and nearby areas, esp. to the north. Fl. autumn and possibly other times also.*

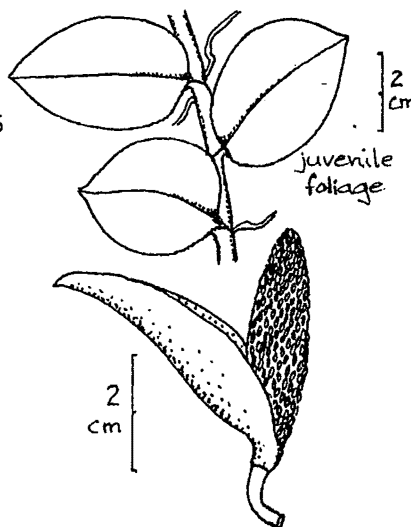
....*R. sp. aff. australasica*

Rhaphidophora, Epipremnum

1*. *Lamina ovate, broad ovate or heart-shaped; petioles EITHER ca. as long as lamina, OR, very short, less than ca. an eighth of lamina length to ± lacking.*

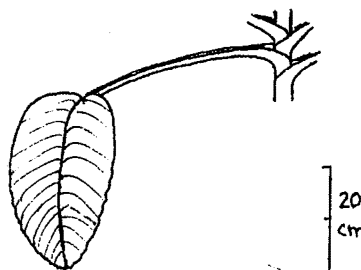
3. *Petioles very short or ± lacking; lamina ± appressed against substrate (esp. in juvenile growth), heart-shaped or broad ovate and basally rounded, usually somewhat glaucous, flat and dull with lateral veins rather indistinct, up to 10 x 15 cm in adult growth; stem flattened. Spadix ca. 4 x 1 cm, tapering at both ends, peduncle ca. 15 x 3 mm, spathe slightly longer than spadix.*

Uncommon and restricted to higher rainfall, tropical lowland rainforest, NE Qld. Non-CAM plant.



....R. *pachyphylla* K. Krause, in Engler Jahrb.
49:92 (1912)

3*. *Petiole ca. as long as lamina (20-45 cm); free-standing; lamina ovate and either obtuse, rounded, or finally shortly drawn out and acute, mid to dark green, shiny above, the surface undulate, veins at right angles to the midrib. Stems ± cylindrical, internodes very short. Inflorescence not known, thus, this sp. may belong to *Scindapsus*, *Epipremnum* or *Rhaphidophora*. Known only from near Tully, N Qld. (see Williams, 1979).*

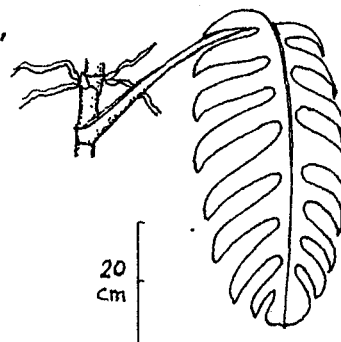


....R. sp.

genus *Epipremnum* Schott, ca. 15, SE Asia, Malesia, SW Pac.;
Aust. 1.

Epipremnum, Scindapsus

A robust, long creeping, semi-epiphytic climber with large, pinnatisect leaves. Stem up to ca. 6 cm wide in mature plants, slightly flattened, often covered, esp. in the leafy parts by the fibrous remains of petiole sheaths. Lamina up to ca. 70 cm long, the segments up to ca. 35 x 6 cm, somewhat falcate, obliquely truncate, and with one central, main vein, the finer veins \pm reticulate; petiole ca. as long as the lamina, channelled.



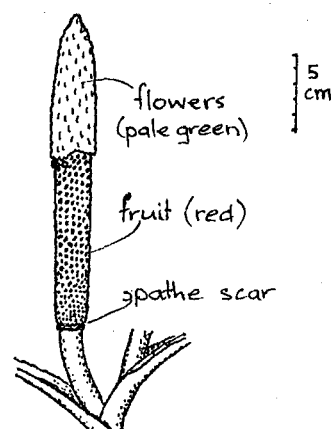
Inflorescences terminal, often several from adjacent nodes; peduncle ca. 10-15 x 2 cm; spathe ca. 20-25 cm long, whitish to yellowish, basally enclosing the spadix at flowering, apex acuminate; spadix cylindrical, 15-20 cm long, pale yellow. Flowers lacking perianth; stamens 4, filaments broad and flattened; ovary unilocular with 2 basal ovules; fruit a berry. Wetter rainforests from lowlands to 800 m or more from at least Ingham to Cooktown. Fl. summer, autumn. (Fig. 3d - inflor., p.5)

....*E. pinnatum* Engl., Pflanzenreich, Arac. Monst., 60 (1908) (Syn. *Rhaphidophora pinnata* Schott, *R. lovellae* F.M. Bail.)

genus *Scindapsus* Schott, 30, SE Asia, Malesia, SW Pac., 1 Brazil; Aust. 1.

A high climbing/scrambling semi-epiphytic climber with large, entire lvs. (Fig. 3e, p.5)
Stems ca. 1-2 cm wide, rooting particularly from the nodes, but often free-scrambling or pendulous in festoons.

Petioles up to ca. 50 cm long, with short, early-withering wings, apical joint 2-3 cm long; lamina ovate, apex acute, slightly drawn out, margins entire, undulate, up to ca. 50 cm long; venation fine, even, all parallel. Inflorescence peduncle ca 10 x 2 cm, spathe early deciduous; ovule solit., basal. Wetter monsoon rft of McIlwraith & Iron Ra.



....*S. altissimus* v. Ald. v. Ros., Bull. Jard. Bot. Buit. ser. III, 4:346 (1922)

AUSTRALIAN VASCULAR EPIPHYTES : Key to the Genera

Group 7 : Sympodial Orchids

1. *Terminating branches of the sympodium - i.e. secondary stems - (pseudobulbs or leaf-bearing aerial stems, i.e. excluding the rhizome) consisting of one internode only and bearing a solitary, terminal leaf (which in two species is vestigial and minute).*
2. *Leaves plicate, thick and leathery; inflorescence terminal and produced during development of new growths.*
 *Pholidota* p.219
- 2*. *Leaf lamina flat or fleshy; inflorescences either apparently terminal or on the rhizome or pseudobulb base, on mature growth.*
3. *Inflorescences produced from rhizome or pseudobulb bases.*
 *Bulbophyllum* p.203
- 3*. *Inflorescences arising from pseudobulb or stem apices.*
 4. *Leaves 7-20 cm long, primary stem aerial and largely rootless and the size of pseudobulbs and leaves decreasing with distance from the plant base; flowers lasting less than a day.*
 *Flickingeria* p.200
 - 4*. *Leaves 1-7 cm long, rhizome creeping or stems tufted, pseudobulb and leaf size \pm constant; flowers lasting more or less than a day.*
 5. *Leaves thin-textured, pseudobulbs on a short creeping rhizome; flowers lasting less than a day.*
 *Diplocaulobium* p.201
 - 5*. *Leaves thick and somewhat fleshy; pseudobulbs or stems tufted or with a very short-creeping rhizome; flowers lasting several days or weeks*
 *Cadetia* p.197
- 1*. *Secondary stems consisting of more than one internode and bearing one to many leaves.*
6. *Inflorescences either arising from pseudobulb bases or from the lower portion of fibrous, non-fleshy stems which bear several linear, thin, leathery leaves.*

AUSTRALIAN VASCULAR EPIPHYTES : Key to Genera, Group 7

7. *Inflorescences branched*; stems pseudobulbous, the leaves relatively soft and thin textured, usually less than 25 cm long; in mature plants, aerial roots forming a dense cushion or nest around the plant base. (Fig.8d, p.227)

....*Acriopsis* p.226

- 7*. *Inflorescences unbranched*; stems either pseudobulbous or thin (ca 1 cm wide) and fibrous, leaves thin and leathery in texture and more than 20 cm long, or thick, fleshy and rigid; lacking nest-forming aerial roots. (Fig. 3f, p.5 ; 8b,c ; p.227)

....*Cymbidium* p.224

- 6*. *Inflorescences terminal or lateral from the upper nodes of pseudobulbs or aerial stems* and leaves proportionately shorter and broader than in 6., or terete.

8. *Stems long, narrow (2-5 mm wide) and ± fleshy*, the leading ones bearing numerous oblong to ovate, notched, bright green and somewhat glossy leaves along most of their length; leaves are twisted at the base so that the laminae are all roughly in the same plane.

....*Podochilus* p.223

- 8*. *Otherwise.*

9. *Inflorescences strictly terminal* (stems thus flower only once) and produced on young, developing pseudobulbs which are relatively short and thick (*L. persimilis* with an elongate apex) and irregular in some aspect of their shape; leaves lanceolate to strap-shaped and soft.

....*Liparis* p.159

- 9*. *Inflorescences lateral* (often apparently terminal) and produced on matured stems which usually flower more than once; vegetative form diverse.

10. *Aerial, terminating branches of the sympodium consisting of three internodes*, the terminal one swollen and fleshy and bearing a single, ovate, emarginate leaf 3-6 cm long;

AUSTRALIAN VASCULAR EPIPHYTES : Key to the Genera, Group 7

such stems well separated on a 2-3 mm diam., brittle rhizome. One, occasionally two, short-lived flowers born at the pseudobulb apex.

....Flickingeria p.200

10*. *Otherwise*

11. *Pollinia* 8; stems pseudobulbous, ovoid-conical, cylindrical, fusiform or narrow club-shaped, 1-20 cm (rarely to 35 cm) long and bearing 1-5 thin to thick-textured leaves near the apex.

....Eria p.220

11*. *Pollinia* 4; vegetatively very diverse (see generic description and key to groups in the genus).

....Dendrobium p.165

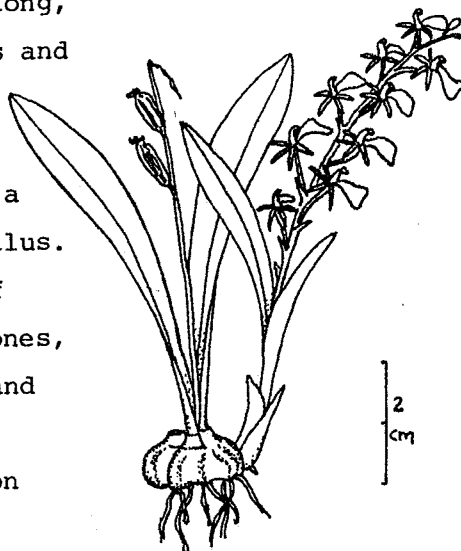
Liparis

family ORCHIDACEAE 750/20,000; epi. 500/1500
 tribe Malaxideae
 subtribe MALAXIDINAE
 genus Liparis Rich. 250 ± cosmop.; Aust.10, 8 epi. and lith.

Moderately sized to small, sympodial herbs with closely spaced pseudobulbous stems and terminal inflorescences. The spp. included here have leaves ± strap-shaped, acute, herbaceous to subsucculent, sheathing basally and jointed at the top of the sheath, 1-3 per pseudobulb. Inflorescences produced on young, developing pseudobulbs ± many-flowered racemes; flowers stalked, perianth free, the segments linear, widely spreading to reflexed, labellum sessile at the column base, not lobed, often with laminal calli, yellowish-green, column elongate, curved forward. Pollinia in 2 pairs, naked. Non-CAM plants.

1. *Pseudobulbs ovoid to narrow ovoid or globular, often somewhat irregular or compressed but not conspicuously flattened nor with a long, drawn-out apical section.*

2. *Pseudobulbs globular to depressed globular often somewhat irregular, 7-12 mm diam.; leaves 4-12 cm long, lanceolate, thin textured, the veins ± conspicuous 4-12 cm long; labellum bent about the middle, lengthwise, the angle formed greater than 90°. Fls. 8-20 in a raceme 10-20 cm long, dull yellow-green, star-shaped, petals and sepals alike, linear, 6-10 mm long, labellum wedge-shaped with a rounded/truncate, notched, mucronate apex and a slightly thickened narrow, central callus. Clump or small mat-forming epiphyte of ± clean surfaces in mid to upper epi.zones, occasionally lithophytic in subtrop. and warm temp. rft from the Hunter R. to Bunya Mts; once reported from Thornton Peak, N.Qld. Fl. summer.*



....*L. coelogynoides* (F.Muell.) Benth., Fl.Aust. 6:273

(1873). (Syn. *Sturmia*

coelogynoides F.Muell., *Leptorchis*

coelogynoides (F.Muell.) Kuntze,

L. mowbulana F.M.Bail.)

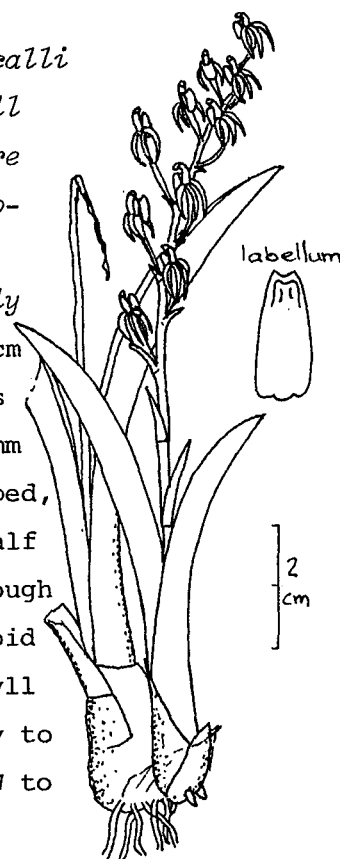
Liparis

2*. Pseudobulbs ovoid/narrow ovoid, often irregular, 10-25 mm diam., leaves mostly 10-30 cm long, lanceolate to linear, thickly herbaceous or subsucculent, the veins \pm obliterated; labellum sharply deflexed, bent to an angle of less than 90° .

3. Leaves 2 or 3 per pseudobulb.

4. Inflorescence peduncle with 3-5 linear to narrow triangular bracts (usually evident well after flowers fall); pseudobulbs ovoid to narrow ovoid, often irregular, or squat ovoid and somewhat obliquely depressed.

5. Labellum with two elongate yellow calli extending from near the base to well onto the apical, deflexed half where they are scarcely thickened, pseudobulbs ovoid to narrow ovoid, often irregular, the surface usually smooth, 2-4 cm long, leaves 10-30 cm long, linear to lanceolate. Racemes 10-30 cm long, flowers 5-30, 6-16 mm long, labellum oblong to wedge-shaped, 2-4 mm wide, truncate, the basal half \pm erect, then sharply deflexed through almost 180° ; with a strong proteinoid odour. Lithophyte of wet sclerophyll forest or rft ecotone in moderately to well exposed sites. Extreme SE NSW to SE Qld. Fl. autumn.



.... *L. reflexa* (R.Br.) Lindl., Bot.Reg.11,t.882(1925). (Syn. *Cymbidium reflexum* R.Br., *Sturmia reflexa* (R.Br.) F. Muell., *Leptorchis reflexa* (R.Br.) Kuntze

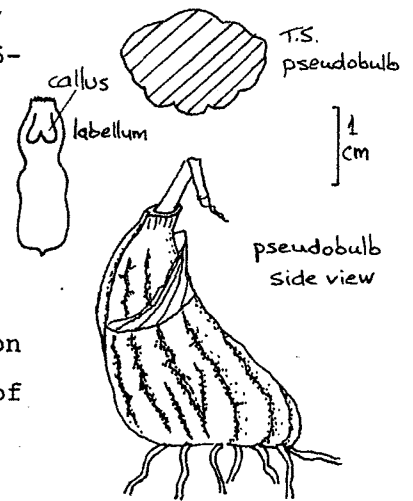
5*. Labellum with a prominent, orange-yellow, double callus in the middle of the basal half only; pseudobulbs ovoid to squat ovoid/pyriform often appearing "pushed off-centre", usually becoming wrinkled and rough with age, 2-3.5 cm long

Liparis

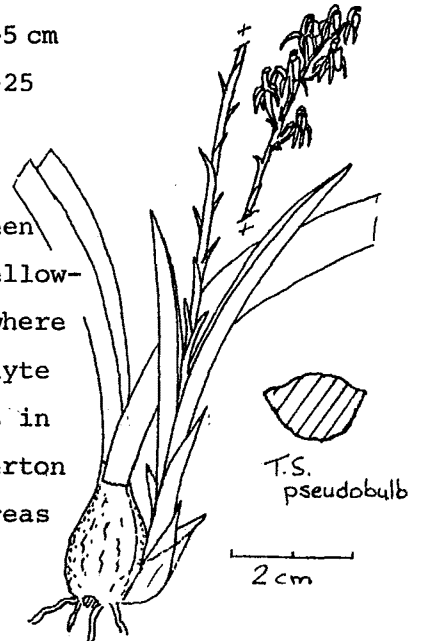
often two-angled; leaves 20-35 cm long, moderately thick-textured, mostly oblanceolate. Racemes 15-25 cm long with 15-25 flowers, each ca 10 mm diam., labellum oblong or with the apical half broadening, truncate, bluntly mucronate, the basal third to half \pm erect, the distal section sharply deflexed. Lithophyte of moderately exposed to rather sheltered sites in rainforest

above ca 1000 m alt. of the Bellenden Ker Ra. and nearby, possibly as far north as the vicinity of Mt. Finnigan, N. Qld. Fl. autumn.

....*L. fleckeri* Nicholls, N.Qld.Nat.6(53):1(1938)



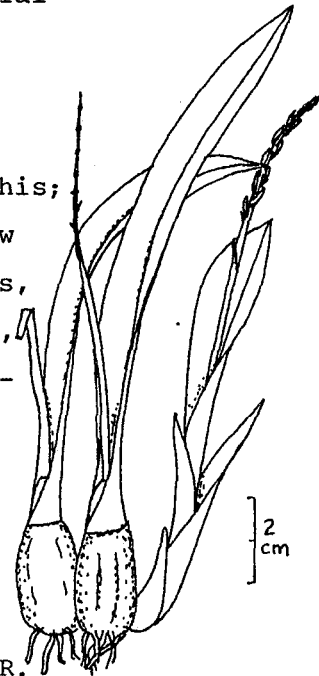
- 4*. *Inflorescence peduncle with 10-15 bracts (evident on persisting inflorescences); pseudobulbs ovoid, slightly compressed with a \pm sharp angle on each side usually smooth but sometimes becoming wrinkled under adverse conditions, 2-5 cm high. Leaves two per pseudobulb, 15-25 cm long, peduncle longer than rachis; flowers 7-12, ca 10-15 mm diam., labellum \pm oblong, with a double, green callus on the basal half, with two yellow-orange lines extending to the point where the apical half is deflexed. Lithophyte in moderately to well sheltered sites in rainforest above ca. 800 m alt., Atherton Tblld/Bellenden Ker Ra. and similar areas nearby, possibly as far north as ca. Mt Finnigan. Fl. spring.*



....*L. bracteata* T.E. Hunt. N.Qld.Nat1st 14(81):9 (1946)

Liparis

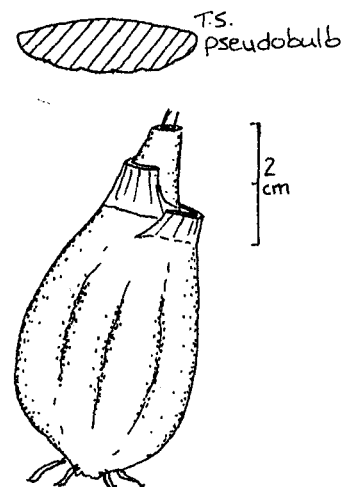
- 3*. *Leaves one per pseudobulb.* Pseudobulbs narrow ovoid, 2-5 x 1-2 cm, immature ones with several leafy, early-deciduous bracts; leaf 15-30 x 1-2 cm, linear, often slightly wider in the apical half, acute. Inflorescence 10-20 cm long, peduncle considerably shorter than rachis; fls. 15-35, ca 8-10 mm diam. yellow to yellow green, similar generally to the above species, labellum with two longitudinal, linear calli, joined near the base and decreasing in thickness apically and extending onto the apical, decurved half as yellow-orange lines. Epiphyte or lithophyte of clean or lightly littered or mossy surfaces in moderately exposed sites in rainforest above ca 750 m alt. from near Townsville to the Bloomfield R. N.Qld. Fl. autumn.



-*L. angustilabris* (F.Muell.) Blaxell, *Orchadian* 6:68(1978)
 (Syn. *Sturmia angustilabris* F.Muell.,
L. cuneilabris F.Muell. ex Benth.)

- 2*. *Pseudobulbs EITHER conspicuously flattened, OR with a drawn out apical section longer than the swollen part.*

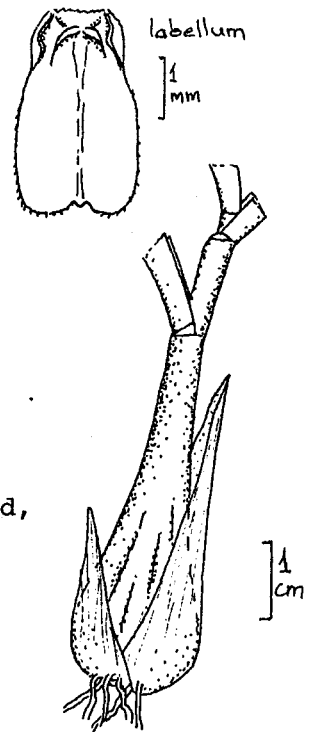
6. *Pseudobulbs flattened and ± appressed against the substrate, ovate to obovate in outline 4-8 x 2-4 cm and 0.8 - 1.5 cm thick. Leaves 2 or 3 per pseudobulb, linear to narrow oblanceolate, channeled, acute, thinly to thickly herbaceous, light to pale green. Inflorescence 10-25 cm long, rachis usually shorter than peduncle; flowers 8-20, ca 15 mm diam., yellow green to yellow; labellum widening considerably in the middle, truncate and notched or mucronate with a pair of orange, glandular longitudinal lines extending from the base, well onto the deflexed apical half. Mostly epiphytic on trunks and large branches in mid to lower epiphyte zones, occasionally lithophytic, in rainforest above ca 800 m alt; from Eungella Ra. north to the vicinity of Mt Finnigan, N.Qld. Fl. spring and early summer.*



-*L. nugentae* F.M.Bail., *Bot.Bull.Dept.Ag.Qld.* 14:11(1896)

Liparis, Oberonia

- 6*. Pseudobulbs with the apex narrowed and drawn out to one to many times the length of the swollen, ovoid base, 1-2 x 5-10 cm. Leaves 2 to 3 per pseudobulb, linear to very narrow elliptical, acute, first and second leaves inserted about 1 cm or more apart. Inflorescence 5-10 cm long, peduncle equal to, or shorter than rachis in length; flowers 15-35, ca 6 mm diam., sepals oblong obtuse, petals linear obtuse, labellum with a small basal crescentic callus, apex bilobed, the margins hairy, ca 3 mm long. Recorded only from the Rocky R, C. York Pen. at a moderate altitude in monsoon rainforest. Fl. late summer and autumn (wet season).

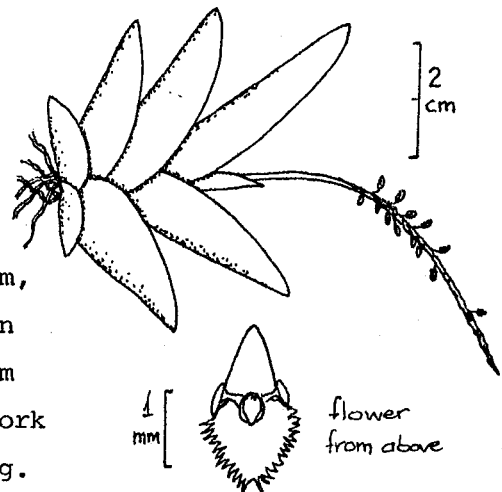


....*L. persimilis* Schltr., in Fedde, Rep. Beih. 1:206 (1911)

Genus *Oberonia* Ldl., 330, Old World trop., Aust. 4.

Small, tufted, fanplant epiphytes with ± fleshy leaves and terminal inflorescences with many, minute flowers. Roots mostly creeping, less than 1 mm diam. Stems very short, tufted; leaves tufted, folded and flattened, the halves fused in the apical part, arranged in a fan, subsucculent to thickly fleshy. Inflorescence a long, many-flowered, terminal spike-like raceme, the flowers spirally placed or often whorled, widely opening, 1-2 mm across. *O. muelleriana* has been shown to be a CAM plant; probably *O. carnososa* and *O. palmicola*, at least, are also.

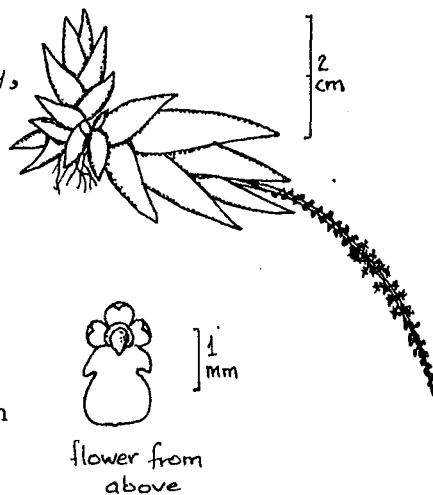
1. Leaves yellow-green and at least 1 cm wide; flowers and fruits yellow-cream coloured; labellum not or indistinctly lobed, the margins fringed or appearing torn. Leaves usually 3-6, 1-2 x 5-10 cm, broadly acute. Epiphyte of mid zones in rainforest from lowlands up to ca 1000 m alt., from near Coffs Hbr., NSW to C. York Pen., also N.G. and SW. Pac. Fl. spring.



....*O. muelleriana* Schltr., in Engl. Bot. Jahrb. 39:61 (1906)
(Syn. *O. iridifolia* F. Muell.,
O. fitzgeraldiana Schltr.)

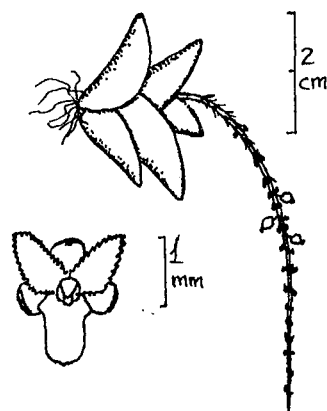
Oberonia

- 1*. Leaves dark to light green to reddish or pink, less than 1 cm wide; flowers and fruits red-brown to orange, labellum 3-lobed (the lobes bifid in one case) and margins entire.
- 2. Leaves acute or broadly acute to moderately acuminate and noticeably fleshy; labellum lobes not bifid.
- 3. Leaves 2-6 cm long, thinly fleshy, acute to moderately acuminate, bright green to olive green or reddish green to pink; inflorescence red to pink-red, petal margins entire, labellum side-lobes moderately deeply incised. Epiphyte in mid to lower zones in rft., mangroves and ecotonal communities from Taree district, NSW to Iron Range, C. York Pen. Fl. spring. (Fig. 3j)



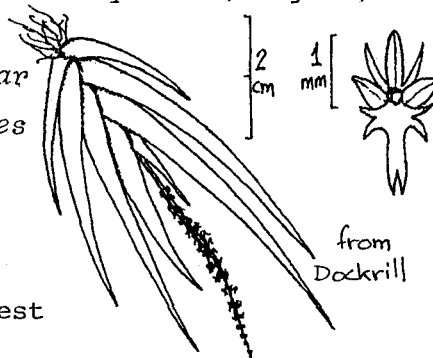
....*O. palmicola* F.Muell., *Fragm.*2:24(1860) (Syn. *Malaxis palmicola* (F.Muell.) F. Muell., *O. titania* Lindl. sens. Rupp)

- 3*. Leaves 0.5-2.5 cm long, thickly fleshy, acute to broadly acute, often finally obtuse, light to pale green; inflorescence orange, petal margins minutely and unevenly toothed, labellum side-lobes scarcely incised. Epiphyte of rather exposed sites in monsoon scrub or rainforest margins at higher altitudes in the Iron Ra. and McIlwraith Ra., N.Qld. Fl. autumn (wet season).



....*O. carnosa* Lavarack, *Austrobaileya* 1:73; Fig.6 (1977).

- 2*. Leaves long acuminate, tapering from near the base, scarcely fleshy; labellum lobes bifid, tips narrowly acute. Plant pendulous, in small clumps, dark green. Leaves 4-8, 2-15 x 0.4-0.8 cm. Inflorescence about as long as the longest leaves; flowers red-brown, sepals and



Oberonia, Dendrobium

petals boat-shaped. Epiphyte in lower zones of lowland rft in gorges or near creeks between the Russell and Bloomfield Rs., N.Qld. Fl. spring.

....0. *attenuata* Dockrill, N.Qld.Natlst. 29:4 (1960)

tribe Dendrobieae

subtribe DENDROBIINAE

genus *Dendrobium* Sw., ca 1500, SE Asia, Malesia, SW Pac., Aust.46

Sympodial epiphytes (*D. lobbii* terrestrial) of great variety, with primary stem or rhizome mostly creeping on the substrate and producing creeping roots + all along, but in some, rooting only or mainly at the plant base and the rhizome mostly aerial and erect or spreading to pendulous. Secondary stems pseudobulbous and ovoid to narrow cylindrical or thin and wiry. Leaves laminate and stem-clasping or sheathing or fleshy and channelled to terete or short and somewhat flattened or gherkin-like. Flowers in axillary racemes (sometimes appearing terminal) or reduced to solitary, very varied in size and morphology, labellum 3-lobed, usually with 2-5, often wavy and/or papillose or glandular hairy keels, moveably attached to a prominent column foot, to the edges of which the basally broadened lateral sepals are joined, forming a mentum or 'chin'. Pollinia 4, in 2 appressed pairs, naked; pollinia adherence aid from sticky fluid of rostellum - a prominence at the top, front of the column immediately below the rostrum or beak of the anther cap. In the following, groups 1, 2 and 3 belong to subgenus *Athecebiium* (true leaves not sheath-forming), 4 and 5 to *Eu-Dendrobium* (leaves with a sheathing base and stems pseudobulbous) and 6 to *Xerobium* (leaves sheathing, stems thin and not fleshy).

Carbon isotope ratio tests have been carried out (K.Winter pers. comm.) on many spp. of this genus and it was found that all fleshy-leafed spp. were CAM plants as also were those with stiffly thick-leathery leaves but not those with thinly leathery leaves (exc. *D. tetragonum* - a CAM plant).

A number of putative natural hybrids between spp. of this genus occur. They are rare to extremely rare in the field but many are popular horticultural subjects and some have been given specific epithets. Morphologically they are usually intermediate between the forms of the parent spp. from their native localities. Some secondary back-crosses are suspected, e.g. in the cases of *D. speciosum* x *D. kingianum* and *D. bigibbum* x *D. discolor*. Following is a list of hybrids recorded:

Dendrobium

- D. beckleri*: x *D. pugioniforme*; x *D. tenuissimum*; x *D. teretifolium*
D. canaliculatum x *D. johannis*
D. cucumerinum x *D. linguiforme*; x *D. mortii*
D. discolor x *D. bigibbum* (= *D. X superbiens*); x *D. johannis*; x *D. nindii*
D. kingianum x *D. falcorostrum*; x *D. gracilicaule* (= *D. X suffusum*);
 x *D. speciosum* (= *D. X delicatum*); *D. aemulum*.
D. linguiforme x *D. racemosum*; x *D. teretifolium* (= *D. X grimesii*)
D. speciosum x *D. falcorostrum*; x *D. gracilicaule* (*D. X gracillimum*);
 x *D. ruppianum*
D. tenuissimum x *D. pugioniforme*
D. teretifolium x *D. rigidum* (= *D. X foederatum*); x *D. striolatum*

Key to the groups:

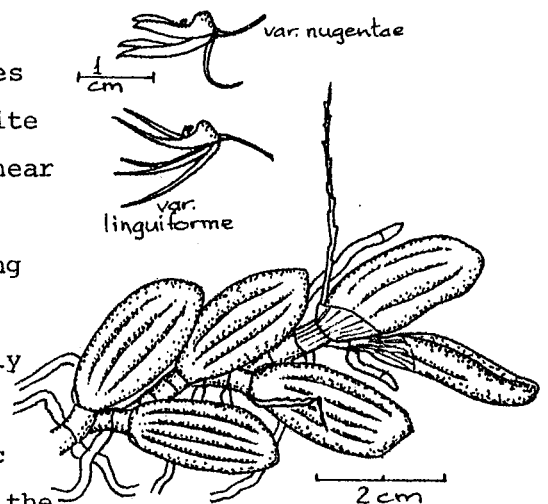
1. Leaves thickly fleshy, not laminate AND, all stems relatively thin and wiry, not fleshy; flowers mostly non-resupinate (labellum above column).
2. Rhizomes creeping, producing roots \pm all along ...Dendrobium Group 1
- 2*. Rhizomes or primary stems initially creeping and rooting but shortly becoming aerial and then mostly rootlessDendrobium Group 2
- 1*. Leaves laminate, thinly leathery to subsucculent (fleshy, narrow and channelled in *D. canaliculatum*) and secondary stems EITHER, fleshy, pseudobulbous and ovoid to narrow cylindrical, or spindle-shaped, OR, thin and wiry; flowers mostly resupinate.
3. Leaves stem-clasping, without a sheathing base (exc. *D. bairdianum*), 1-5 (rarely 7 or 8) crowded near the apex of the pseudobulb, the nodes beneath bearing papery stem-wrapping vestigial leaves ...Den. Group 3
- 3*. Leaves with a sheathing base and EITHER 6 or more in number, spaced over at least half the pseudobulb length (the lower ones often somewhat deciduous but the sheath and lamina abscission scar remaining), OR, if fewer and crowded at the apex, then thickly fleshy, narrow and channelled.
4. Secondary stems fleshy (pseudobulbous), ovoid to narrow cylindrical or spindle-shaped.

Dendrobium: Rhizobium

5. Leaves leathery to stiffly subsucculent OR thickly fleshy and linear; inflorescences long (more than 10 cm) with more than 4 flowers and these at least 1 cm or so apart...Den. Group 4
- 5*. Leaves herbaceous OR softly subsucculent to thinly leathery; inflorescences short (less than 10 cm long), usually considerably so, EITHER, with less than 5 flowers, OR if many more, then very closely spaced (much less than 1 cm apart) Dendrobium Group 5
- 4*. Secondary stems thin and wiry, not fleshy (slightly so in *D. luteocilium*) Dendrobium Group 6

Key to the species of *Dendrobium* Group 1

1. Rhizome 3 mm diam. or more; inflorescence with 2-30 or more flowers; sepals relatively long and narrow, much longer than the column foot (Section *Rhizobium*)
2. Leaves 1.5-3.5 cm long and EITHER somewhat flattened and tongue-shaped OR ellipsoid and warty - like a small gherkin, dull olive green or red coloured when exposed, usually \pm appressed to the substrate.
3. Leaves \pm flattened and tongue shaped, mostly longitudinally grooved above and apically rounded to bluntly pointed, occasionally acutely, elliptical, obovate or oblong, often somewhat falcate. Racemes 5-15 cm long, flowers 6-20, white to cream, perianth segments linear to subulate ca 12-20 cm long; labellum with some red streaking side lobes crescentic, midlobe very broad ovate, with a shortly drawn out tip, strongly down curved, margins very wavy, disc with 3 keels which extend onto the midlobe and become wavy. Epiphyte of upper zones in rainforest or in \pm exposed sites in swamp forest, or lithophyte of open forest, woodland or rainforest relict scrubs of drier country. Variety *nugentae* F.M. Bail. is distinguished by having larger, rounder



Dendrobium:Rhizobium

leaves and longer racemes with more flowers, the perianth segments relatively shorter and broader; it is distributed from the Burdekin R., north to near Cooktown, the type variety from S.E. NSW to the Burdekin R. Qld. Fl. early spring. CAM plant. Tongue Orchid.

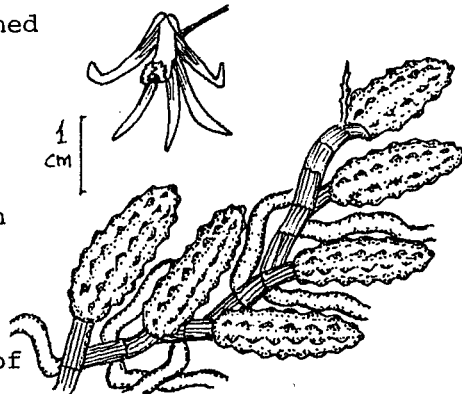
....*D. linguiforme* Sw., in Vet.Acad.Handl.Stockh. 21:247

3*. Leaves gherkin-like, i.e. terete to ellipsoid and prominently warty.

Racemes contracted, less than 4 cm long, flowers sometimes subumbellately arranged, 2-10, mostly not particularly widely opening, greenish white to pale yellow, the segments basally red-streaked, 13-20 mm long, linear acute;

labellum side-lobes ± oblong (attached on the long side) with an acute, shortly drawn-out apex, midlobe triangular-ovate, down-curved strongly, margins crisped, disc with three parallel keels extending onto the midlobe where they become wavy.

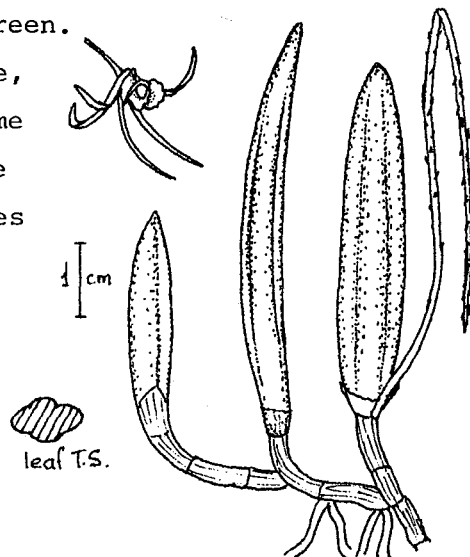
Typically growing on the underside of lower branches of *Casuarina cunninghamiana* Miq. in open communities in valleys and gorges of the escarpment; also in dry rft on other trees & occasionally on rocks; from NSW Central Coast to SE Qld. Fl. summer. Cucumber or Gherkin Orchid.



....*D. cucumerinum* Macleay ex Lindl., Bot.Reg.28, Misc.58(1842)

2*. Leaves 4-9 cm long, irregularly very narrow ellipsoid, slightly flattened and with 4 or 5 longitudinal grooves, held at an angle away from the substrate, light green to pale yellow-green.

Rhizome usually held above the substrate, light green to pale yellow-green. Rhizome usually held above the substrate to some degree with the roots stilt-like. Racemes 7-19 cm long, many-flowered; perianth segments white, ca 15 mm long, linear acute, the petals narrower; labellum yellow with red markings in the lower half, side-lobes ± oblong with blunt apices, midlobe down-curved and



Dendrobium:Section 2

turned under, elliptical, the tip acute and slightly drawn out, margins crisped. Epiphyte of upper zones in deciduous and semi-deciduous monsoon forest, typically on *Araucaria cunninghamii* Ait. ex D. Don, in the McIlwrath Ra. CAM plant. Fl. winter, or early dry season.

....D. *wassellii* S.T. Blake, Proc. Roy. Soc. Qld. 73:66 (1963)

1*. Rhizome up to ca 2 mm diam., flowers solitary; sepals relatively short and broad, ca as long as the column foot (Section 2).

4. Leaves \pm cylindrical or very narrow ellipsoid, acute, to thick disc-shaped, occasionally slightly grooved above; flower on a peduncle at least as long as the pedicel and ovary, arising from the node below the leaf insertion. Leaves very variable

also in size and colour, being 0.5-4 cm long and from light green to dark

bluish-green or red. Flower cup-shaped, ca 5 mm diam., pale yellow-green with some degree of red

striping along the segments, lateral sepals \pm triangular, dorsal broad

ovate, petals lanceolate; labellum scarcely three lobed, \pm oblong

truncate, slightly and bluntly

micronate, orange coloured. Divided

into two varieties - the type with

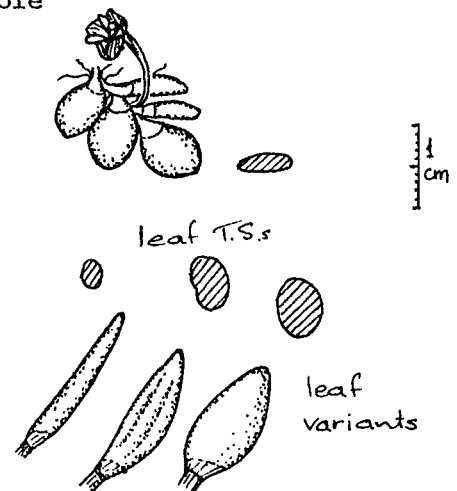
smaller, round, flat leaves and rhizome ca 1 mm diam. and var. *prenticei*

(F. Muell.) Dockr. with thicker rhizomes and longer, narrower and more

cylindrical leaves. Epiphyte of mid zones in rainforest or lithophyte

in more open, moist communities, most common at altitudes above ca 500 m;

from Eungella RA. to near Cooktown. Fl. sporadic. CAM plant.



....D. *lichenastrum* (F. Muell.) Krzl. emend. Dockr., N. Qld Natl. St.

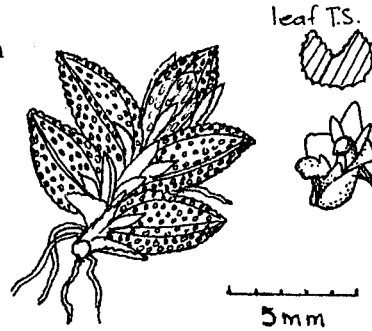
24:20-21 (1956) (Syn. *Bulbophyllum*

lichenastrum F. Muell.)

4*. Leaves ovate acute, deeply channelled above, rounded beneath; flower \pm sessile in the axil of the uppermost leaf-bract with ca 2 more papery bracts inserted below this above the true leaf but the whole so contracted that the flower nestles in the leaf channel. Leaves ca 5 mm

Dendrobium:Section 2

long, the surface finely pitted as with the previous sp. but more conspicuously so than that, bright green to red, very closely spaced and \pm appressed to the substrate. Flower rather similar to the above in structure, slightly smaller, translucent pale green; labellum yellow,



midlobe \pm circular, side lobes not prominent. Epiphyte of mid to upper zones in rainforest or lithophyte in moist, \pm open communities, at all altitudes to ca 1200 m or so from the Atherton Tbl'd and nearby north to the vicinity of Mt Finnigan. Fl. sporadic. CAM plant.

....*D. torresae* (F.M.Bail.) Dockrill, *Orchadian* 1:64,65,79 (1964)

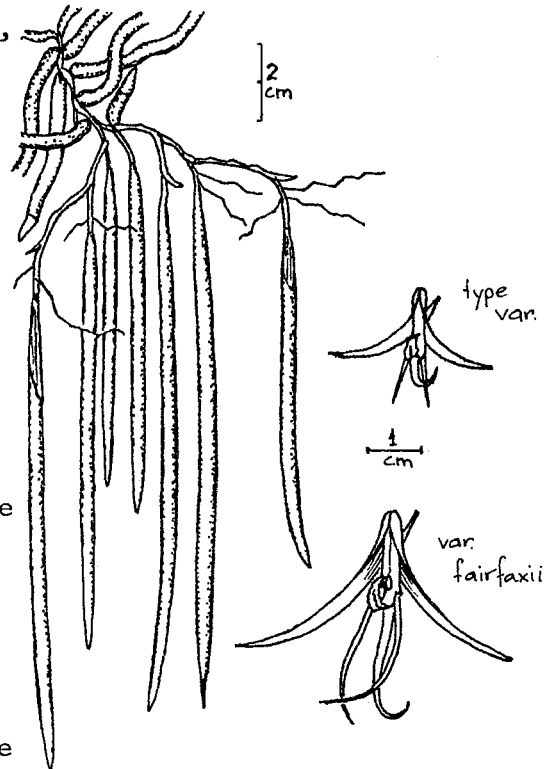
(Syn. *Bulbophyllum torresae*
F.M. Bail.)

Key to the species of *Dendrobium* Group 2

1. *Leaves terete, often longitudinally grooved*
2. EITHER *leaves \pm vertically pendulous, OR, plant lithophytic and rhizome creeping on the substrate*

3. *Leaves smooth, not grooved, 10-70 cm long; racemes with 2-15 flowers (occasionally only one), perianth segments 2-4 cm long.*

Leaves 1.5-10 cm diam., olive-green to reddish. Racemes 1-8 cm long, 1-3 per leaf. Perianth segments recurved to some degree, acuminate to subulate, white to cream or yellow, with or without thin, red, longitudinal lines on the basal half particularly, midlobe narrow triangular with a long narrow, aristate, downcurved to rolled apex, edges of the basal half crisped, side-lobes short and broad with acute apices, the



Dendrobium:Section 3

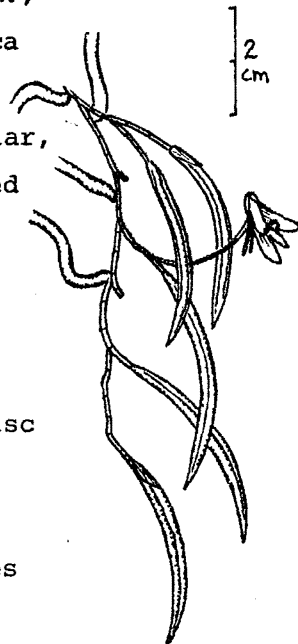
disc with 3 parallel keels which extend onto the midlobe and become very wavy or crisped. Three varieties are currently accepted : (a) the type which has more numerous, smaller, paler flowers and grows mostly in open communities on *Casuarina glauca* Sieb. x Spreng. in coastal swamps and along tidal creeks and rivers or on *C. cunninghamiana* Miq. along rivers of the coastal plain from S. NSW to ca the tropic; (b) var. *fairfaxii* (F.Muell. and FitzG.) F.M.Bail. with 1-5 flowers per raceme with cream to yellow, basally red-striped perianth 3-4 cm long, more slender leaves and growing in rft and related communities in mid to upper zones, from the Blue Mts, NSW to the Eungella Ra. Qld.; and (c) var. *fasciculatum* Rupp with more robust leaves, flower segments less recurved and flowers more "bunched", growing in \pm exposed sites in a variety of humid communities from the Eungella Ra. to C York monsoon rfts. Fl. spring, usually early in the type variety. CAM plant.

....D. teretifolium R.Br., Prodr. 333 (1810) (Syn.

D. calamiforme Lodd.)

3*. Leaves with 1-5 grooves extending along most of their length, 2-10 cm long (rarely to 15 cm or more); flowers solitary (occasionally in pairs in *D. striolatum*), perianth segments 1-1.5 cm long.

4. Plant \pm exclusively lithophytic (occasionally \pm terrestrial); primary stem (rhizome) mostly creeping on the substrate; leaves curved to some degree, 2-3 mm diam., bright green to reddish. Flowers ca 15-25 mm diam., greenish-white to cream, the perianth narrow triangular, sepals obtuse, petals acute, striped red-brown, especially towards the base. Labellum white, side-lobes not high, folded up towards the column, apices acute, midlobe \pm triangular with crisped margins, disc with 3 parallel keels that extend onto the midlobe, becoming wavy/crisped. Growing in \pm exposed sites



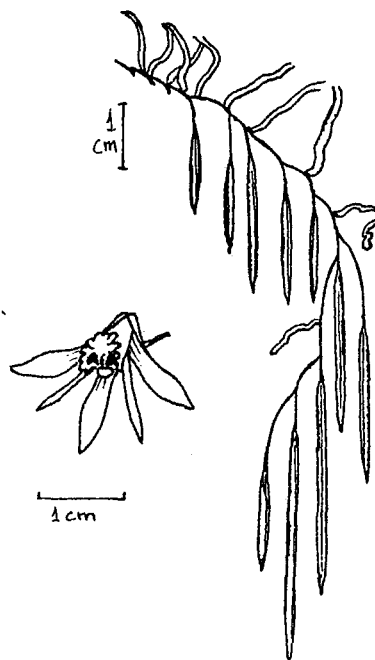
Dendrobium:Section 3

on boulders and cliffs in sclerophyll forest and related open communities from Tas. and E.Vic. to the Hunter R., NSW.
Fl. spring and early summer.

....*D. striolatum* Rchb.f., Hamb.Gartenz 13:313 (1957) (Syn. *D. teretifolium* Lindl., *D. milliganii* F.Muell.)

- 4*. *Plant exclusively epiphytic; primary stem initially creeping but at maturity aerial and pendulous; leaves straight or slightly curved and limply pendulous.*

Stems very thin and wiry, leaves 2-3 mm diam., mid green but becoming suffused with red when exposed. Flowers ca 15-20 mm diam., perianth segments \pm narrow triangular acute, from apple green to olive-brown, the petals lighter; labellum white with purple markings near the lamina apex, side lobes narrow, folded towards the column, apices acute, midlobe \pm circular, mucronate, curled backwards, disc with 3 parallel keels extending onto the midlobe, the central one to the apex, not very wavy. Epiphyte of mid to lower zones in warm temperate and cooler subtropical rft of the scarp, from the Hunter R. NSW to extreme SE Qld. Fl. spring.

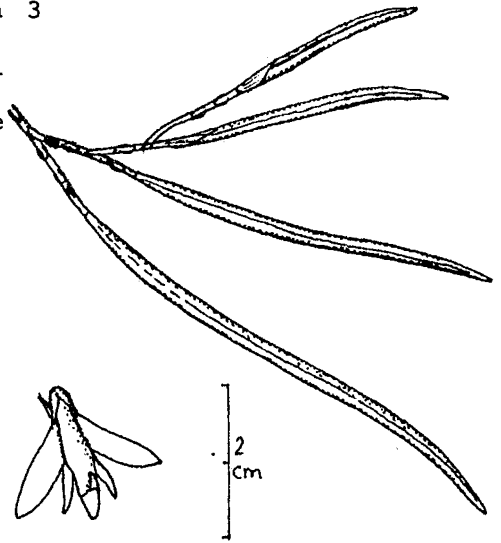


....*D. tenuissimum* Rupp, Proc.Linn.Soc. NSW 52:570 (1927)

- 2*. *Leaves erect to spreading to \pm horizontal, or, if pendulous then untidily projecting in various directions; if lithophytic, rhizome (primary stem) mostly aerial.*
5. *Plant spreading to \pm pendulous with stems and leaves curved and bent and projecting in various directions; roots mostly 3-5 mm wide. Inflorescence two-flowered; sepals narrow oblong and broadly acute to obtuse, petals linear-lanceolate, flowers ca 2 cm diam.,*

Dendrobium:Section 3

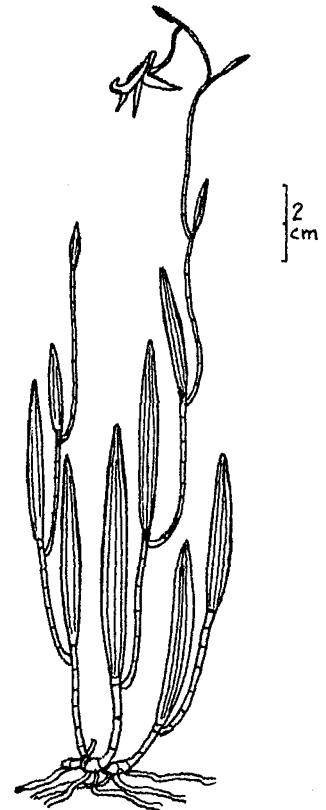
yellow-green labellum white, side-lobes low, \pm column-embracing, the apices acute, midlobe \pm square to circular, crisped, disc with 3 parallel keels extending onto the midlobe where they become wavy, the middle one longest. Column with apical teeth. An epiphyte of mid to upper zones in drier subtropical and tropical rfts and rft relict scrub from the Clarence R., NSW to the Atherton Tbl., N.Qld. Fl. late summer and autumn.



....*D. mortii* F.Muell., *Fragm* 1:214(1859) (Syn. *D. bowmanii* Benth.)

5*. Plants typically erect but also spreading to porrect or semi-pendulous, roots 1-2 mm wide. Inflorescence either 1 (sometimes 2) or 4-15 flowered, the sepals linear acute to subulate.

6. Inflorescence axis 1-3 cm long, 1 or 2 flowered, tepals white to cream or pale green with red striping on the basal half; stem diam. near plant apex (in flowering size specimens) 1-1.5 mm with leaves very small (ca 2-10 x 1.5-2 mm). Basal leaves 0.3-1 x 1-15 cm, grooved. Perianth segments narrow oblong acuminate, petals narrower than sepals, 15-24 mm long; labellum white with some red-purple markings, sidelobes small, acute, midlobe triangular with crisped margins and a drawn-out, curled under, filiform apex, disc with three keels extending onto the midlobe, wavy in their apical half or so. Epiphyte of upper zones in subtropical and dry rain-




Dendrobium:Section 3

forest and more open communities e.g. on *Casuarina cunninghamiana* Miq. along rivers; occasionally lithophytic; at altitudes up to ca 750 m from the Hunter R. NSW to the Eungella Ra.
CAM plant. Fl. spring

....*D. beckleri* F.Muell., *Fragm.* 5:95 (1965) (Syn.

D. mortii Benth., *D. striolatum* F.M. Bail.)

6*. *Inflorescence axis 4-8 cm long, flowers 5-15, tepals cream-yellow or slightly brownish, not striped;*

stem diam. near plant apex 2-3 mm diam.,  leaf T.S.
smallest upper leaves ca 2-4 x 3-10 mm.

Basal leaves 0.3-1 x 10-20 cm, grooved. Perianth segments very narrow triangular acuminate, petals narrower than sepals 20-25 cm long; labellum yellowish, side-lobe apices rounded to obtuse, midlobe ovate with a subulate, filiform, curled-under apex and crisped margins, disc with 3 keels extending almost to the midlobe tip, wavy in the mid region.

Epiphyte of upper zones in rft. or on isolated trees in cleared areas near rainforest in the wetter parts of the Atherton Tbl'd and also the lower Johnstone and Russell Rs. CAM plant. Fl. mainly spring.



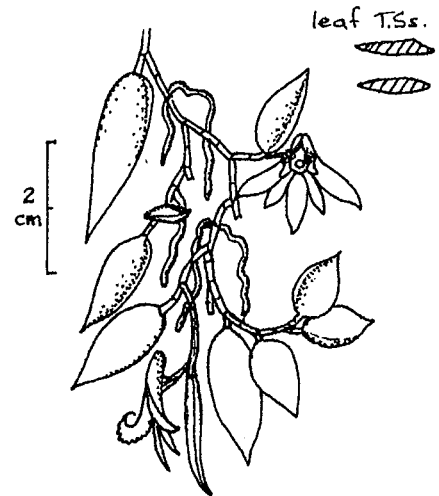
....*D. racemosum* (Nicholls) Clemesha and Dockrill, *Orchadian* 1:52-54 (1964) (Syn. *D. beckleri* F.Muell. var. *racemosum* Nicholls

1*. *Leaves flattened to some degree, not grooved, lanceolate or ovate to obovate to ± circular in outline.*

7. *Leaves with a smooth, somewhat shiny surface, mid green to yellow-green, margins angular, the apex with an acute to acuminate drawn out, hard, sharp point; flowers solitary. Plant pendulous, up to 200 cm long but usually shorter, producing many aerial roots. Flowers 15-25 mm diam.,*

Dendrobium:Section 3

yellow to green; sepals alike, narrow oblong acute, petals oblanceolate; segments basally striped red; labellum white usually with purple or red markings on the midlobe; side-lobes low with an obtuse apex, midlobe \pm triangular, crisped, curled away from the column, disc with three keels extending onto the midlobe, there wavy. Mostly epiphytic in mid to upper zones of warm and cool temperate rainforest but often lithophytic in more open communities; S NSW (Mt. Dromedary) to Bunya Mts Qld. CAM plant. Fl. spring.



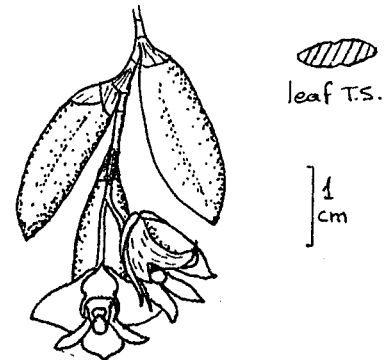
....*D. pugioniforme* A. Cunn., in Lindl., Bot. Reg. 25, Misc. 33, No. 34 (1839) (Syn.

D. pungentifolium F. Muell.)

7*. Leaves with a rough, dull surface, olive green to pink or dull red, margins rounded, the apex with an obtuse to acute tip; flowers 2-5 in a short raceme. Flowers 7-12 mm diam.,

pale dull brown-green to yellowish; sepals oblong, broadly acute, petals oblanceolate, slightly falcate; labellum brighter yellow heavily marked with red, esp. the side-lobes and sides of the midlobe, side-lobes oblique ovate, midlobe oval with a shortly drawn-out blunt tip, slightly curved, lacking keels or calli. An

epiphyte of more exposed sites in rainforest, monsoon forest, swamp forest mangroves, or sometimes rainforest relict scrub or woodland from the Russell R, Qld to Cape York Pen., also N.G. CAM plant. Fl. spasmodic.



....*D. rigidum* R.Br., Prodr. 333 (1810)

Dendrobium: Monophyllaea

Key to the species of *Dendrobium* Group 3

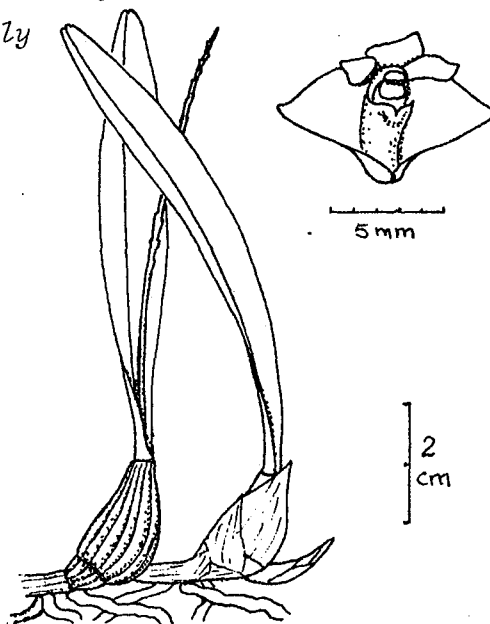
1. Pseudobulbs ovoid to narrow conical, rarely more than five times longer than thick, the swollen part consisting of a single internode; leaves 1 or 2, strap-shape, inflorescences apparently terminal. (Section: *Monophyllaea*)

2. Leaf solitary. Pseudobulbs 0.5-4 cm apart. Inflorescences erect, 7-17 cm long; flowers 5-20, not widely opening, usually nodding, yellow; lateral sepals broad triangular, dorsal oblong acute, petals lanceolate; labellum side-lobes small, triangular, midlobe broad ovate, obtuse, disc with two keels extending well onto the midlobe.

Epiphyte of upper, more exposed zones of rft, sometimes lithophytic; from the Clarence R., NSW, north almost to Cooktown. Non-CAM plant. Fl. spring.

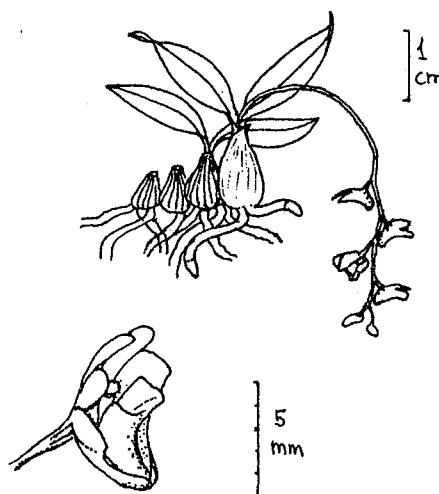
....*D. monophyllum* F. Muell., *Fragm.* 1:189 (1859)

(Syn. *D. tortile* A. Cunn.)



- 2*. Leaves two per pseudobulb.

3. Primary stem (rhizome) very short, pseudobulbs touching one another; inflorescences longer than the leaves, arching to pendulous; flowers yellow-green, sepals not much longer than broad or broader than long. Flowers 5-25, sepals usually edged red, broad ovate, the lateral ones very oblique, petals obovate, column foot very prominent, as long as pedicel and ovary; labellum lacking a midlobe, truncate, side-lobes triangular, disc with a raised, triangular callus. Epiphyte of upper zones,

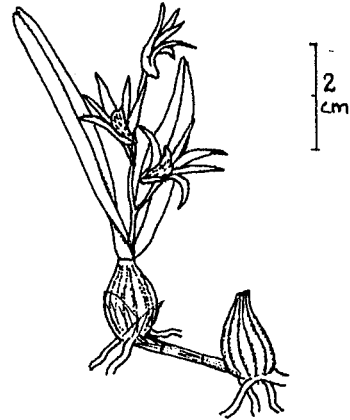


Dendrobium: Monophyllaea, Latouria

particularly on emergent *Araucaria cunninghamii* Ait. ex. D. Don in rft from the Clarence R. NSW to the Eungella Ra., Qld. Fl. late summer and autumn.

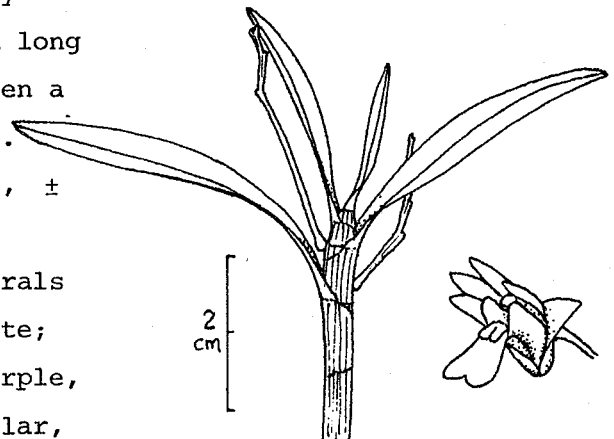
....*D. schneiderae* F.M. Bail., Occ. Papers 1:7 (1886)

- 3* *Rhizome medium creeping, pseudobulbs 3-10 cm apart; inflorescences shorter than the leaves, ± erect; flowers white with a yellow, red-streaked labellum, sepals much longer than broad. Flowers 2-10 not widely opening, perianth segments narrow triangular; labellum side-lobes low with rounded apices, midlobe ovate, thick, somewhat channelled, disc with 3 parallel, central keels; column foot ca ½ the length of the pedicel and ovary. Epiphyte of upper zones in cloud rft at altitudes above ca 1000 m from the Atherton Tblld area, north to ca Mt. Finnigan. Fl. spring.*



....*D. carrii* Rupp and C.T. White, Qld. Natlst. 10:26 (1937)

- 1*. *Pseudobulbs cylindrical to spindle-shaped (four-angled in *D. tetragonum*), mostly more than five times longer than thick, consisting of several to many internodes.*
4. *Labellum midlobe bifid or ± deeply cleft, the lobes rounded; flowers green with purple or brown areas or marks. Tropical spp. (Section Latouria)*
5. *Stems up to ca 1 cm diam., leaves narrow lanceolate, 1-1.5 cm wide. Inflorescence axis up to ca 5 cm long, the peduncle up to twice the rachis length. Stems in a tuft, narrow cylindrical, lightly grooved, mostly ca 5-15 cm long with a bulbous base and then a short, constricted section. Flowers 1-7, ca 2 cm diam., ± widely opening; sepals triangular ovate, the laterals ± oblique, petals lanceolate; labellum heavily marked purple, side-lobes oblique triangular,*



Dendrobium : Latouria

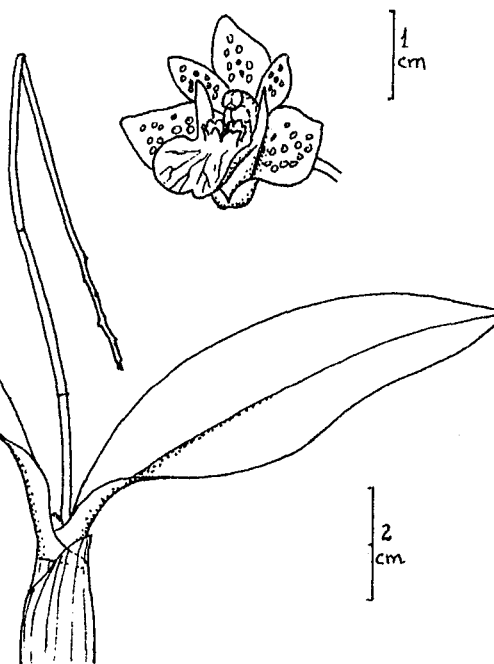
disc with 2 keels extending to the midlobe where they widen, become papillose and are white. Epiphyte of mid to upper zones on rough-barked trees of open forest at altitudes of 500-1000 m, between the Burdekin and Bloomfield Rs., Qld. Fl. early summer (early wet season).

....*D. bairdianum* F.M.Bail., Syn. Qld.Fl.Suppl. 1:53 (1886)
(Syn. *D. giddinsii* T.E. Hunt)

5*. Stems 1-1.5 cm diam., leaves ovate or elliptical, 2-5 cm wide. Inflorescence axis 10-20 cm long, the peduncle several times the length of the rachis. Pseudobulbs

± tufted, spindle-shaped with a small bulbous basal section, grooved with age, 10-30 cm long. Flowers ca 5-12, 2-2.5 cm diam., moderately widely opening, sepals very broad ovate, the laterals somewhat obliquely so, petals ovate; labellum yellow-green with some purple marking, side-

lobes narrow triangular, somewhat falcate, disc with a longitudinal double keel which is apically bifid and white-warty-papillose. Epiphyte in mid zones of monsoon



rft of the lower areas of Iron Ra. and McIlwraith Ra. and nearby; also reported as very rare as far south as Daintree R. Fl. winter, or early dry season. CAM plant.

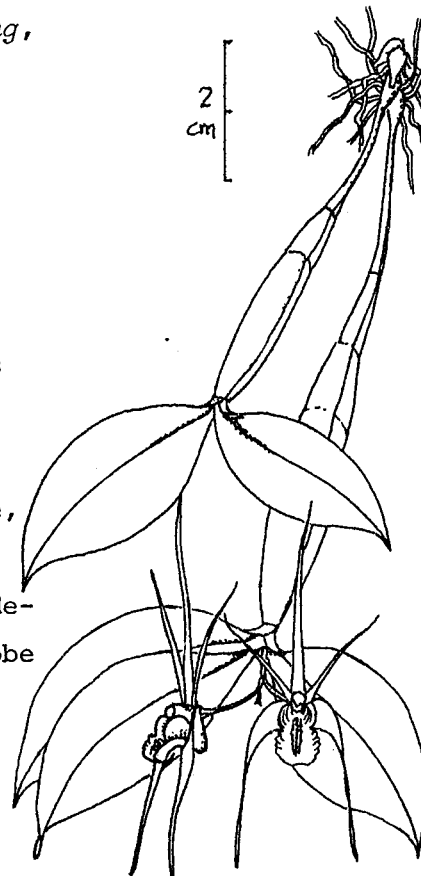
....*D. bifalce* Lindl., in Hook. Lond. J.Bot. 2:237 (1843)

(Syn. *D. chloropterum* Rchb.f. and S. Moore, *D. breviracemosum* F.M.Bail., *Doritis bifalcis* (Lindl.) Rchb.f., *Bulbophyllum oncidiochilum* Krzl., *Latourea oncidiochila* (Krzl.) Krzl.)

4*. Labellum midlobe, obtuse to acute or acuminate; flowers not green (exc. in some forms of *D. aemulum*; yellow-green in some *D. gracilicaule*). Tropical, subtropical and temperate spp. (Section *Dendrocoryne*).

Dendrobium : Dendrocoryne

6. *Secondary stems (pseudobulbs) distinctly four angled (\pm square in cross section), pendulous to spreading, tapering from thickest in the apical half, to thin and \pm wiry near the bulbous base, 5-45 cm long. Leaves 2-5, near the stem apex, ovate to lanceolate, dark green, 3-8 long. Roots thin, ca 1 mm diam. Racemes much shorter than the leaves; flowers 1-5, 2-9 cm long, yellow to yellow-green, the segments usually edged or blotched red; sepals narrow acuminate, petals linear, shorter than sepals. Labellum white, marked red-brown, side-lobes triangular to crescentic, midlobe down-curved, ovate, acuminate or mucronate, often curled under, disc with 3 keels. Variety *giganteum* Gilbert has sepals 4-5 cm long, usually blotched whereas in the type they are edged red, and occurs mostly in the tropics; var. *hayesianum* Gilbert is a colour form which lacks all red or brown pigment and occurs mostly in the Atherton Tableland area at altitudes above ca 1000 m. Epiphyte of lower, sheltered zones in rft and related communities from the Illawarra district, NSW to C. York Pen. CAM plant. Fl. spring.*

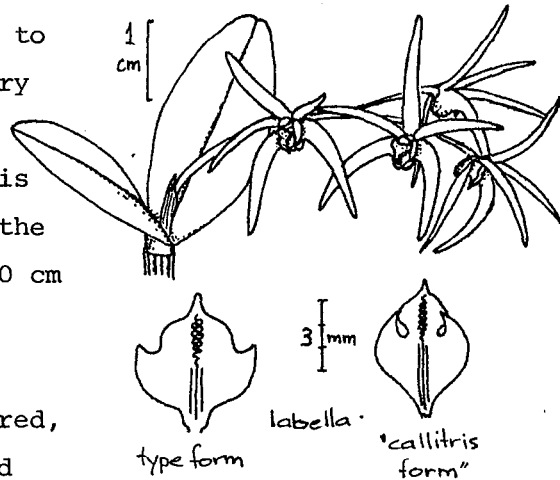


....D. tetragonum A. Cunn., in Lindl., Bot. Reg. 25, Misc. 33 (1839)

- 6*. *Secondary stems \pm round to oval in cross section, erect to spreading.*
7. *Secondary stems with a small bulb-like base, constricted for a short length above this and then dilating to the width of most of the stem.*
8. *Secondary stems (4-) 7-15(-30) cm long, up to 1 cm diam. Leaves normally 2 (up to 4), from almost circular to elliptical acute, 2-5 cm long, stiffly leathery. Three distinct vegetative forms are known: (a) shorter, thicker-stemmed form growing on ironbark eucalypts in sclerophyll forests from S. NSW to S. Qld; (b) a moderately slender, longer-stemmed form growing in rainforests, esp. on*

Dendrobium:Dendrocoryne

Tristania conferta R.Br. from S.NSW to Atherton Tbl'd; and (c) a longer, very slender, more pauciflorous form growing on *Callitris*, S. Atherton Tbl'd (see this form keyed out below). Flowers of the first two forms alike; racemes 4-10 cm long, flowers 2-12, white, perianth segments 1.5-2 cm long, linear to narrow acuminate; labellum marked red, side-lobes crescentic, midlobe broad ovate, down-curved, disc with three keels, the central one extending onto the midlobe where it becomes very wavy. Fl. early spring.

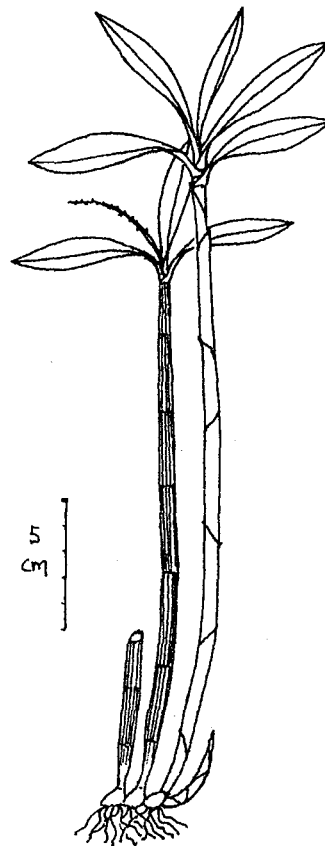


....*D. aemulum* R.Br., Prodr. 333 (1810).

8*. *Stem longer or leaves different.*

9. *Stems less than 1 cm thick.*

10. *Inflorescence axis 5-12 cm long, bearing 5-20 (occas. up to 30) flowers.* Stems mostly 6-8 mm diam., 20-60 cm long. Leaves 2-6, lanceolate or elliptical acute to ovate, 5-12 cm long, thinly leathery, shiny. Peduncle of inflorescence much shorter than rachis; flowers dull yellow, not very widely opening, usually blotched red-brown on the outer surface; perianth segments ca 1 cm long, sepals oblong obtuse, the laterals with a dilated base, petals narrower, acute; labellum unmarked lateral lobes oblique triangular, obtuse, midlobe very broad ovate, the tip slightly drawn-out, disc with three parallel,



Dendrobium:Dendrocoryne

straight keels which diverge near their apices. Epiphyte of mid zones in rft, occas. on rocks, from the Illawarra district to Atherton Tblld area. Fl. spring (flower - Fig. 3k)

....D. gracilicaule F.Muell., Fragm. 1:179 (1859)

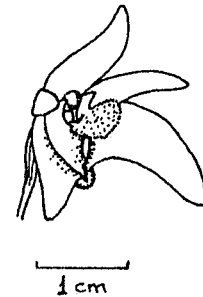
(Syn. *D. elongatum* A. Cunn.,
D. brisbanense Rchb.f.,
D. fellowsii F.Muell.,
D. jonesii Rendle)

10*. Inflorescence axis 1-3 cm long, bearing 1-5 flowers. Plants generally similar to 10, but usually smaller and proportionately thinner.

11. Labellum midlobe not keeled but either hairy or papillose; sepals not more than 4 times longer than wide.

12. Midlobe of labellum \pm evenly and very shortly tomentose or papillose. Stems (10-)15-25(-35) cm long and 3-5 mm diam., usually grooved. Leaves 2-4, lanceolate or narrow elliptical acute, thinly leathery, 3-8 cm long.

Inflorescence peduncle ca 1-2 cm long, rachis shorter; flowers 1-5, 2-3 cm diam., widely opening, white or greenish white to pale yellow; sepals oblong acute, finally blunt, the laterals with dilated oblique bases, petals narrower, oblanceolate;



side lobes low triangular/crescentic with acute apices with some mauve marks, midlobe very broad ovate, the tip somewhat drawn-out and curved upwards, disc with a single keel split into 3 on the upper edge. Epiphyte in mid zones of moister rft, sometimes on rocks, from the Burdekin R. north to the vicinity of Mt. Finnigan, Qld, at altitudes above ca 800 m. Non-CAM plant. Fl. spring.

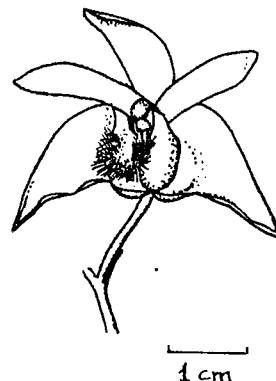
....D. adae F.M.Bail., Proc.Roy.Soc.Qld. 1:149 (1884)

(Syn. *D. palmerstoniae* Schltr.,
D. ancorarium Rupp)

12*. Midlobe of labellum with 1-3 mm hairs around the margin, otherwise \pm glabrous. Vegetatively \pm identical to the

Dendrobium:Dendrocoryne

previous species except that the stems never have more than 3 leaves and generally does not reach the upper limit of size of that sp. Flowers 2.5-4 cm diam. yellow-green to apricot, dorsal sepal ovate, laterals broad triangular, petals oblanceolate; labellum side-lobes crescentic/triangular, red-striped, the apices \pm drawn out, midlobe broad ovate, boat-shaped, red spotted inside, margins hairy, disc with a high keel, dorsally split into three ridges which produce pointed tips at their apices, Epiphyte or lithophyte in mid to upper zones in cloud rft above ca 1000 m altitude from the Bellender Ker Ra., north to the vicinity of Mt. Finnigan, Qld. Fl. spring and early summer. Non-CAM plant.



....D. fleckeri Rupp and C.T. White, Qld.Natlst. 10:25
Pl.1 (1937)

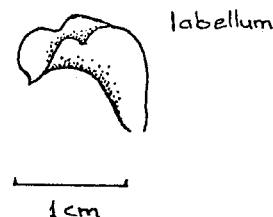
11*. *Labellum midlobe with a prominent, sinuate keel, glabrous; sepals more than 4 times longer than wide. Stems 10-30 cm long, ca 3 mm diam. with leathery leaves. Inflorescence axis 1-2 cm long; flowers 1-3, greenish-white to almost mid green; sepals 1.5-2 cm long, narrow triangular and finally blunt, to linear, petals linear; labellum side-lobes oblique triangular/falcate, basally striped red, midlobe broad ovate. Epiphyte on Callitris in open forest on the southern end of the Atherton Tbl.. So-called "callitris form" of the sp.*

....D. aemulum R.Br.

9*. *Stems at least 1 cm thick.*

13. *Leaves broad ovate to broad elliptical, 3-6 cm wide; stems dull olive-green to dark maroon; labellum midlobe truncate, shortly and bluntly mucronate, down-turned, racemes 15-30 cm long.*

Stems mostly 1.5 x 2-3 cm, prominently grooved, spindle shaped with 4-5 leathery leaves crowded on the upper narrowed section. Rachis longer



Dendrobium: Dendrocoryne

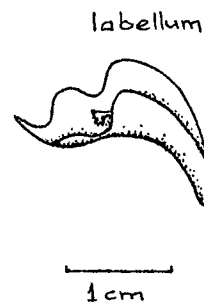
than peduncle, flowers numerous, white or cream, ageing to yellow; sepals narrow triangular/oblong, the laterals with a dilated, offset base, petals linear acute; labellum side-lobes broad, low triangular/falcate, lightly striped purple, disc with a single keel not reaching the midlobe. Lithophyte of open forests or epiphyte of mid zones in rft and related communities from the Burdekin R. to C. York Pen. (and N.G.) most common above ca 500 m. Fl. spring Non-CAM plant. (See Fig. 7c, p.184)

....D. ruppianum A.D.Hawkes, Aust.Orchid Rev. 29:40(1964)

(Syn. *D. speciosum* Sm. var.

fusiforme F.M.Bail., *D. fusiforme* (F.M. Bail.) F.M.Bail.)

- 13*. Leaves narrow ovate to narrow elliptical or narrow obovate, 1.5-3 cm wide; stems yellow-green to straw coloured; labellum midlobe with a drawn-out, acuminate, upturned tip. Racemes 5-15 cm long; flowers 4-20, ca 3-4 cm diam., white, sepals narrow oblong, acute, the laterals with dilated, oblique bases, petals oblanceolate/falcate; labellum marked yellow and red-purple, side-lobes broadly and bluntly triangular, midlobe broad oblong with a narrow, drawn-out, upturned tip, disc with a single, apically bifid keel. Epiphyte in mid to upper zones of cool temperate rainforest, + exclusively on *Nothofagus moorei* Maiden, from the Hunter R. NSW to the McPherson Ra., Qld. Fl. spring. Beech Orchid. (Fig. 7d, p.184)



....D. falcorostrum FitzG., Syd.Morn.Herald 18.11.1876, p.7.

- 7*. Stems lacking a bulbous base and constriction (may be so slightly in *D. speciosum*) and either tapering evenly upward, or + parallel sided.

14. Stems mostly 3-5 cm wide (extremes 1-6 cm), leaves 3-12 x 12-24 cm elliptical or oblong to ovate obtuse or obovate obtuse, rather thickly and stiffly leathery; racemes many-flowered, 15-45 cm long; flowers white to cream or light yellow.



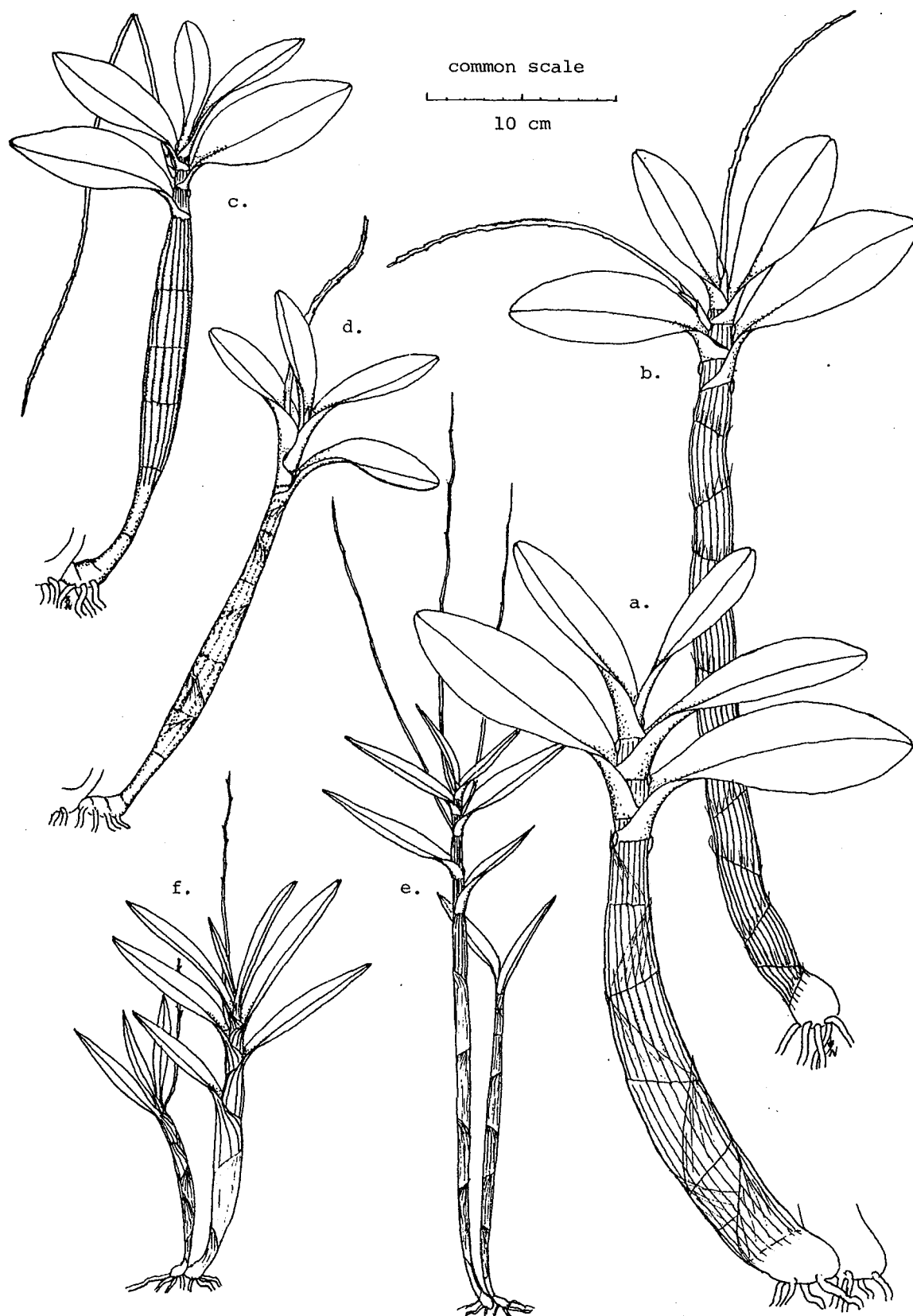


Figure 7. a. *Dendrobium speciosum* var. *speciosum*, typical cane. b. *D. speciosum* var. *hillii*, typical cane. c. *D. ruppianum*, typical cane. d. *D. falcorostrum*, typical cane. e. *D. bigibbum*, typical southern form. f. *D. johannis*, robust specimen.

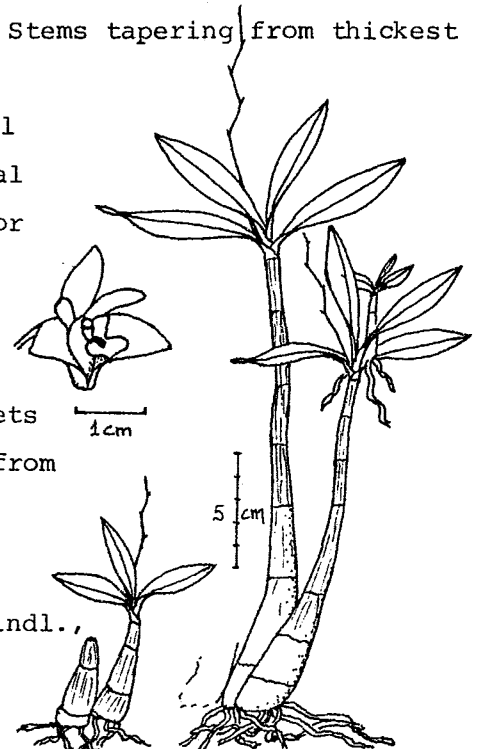
Dendrobium : Dendrocoryne

Stems varying greatly in length but mostly 15-45 cm long (extremes 5-100 cm). Sepals 2-4 cm long, narrow triangular or narrow oblong acute, petals as long, linear acute, labellum red- or purple-spotted, side-lobes broadly and bluntly triangular, midlobe very broad ovate, shortly and bluntly mucronate, separated from the lamina on a short neck, disc with a single, central keel. Typically epiphytic in mid zones of rft or lithophytic in more open communities from NE Vic. to SE C. York. A very variable species that has been divided into a number of varieties : there seem to be 5 sufficiently distinctive to merit mention : (a) the type, with relatively short, stout stems and fewer, large, more widely spaced fls, typically a lithophyte in open communities, (b) var. *hillii* F.M. Bail. with smaller, more numerous and closely spaced fls and longer, more lanky stems, typically growing as a rft epiphyte, (c) var. *grandiflora* F.M. Bail. with large, yellow fls and robust stems, epiphytic in rft, (d) var. *curvicaule* F.M. Bail. with canes strongly curved, 20-40 cm long, shorter inflors., fls with shorter, broader segments, ranging from near Mackay to Thornton Peak, Qld, and (e) var. *pedunculatum* Clemesha, canes 5-16 cm long, racemes erect, peduncle longer than rachis, dark; perianth segments short and broad, labellum proportionately larger (See Clemesha 1981) Fl. spring. CAM plant. Rock Lily, King Orchid. (See Fig.7a,b p.184)

....D. *speciosum* Sm., Exotic Bot. 1 : 17 (1804).

14*.Stems mostly 1-2 cm wide, lvs 1-2 x 3-10 cm, narrow elliptical to oblanceolate, thinly and flexibly leathery; racemes 5-12 cm long, with 2-12 fls which are some shade of pink, rarely white. Stems tapering from thickest at the base, to the middle or less, then more gradually to the apex or not at all in the apical half. Fls with prominent mentum ("chin"), lateral sepals triangular falcate, dorsal oblong acute or obtuse, petals linear acute to oblanceolate; labellum strongly marked dark pink, side-lobes acute, midlobe wider than long, broad ovate, mucronate, downcurved. Commonly produces plantlets in place of inflors. Lithophyte of WSF or Ect from the Hunter R., NSW, north to Carnarvon Gorge, central Qld. Fl. Spring. Pink Rock Lily.

....D. *kingianum* Bidw., in Lindl.,
Bot. Reg. 30, Misc.
p. 11 (1844).



Dendrobium:Phalaenanthe

Key to the spp. of *Dendrobium* Group 4

1. *Mentum* with a protuberent swelling in front i.e. flower with a "double chin" (see diagrams with next two spp.); petals \pm flat, broad spatulate to \pm circular (Section *Phalaenanthe*).

2. Petals very broad ovate or very short, broad obovate to roughly circular, constricted into a clawed base, mostly light lilac-pink to almost maroon (white forms rarely occur) labellum

midlobe length approx. equal to side-lobe width. Pseudobulbs commonly ca 15-45 x 0.4-

0.8 cm, cylindrical to very narrow spindle-shaped, but in some forms much shorter and thicker (e.g. subvar. *compactum* (C.T.White)

Dockr. to 2:1 ratio, up to 2 cm thick, -

ovoid). Leaves lanceolate to ovate, 5-15 cm long, leathery, mid to dark green, often edged red, the sheathing bases usually with red veins, 3-12 in number, confined to the apical half or third of the pseudobulb.

Racemes 10-40 cm long, spreading; flowers 3-20 or so, widely opening,

3-7 cm diam., sepals oblong to ovate, acute; labellum usually with darker veins, sidelobes oblique transverse oblong to rounded triangular, midlobe oblong, acute to rounded and shortly mucronate or notched, disc with 5 keels which are pale-hairy in the distal half and extend for a short distance onto the midlobe. Two ssp. have been delineated

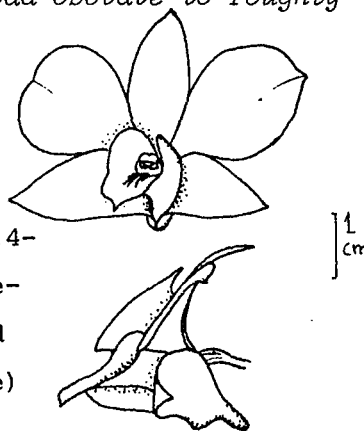
(Clemsha 1978), with only the type in Aust.; this is further divided into two varieties but these are not very distinct. Mostly epiphytic in deciduous vine thickets and rft. relict scrubs from Mt. Molloy

on the northern end of the Atherton Tblid to the tip of C.York; also N.G. and islands to Australia's north; deciduous under harsher

conditions; sometimes lithophytic (as in subvar. *compactum*). Fl. late wet and early dry season. CAM plant. Cooktown Orchid. (Fig.7e, p.184)

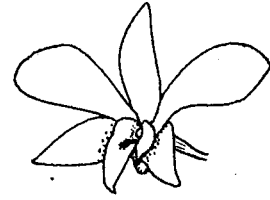
....*D. bigibbum* Lindl., in Paxt.Flow.Gard. 3:25,f.245 (1952)

(Syn. *D. sumneri* F.Muell.).



Dendrobium:Phalaenanthe

- 2*. *Petals broad spatulate to obovate, broadly acute to rounded and bluntly mucronate, the bases not clawed, mostly white (rarely pale pink); labellum midlobe length at least 1.5 times side-lobe width.* Pseudobulbs (5-)10-30(-50) x 1-2.5 cm, spindle-shaped. Leaves on the upper half of stem, deciduous, lanceolate, dull darker green, leathery, the veins of the sheathing bases not coloured. Racemes 10-45 cm long, erect to spreading; flowers 3-20 or so, widely opening, 2-4 cm diam., sepals oblong acute, the tip shortly drawn out; labellum side-lobes oblique triangular, rounded, often pink to deep red, mid-lobe oblong, broadly acute with a short, drawn out tip, disc with 3 or 5 finely warty or crested keels which extend for a short distance onto the midlobe. Epiphytic, mostly on paperbark *Melaleuca* spp. along water courses in the wetter parts of NW Aust. and N.T. Fl. dry season. CAM plant.



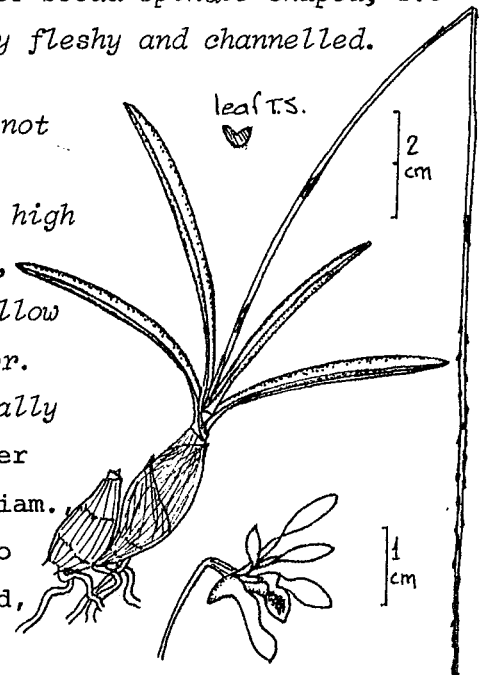
1 cm

....*D. dicuphum* F. Muell. *Fragm.* 8:28 (1873).

- 1*. *Mentum lacking such a protuberance; petals narrow oblong to linear and twisted to some degree (scarcely in *D. mirbelianum*) (Section 'Ceratobium).*

3. *Pseudobulbs globular to narrow ovoid or broad spindle-shaped, 1.5-12 cm long, AND leaves linear, thickly fleshy and channelled.*

4. *Mentum essentially straight, ovary not warty white or greenish (pedicel also), labellum keels 1-2 mm high extending well across the midlobe, petals basally white & green to yellow or yellow-brown in apical ½, inflor. 10-40 cm long, many flowered, usually erect or spreading, peduncle longer than rachis, flowers ca 2-2.5 cm diam., perianth segments narrow oblong to linear, acute to obtuse or rounded, often broadest towards the apex,*



Dendrobium : Ceratobium

twisted 1 to 3 times, basally white, coloured in the distal half or so, pale yellow-green to yellow to dusky yellow-brown or light chocolate brown, petals slightly longer than sepals; labellum side-lobes low, the apices oblique oblong, rounded, heavily striped purple to red, midlobe broad ovate, marked purple to dull red, disc with three keels extending across most of the midlobe where they become higher, sinuate and crested. Epiphytic, mostly on *Melaleuca* paperbarks in open monsoon woodland, at about mid levels; from ca the tropic to C.York Pen., N.T., NW Aust., N.G. Fl. spring. CAM plant. Onion or Teatree Orchid.

....D. canaliculatum R.Br., Prodr. 333(1810) (Syn. *D. tattonianum* Batem.)

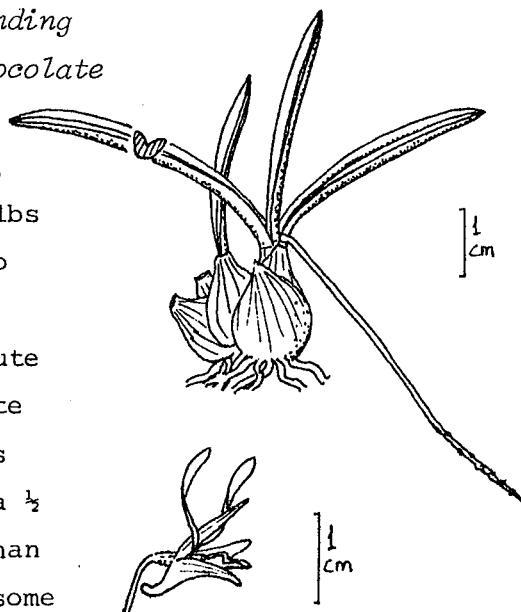
4*. *Mentum* hooked backwards; ovary finely and obscurely warty (and grooved), bright pink to dull purple-pink (pedicel also) labellum keels less than 1 mm high, not extending

onto the midlobe, petals reddish chocolate coloured for most of their length; racemes 5-15 cm long, 5-15 flowered, usually somewhat deflexed. Pseudobulbs

globular or pyriform to ovoid, up to 6 x 2 cm. Flowers ca 2 cm diam., sepals narrow-triangular/oblong, acute to obtuse, not twisted, pinkish white

with 2 or 3 fine red stripes, petals narrow spatulate, acute, twisted ca $\frac{1}{2}$ turn, \pm erect, considerably longer than sepals; labellum yellow-green with some obscure reddish striping near the base

of the side-lobes, side-lobes low, their apices broad triangular and broadly rounded, midlobe broad ovate, disc with three keels which are slightly wavy and crested towards their apices, not extending, or scarcely so, onto the midlobe. Epiphyte of mid zones on finely rough-barked trees or paperbarks in wetter areas of NE C.York Pen., also NG. Fl. spring. "Pink and brown canaliculatum".



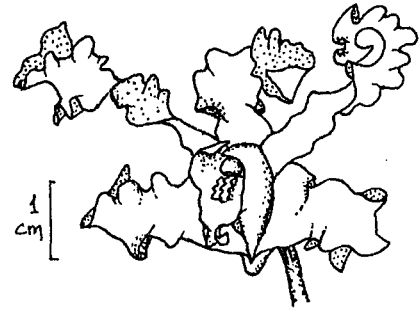
....D. carronii Lavarack & Cribb, Ms.

3*. Pseudobulbs (secondary stems) longer and proportionately narrower; leaves not thickly fleshy and usually wider than linear shape.

Dendrobium: Ceratobium

5. *Perianth yellow to brown.*

6. *Perianth margins crisped; stems (15-)30-200(-500) × (1-)2-4(-5) cm, leaves elliptical or oval, obtuse, 4-17 × 3-8 cm, stiffly leathery or subsucculent, produced on the upper two thirds or so of the stem and at a high angle to it. Inflorescence 20-60 cm or more long, peduncle shorter than rachis; flowers numerous, mostly yellow-brown but from butter yellow (uncommon) to dusky brown (more common on C.York), 3-8 cm diam.,*



labellum whitish with violet veins, side-lobes \pm oblique low triangular, the apices rounded, midlobe triangular, deflexed and the tip turned back, disc with three keels that extend slightly onto the midlobe where they become somewhat wavy. Epiphyte of mid to upper zones, or lithophytic, in or near lowland rainforest and related communities, sometimes up to ca 500 m; from the tropic north to the tip of C.York, also N.G. Fl. mostly spring. CAM plant. Golden Orchid.

....D. *discolor* Lindl., Bot.Reg.27, pl.52, misc. 21, No.50
(1841) (Syn. *D. undulatum* R.Br.
D. elobatum Rupp)

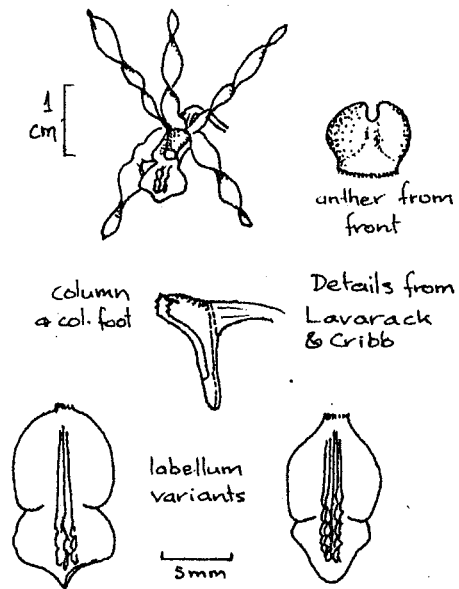
6*. *Perianth margins not crisped (but segments twisted), stems (10-)15-45(-80) × 0.7-2 cm, leaves lanceolate to elliptical, acute, 1-4 × 5-10 cm; peduncle of inflor. 1.5-2 mm diam.*

7. *Petals twisted through at least one turn (usually 2 or 3); leaves lanceolate to narrow lanceolate, narrowly acute, less than 2 cm wide.*

8. *Labellum midlobe (with intact labellum flattened out) as wide, or wider than the lamina and side-lobes; anther cap deeply cleft; mentum almost at right angles to column; petals and sepals yellow brown to yellow. Stems narrow spindle-shaped, 15-60 × 0.7-1.5 cm; leaves typically crowded on the apical quarter of the stem and at an angle of 50° or less, narrow lanceolate, thickly and stiffly leathery, somewhat channelled. Inflorescences typically semi-erect to spreading or horizontal; flowers ca 10-20, 3-5 cm diam., petals and sepals twisted;*

Dendrobium: Ceratobium

labellum light yellow, sidelobes \pm crescentic/transverse oblong, the apices obtuse or rounded, veined red-purple, midlobe almost circular to \pm hastate, disc with 3-5 dark yellow keels which extend across most of the midlobe where they become higher and crested. Epiphyte, mostly on paperbarks in open monsoon woodland from near Cooktown to the top of C. York, northern N.T. and N.G.. CAM plant. Fl. spring or mid-late dry season.



....D. semifuscum (Rchb.f.) Lavarack & Cribb, *Orchadian* 6:209-211 (1980)

8*. *Labellum midlobe narrower than lamina and side-lobes; anther cap with a small notch; mentum \pm parallel to column, petals and sepals chocolate brown to purple.*

Stems spindle-shaped, 10-40 x 1-2 cm; leaves typically distributed over the upper half or so of the stem and held at a high angle to it, lanceolate to narrow lanceolate, thickly and stiffly leathery, somewhat channelled. Inflorescences typically erect or semi-erect;

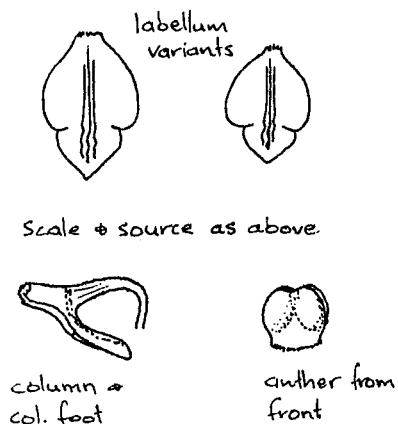
flowers ca 6-12, 3-5 cm

diam., petals and sepals twisted;

labellum light yellow, the keels darker yellow, side-lobes oblique triangular/crescentic, the apices rounded, red-purple veined, midlobe triangular to very broad ovate, disc with 3 or 4 keels which extend well across the midlobe where they become higher and crested. Epiphytic on various trees in or near swamp forest near the coast from the lower McIlwraith Ra. to the top of C. York and some Torres Str. Is. Fl. autumn or late wet season. CAM plant.

(Fig. 7f, p.184)

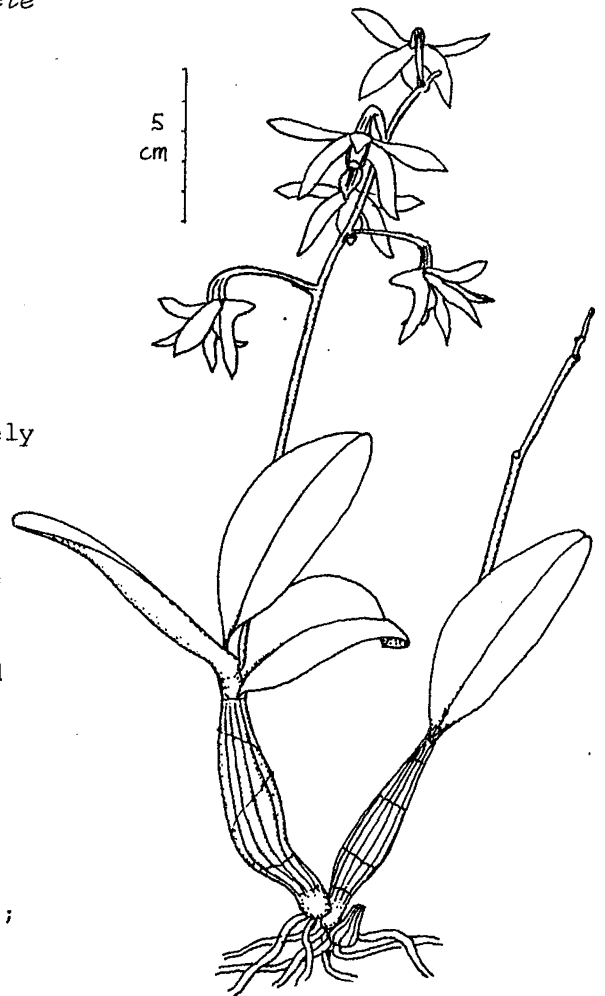
....D. johannis Rchb.f., *Gdnrs. Chron.* 890 (1865).



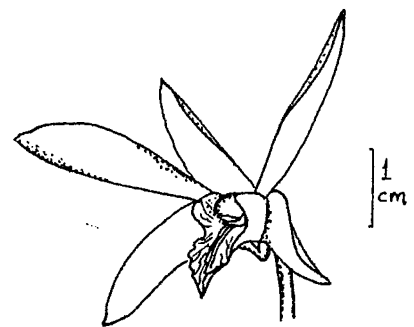
Dendrobium : Ceratobium

7*. *Petals only slightly twisted - less than one turn, inflorescence peduncle ca 3 mm diam.; leaves broad lanceolate to ovate or elliptical, obtuse to broadly acute, at least 2 cm wide. Stem 10-45(-90) x 1-3 cm, spindle-shaped; leaves borne on the upper half, often suffused reddish, stiffly and thickly leathery. Flowers 3 or 4 cm diam., often self pollinating and not widely opening, yellowish olive brown, labellum veined dull red, side-lobes oblique crescentic/transverse oblong, the apices rounded, midlobe oblong/ovate, the apex usu. crimped and turned down, disc with 5 keels, 3 extending well along the midlobe and there slightly sinuate. Epiphyte in mid to upper levels in mangroves from the Johnston R. north; also N.G. Fl. spring.*

small flowering specimen



....*D. mirbelianum* Gaud.,
 in Freyc. voy. 423,
 t.38 (1826) (Syn.
D. prionoehilum.
 F. Muell. & Krzl.,
D. wilkianum Rupp).



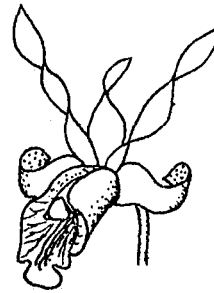
5*. *Perianth white or mostly so (petals green in D. antennatum).*

Dendrobium: Ceratobium

9. *Side-lobes of labellum approx. semi-circular, midlobe wider than long, truncate; stems 30-150(-250) cm long, often dark purplish brown; leaves elliptical to oval, obtuse 5-15 x 3-8 cm, well spaced on the upper ½ of the stem.*

Inflorescences 20-45 cm long, peduncle often longer than rachis; flowers 8-20, ca 7 cm diam., perianth white, labellum large, light mauve with purple veins, disc with 3 purple keels which extend onto the midlobe.

Epiphyte in mid to upper zones of mangroves, dense lowland swamp forest or rft, especially near creeks, from the Johnston R., Qld., northwards. Fl. early spring. CAM plant.

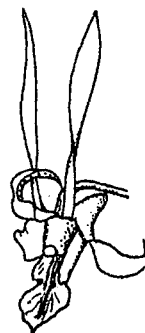


....*D. nindii* W. Hill, Rep. Brisb. Bot. Gdn, p.7 (1874)

(Syn. *D. toftii* F.M.Bail., *D. ionoglossum* Schltr.)

- 9*. *Labellum side-lobes transverse narrow oblong, midlobe broad ovate; stems 10-45 cm long green to ± yellow; leaves lanceolate to ovate, tips acute with unequal sides, 3-10 x 1.3 cm, on the upper half to two thirds of the stem. Inflorescences*

10-30 cm long, peduncle often shorter than rachis; flowers 3-15, ca 3-5 cm high, petals green, linear twisted once or twice, erect; sepals narrow triangular, white, undulate, curled backwards; labellum white with purple veins, disc with 5 keels, the central one extending onto the midlobe almost to its apex. Epiphyte in mid zones of monsoon rft of the McIlwraith and Iron Ra. areas. Fl. mid-late dry season (spring). CAM plant.



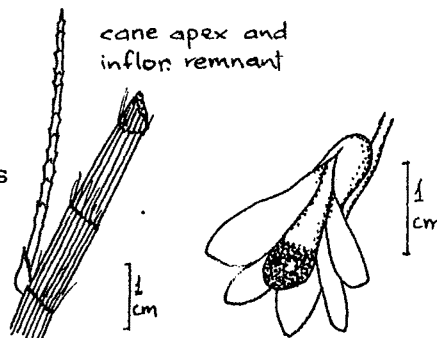
....*D. antennatum* Lindl., in Hook, Lond. J. Bot. 2:236 (1843)

(Syn. *D. d'albertisii* Rchb.f.)

Dendrobium: Pedilonum, Trachyrhizum

Key to the spp. of *Dendrobium* Group 5

1. Stems 1-2 cm diam., prominently grooved after maturing, narrowly spindle shaped, (15-)20-60(-120) cm long, with a small, swollen, basal portion, tufted, leafy for at least the apical two thirds; leaves mostly deciduous after 2-3 years, lanceolate, 5-20 cm long, thinly leathery to almost herbaceous. Inflorescences borne on the upper nodes of older, usually leafless stems, 5-15 cm long; flowers numerous and crowded rather densely, mid to pale pink to white, not widely opening, ca 1.5-2 cm long, sepals oblong obtuse, petals spatulate; labellum \pm boat-shaped, narrower in the middle where there is a transverse septum, not lobed, the apical $\frac{1}{4}$ broadened and thickened and shiny dark green. Tufted epiphyte of mid to upper zones in rft and monsoon rft or mid levels in rft ecotones or moister open forest, often in hollow limbs etc., sometimes lithophytic; Burdekin R. to C. York and N.G. Fl. spring. Non-CAM plant (Section *Pedilonum*). Bottlebrush Orchid.

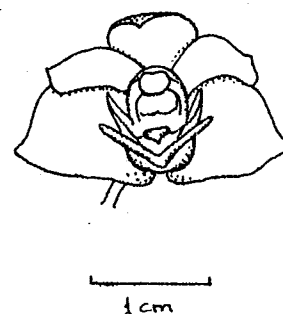


....*D. smilliae* F. Muell., Fragm. 6:94 (1867) (Syn.

D. hollrungii Krzl. var. *australiense*
Rendle, *D. ophioglossum* Rchb.f.)

- 1*. Stems 4-6 mm diam. (rarely to 8 mm)

2. Plant erect, primary stem (rhizome) elongate, secondary stems (pseudobulbs) 1-5 cm apart; leaves 6-12 mm wide. Pseudobulb terete with a narrowed section at the base, up to 50 cm long, leafy in the upper $\frac{1}{2}$ or more but decreasingly so with age. Leaves lanceolate, 3-10 cm long, tips unequal, often notched, thinly leathery. Inflorescence axis 1-2 cm long; flowers usually 3-5, nodding, yellow, ca 1.5-2 cm diam., moderately widely opening, lateral sepals \pm broad triangular, dorsal oblong-ovate, petals obovate; labellum side-lobes transverse oblong, midlobe \pm bifid, the lobes oblong, rounded, disc with two \pm elongate calli, in line. Short to medium creeping epiphyte of \pm clean to lightly littered or mossy



Dendrobium: Eugenanthe, Grastidium

substrates in mid to upper zones of wetter rft, mostly above ca 800 m alt., from the Eungella Ra. to ca Mt Finnigan area, near Cooktown, Qld. Non-CAM plant. (Section *Trachyrhizum*). Buttercup Orchid (Fig. 3n, p.5)

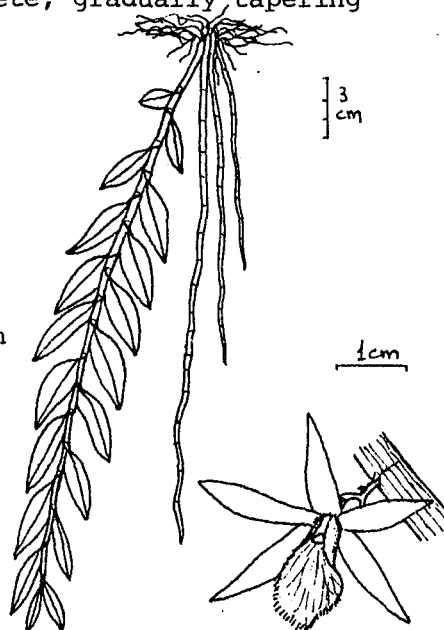
....*D. agrostophyllum* F.Muell., *Fragm.* 8:28 (1873)

(Syn. *D. muellerianum* Schltr.)

2*. *Plant pendulous to porrect, primary stem virtually absent and plant tufted; leaves 15-25 mm wide. Stems terete, gradually tapering*

towards both ends, somewhat flexuose, with a small swollen section at the base, 10-45 x 0.2-0.6 cm, leafy over almost the entire length but mostly deciduous each monsoonal dry season. Leaves lanceolate to ovate, acute, softly subsucculent, light green. Inflorescence axis less than 1 cm long; usually several per stem; flowers 1-4, yellow-green with a yellow, orange-veined labellum, fairly widely opening, 2-3 cm diam., sepals narrow triangular/lanceolate, petals narrow elliptical, acute; labellum not lobed, + shield-shaped when flattened out, with

a basal, oblong claw and with 3 indistinct, apically hairy keels and hairy margins; labellum + trumpet-like in life. A tufted, pendulous epiphyte of lower to mid zones in monsoon rft of the MacIlwraith and Iron Ra. areas. (Section *Eugenanthe*). Fl. wet season (summer).



....*D. stuartii* F.M.Bail., *Proc.R.Soc.Qld.* 1:12 (1884)

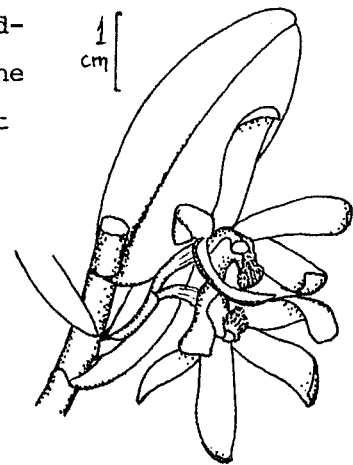
(Syn. *D. whiteanum* T.E.Hunt).

Key to the spp. of *Dendrobium* Group 6

1. *Stems 5-10(-15)mm thick; leaves elliptical to ovate or lanceolate, obtuse, notched, stiffly leathery/subsucculent, 5-10 cm long. Stems 40-150 cm long, leafy almost throughout, tufted, slightly flattened towards the apex. Inflor. peduncle ca 5 mm long, produced in the upper third or more of the stem; flowers 2, lasting only one day, + opposed, pale yellowish, opening only moderately widely, perianth oblanceolate, acute, ca 1.5 cm long; labellum side-lobes falcate oblong, obtuse, midlobe broadly triangular, the margins crisped, lamina with a broad red, papillose/crested keel;*

Dendrobium:Grastidium

most of the labellum upper surface red-tipped-papillose, less so the side-lobes, more so the midlobe where the papillae are longer and not red-tipped, the apex bearing a tuft of extra long ones, separate from the rest; column foot with a basal, red, glandular area; stigma with a double prominence near the base. Tufted epiphyte or lithophyte of mid zones on moderately clean surfaces, in wetter lowland to moderate alt. rft and monsoon rft, from Rockingham Bay, N.Qld. to C.York and N.G. CAM plant. (Section *Grastidium*)



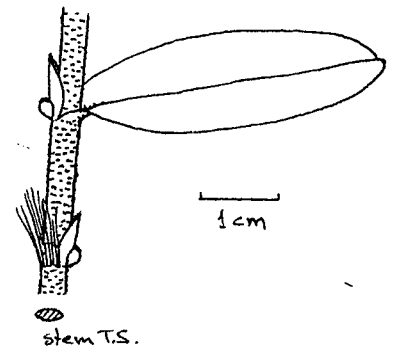
....D. *luteocilium* Rupp, N.Qld.Natlst. 13:1 (1945).

1*. Stems 1-3 mm thick; linear, strap-shaped or narrow lanceolate to elliptical or ovate, acute to broadly acute, notched or 2-lobed, thinly and flexibly leathery to almost herbaceous.

2. Stems 1-3 mm thick, 20-120 cm long; leaf tips acute or slightly notched with the lobes uneven; flowers 2 per inflor., opposed, perianth segments linear, lasting only one day. (Section *Grastidium*).

3. Leaf base sheaths brown and finely ridged or warty, blades ovate or elliptical to oblong, obtuse or broadly acute, slightly notched and unequal; a small bract-like extension of the sheath, opposite the lamina covers the inflorescence buds.

Stems 2-3 mm thick, somewhat flattened, esp. in the apical half, 20-80 mm long spreading to pendulous. Inflorescence axis 2 or 3 mm long, produced on most of the upper nodes; flowers paired, opposed, not widely opening, the tepals



red brown with creamy bases, linear-tapering, curved and often twisted irregularly, thick-textured, finely warty; labellum indistinctly 3-lobed, side-lobes small, rounded, midlobe down-curved, broad triangular, hairy, disc with a single keel. Epiphyte of \pm clean surfaces in lower to mid zones, esp. near creeks, between the Johnston and Annan Rs. in low alt., wetter rft. Fl. sporadic. Non-CAM plant.

....D. *cancroides* T.E.Hunt, N.Qld Natlst. 14:30 (1947).

Dendrobium:Grastidium

3*. Leaf bases green, dark red-brown spotted, or whitish when dead, not warty, blades linear-lanceolate, acute or slightly notched or uneven; sheath opposite the lamina slightly peaked but not formed into a bract; stems 1-2 mm diam., not flattened.

4. Leaf tips minutely notched and/or unequal; plants growing into small tufts of a few stems with one or two growth leads; flowers yellow to creamy white, spotted to some degree with purple-red, sepals ca 25-40 mm long. Stems 25-120 cm long, leafy throughout but the lower ones relatively early deciduous.

Leaves 3-9 cm long, linear-lanceolate.

Inflorescence axis ca 5 mm long; flowers 2,

opposed, perianth segments very narrow triangular/linear with long, finely drawn

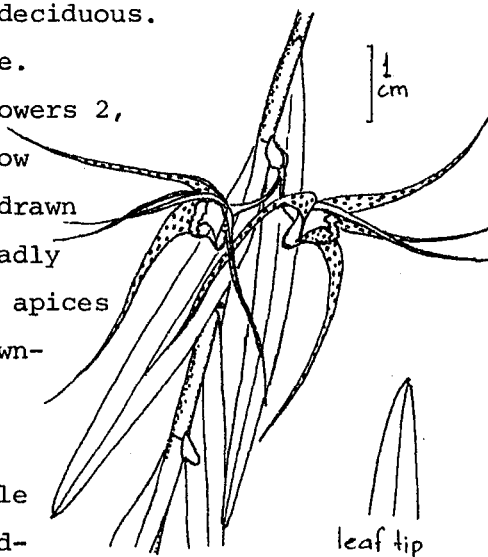
out apices; labellum side-lobes broadly attached, transverse elliptical, the apices

free, rounded, midlobe triangular down-curved, yellow, the margins somewhat

crisped and papillose/hairy except the apical few mm., disc with a single

keel; the entire upper surface + red-papillose-hairy. Epiphytic on + clean

or mossy surfaces in lower to mid zones of wetter rft and monsoon rft at altitudes up to ca 700 m from the Burdekin R. to at least the MacIlwraith Ra.. Fl. spring and summer (late dry and wet season). Non-CAM plant.



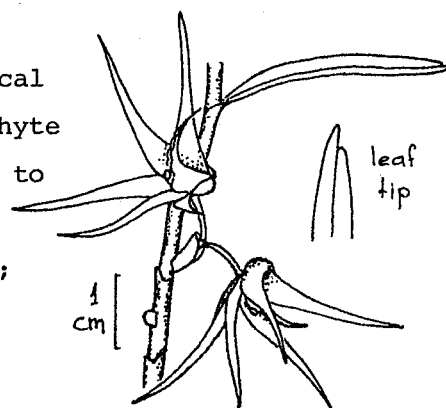
....*D. baileyi* F. Muell., *Fragm.* 8:173 (1874)

(Syn. *D. keffordii* F.M.Bail.)

4*. Leaf tips conspicuously notched; plants growing into dense clumps of many stems and with numerous growth leads; flowers wholly white, sepals ca 12-18 mm long. Stems 20-60 cm long, leafy from the base up, usually the lower half losing its leaves after one dry season, laminae 3-8 x 0.4-0.8 cm, tapering + evenly from base to apex. Inflorescence peduncle ca 5 mm long, ovary and pedicel ca 5 mm long, perianth segments narrow triangular with narrowly acute tips, not or scarcely downturned, shortly and sparsely hairy,

Dendrobium: Monanthos

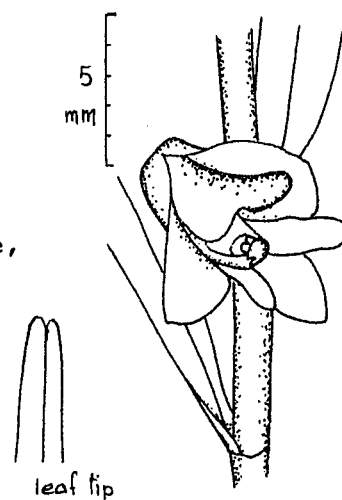
the margins crisped except for the apical 2-3 mm, disc with a single keel. Epiphyte or lithophyte of clean surfaces in mid to upper zones of monsoon rft, especially ecotones and more open areas near rft.; Iron Ra. and McIlwraith Ra.. Fl. late dry and wet seasons. Non-CAM plant.



....D. tozerensis Lavarack, *Austrobaileya* 1(1): 70-72 (1977)

- 2* *Stems 0.5-1 mm thick, 12-25 cm long; leaf tips prominently notched and ± equally bilobed; flowers solitary with perianth segments relatively short and broad and lasting several days at least.*

Stems tufted, the plants growing into large, dense clumps. Leaves 3-6 x 0.2 - 0.3 cm, strap-shaped, tapering slightly. Flowers rather widely opening, ca 8 mm diam., yellow green with dark red on the labellum and anther, dorsal sepal and petals ± broad ovate, lateral sepals broad, rounded triangular; labellum side-lobes indistinct, rounded, midlobe knob-like, yellow, mentum or chin very prominent. Tuft epiphyte on mossy or clean trunks and larger branches in mid zones of monsoon rainforest, McIlwraith Ra..



Fl. late wet season. Non-CAM plant. (Section *Monanthos*).

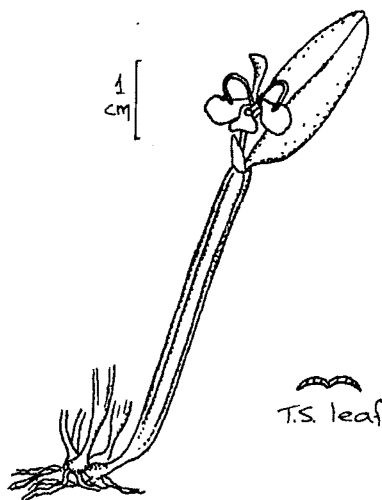
....D. malbrownii Dockr., *Aust.Pl.* 4:134-6 (1967)

genus *Cadetia* Gaud. ca 60, N.G., SW Pac., Aust. 4, epi.

Small to very small, tufted or mat-forming, sympodial epiphytes. Roots creeping, less than 1 mm diam.. Primary stem (rhizome) almost absent and secondary stems (pseudobulbs) tufted or forming lines and eventually mats, consisting of a single internode, wiry or fleshy. Leaf solitary and either fleshy or stiffly leathery to subsucculent. Flowers solitary, fairly widely opening, apparently terminal, lasting several to many days, sometimes self-pollinating; sepals rather broad, petals narrow, labellum fused to column foot to form a closed spur, and mentum relatively prominent, parallel to the ovary, side-lobes small, midlobe prominent, lamina lacking calli but hairy or papillose; column usually with apical teeth higher than the anther.

Cadetia

1. *Stems fleshy, at least 3 mm wide; leaves fleshy or stiffly leathery, ovary smooth or winged, not hairy.*
2. *Stems elongate, 3-10 x 0.3-0.5 cm, with several longitudinal grooves; leaf stem-clasping, stiffly leathery, 1.5-5 x 0.7-1.2 cm, narrow elliptical to narrow oblong, obtuse and notched, dull mid green. Flower ca 1 cm diam., white, lateral sepals broad oval, dorsal oblong, broadly acute, reverse channelled, curved inwards apically, petals linear acute markedly incurved; labellum side-lobes horizontal, obovate, the apices free and acute, mid-lobe yellow or pink, + transverse oval with a slight apical notch and a small, triangular lobe on each side near the junction with the disc, thickly fleshy, downturned, densely and shortly hairy above; ovary glabrous, not winged. Tufted epiphyte, sometimes growing into large clumps, in mid zones of wetter rft from sea level to 1500 m or so; Eungella Ra. to Iron Ra. Fl. irregular, mostly summer. Non-CAM plant.*

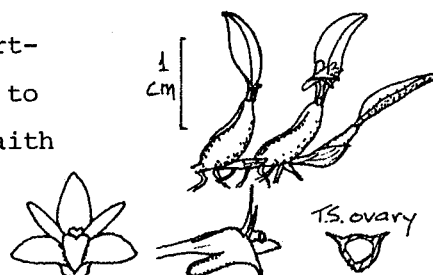


....*C. taylori* (F.Muell.) Schltr., in Fedde, Rep.Beih 1:424
 (1912) (Syn. *Bulbophyllum taylori* F.Muell., *Dendrobium uniflos* F.M.Bail. *D. taylori* (F.Muell.)FitzG., *D. hispida* var. *taylori* (F.Muell.)F.M.Bail.)

- 2*. *Stems squat, 6-10 x 3-5 mm, with a single longitudinal groove (more when shrivelled); leaf thickly fleshy, basally narrowed, into a short petiole, 7-15 x 3-6 mm, broad ovate to oval notched, light to pale green, glossy when new. Flowers mostly produced behind the leaf, ca 5 mm diam., white, sepals oblong, broadly acute to obtuse, petals narrow oblong, acute; labellum scarcely lobed, obovate, the apical half yellow and papillose above, the lower part shortly hairy;*

Cadetia

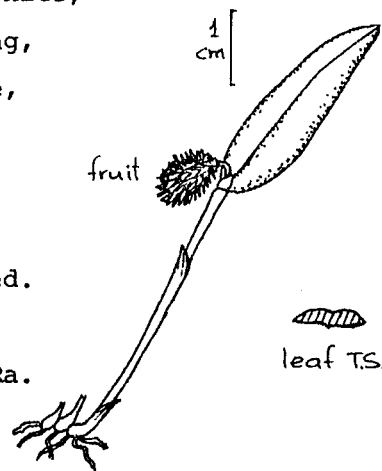
anther cap green; ovary winged. Short-creeping, mat-forming epiphyte of mid to lower zones in monsoon rft. of McIlwraith and Iron Ra. areas. Fl. late wet and early dry season. CAM plant.



....*C. wariana* Schltr., in Fedde, Rep.Beih. 1:426 (1912)

1* *Stems thin (1-2 mm wide), not fleshy; leaves fleshy; ovary densely fleshy-hairy.*

3. *Stems 2-7 cm long, leaves ovate to elliptical or oblong, acute to obtuse, notched, 3-6 x 1-1.5 cm; labellum midlobe fleshy, apically truncate, concave. Flower ca 6 mm diam, white, lateral sepals (the free part) short oblong, dorsal oval, obtuse; petals linear, acute, incurved; labellum cupped, side-lobes transverse linear, pink, purple marked, midlobe hemi-cylindrical, truncate, disc hairy; column apical teeth purple, rounded. Tufted epiphyte of mid zones in warmer, moister rft from the Burdekin R. to Iron Ra. area. CAM plant. Fl. wet season - late summer to autumn but often at other times.*



....*C. maideniana* (Schltr.)Schltr., in Fedde, Rep.Beih. 1:424 (1912) (Syn. *Den. maidenianum* Schltr., *Den. hispidum* F.Muell., *C. hispida* (F.Muell) Dockrill)

3*. *Stems 0.6-1.8 cm long; leaves 11-22 x 5-10 mm, ovate to lanceolate, notched; labellum midlobe only slightly fleshy, the apex bluntly pointed. Flowers ca 5 mm diam., white; sepals ovate, petals linear; labellum side-lobes very small, disc sparsely and minutely hairy; column apical teeth purple, extending above the anther. Fruit densely fleshy-hairy. Tufted epiphyte of lower zones in lowland monsoon rft of the McIlwraith to the Janet Ra., C.York. Fl. wet season.*

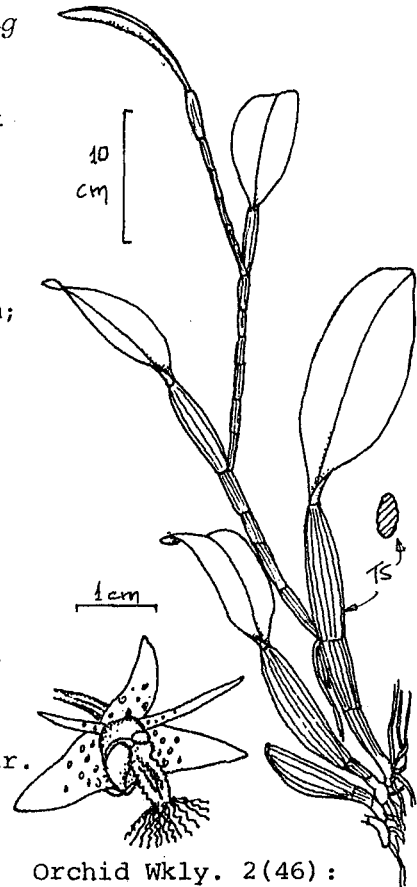
....*C. collinsii* Lavarack, Austrobaileya 1(4):380-384 (1981)

Flickingeria

genus Flickingeria A.D. Hawkes, ca 70, SE Asia, Malesia, SW Pac.,
Aust. 2

Small to medium sized sympodial epiphytes with a short or elongate primary stem which may be aerial and \pm rootless or creeping and root-bearing. Secondary stems pseudobulbous, the swollen part consisting of a single internode and terminated by a solitary, leathery or somewhat succulent leaf. Flowers short-lived, lasting one day only, solitary but several may be produced at once, may be in front of, or behind the leaf and are fairly widely opening; labellum side-lobes not very prominent, midlobe well developed, disc with 3 keels.

1. Primary stem becoming aerial and rootless, of determinate length with pseudobulbs decreasing in size towards the plant apex; leaves also decreasing in size, 10 x 20 cm to 5 x 2 cm, oblong or elliptical, stiffly leathery. Basal pseudobulb much the largest, up to ca 15 x 3 x 2 cm, somewhat flattened spindle shape, longitudinally grooved. Flowers produced on pseudobulbs towards the plant apex, pale yellow-green, \pm heavily red-spotted in the basal half of the segments and on the labellum; ca 2.5 cm diam.; sepals moderately narrow-triangular, acute, petals linear acute; labellum midlobe narrow-triangular, the margins crisped and the apex bearing tuft of long, crisped, thick hairs, the lateral keels become wavy on the midlobe, side-lobe apices rounded and red-toothed; anther cap green. Tufted epiphyte of mid to lower zones in moister monsoon rft up to ca 300 m alt. in the McIlwraith Ra.; also Malesia. Fl. irregular. Non-CAM plant.



....*F. comata* (Bl.) A.D. Hawkes, Orchid Wkly. 2(46):

(1961) (Syn. *Desmotrichum*

comatum Bl., *Dendrobium comatum* (Bl.) Ldl.,

Callista comata (Bl.) Ktze., *Des. criniferum*

(Ldl.) Krzl., *Des. scopa* Krzl., *Ephemerantha*

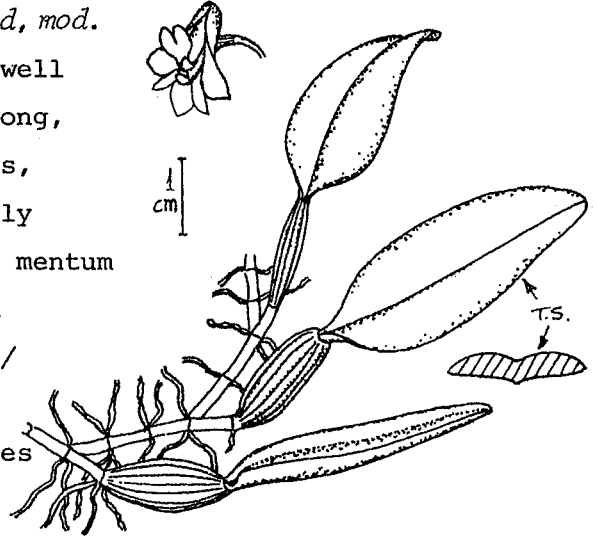
comata (Bl.) Hunt & Summerh., *E. thysanochila*

(Schltr.) Hunt & Summerh.

Flickingeria, Diplocaulobium

- 1*. Primary stem creeping on the substrate, producing roots at most nodes, indeterminate in length with pseudobulbs of \pm constant size; leaves 4-8 x 1-2 cm, ovate, obtuse and notched, mod.

fleshy. Pseudobulbs flattened ovoid, well spaced, the swollen part ca 1.5-4 cm long, stalk-like basal part of 1-3 internodes, ca 2 mm diam.. Flowers solitary, mostly from behind the leaves, ca 15 mm long, mentum very prominent, tepals cream, labellum lamina red; lateral sepals triangular/ovate, obtuse with a shortly drawn out apex, dorsal ovate; labellum side-lobes obliquely, rounded triangular, midlobe



deeply bifid, the lobes semicircular to rounded oblong. Medium creeping epiphyte of upper zones in tr. rft, mangroves and monsoon rft., from ca the Daintree R. to at least the McIlwraith Ra., also Malaysia. Fl. irregular. CAM plant.

...F. convexa (Bl.) A.D.Hawkes, Orchid Wkly. 2(46):451-460

(1961) (Syn. *Desmotrichum*

convexum Bl., *Den. convexum* (Bl.) Ldl.,

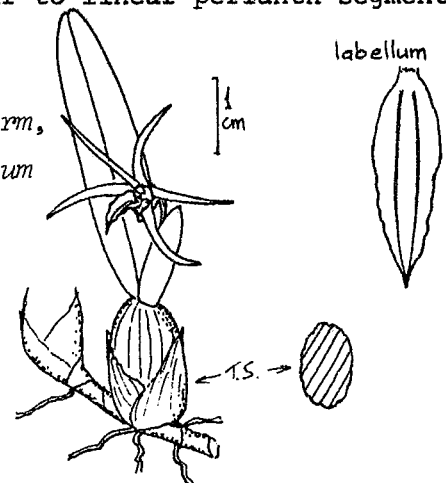
Ephemerantha convexa (Bl.) Hunt & Summerh.,

Callista convexa (Bl.) Ktze.)

genus *Diplocaulobium* Krnzl. ca 70, Malaysia, SW Pac., Aust. 2

Small, short to medium-creeping, sympodial epiphytes with pseudobulbous secondary stems of a single internode, terminated by a solitary, thinly leathery leaf. Flowers solitary, moderately widely opening, lasting for a single day only, cream coloured with very narrow triangular to linear perianth segments and a moderately prominent mentum.

1. Pseudobulbs slightly flattened ovoid /pyriform, not angular; leaves 2.5-7 cm long; labellum with 2 straight keels which extend to the midlobe tip. Rhizome 3-5 mm diam.. Pseudobulbs pale green to yellow, shiny, grooved with age, usually widest in the basal half. Leaves elliptical to narrow ovate, rounded obtuse, notched,



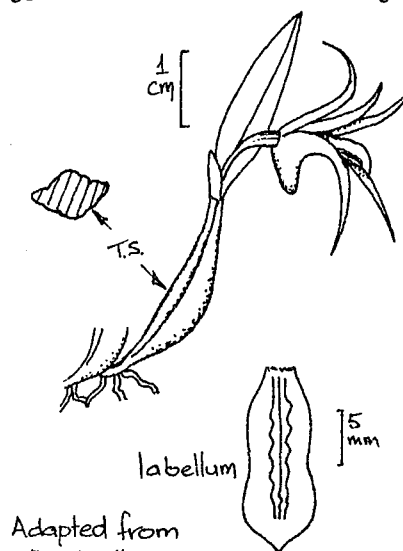
Diplocaulobium

shiny when young, mid green. Flowering sheath 10-15 mm long, straw yellow fading to white apically. Flowers 2-3 cm diam. on 2-3 cm stalks, sepals very narrow triangular, petals linear; labellum side-lobes almost obsolete, upturned, red-edged, midlobe triangular/ovate, basal margins undulate, apex acute, disc \pm papillose, cream, column sides red, especially towards the apex. Mat-forming epiphyte of rft ecotones, especially on flaky-barked trees such as *Tristania sauveolens* Sm. in microsities \pm equivalent to upper zones in rft; Cairns north on E. C.York, also in Malesia. Fl. irregular. Non-CAM plant.

....D. *glabrum* (J.J.Sm.)Krzl., Pflanzenr., H.45:339 (1910)
 (Syn. *Den. glabrum* J.J.Sm.,
Cadetia ruppilii St. Cloud)

- 1*. *Pseudobulbs narrow ovoid/pyriform, four angled in cross-section, the angles often produced into wings; leaves 1.5-3 cm long; labellum with 3 wavy keels which do not reach the midlobe apex.*

Rhizome 1 mm diam. Leaves ovate. Flowering sheath ca 7 mm long; flowers ca 2.5 cm diam., on stalks 1-1.5 cm long, sepals very narrow triangular, the tips drawn out and subulate, petals narrow linear; labellum side-lobes virtually obsolete, marked chocolate, midlobe broad oval, the tip shortly drawn out, disc white; column sides with chocolate markings. Known only by the type collection from trees on a mangrove swamp margin, near Cape Tribulation, N.Qld.



....D. *masonii* (Rupp.)Dockrill, Orchadian 1:132-3 (1965)

Bulbophyllum

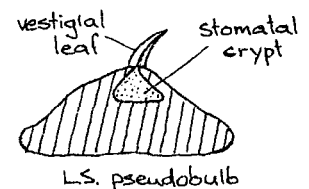
subtribe BULBOPHYLLINAE

genus *Bulbophyllum* Thouars, ca 1500, pantrop and subtrop. esp. Malesia,
N.G. ca 600; Aust. 26.

The Aust. spp: minute to moderately small, sympodial epiphytes (some occas. lithophytic) with pseudobulbous secondary stems terminated by a single leaf. Roots not more than 1 mm diameter with one only layer of velamen (epidermal) cells. Primary stem (rhizome) short to long creeping, sometimes pendulous (e.g. *B. aurantiacum*, *B. gadgarrense* etc.). Pseudobulbs consisting of one internode only and may be small and inconspicuous (as in *B. gadgarrense*, *B. crassulifolium* etc.). Lvs thinly leathery to thick and fleshy or vestigial (as in *B. minutissimum*), strap-shaped to \pm circular, or almost terete (*B. wadsworthii*). Inflors racemose, umbellate or flowers solitary, arising from the pseudobulb base or from the rhizome. Fls very small to medium sized, moderately to widely opening, sepals \pm equal or the laterals larger and broadly attached to the column foot and forming a prominent mentum; petals considerably smaller than the sepals; labellum relatively simple and entire, often papillose, moveably hinged to the base of the column foot; column short and with apical teeth (stelidia); pollinia in two pairs, waxy, lacking stipes and caudicles.

1. Pseudobulbs less than 2.5 mm diam. AND, leaves vestigial, small and scale-like.

2. Pseudobulbs \pm flattened and disc-shaped, 1.5-2 mm diam., often reddish coloured. Fl. peduncles (which persist), ca 2 mm long; fls solitary, not widely opening, ca 3 mm diam., segments yellowish, broadly striped dark red; sepals obtuse, laterals triangular, dorsal oblong, petals narrow oblong, obtuse; labellum oval from above, thick and fleshy; column apical teeth not prominent; ovary papillose. Mat-forming epi. of mid to upper zones in rft but sometimes more open communities when often on rocks. SE NSW to SE Qld. Fl. late spring (Fig. 3g, p.5)

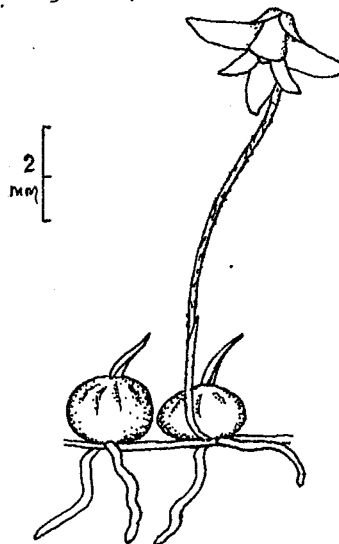


....*B. minutissimum* (F.Muell.) F. Muell., *Fragm.* 11:53 (1878)

(Syn. *Den. minutissimum*
F. Muell.)

Bulbophyllum

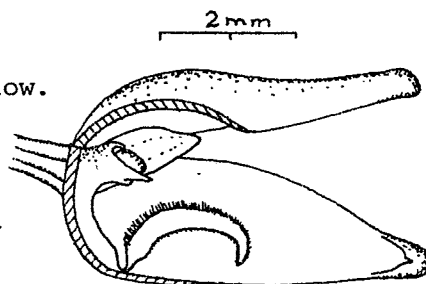
- 2*. *Pseudobulbs* \pm globular (flattening to some extent with age) 1-1.5 mm diam. Flower peduncles 6-10 mm long. Flowers solitary, white or cream, labellum yellow; sepals ovate/triangular, the dorsal narrower slightly recurved, 3-4 mm long; petals lanceolate \pm as long as the sepals; labellum oblong obtuse, channelled in the basal half, thick and fleshy. Column with upcurved, narrow projections from near the base, apical teeth ca as high as the anther. Mat-forming epiphyte in upper zones of subtrop. rft. esp. on *Araucaria cunninghami* Ait. ex D. Don; McPherson Ra. and nearby. Fl. late spring.



....*B. globuliforme* Nicholls, *Orchid. Zeylan.* 5:124 (1938).

- 1*. *Pseudobulbs* more than 2.5 mm diam. AND/OR leaves normally developed.
3. *Pseudobulbs* not prominent, up to ca twice rhizome thickness (incl. bracts) and less than 5 mm wide; leaves thickly fleshy to subsucculent; flowers solitary (\pm in a head in *B. evasum*).
4. Leaves more than 8 mm wide.
5. Rhizomes pendulous, relatively tough, leaves ovate to lanceolate or oblong, acute; flowers solitary, but often many produced at once.
6. Leaves fleshy, surface dull, even when young; sepal tips with inrolled and fused margins, orange coloured, fading to yellowish-green basally. Leaves channelled, 8-25 mm wide, sometimes slightly keeled below. Flowers not widely opening, 4-7 mm long, sepals \pm equal, petals ovate, obtuse, shorter than sepals; labellum ovate, obtuse, downcurved, orange, the

(See Fig. 7 for illustration of plant.)



Bulbophyllum

margins ciliate; stelids higher than anther. Tufted pendulous epiphyte of mid zones in rft. from the Hunter R., almost to Cooktown. Fl. mainly autumn. CAM plant. (Fig. 8a, p. 227)

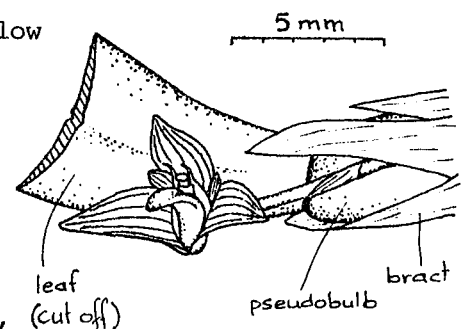
....*B. aurantiacum* F. Muell., *Fragm.* 3:39 (1862) (Syn. *Den. aurantiacum* (F. Muell.) F. Muell.)

6*. *Leaves leathery to subsucculent, glossy when young; sepal tips flat, the whole cream with dark red longitudinal stripes.*

Leaves channelled to a slight degree, the midrib sunken above and prominent below 3-8 x 0.7-1.8 cm. Flowers moderately widely opening, 4-5 mm long, lateral sepals triangular, dorsal oblong/ovate, much shorter than the sepals; labellum ± oblong if flattened, red, the apical half somewhat boat-shaped, hairy underneath; stelids at least

twice the height of the anther, curved awl-shaped. Tufted pendulous epiphyte of mid to lower zones in rft. from ± sea level to over 1000 m from the Eungella Ra. to near Cooktown.

Fl. irregular.

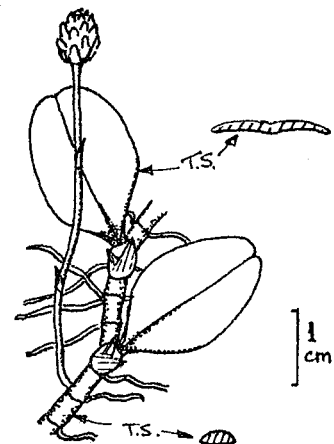


twice the height of the anther, curved awl-shaped. Tufted pendulous epiphyte of mid to lower zones in rft. from ± sea level to over 1000 m from the Eungella Ra. to near Cooktown.

Fl. irregular.

....*B. radicans* F.M. Bail., *Qld, Ag. J.* 1:81 (1897) (Syn. *B. cilioglossum* Rogers & Nicholls)

5*. *Rhizomes creeping, flattened, very brittle, leaves oblong or oval to ± circular, obtuse or notched; inflorescence subcapitate.* Pseudobulbs somewhat flattened, partially fused to the rhizome; leaves ± fleshy, 1-3 x 1-3 cm. Inflorescence peduncle 3-10 cm long, rachis ca 5 mm; flowers 10-25, on very short stalks 3-4 mm long, not widely opening, perianth pink with dark red stripes, dorsal sepal ± ovate, laterals ovate/triangular, petals ovate/falcate, slightly shorter than the sepals; labellum thick and channelled, truncate heart-shaped from above, papillose above with 2 converging keels; stelids horn-like, considerably higher than the anther. Medium creeping and to some extent mat-forming epiphyte of mid



Bulbophyllum

zones in cloud rainforest, at altitudes above ca 800 m, from the Burdekin R. to the Endeavour R., N.Qld. Fl. irregular.

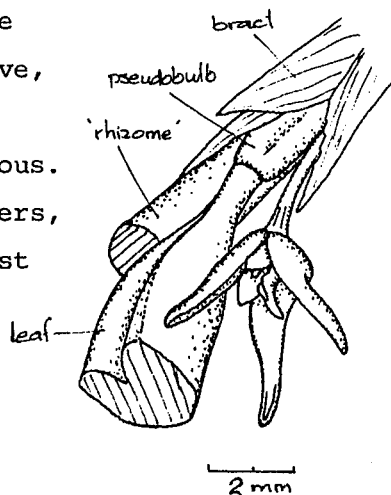
....*B. evasum* T.E.Hunt and Rupp, Proc.Roy.Soc.Qld. 60:58(1949).

4*. *Leaves less than 8 mm wide (usu. 3-6 mm).*

7. *Leaves constricted into a short petiole.*

8. *Primary stems (rhizomes) pendulous to semi-erect, pseudobulbs well-spaced, not touching; flower stalks short (4-5 mm long), hidden by stem bracts; flowers not widely opening, white or orange.*

9. *Pseudobulbs terete, almost obsolete, 1-1.5 mm diam; stems clad with purple-brown bracts; sepal tips angular terete, finally blunt, orange, fading to yellow-green in the basal half. Leaves ca as wide as thick, fleshy, channelled above, rounded beneath, 15-30 x 3-5 mm. Stems to ca 20 cm long, ± pendulous. Flowers usually produced in numbers, on individual peduncles along most of the stem, ca 5 mm long, not widely opening, petals narrow elliptical, blunt, ca half the length of the sepals; labellum yellow-orange, bent at ca 90° in the middle, fleshy, channelled, the basal half vertical, the upper ± horizontal and ± ovate from above, the apex rounded, midlobe gently downcurved, side-lobes indistinct, broadly rounded. Tufted, pendulous epiphyte of mid to upper zones in cloud rft, above ca 800 m alt. from SE Atherton Tbl. area to near Cooktown. Fl. spring.*

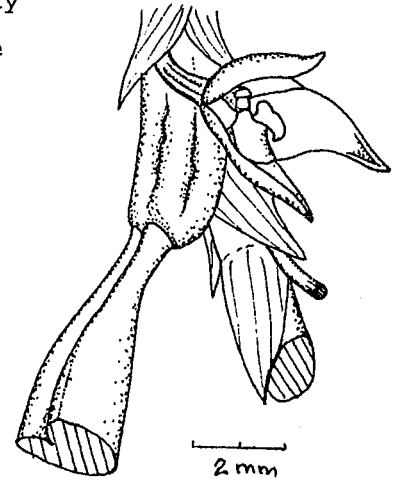


....*B. gadgarrense* Rupp, Proc. Roy. Soc. Qld. 60:59 (1949).

9*. *Pseudobulbs oblique ovoid, 2-3 mm diam.; stems clad with whitish bracts; sepal tips flat with slightly inrolled margins, finally acute, whole flower white except the column foot and labellum base which are yellow-green.*

Bulbophyllum

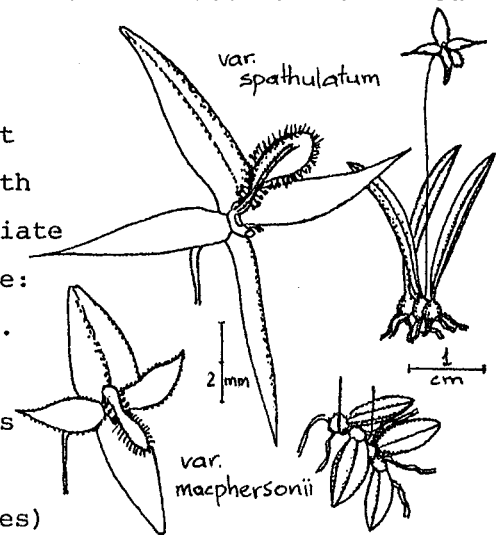
Leaves tend to be proportionately slightly narrower and further apart than the above sp. but otherwise vegetatively very similar to it. Labellum more distinctly three-lobed than *B. gadgarrense* with the midlobe more tightly downcurved. Tufted pendulous epiphyte of mid-zones in cloud rft. above ca 1100 mm. So far recorded from Mt Lewis and Mt Bartle Frere, N.Qld. Fl. spring.



....*B. affe. gadgarrense*

8*. *Rhizome very short-creeping, adjacent pseudobulbs touching; flower stalks at least 2 cm long, erect and clear of bracts; flowers widely opening, deep red or purple.* Leaves very variable in size from 5 x 3 mm to ca 25 x 4 mm, channelled above and rounded to keeled beneath. Flowers 1-2.5 cm diam.,

solitary, sepals narrow triangular, the laterals fused by their adjacent margins, petals ovate, acuminate with finely drawn-out tips and often ciliate margins. Labellum variable in shape: type variety narrow spathulate, var. *spathulatum* Dockr. and St. Cloud, broad spathulate (this var. also has larger fls., 15-25 mm diam., on longer stalks and often longer leaves)



with small basal lobes, the margins particularly, hairy and glandular, hairy at the narrowed part. Stelids higher than anther, two-pronged. Mat-forming epiphyte on clean surfaces sometimes on rocks, in mid zones of moister rft. and cloud rft. above ca 500 m alt. from the tropic to near Cooktown. Fl. autumn. CAM plant.

....*B. macphersonii* Rupp, Victn. Natlst. 51:81 (1934) (Syn. *B. purpurascens* F.M.Bail. - non Teysm. and Binn., *Osyricera purpurascens* (F.M.Bail.) Deane, *B. cochleatum* Schltr. - non Lindl., *B. sladeanum* Hawkes)

Bulbophyllum

7*. *Leaves sessile.*

10. *Leaves subterete with a narrow groove above; primary stems (rhizomes) not creeping, erect to pendulous; sepals with constricted, sharply pointed apices, flowers cream to yellow.* Leaves 1.5-4 x 0.2-0.5 cm. Flowers mostly produced in large numbers simultaneously along most of the stem, ca 6 mm long, sepals + triangular, petals

elliptical with rounded apices

and less than half the sepal

length; labellum oblong channelled,

erect in the basal half and the

apical half + flat, tongue-shaped

and horizontal. Stelids not as high

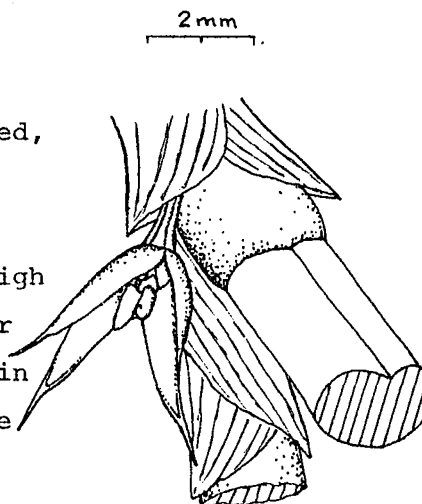
as the anther. Tufted epiphyte or

lithophyte of mid to lower zones in

cloud rft. above ca 800 m from the

Burdekin R. to the Endeavour R.

Fl. spring.



....*B. wadsworthii* Dockrill, *Orchadian* 1:94-96 (1964).

- 10*. *Leaves may be as wide as thick and + rounded underneath but broadly channelled above; primary stems creeping (rarely pendulous); sepals acute but not apically constricted and sharp-pointed.* Leaves 1-4 cm long, narrow

elliptical acute in outline, thickly

fleshy. Flowers 4-5 mm long, not

widely opening, whitish, the sepals

tipped yellow to orange, labellum

red-brown; sepals narrow triangular,

petals much smaller, obovate,

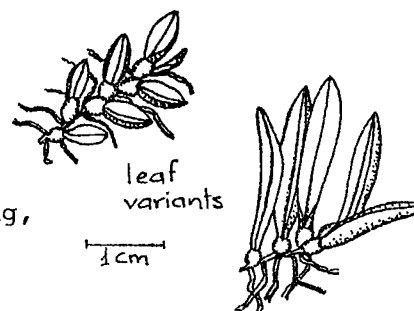
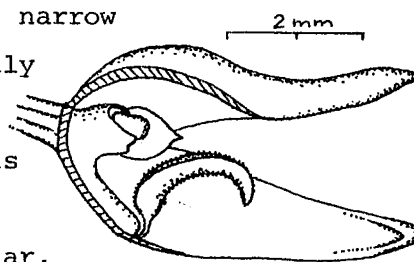
mucronate; labellum ovate,

channelled, the apical half down-

turned, glabrous; stelids not as

high as the anther. Short creeping,

mat-forming epiphyte or lithophyte



Bulbophyllum

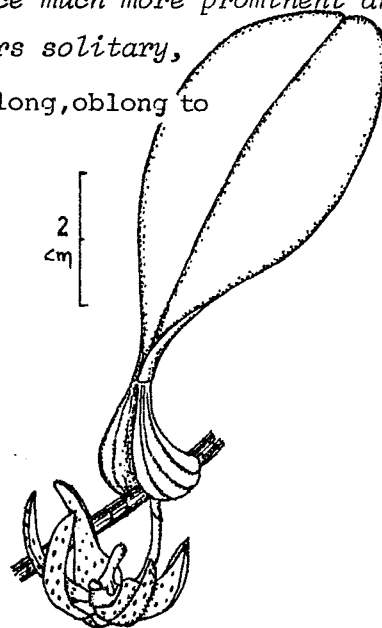
of mid to lower zones in subtropical and warm temperate rft
from SE NSW to SE Qld. Fl. irregular, mainly spring.

....*B. crassulifolium* (A.Cunn.) Rupp, Proc.Linn.Soc.NSW
62:27(1937) (Syn. *Den.*
crassulifolium A. Cunn.,
Den. shepherdii F.Muell., *B. shepherdii*
(F. Muell.) F.Muell. , *B. intermedium*
F.M.Bail.).

3*. Pseudobulbs prominent, at least 5 mm wide and more than twice as wide as the rhizome; leaves thinly to thickly leathery to subsucculent; flowers in racemes, umbels, or solitary.

11. Length of leaf plus pseudobulb 8 cm or more (usu. at least 10 cm; sometimes less than 8 cm when growing in a harsh environment).

12. Leaves thickly and stiffly leathery or subsucculent, somewhat brittle, pseudobulbs somewhat flattened ovoid, grooved with age but 1 or 2 grooves on the leading face much more prominent and extending from top to bottom; flowers solitary, upward-facing. Pseudobulbs ca 1-3 cm long, oblong to elliptical or oval, with apices obtuse or rounded and slightly notched; petioles ca 1 cm long. Flowers 2-3 cm diam., widely opening, yellowish with red-purple spots; lateral sepals triangular, dorsal and petals narrow triangular, all strongly concave inwards; labellum apical half tongue-like, the base broadened out, channelled; acute; stolid-like column wing projections from the middle of the column front edges. Medium-creeping, strand or mat-forming epiphyte or lithophyte of lower to upper zones in rft and related communities from near sea level to ca 1000 m; Burdekin R. to Pascoe R., C.York Pen. Fl. mainly summer (wet season).



....*B. baileyi* F.Muell., Fragm. 9:5 (1875) (Syn. *B. punctatum*
FitzG.)

Bulbophyllum

12*. Leaves either thinly leathery or if thick then pliable and not brittle and/or pseudobulbs different, and/or flowers more than one per inflor. or, if solitary, then porrect to nodding and smaller.

13. Pseudobulbs prominently wrinkly-warty; flowers in a one-sided raceme, lateral sepals more than twice as long as the dorsal sepal.

Pseudobulbs globular to conical, 1-2 cm diam; leaf 3-11 cm long, oblong or narrow oblong to lanceolate, acute, shortly stalked. Flowers 4-12 cm, usu. apple green but rarely yellow, red-purple or pale pink; dorsal sepal ovate, acute, somewhat hooded, laterals narrow triangular, petals broad oblong/ovate, obtuse, less than half the dorsal sepal length; labellum dark red-purple to almost black, shortly clawed, oblong, erect then curving to horizontal, apex acute; stielidia short, anther with a nose-like prominence. Short creeping, small strand or mat-forming epiphyte of mid to upper zones in subtrop. rft or occasionally more open communities on rocks; Blue Mts., NSW, to SE Qld. Fl. winter and spring, mainly.



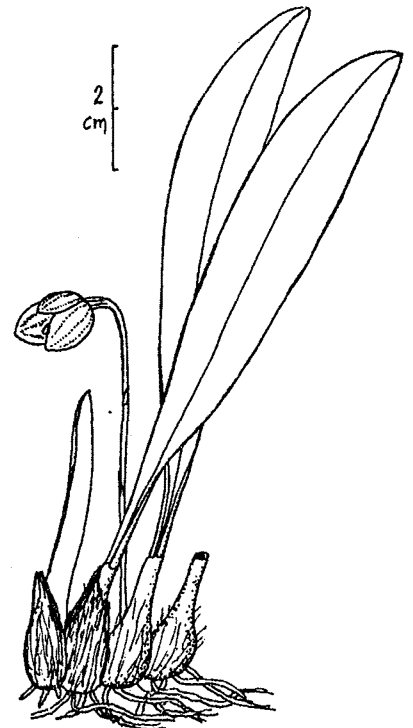
....*B. elisae* (F.Muell.) Benth., Fl. Aust. 5:289 (1873) (Syn. *Cirrhopetalum elisae* F.Muell.)

13*. Otherwise.

14. Pseudobulbs globular to conical, not grooved, with a narrow neck ca as long as the bulb, young ones clothed in woolly bracts; flowers solitary with broad, blunt sepals. Leaves subsucculent, petiolate, narrow oblong and elliptical to oblanceolate. Flower scape 3-7 cm long; flower solitary held horizontally or somewhat nodding, not widely opening, ca 1 cm long, pale yellow-

Bulbophyllum

green to cream with red spotting on the inside, lip blotched red; sepals oval, obtuse, concave inside, dorsal slightly shorter than laterals, petals elliptical, obtuse, much smaller than the sepals; labellum tongue-shaped in the apical half, channelled basally; stelids just higher than the anther which has a peaked frontal prominence and is dark green with a rough surface. Short creeping, small strand or bunch-forming epiphyte of mid to upper zones in cloud rft above ca 1000 m from ca the Burdekin R. to near Cooktown. Fl. spring.

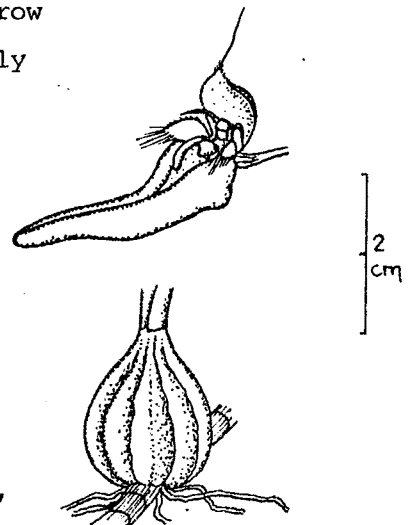


....*B. nematopodum* F.Muell., *Fragm.* 8:30 (1873).

14*. *Pseudobulbs conical or ovoid to angular barrel-shaped, grooved, lacking a narrow neck, young ones with papery bracts; flowers in umbels, or, if solitary then sepals with long, drawn out tips; leaves leathery.*

15. *Leaves 2 cm or more wide, thickly leathery; pseudobulbs at least 1 cm wide; flowers in umbels.*

16. *Lateral sepals joined in the apical 3/4 of their length, greenish cream, purple spotted, linear, acute. Pseudobulbs 1.5-4.5 x 1-2.5 cm, 1-2 cm apart on a 4-8 mm diam. rhizome. Leaves elliptical to narrow oblong or narrow obovate, obtuse, thickly and plially leathery, petiole ca as long as pseudobulb, lamina 4-12 x 2-3 cm. Scape 10-20 cm long with 1 or 2 bracts; flowers 3-8 per umbel, arranged in a circle, 2.5-4.5 cm long; dorsal sepal broad ovate, hooded somewhat, with a filiform, awl-shaped tip, petals purple, oblique narrow triangular, falcate, the upper margin shortly hairy, apex with a tuft of long, fine hairs; labellum purple, apical 1/2 narrow tongue-shaped,*

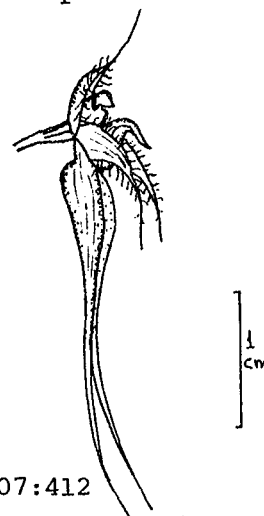


Bulbophyllum

horizontal then downcurved, the base dilated and channelled; stelids very much longer than the anther, awl-shaped, somewhat downcurved. Short- to medium-creeping epiphyte forming short strands or small clumps in mid to lower zones in moister monsoon rft of the McIlwraith Ra. Fl. wet season.

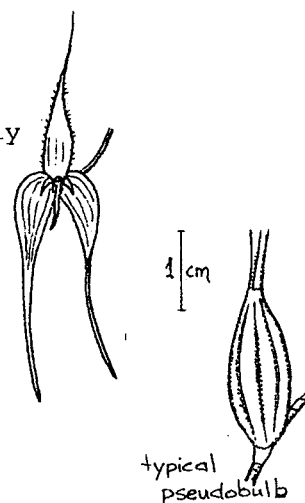
....*B. longiflorum* Thouars, Orch. Iles. Aust. Afr. Espec. III, 198
(1822) (Syn. *B. clavigerum* (FitzG.) F.
Muell., *Cirrhopetaleum umbellatum*
(Forst.) Hook., *C. thouarsii* Lindl., etc.)

16*. *Lateral sepals joined in the basal third or less, purple red, linear/triangular with long drawn out, filiform apices.* Rhizomes ca 5 mm diam.; pseudobulbs 12-18 x 10-15 mm with 4 or 5 prominent angles, and spaced 5-10 mm apart. Leaves oblong, shortly petiolate, 6-8 x 2-3.5 cm. Scape 15-25 cm long; flowers 6-10 arranged in a circle, 2-3 cm long; dorsal sepal purple red, hooded ovate with a drawn out, awl-shaped apex, margins hairy, petals similar but somewhat falcate and smaller; labellum cream, fleshy, down curved, triangular apically, with a dilated base, freely articulate; stelids small. Short-, medium-creeping small strand or clump forming epiphyte of lower zones in monsoon rft., Tozer and Janet Ranges, C. York Pen.. Fl. late dry and wet seasons.



....*B. gracillimum* (Rolfe) Rolfe, Kew Bull. 1907:412
(Syn. *Cirrhopetalum gracillimum* Rolfe,
B. leratii (Schltr.) J. J. Sm., *C. leratii* Schltr.,
C. psittacoides Ridley, *C. wariarum* Schltr.)

15*. *Leaves less than 2 cm wide, thinly leathery, pseudobulbs up to ca 1 cm wide, flowers solitary.* Rhizome ca 2 mm diam.; pseudobulbs ovoid to narrow ovoid, up to 4 cm long, grooved, spaced 1-3 cm apart. Leaves lanceolate with a 2-3 cm petiole and acute apex, 6-12 cm long. Flower scape 10-15 cm long; flowers widely opening, 3-4 cm long, lateral sepals falcate ovate with long, drawn out filiform apices with yellow-green tips, red with the lower margins yellow, dorsal smaller, narrow ovate with a filiform apex, the margins hairy and undulate in the mid-regions, whitish with 4 or 5 basally merging and apically fading red lines, petals comparatively very much smaller, falcate lanceolate, acute and finally



Bulbophyllum

shortly drawn out, dark red; labellum base two-lobed, dark red with a yellow throat, the apex triangular linear filiform and yellowish with a dark red tip; stelidia higher than anther. Medium-creeping, clump-forming epiphyte of midzones, particularly on fibrous and flakey barked trees, in monsoon rft scrub (simple notophyll vine forest) of N.C.York Pen.. Fl. mid to late dry season

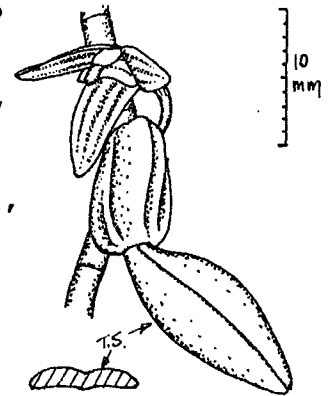
...*B. masdevalliaceum* Krzl., Bot.Jarb.Syst. 34:251 (1904)

11*. Length of leaf plus pseudobulb up to ca 10 cm (usu. not more than 8 cm).

17. Pseudobulbs separated by a distance of ca 2 mm or more (may be closer in juvenile growth).

18. Flowers solitary.

19. Leaves subsucculent, 7-20 mm long, often close and parallel to the substrate; pseudobulbs flattened, prostrate; inflorescence up to ca 1 cm long; flower nodding, lateral sepals pinkish with red stripes. Pseudobulbs 5-10 x 3-5 x 2-3 mm, grooved, ovoid in outline; rhizomes ca 1 mm diam.. Leaves elliptical to broad ovate, obtuse. Flowers not widely opening, ca 5 mm long, lateral sepals narrow triangular falcate, obtuse, dorsal lanceolate or oblong, obtuse, petals \pm elliptical, less than $\frac{1}{2}$ sepal length; labellum tongue-shaped, channelled; stelids higher than anther, curved backwards. Medium- to long-creeping, strand-forming epiphyte of upper zones in rft or in open forest of higher rainfall areas, sometimes on rocks; mostly above ca 500 m from S. Atherton Tbl. to the McIlwraith Ra.. Fl. mainly winter and spring.



...*B. bowkettiae* F.M.Bail., Proc.Roy.Soc.Qld 1:189 (1994)

(Syn. *B. waughense* Rupp).

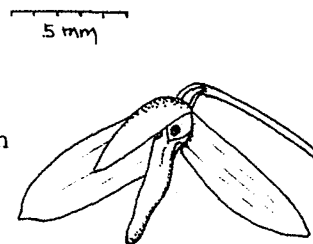
19*. Leaves thinly leathery, 8-70 mm long, held away from the substrate; pseudobulbs may be obliquely depressed and somewhat decumbent but not prostrate; inflor. at least 1.5 cm long; flowers porrect, lateral sepals yellow or greenish with dark stripes.

20. Lateral sepals oblong, obtuse or rounded, \pm mucronate, much larger than the dorsal sepal; pseudobulbs usu. obliquely depressed conical and the leaf \pm upright, not reflexed.

Pseudobulbs 7-18 mm long, green to red or purplish. Leaves

Bulbophyllum

lanceolate to broad ovate, obtuse or notched, 1.5-7 cm long. Flower moderately widely opening, 1-2 cm across, lateral sepals yellow, sometimes red striped, petals obovate, mucronate, yellowish with a dark red blotch near the apex; labellum narrow tongue-shaped, channelled and dark red basally, yellow in the apical $\frac{1}{4}$; stelids higher than the anther, curved forward. Medium to long creeping, strand or mat-forming epiphyte (occas. lithophyte) of mid to upper zones in rft and related communities from the Burdekin R. to near Cooktown. Fl. irregular.



....*B. johnsonii* T.E.Hunt and Rupp, Proc.R.Soc.Qld 60:60 (1949)
(Syn. *B. kirkwoodae* Hunt and Rupp,
B. whitei Hunt and Rupp).

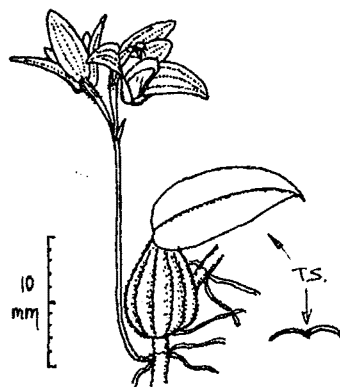
20*. *Lateral sepals triangular, acute, approx. equal in size to the dorsal sepal; pseudobulbs conical/ovoid (sometimes somewhat depressed obliquely); leaf almost always reflexed to horizontal. Inflor. usu. 2-flowered.*

....*B. lilianae* Rendle (see below for full descr. etc.)

18*. *Flowers two or more per inflorescence.*

21. *Ovary and sepal nerves finely tuberculate; flowers green to reddish with darker stripes, usu. 2 (sometimes 1, rarely 3) per inflorescence, pseudobulbs with a finely rough surface; leaves usu. reflexed to horizontal.*

Pseudobulbs conical/ovoid, sometimes obliquely depressed, 5-12 mm long, ribbed. Leaves 7-25 mm long, ovate or oblong, obtuse or broadly acute, dark green. Flowers opening moderately widely, 4-6 mm diam., lateral sepals + falcate triangular, acute, dorsal ovate, acute, petals oblong obovate, obtuse; labellum dark red, tongue-shaped, channelled, with margins downrolled; stelids small, much lower than the anther. Medium to long creeping, strand-forming epiphyte of upper zones in clour rft; Atherton Tbl. north to the vicinity of Mt Finnigan. Fl. spring.



....*B. lilianae* Rendle, J.Bot. 55:308 (1917) (Syn.

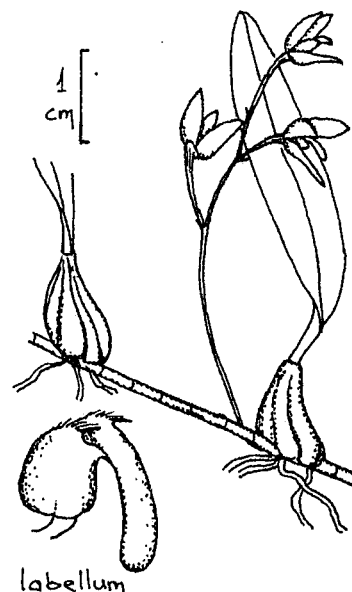
B. revolutum Dockrill and St. Cloud).

Bulbophyllum

21*. Ovary and sepals not tuberculate; flowers cream, white, or pale greenish, (1-)3-5(-8) per inflorescence; pseudobulbs grooved but not rough; leaves not usu. reflexed.

22. Labellum with cilia and a filiform projection on each side towards the back of the horizontal part, throat hairy; column wings formed into a small pointed projection below the stolid.

Pseudobulbs globular to conical, often somewhat obliquely depressed, 7-15 mm long. Leaves lanceolate to oblanceolate, or narrow oblong. Inflor. axis very slender, 4-9 cm long, rachis much the shorter; flowers 3-8, lateral sepals obliquely triangular, dorsal ovate, petals oblong, rounded or mucronate; labellum with a narrow tongue-shaped apical half and broader, channelled base; stolid oblique, ca as high as anther.



Medium-creeping strand or mat-forming epiphyte (sometimes lithophyte) of rft and related communities, above ca 600 m; from Eungella Ra. to the Annan R., N.Qld. Fl. spring.

.... *B. newportii* (F.M.Bail.) Rolfe, *Orchid Rev.*, 17:94 (1909)

(Syn. *Sarcochilus newportii*

F.M.Bail., *B. trilobum* Schltr.,

B. wilkianum T.E.Hunt, *B. wanjurum*

T.E.Hunt).

22*. Labellum glabrous and lacking such projections; column wings not so formed but stolid two per side, the front ones much the larger. Pseudobulbs globular to

ovoid, ribbed, 4-10 mm diam. Leaf lanceolate to oblong acute, 1.5-5 cm long. Flowers (1-)3-5, 5-8 mm diam. on a very fine rachis and peduncle; lateral sepals oblique narrow triangular, dorsal ovate, petals smaller, elliptical, broadly

labellum



(Plant rather similar to the above).

Bulbophyllum

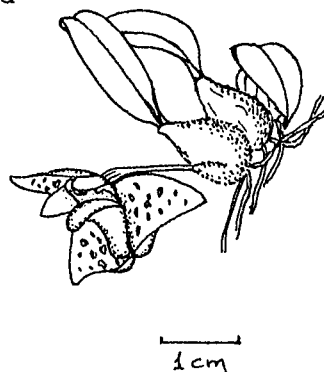
acute; labellum yellow, narrow tongue-shaped apically, widening and channelled in the basal $\frac{1}{2}$. Medium to long creeping strand or mat-forming epiphyte or lithophyte of rft and related communities. SE NSW to SE Qld, possibly further north. Fl. autumn.

....*B. exiguum* F.Muell., *Fragm.* 2:72 (1860) (Syn.

Den. exiguum (F.Muell.) F.Muell.)

17*. *Pseudobulbs touching, or almost so.*

23. *Pseudobulbs covered with a white, matted, woolly bract when young; flowers solitary, ca 1.5-2 cm diam. Pseudobulbs \pm ovoid 0.8-2 cm long. Leaves oblong to ovate, 1.5-3 cm long, often reflexed. Flowers widely opening, translucent pale yellow-green, spotted and blotched red to purple; dorsal sepal ovate to oblong, acute, shortly drawn out, laterals \pm triangular, broadly acute, petals shorter by ca a third, oblanceolate; stelidia poorly developed. Short-creeping, mat- or strand-forming epiphyte, restricted to the emergent sections of *Araucaria*, on branch undersides and trunk shady side, in subtrop. rft above ca 300 m; from Dorrigo, NSW to Bunya Mts, Qld. Fl. autumn.*



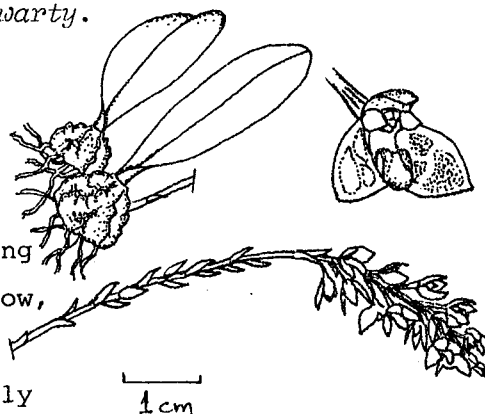
....*B. weinthalii* Rogers, *Trans.Roy.Soc.S.A.* 57:95 (1933).

23*. *Bracts thinly papery; fls. usu. two or more, less than 1 cm diam.*

24. *Inflor. 5-10 cm long, peduncle bearing numerous whitish bracts; usually 10-25 flowers; pseudobulbs 6-12 mm diam., soon becoming prominently wrinkly/warty.*

Pseudobulbs 6-10 mm diam.

Leaves 1.5-3 cm long, oblong to ovate, obtuse. Flowers closely packed, widely opening ca 6 mm diam., cream to yellow, mottled red-purple; dorsal sepal ovate, obtuse to broadly acute, laterals triangular,



Bulbophyllum

petals much smaller, lanceolate; labellum with some side-lobe development, thick, tongue-shaped; stelids poorly developed. Strand- or mat-forming, short-creeping epiphyte of upper zones in subtrop. rft, esp. on *Araucaria*; Clarence R. to Bunya Mts. Fl. spring.

.... *B. bracteatum* F.M.Bail., Qld.Dept.Ag.Bot.Bull. 4:17

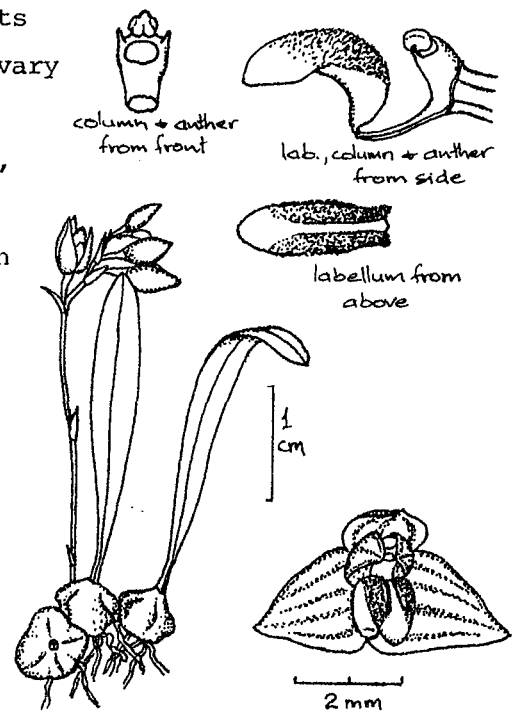
(1891) (Syn. *Adelopetalum bracteatum*
(F.M.Bail.)FitzG.)

24*. Inflor. up to 7 cm, peduncle lacking such bracts; pseudobulbs 3-6 mm diam. becoming wrinkly/warty with age or drying.

25. Ovary not warty/papillose; pseudobulbs depressed angular obovoid, neither regularly grooved nor papillose.

Pseudobulbs 4-7 mm diam., shaped somewhat like a pumpkin. Leaf 2-4 cm long, narrow oblanceolate, broadly acute with a petiole ca as long as the pseudobulb, somewhat glossy. Inflor. peduncle ca as long as the leaves, with two bracts, rachis much shorter, 1-5 flowered, flower bracts ca 2 mm long, acute, pedicel and ovary ca 4 mm long; flowers moderately widely opening, dorsal sepal ovate, slightly hooded, apex acute and shortly drawn out, yellow-pink with 3 maroon stripes and maroon margins, laterals triangular with a broadly acute, shortly drawn out tip and similar colour to the dorsal, petals slightly oblique oval, apex shortly drawn out, also similar coloured but with one stripe, somewhat column shrouding.

Labellum ca 3 mm long dark purple-red, thick and fleshy, the apical two-thirds horizontal and tongue-shaped, the basal third \pm vertical and somewhat channelled with a low, rounded glabrous central keel that disappears in the apical half; basal two thirds papillose; column foot ca 2.5 mm long; column ca 1.5 mm long with blunt stelids ca $\frac{1}{2}$ anther height; anther cap with a rounded ridge down the middle, anther yellow. Short-



Bulbophyllum

creeping, strand- or mat-forming epiphyte of upper zones; known so far from one collection on Bellenden Ker Ra. at ca 1200 m (B. Gray.) in cloud rft. Fl. spring.

....B. sp.

25*. Ovary finely warty & EITHER, pseudobulbs depressed ovoid/conical, evenly and prominently 4-6 grooved, with fls. pale green, OR, pseudobulbs globular to somewhat angular ovoid conical and white papillose, appearing frosted; fls whitish.

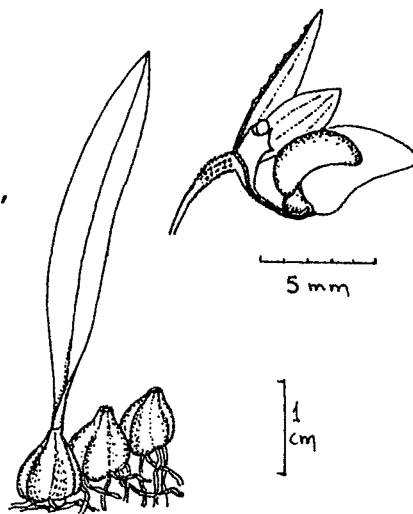
26. Pseudobulbs ovoid/conical, prominently & evenly 4-6 grooved, not papillose, 5-10 mm diam.; leaves 4-8 cm long; pedunc. glabrous; fls 8mm dia.

Pseudobulbs 5-10 mm diam., rhizome-clasping. Leaves narrow oblong to linear, acute, shortly petiolate.

Inflor. 4-7 mm long with 1-4 (usu. 2) flowers. Flowers not widely opening, pale green, the labellum light apricot; sepals with darker coloured, finely rough, raised nerves, dorsal ovate, broadly acute, somewhat hooded, laterals triangular;

labellum light apricot; sepals with darker coloured, finely rough, raised nerves, dorsal ovate, broadly acute, somewhat hooded, laterals triangular;

labellum tongue-shaped, the edges downfolded considerably, lamina with 4 low, rounded keels, the outer ones less prominent; stelids forked (sometimes obscurely) near their apices, almost as high as the anther, column wings peaked forwards towards the top. Short-creeping, short strand- or small mat-forming epiphyte (sometimes lithophyte) of rft above ca 800 m from extreme S. Atherton Tbl'd north to near Cooktown. Fl. summer.

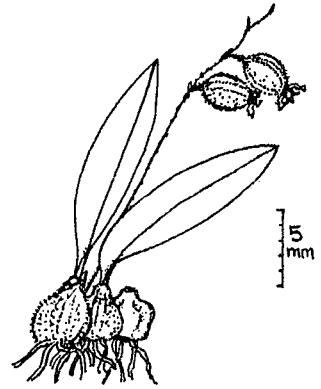


....B. lageniforme F.M.Bail., Qld.Ag.J. 15:494 (1904) (Syn. *B. adenocarpum* Schitr.)

26*. Pseudobulbs globular to somewhat angular ovoid conical, occasionally depressed obovoid white-papillose, giving a frosted appearance to the younger ones, 3-6 mm diam.; leaves 1-3 cm long; peduncles minutely warty; flowers ca 4mm diam. Leaves lanceolate to linear acute, leathery. Inflorescence 1-3 cm long; flowers 1-4, not widely opening, whitish, the labellum orange; dorsal sepals oblong/lanceolate, subacute, lateral sepals triangular,

Bulbophyllum, Pholidota

petals much smaller, ovate, obtuse; labellum thick and fleshy, the apical part oblong, subacute, margins downcurved, basal part somewhat channelled, two-keeled; column winged near the top, stelids small. Short-creeping, small-clump-forming epiphyte of mid zones in subtrop. rft; discovered near Dorrigo in 1978; also N.Z. and Lord Howe Is.. Fl. summer.



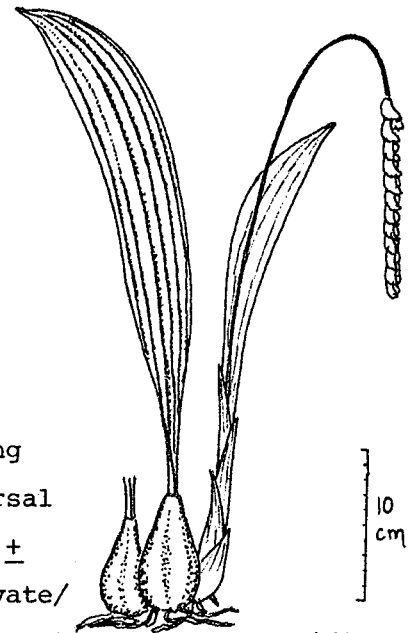
....*B. tuberculatum* Colenso, Trans.N.Z.Inst. 15:36 (1884)

(Buchanan in error: *B. exiguum*)

subtribe COELOGYNINAE

genus *Pholidota* Lindl., ca 50, trop. Asia to S.W.Pac., Aust. 1

A moderately large sympodial epiphyte or lithophyte forming clumps or large masses. Rhizome (primary stem) virtually non-existent, secondary stems pseudobulbous, + pear-shaped to cylindrical green-grey, sometimes yellowish, smooth or grooved, 5-10 x 2.5-5 cm. Leaves solitary, terminal, oblong to oblanceolate, broadly acute, thickly leathery, ± pleated, petiolate, 20-40 cm long. Inflorescence a terminal, many-flowered raceme produced from developing pseudobulbs, the peduncle ca 20-40 cm long, rachis somewhat shorter, pendulous. Flowers ca 6-8 mm diam., greenish-white or cream in two ranks, subtending bracts large, drying after flower opening; dorsal sepal broad ovate, mucronate, hooded, laterals ± boat-shaped, sometimes marked purple, petals ovate/lanceolate; labellum saccate, side-lobes short, blunt, ± erect, midlobe trifid, sac with 3 short, basal keels. Column with a hood extending above the anther; pollinia 4, in 2 pairs with short caudicles, a retinaculum per pair. Epiphyte of mid zones in rft and swamp forest, mangroves etc., up to ca 800 m alt. from the Burdekin R. to C.York; also Malesia and S.E.Asia. Fl. late wet season (autumn).



....*P. pallida* Lindl., Bot.Reg.21 sub.t. 1777 (1864)

(Syn. *P. imbricata* Lindl.)

Eria

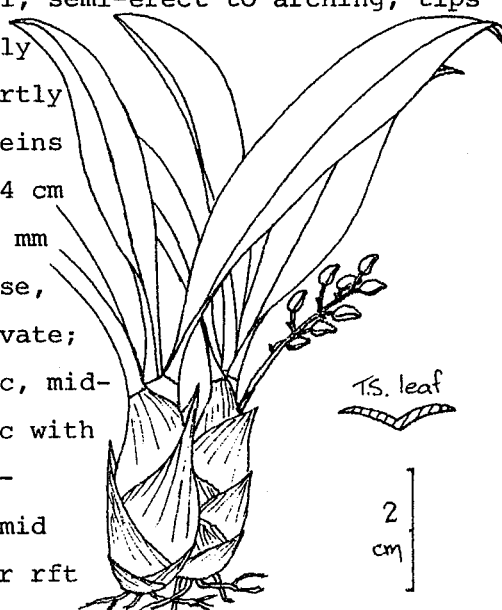
tribe Epidendreae

subtribe ERIINAE

genus *Eria* Lindl., ca 375, trop. Asia to S.W.Pac., Aust. 6

Small to moderately large sympodial epiphytes with pseudobulbous secondary stems. Roots relatively thin, often graded in size and harsh-textured. Pseudobulbs from almost as wide as long to several times longer than wide, of 2 or more internodes and clad in papery bracts. Leaves thinly leathery (fleshy in *E. irukandjiana*), 1-5 per pseudobulb. Inflorescences racemose, lateral from nodes near the pseudobulb apex, shorter than the leaves. Flowers small and mostly inconspicuous; column with a foot (exc. *E. irukandjiana*) to which the labellum is attached as are the sepals, forming a mentum. Pollinia 8, in two groups of 4, with short caudicles.

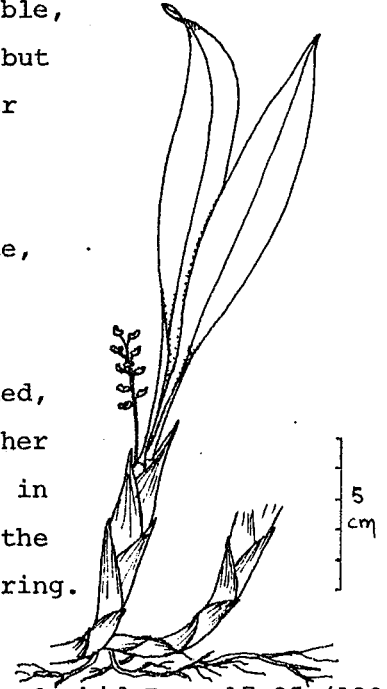
1. *Leaves thinly leathery to subsucculent; column with a distinct foot.*
2. *Leaves 2 or more per pseudobulb, pseudobulbs not flattened, mostly more than 4 cm long (down to 2.5 cm sometimes in *E. queenslandica*)*
3. *Pseudobulbs less than 1.5 cm wide; flowers less than 5 cm diam., often not opening.*
4. *Rhizome short-creeping and pseudobulbs touching or almost so; ovoid to cylindrical, 2.5-6 x 1-1.5 cm; leaves subsucculent, narrow elliptical, semi-erect to arching, tips acute and notched with slightly unequal sides; moderately shortly petiolate, 5-12 x 1-2.5 cm, veins scarcely visible. Inflor. 1-4 cm long with 3-10 flowers; ca 3 mm diam.; sepals acute, tomentose, laterals triangular, dorsal ovate; labellum side-lobes crescentic, mid-lobe broadly triangular; disc with a broad, grooved keel. Short-creeping, tufted epiphyte of mid zones in rft. or on rocks near rft at altitudes from ca 500-1000 m; southern Atherton Tblld to the Big Tblld. Fl. mainly spring.*



....*E. queenslandica* T.E.Hunt., N.Qld.Natlst. 15(85):14 (1947)

Eria

- 4*. Rhizome medium creeping, pseudobulbs ca 1-4 cm apart, cylindrical or spindle-shaped, 4-10 x 0.8-1.5 cm; leaves thinly leathery, \pm erect, narrow elliptical, the tips acute, notched and unequal sided, with a moderately long petiole and the veins visible, lamina 8-30 x 1.5-3 cm. Inflor. from all but lowest nodes but most commonly in the upper third, 3-5 cm long, hairy (incl. sepals); flowers 3-10, ca 4 mm long, usu. cleistogamous, whitish; dorsal sepal ovate, acute, laterals broadly triangular, petals obovate; labellum bent through ca 90° in the middle, side-lobes oblique ovate, rounded, midlobe triangular obtuse, disc with 2 rather thick keels. Epiphyte growing into masses in midzones of rft up to ca 1000 m alt. from the Burdekin R. to near Cooktown. Fl. usu. spring. Non-CAM plant.



....*E. eriaeoides* (F.M.Bail.) Rolfe, Orchid.Rev. 17:95 (1909)
(Syn. *Den. eriaeoides*
F.M.Bail.)

- 3*. Pseudobulbs more than 1.5 cm wide; flowers more than 5 mm diam., usu. opening, though sometimes not widely.

5. Inflorescences arching; flowers moderately to rather widely opening, 10-15 mm diam., labellum lamina with 3 keels. Rhizome very short-creeping; pseudobulbs tufted, touching, ovoid or narrow ovoid, brown, finely grooved, 5-20 cm long. Leaves usu. 3, narrow oblong or narrow elliptical to obovate, tips broadly acute and sometimes uneven, 10-30 cm long, thinly leathery. Inflor. 10-20 cm long, peduncle shorter than rachis, from apical nodes; flowers numerous, cream coloured; dorsal sepal elliptical acute, laterals triangular acute with a dilated base, petals obovate; labellum rather variable, sometimes scarcely lobed and oblong, otherwise with crescentic side-



Eria

lobes, disc with 3 keels. Tufted epiphyte to mid to upper zones in rft, swamp forest and more open, related communities, sometimes on rocks; lowlands to ca 800 m. Eungella Ra. to Iron Ra. Fl. spring (late dry season). Non-CAM plant.

....*E. fitzalani* F.Muell., in Wing, Sth.Sci.Rec. 2:252 (1882)

- 5*. *Inflorescences erect; flowers not widely opening, 7-9 mm diam.; labellum lamina lacking keels (midlobe with a single one).*

Vegetatively very similar to the above except that this present sp. is often larger and the pseudobulbs are

usually greener in colour. Flowers 7-9 mm

diam., cream, shortly & densely hairy outside,

dorsal sepal oblong, obtuse, mucronate,

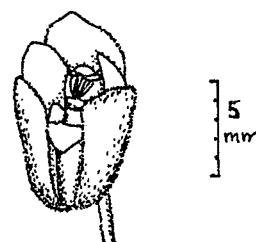
laterals broadly triangular, broadly acute,

petals falcate elliptical; labellum side-

lobes oblong/oblique triangular, midlobe

triangular to ovate, notched. Similar in ecology to the above. From

the Tully R. to C.York and N.G.. Fl. spring, or late dry season.



....*E. inornata* T.E.Hunt, Orch.J.(Calif.) 1:190 (1952)

(Syn. *E. linariiflora* Rupp,

E. liparoides T.E.Hunt)

- 2*. *Leaves, one per pseudobulb, pseudobulbs somewhat dorsiventrally flattened ovoid, 2-4 cm long, spaced 2-5 mm apart. Leaves oblong/ovate, with obtuse,*

slightly uneven tips, leathery and shortly

petiolate. Racemes 5-7 cm long, peduncle

ca equal to rachis; flowers 4-8, 8-10 mm

diam., moderately widely opening, cream

with some red dots inside the segments,

dorsal sepal hooded, ovate, broadly acute,

laterals broadly triangular, petals

falcate lanceolate; labellum side-lobes

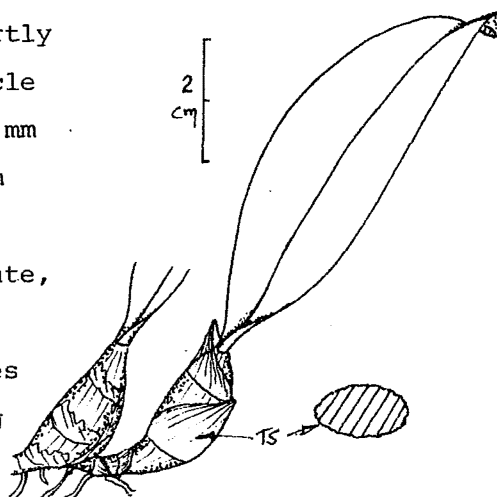
crescentic with acute, forward-pointing

apices, midlobe crescentic, mucronate,

disc with two keels. Short-creeping, small strand or clump forming

epiphyte in rft or monsoon rft at altitude ca 400-700 m from Cairns to

McIlwraith Ra.; also N.G.. Fl. early summer (early wet season).

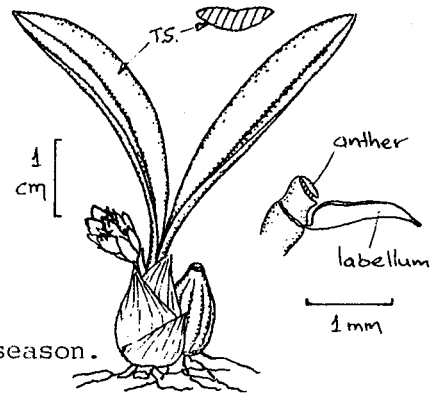


....*E. dischorensis* Schltr., in Fedde, Rep.Beih. 1:666 (1912)

(Syn. *E. intermedia* Dockrill)

Eria Podochilus

- 1*. *Leaves thick and fleshy; column foot lacking.* Pseudobulbs ovoid, closely packed, 7-15 mm long. Leaves usu. 2 per pseudobulb, narrow elliptical or oblanceolate, petiolate, 3-12 cm long, apices obtuse, unequally notched, broadly channelled above, rounded below. Inflor. ca 1 cm long; flowers 6-12, 2-3 mm diam., widely opening, greenish; sepals narrow ovate, hairy outside, acute; labellum triangular/ovate, mucronate, lacking keels etc.. Short-creeping small strand or mat-forming epiphyte of upper zones in or near rft and monsoon rft; southern Atherton Tbl'd to McIlwraith Ra. Fl. late wet season.



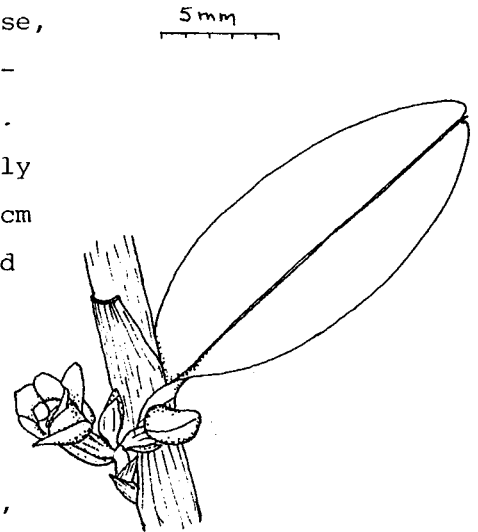
....*E. irukandjiana* St.Cloud, N.Qld.Natlst. 23:1 (1955)

(Syn. *E. johnsonii* T.E. Hunt)

subtribe PODOCHILINAE

genus *Podochilus* Bl. ca 60 SE Asia to SW Pac.; Aust. 1

- A moderate sized, tufted, sympodial epiphyte with long, narrow, leafy secondary stems and minute flowers. Primary stem (rhizome) virtually absent, secondary stems terete, not fleshy, with a slightly swollen base, 20-60 x 0.2-0.3 cm, erect to spreading or sometimes ± pendulous, leafy throughout when young. Leaves lanceolate with obtuse, notched, slightly unequal-sided tips, glossy, dark green, 2-4.5 cm long. Inflor. racemose, 1-1.5 cm long, produced from many nodes in the upper half of the stem simultaneously, or a few at once; flowers 2-5, 3-4 mm diam., green with a white lip, rather widely opening; dorsal sepal broad ovate, obtuse or rounded, laterals oblique triangular, obtuse, petals ovate, obtuse; labellum saccate in the basal half, ovate-oblong, mucronate. Pollinia 4 in 2 pairs, each pair with its own stipe joined to a common retinaculum. Tufted, cane-stemmed epiphyte of mid zones in trop. lowland rft and monsoon rft from the Tully R. to McIlwraith Ra.. Fl. autumn (late wet season). Non-CAM plant.



....*P. australiensis* (F.M.Bail.) Schltr., in Fedde, Rep.nov.

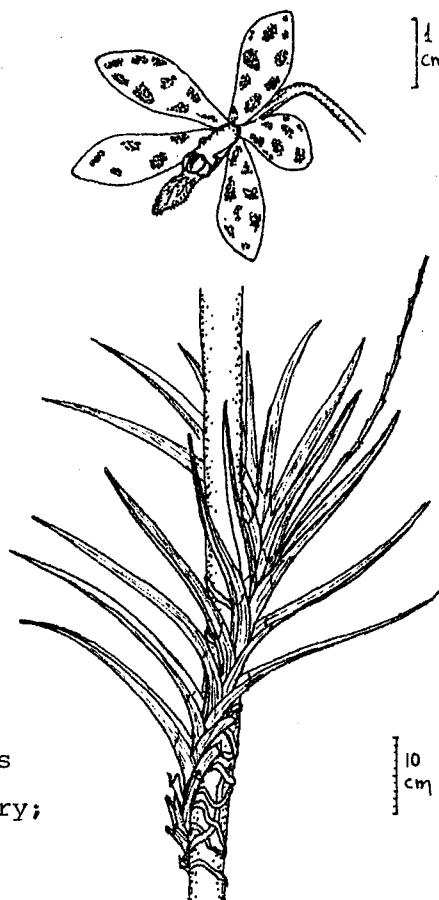
Sp. 3:316(1907) (Syn.

Eria australiensis F.M.Bail.)

Dipodium, Cymbidium

tribe Cymbidieae
 subtribe CYMBIDIINAE
 genus Dipodium R.Br. 22, Malesia to SW Pac; Aust. 4, 1 epi.

A monopodial, short-creeping, secondary hemi-epiphyte. Stems ca 1-3 cm diam. with internodes ca 1-2 cm, creeping along the ground, logs and rocks and spiralling up tree-trunks for up to 10 m or more but usu. only the apical 1-3 m alive. Leaves narrow triangular, 20-40 x 2-3.5 cm, tapering evenly from the roundly channelled sheathing base to an acute tip, keeled beneath, esp. near the base, light green, leathery, the abscission line ca a third the distance from base. Inflorescence usu. longer than the leaves, peduncle shorter than rachis, ca 4 mm diam.; flowers 6-30 or more, widely opening, ca 3-4 cm diam., whitish with red-brown spots that are darker on the outside, labellum midlobe pinkish, column apex yellow; perianth segments + alike, oblanceolate, broadly acute; labellum side-lobes small, falcate oblong, midlobe occupying ca two thirds of the length, oblanceolate acute, shortly hairy; pollinia 2, with separate stipes on a common retinaculum. Short-creeping but long travelling semi-epiphytic climber and eventually secondarily hemi-epiphytic in lower zones of monsoon rft., C. York Pen.. Fl. dry season or early wet. Non-CAM plant.



....D. pandanum F.M.Bail., Qld. Ag. J. 6:287 (1900)

genus Cymbidium Sw. ca 50, trop. & subtrop. Asia; NG. 1; Aust. 3.

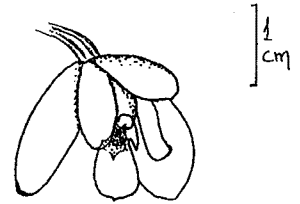
Moderately large, nest-invading, sympodial tufted epiphytes, most commonly growing from hollow limbs and holes in trees. Secondary stems either narrow and densely fibrous or short and pseudobulbous, primary stem + lacking. Leaves either rigidly, thickly leathery to subsucculent, or thinly and plially leathery. Flowers numerous, fragrant, in semi-erect to pendulous racemes from the lower nodes of the stems; perianth segments + alike, moderately widely

Cymbidium

spreading; labellum 3-lobed; column relatively long, curved forward slightly; pollina 2, joined by a short caudicle, seated ± directly on retinaculum.

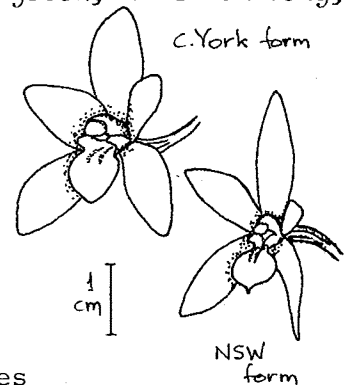
1. *Stems pseudobulbous, of definite, limited apical growth.*

2. *Leaves thin and pliable, bright green, ± strap-shaped, 20-90 cm long, acute. Pseudobulbs 6-25 x 2-8 cm. Flowers yellow-green to olive brown, perianth segments narrow obovate, 10-15 mm long, the petals slightly smaller; labellum yellowish with a dark red band across the base of the obovate, obtuse midlobe, side-lobes small, crescentic with acute apices, disc with a single, low, viscid keel extending onto the midlobe. Clump-forming, nest-invading epiphyte of mid zones in rft and ecotonal communities, sometimes growing on the outside of trees with thick, soft bark. Hastings R., NSW to C. York Pen. Non-CAM plant. Fl. spring and early summer (Fig. 3F, p.5)*



....*C. madidum* Lindl., Bot.Reg.26,misc.9 (1840) (Syn. *C. lei* Rendle, *C. albueiflorum* F. Muell., *C. iridifolium* A.Cunn., *C. queenianum* Klinge).

2*. *Leaves thick, rigid and channelled dull, pale green, 12-40 cm long, ± erect, acute, Pseudobulbs 3-8(-12) x 1.5-4 cm. Flowers very variable in colour - from green to olive-brown, marked heavily with blotches or areas of brown to red brown, or wholly red-brown with greenish margins to wholly dark red; labellum usu. whitish with red spots. Perianth segments lanceolate to oblong acute 1-2.5 cm long; labellum side-lobes low, crescentic, acute, midlobe ovate, downcurved, disc with two parallel, slightly pubescent keels. Tuft or clump-forming epiphyte growing from hollow limbs, knot-holes etc. in exposed to moderately heavily shaded sites in open communities across ca the northern half of the continent and as far south as the Hunter R. in the east. Fl. spring. CAM plant. (Fig. 8c, p.227)*

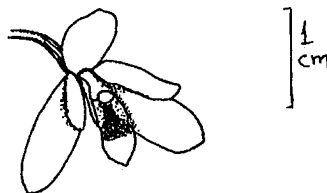


....*C. canaliculatum* R. Br., Prodr.311(1810) (Syn. *C. hillii* F. Muell., *C. sparkesii* Rendle).

Cymbidium , Acriopsis

1*.Stems not pseudobulbous, narrow and densely fibrous and of apparent indefinite apical growth and \pm covered with old leaf-bases, 5-35 cm long.

Leaves up to ca 45 cm long and less than 2 cm wide, somewhat channelled esp. near the base and \pm strap-shaped towards the apex, dark green, somewhat glossy, thinly leathery. Flowers yellow-green to olive-



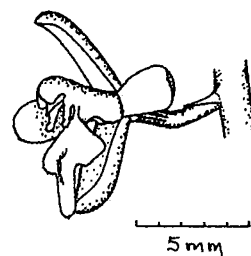
brownish; perianth segments obovate, obtuse and \pm mucronate, petals smaller; labellum side-lobes indistinct, broadly and obliquely rounded triangular to \pm lacking; midlobe ovate, yellowish, disc thickened and dark red-brown, lacking keels. Tuft or clump-forming epiphyte growing in hollow limbs etc. of mostly *Eucalyptus* species in open forest of wetter areas of the coastal plain and nearby ranges up to ca 1000 m; SE NSW to near Cooktown, Qld. Fl. spring and early summer. Non-CAM plant. (Fig.8b, p.227)

....C. suave R.Br., Prodr. 331 (1820) (Syn. *C. gomphocarpum* FitzG.)

subtribe ACRIOPSIDINAE

genus *Acriopsis* Reinw. ex Bl. 12, SE Asia to SW Pac; Aust. l.

A sympodial, pseudobulbous epiphyte with much-branched, matted, aerial, nest-forming roots. Pseudobulbs closely packed, ovoid, pale green, lightly grooved, 3-7 cm long. Leaves narrow elliptical to \pm strap-shaped, slightly channelled, acute, thinly leathery, 10-25 cm long. Inflorescences from the pseudobulb bases, branched, peduncle ca as long as leaves and remainder ca. this long again. Flowers widely opening ca. 6 mm diam. pale greenish-cream, often with a slight



brown-pink tinge outside, labellum white; dorsal sepal oblong, obtuse, somewhat channelled and hooded, laterals joined by their adjacent margins, oblong, obtuse, \pm boat-shaped, petals narrow elliptical, rounded, labellum basally joined to the column, forming a tube with it, with a projection from the column within it; labellum side-lobes triangular/rhomboid, midlobe oblong, obtuse with a double, narrow but high callus; column apex forming broad wings over the anther and at the front, two prominent, cylindrical, forward-pointing projections with yellow-green, glistening, glandular apices. In upper zones of rft or mid to lower (well-lit) zones in swamp forest. Daintree R. to C. York Pen. and N.G. Aust. material is assigned to var. *nelsoniana* (F.M. Bail.) J.J. Sm. Fl. mid-late dry season (spring). (Fig. 8d, p.227)

....A. javanica Reinw. ex Bl., Bijdr. 377 (1825) (Syn. *A. nelsoniana* F.M. Bail., *A. papuana* Krzl.)



Figure 8. a. *Bulbophyllum aurantiacum*, plant habit, in flower. b. *Cymbidium suave*, habit. c. *C. canaliculatum*, habit, in flower. d. *Acriopsis javanica*, habit. e. *Trichoglottis australiensis*, plant habit, in fruit. f. *Saccolabiopsis armitii*, habit, in fruit and bud.

AUSTRALIAN VASCULAR EPIPHYTES ; Key to the Genera :

Group 8: Monopodial and Fan-Plant Orchids

1. *Leafless and virtually stemless plants*, vegetatively consisting of a fascicle of creeping roots, often with some aerial.
 2. *Roots 4-10 mm wide*, very flattened and having a rough, pitted surface; inflorescences more than 4 cm long. (Fig. 3i, p.5)

....*Chiloschista* p.266
 - 2*. *Roots less than 3 mm wide*, round to somewhat flattened, with a smooth or minutely grooved surface; inflorescences shorter than 4 cm. (Fig.3h, p.5)

....*Taeniophyllum* p.242
- 1*. *Plants with leaves and stems* (the latter may be short and covered with overlapping leaf bases).
 3. *Fan-plants*, i.e. having very short stems and leaves either ensiform or thin and the conduplicate bases at least, laterally flattened, and flabellately or radially arranged.
 4. *Leaves fleshy and ensiform* (with the halves conduplicate fused); inflorescences strictly terminal. (Fig.3j, p5)

....*Oberonia* p.163
 - 4*. *Leaves neither fleshy nor ensiform*; inflorescences lateral.
 5. *Growth monopodial; column with a foot; flowers not tubular*. Five or more leaves per lead.

....*Rhynchophreatia* p.235
 - 5*. *Growth sympodial; column without a foot; flowers \pm tubular*. Less than 6 leaves per lead.

....*Oxyanthera* p.234
 - 3*. *Otherwise*; if short-stemmed, then \pm horizontal and the leaves twisted at the base and laminas open so that the surfaces are in the same plane as the axis.
 6. *Leaves linear, fleshy and thick* (width less than four times thickness).

Group 8: Key to Genera

7. *EITHER, leaves strictly terete, OR, approaching this but channelled above and digitately arranged on a stem of very short internodes, around which the leaf bases form a bulb-like structure in larger plants.*
8. *Leaves terete and longer than 4 cm, stem relatively elongate and woody; roots more than 2 mm wide.*
Luisia p.238
- 8*. *EITHER, leaves terete and less than 3 cm long, OR, subterete and channelled above; stems contracted, roots less than 2 mm wide. (See spp. key for illustr.)*
Phreatia p.235
- 7*. *Leaves either proportionately thinner and broader (but still quite fleshy) or, if thick and channelled, then further apart on a slender, more elongate stem.*
9. *Leaves tufted on a contracted stem, usually dull green and spotted or suffused with red or purple; flowers more than 3 mm diam., and basal saccate spur not prominent.*
Sarcochilus (in part) p.259
- 9*. *Leaves more widely separated, bright green, or sometimes generally purplish, not spotted or suffused; flowers less than 3 mm diam. and basal saccate spur prominent (see spp. key for illustr.).*
Schoenorchis p.241
- 6*. *Leaves proportionately broader and thin textured to subsucculent.*
10. *Stems long-creeping, usually beginning terrestrially and climbing on tree trunks, often in a spiral and becoming detached from the ground; leaves pale green, thin, closely spaced, 3-4 x 20-50 cm, tapering evenly to an acute tip.*
Dipodium p.224
- 10*. *Plants not having such a character combination.*
11. *Roots prominently scabrous, ca 5 mm wide, flattened, long creeping; leaves large (2-5 x 6-20 cm) tough and leathery, dull*

Group 8: Key to Genera

dark green, the margins often undulate; inflorescences many-flowered, as long as or longer than the leaves; flowers with linear-subulate segments, ca 2 cm long and lasting only a couple of days.

....*Rhinerrhiza* p.258

11*. *Otherwise.*

12. *Leaf tips prominently hooked* (see spp. key for illustr.); leaves linear to oblong acute, 2-6 cm long, well spaced (1-2 cm apart). Inflorescences shorter than the leaves, arising opposite the leaf lamina bases.

....*Mobilabium* p.254

12*. *Otherwise.*

13. *Leaves strap-shaped, 15 cm or more long* (usually more than 20 cm, relatively thin textured and leathery, rather closely spaced on a ± erect stem.

14. *Inflorescences considerably shorter than the leaves, not branched*, flowers 4-5 cm diam., fewer than 7, opening ± simultaneously, labellum with a small basal spur.

....*Vanda* p.237

14*. *Inflorescences as long as or longer than the leaves, usually branched*, flowers numerous, up to 2 cm diam., opening sequentially with 2 or 3 open at once, labellum with a large saccate spur.

....*Pomatocalpa* (in part) p.250

13*. *Otherwise.*

15. *Inflorescence very short* (not more than ca ¼ leaf length) and leaves somewhat fleshy and rigid.

16. *Leaves closely spaced on a short stem*; inflorescence axis thick and fleshy, each pedicel being attached in a groove (this remains apparent on dry inflorescences); flowers lasting not more than a day.

....*Trachoma* p.247

Group 8: Key to Genera

16*. *Leaves well spaced on an elongate stem; inflorescence axis not thick and fleshy; flowers lasting several to many days.* (Fig. 8e, p.227)
*Trichoglottis* p.252

15*. EITHER, *inflorescences at least half as long as the leaves,* OR, *the leaves thin and leathery.*

17. *Rachis of inflorescence less than one-third the length of the peduncle.*

18. *Leaves thick and leathery to somewhat rigid, the lamina constricted near both apex and base, flowers opening ± in sequence and lasting at least several days.*

....*Micropera* p.249

18*. *Leaves thin textured, not constricted thus; flowers opening in several batches, each lasting less than a day.*

....*Thrixspermum* p.253

17*. *Rachis at least equal to peduncle in length.*

19. *Leaves widest in the distal half, at least 11 x 4 cm, closely spaced and pendulous; inflorescence branched, flowers more than 5 cm diam., white, widely opening and long-lived.*

....*Phalaenopsis* p.238

19*. *Plants not having this combination of characters.*

20. *Full grown plants very small, leaves up to 2 cm long (rarely to 5 cm) and oblong or lanceolate to linear, very closely spaced on a short stem which is usually less than 2 cm long.*

21. *Leaves oblong; labellum not spurred; confined to N.E. Qld.*

....*Drymoanthus* p.240

21*. *Leaves narrow linear to lanceolate; labellum spurred, restricted to N.E. NSW.*

Group 8: Key to Genera

22. *Flowers all ± on one side of the rachis which is usually twisted; lamina of labellum papillose and the spur lacking calli; perianth segments usually edged red at the base; usually found at altitudes less than ca 250 m.*

....*Papillilabium* p.256

- 22*. *Flowers in 2 ranks on a flexuose rachis; labellum lamina glabrous, spur entrance with a bifid callus, perianth with large purple markings; from altitudes above 500 m.*

....*Schistotylus* p.257

20*. *Plants larger.*

23. *Internodes relatively long i.e. 4-10 mm, or 1-3 leaves per cm of stem.*

24. *Leaves oblong, more than 6 cm long; flowers numerous and small (less than 8 mm diam.).*

25. *Leaf venation visible as alternating pale and darker longitudinal lines. Labellum-spur short and broad.*

....*Peristeranthus* p.240

- 25*. *Venation not obvious; labellum-spur long - at least half the length of the whole flower.*

....*Robequetia* p.244

- 24*. *Leaves narrow linear to lanceolate or elliptical, sometimes falcate, various sizes; flowers larger, or, if small, then fewer than ca 15.*

26. *Plants epiphytic; leaves shorter than 8 cm; flowers small (less than 1 cm diam.), greenish and the labellum prominently spurred.*

....*Plectorrhiza* p.255

- 26*. *Plants lithophytic; leaves longer than 6 cm; flowers larger than 1 cm diam., white with some red or brown spotting on the perianth base, labellum not prominently spurred.*

....*Sarcochilus* p.259

Group 8: Key to Genera

23*. *Internodes very short, 1-4 mm long, or 3-6 or more leaves per cm of stem.*

27. *Leaf tips with the halves unequal AND rounded, leaves narrow oblong 6-20 cm or more long; flowers more than 7 mm diam., labellum spur prominent, saccate.*

....*Pomatocalpa* (in part) p.250

27*. *EITHER, leaf tips, unequal and not rounded, OR, leaves less than 6 cm long, OR, leaves not narrow oblong; flowers various sizes, labellum spur small or solid, or, if prominent, then narrow and the flowers less than 5 mm diam.*

28. *Flowers less than 5 mm diam., more than 6 per inflorescence; labellum with a narrow basal spur, ca half as long as the whole flower; recorded only north of the Burdekin R., Qld.*

....*Saccolabiopsis* p.246

28*. *Flowers larger than 8 mm diam., labellum-spur either considerably less prominent, or, if as prominent, then the inflorescence few-flowered (1-5 flowers). Tropical and subtropical.*

29. *Labellum-spur relatively prominent and hollow, side-lobes spatulate to narrow obovate; inflorescences few flowered (usually 1-4).*

....*Pteroceras* p.257

29*. *Labellum-spur short and chin-like, shallowly saccate or solid, side lobes broadest in the middle or lower; inflorescences usually with more than 3 flowers.*

....*Sarcochilus* p.259

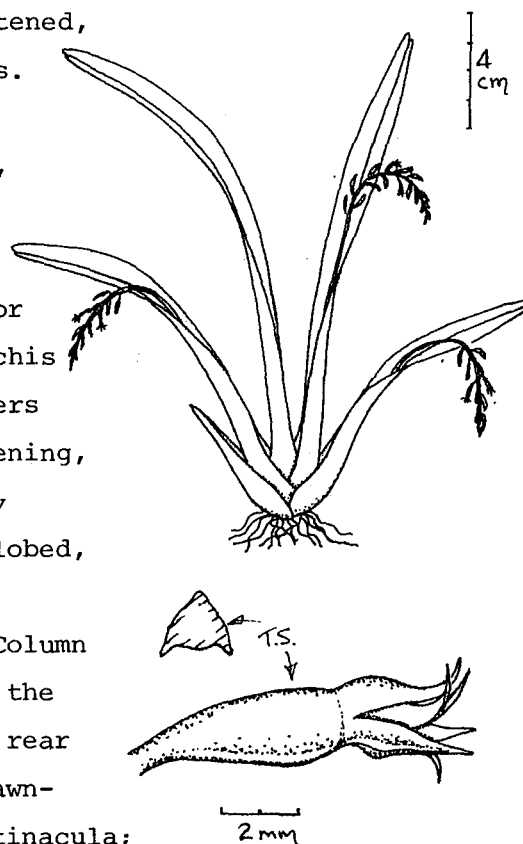
Oxyanthera

subtribe THELASTINAE

genus *Oxyanthera* Brongn.

6, S.E.Asia, Malesia, Aust. 1

A sympodial, fanplant epiphyte, usually with 2 or 3 fans in a tuft. Rhizome absent, secondary stems very short and flattened, enclosed by the folded, sheathing leaf bases. Leaves 3-5 per fan, 10-30 cm long, with an abscission line 2-4 cm from the base, linear, overlapping considerably, folded for ca the basal $\frac{1}{4}$ or so, apices unequally rounded & bilobed. Inflor. 1-3, arching, as long as or slightly longer than the shorter leaves, rachis ca half to a third of peduncle length; flowers 15-35, white, shortly tubular, not widely opening, perianth ca 3 mm long, the segments narrowly triangular, acute; labellum indistinctly 3-lobed, side-lobes \pm crescentic, upfolded, midlobe elliptical, disc thick and fleshy, yellow. Column very short with 2 apical stelids each side, the front ones ca as high as the anther and the rear ones ca half this height; anther with a drawn-out beak housing the 2 linear/lanceolate retinacula; stipes divided into 2 caudicles at ca two thirds distance from retinaculum, each caudicle with a pair of flattened pollinia, i.e. 8 in all. Ovary ca as long as perianth, 3-angled, the sides winged; petiole ca 1 mm. Tufted fanplant epiphyte of lower to mid zones in moister monsoon rft of the McIlwraith Ra. at ca 400 m alt.. Fl. late wet season (autumn). Non-CAM plant.



....0. papuana Schltr., in Schum. & Lauterb, Nachtr., p. 126

(1905) (Syn.: Dockrill in error:

Thelasis carinata)

Rhynchophreatia, Phreatia

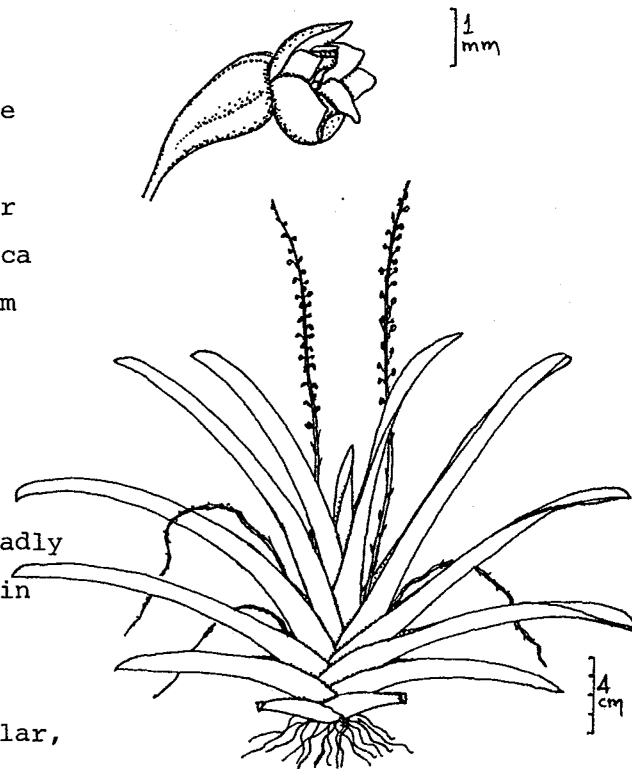
genus Rhynchophreatia Schltr. 5 NG, SW Pac.; Aust. 1

A monopodial fanplant. Stem short and covered by the considerably overlapping, folded leaf bases which are ca a third of total leaf length; leaves to ca 30 cm, folded and flat for ca $\frac{1}{2}$ length, then channelled and finally flat for the apical $\frac{1}{4}$, narrow oblong to linear, the tips unequally rounded-bilobed.

Inflorescences 1 or 2, somewhat longer than the leaves, rachis and peduncle ca equal; flowers very numerous, ca 2 mm diam., white, widely opening, ovary somewhat swollen, 2 mm long, pedicel 2 mm long, bract narrow lanceolate, 2-4 mm; dorsal sepal broad ovate, somewhat hooded, obtuse, laterals broadly

oblique triangular, somewhat pouched in the lower half, petals ovate, obtuse; labellum side-lobes short, rounded, oblique triangular, midlobe semicircular, bluntly mucronate, disc thickened and

fleshy. Pollinia 8, somewhat flattened hemispherical, each with short caudicles, 4 per stipe, with a single, common, small retinaculum. Fanplant epiphyte of mid to lower zones in trop. lowland rft and monsoon rft from the Russell R. to C. York Pen; also NG and SW Pac.. Fl. spring and summer (late dry and early wet season). Non-CAM plant.



....*R. micrantha* (A. Rich.) N. Hallé, in Aubreville & Lefroy,
Flor. N. Cal. pp. 341-344
(1977) (Syn. *Oberonia micrantha* A. Rich.,
Phreatia robusta Rogers, etc.)

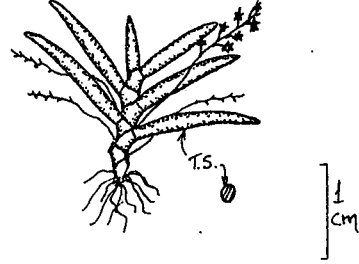
genus Phreatia Lindl., ca 200, SE Asia to SW Pac., Aust. 2

Small, monopodial epiphytes with succulent leaves. Roots creeping, less than 1 mm diam.. Stems covered with leaf bases, the leaves closely spaced and + radially arranged. Leaves very fleshy and succulent + equidimensional in cross section. Inflorescences ca as long as the leaves or somewhat shorter; flowers numerous, minute, moderately widely opening, white. Pollinia 8, with short caudicles, stipe and small retinaculum.

Phreatia

1. *Leaves terete, 10-30 x 1.5-2.5 mm; inflorescences ca as long as the leaves, the axis filiform and flowers free-standing. Leaves 3-6, + radially arranged, stems to ca 4 cm long.*

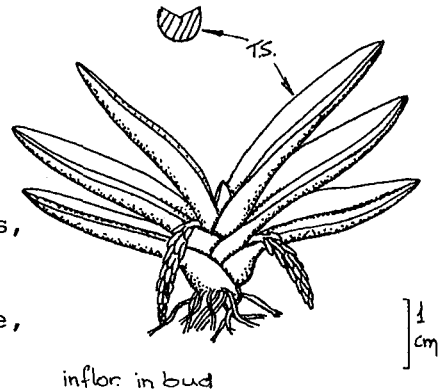
Inflor. peduncle ca equal to rachis in length; flowers 8-20, ca 1.5 mm diam.; sepals ovate, laterals obliquely so, obtuse, petals ovate, acute; labellum oblong, obtuse, shortly and bluntly drawn out. Very small tuft-forming epiphyte of mid zones in rft above ca 800 m, from near Townsville to the Annan R.. Fl. autumn.



....*P. baileyana* Schltr., in Fedde, Rep.nov.Sp. 9:433 (1911)
 (Syn. *Oberonia pusilla* F.M.Bail.,
P. pusilla (F.M.Bail.) Rolfe)

- 1*. *Leaves channelled above, ca as deep as wide, 20-60 x 5-10 mm; inflorescences shorter than the leaves, usu. considerably so, the axis thick and fleshy and flowers almost sessile and + appressed to the rachis. Stems very short, the sheathing leaf bases somewhat fleshy, forming a + bulbous base; leaves 3-6, + radially arranged. Inflor. peduncle much shorter than rachis; flowers numerous, ca 2 mm diam., subtending bract brown and longer than the flower; dorsal sepal ovate, obtuse, hooded somewhat, laterals broad*

ovate, rounded, petals oblong, obtuse; labellum very broad ovate, the apex with a broad, shallow notch, the base somewhat constricted. Succulent fanplant epiphyte of mid to upper zones in rft or mid to lower zones in open forest near rft, from near Townsville to the Annan R.. Fl. mainly summer.



....*P. crassiuscula* F.Muell. ex Nicholls, Victn.Natlst 61:151
 (1945) (Syn. *Oberonia*
crassiuscula F.Muell., *P. limenophylax*
 Benth. - non Rchb.f.)

Vanda

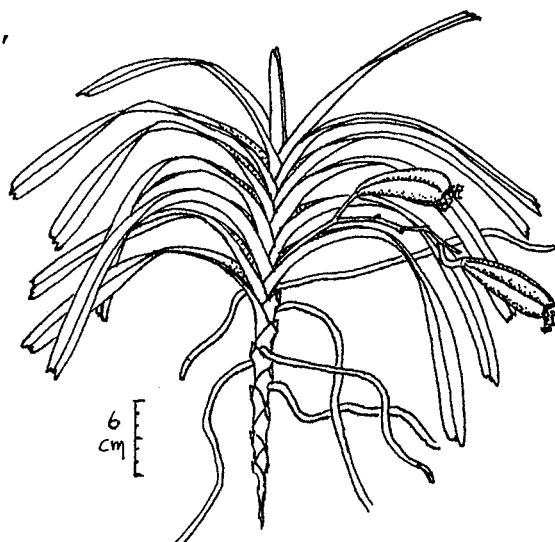
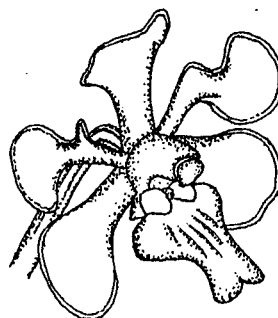
tribe Vandeeae

subtribe VANDINAE

genus *Vanda* R. Br. ca. 60, SE Asia to SW Pac.; Aust l.

A large, medium-climbing, monopodial epiphyte with many long-creeping, nidophobic and aerial roots which are relatively large in diameter (5-10 mm) and heavily velamen-clad. Stems ascending, up to 1 m or more long, sometimes branching from the older parts. Leaves strap-shaped, 20-40 cm long, arching, moderately stiffly leathery, somewhat keeled beneath esp. towards the base, tips unequally round-bilobed, 10-20 or more per lead.

Inflorescences arising from ca. the middle of the leafy part of the stem, up to as long as the leaves, peduncle shorter than rachis; flowers 3-10, very widely opening, ca. 3-4 cm diam., the perianth shiny brown to yellow-brown, paler olive on the outside, column and labellum base white or pinkish, labellum yellowish with brown longitudinal stripes on the midlobe; perianth segments spatulate, the petals somewhat falcate; labellum sidelobes short, rounded oblong to oblique rounded-triangular, midlobe oblong with a



bi-lobed or deeply notched apex the margins down-curved, disc with an ovoid spur which has a two-lobed funnel above. Medium-climbing, nidophobic epiphyte (sometimes lithophyte) of mid zones in monsoon rft of the McIlwraith and Iron Ra. areas, up to ca. 300 m alt. Fl. wet season (summer). CAM plant.

....*V. whiteana* D. Herbert & S.T. Blake, Qld. Natlst
14:57 (1951)

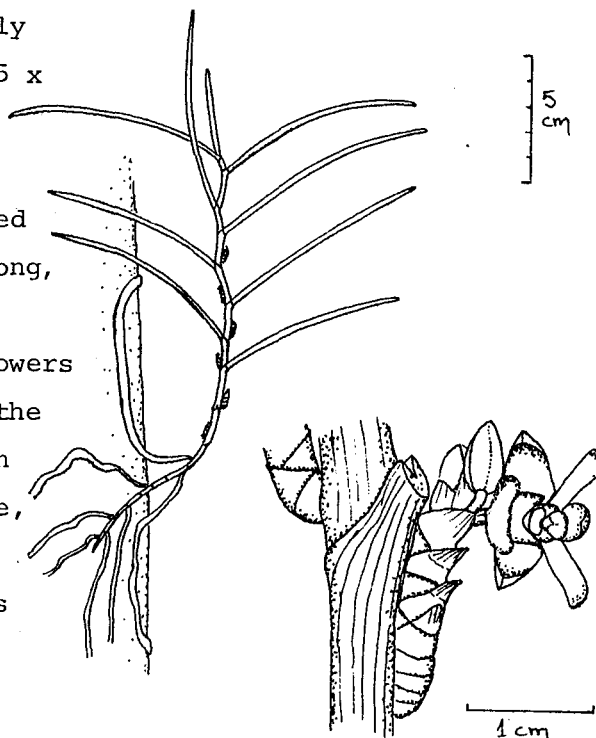
Luisia

genus *Luisia* Gaud. 30 Trop. Asia to Japan and SW Pac.;
Aust. 1.

An erect, monopodial epiphyte with terete leaves and semi-woody stem. Stem ca. 3-5 mm diam., to 30 cm or more long, sometimes branching from the base, internodes 1-2 cm; roots 4-7 mm wide, terete when aerial, considerably flattened when creeping. Leaves 5-15 x 0.2 - 0.5 cm, tapering \pm evenly from the base to a truncate/acute tip.

Inflorescence very contracted, covered with overlapping bracts, 0.5 - 2 cm long, bearing flowers sequentially or in batches, up to 10 or more in all; flowers 10-15 mm diam., opening moderately, the perianth olive-green, labellum maroon and anther yellow; dorsal sepal ovate, acute, somewhat hooded, laterals broader, somewhat boat-shaped, petals narrow oblong, obtuse; labellum papillose/tomentose, the apical half kidney-shaped and \pm bluntly mucronate, basal half much narrower, with two small lateral, basal lobes; pollinia 2, cleft, with short caudicles and a short stipe, retinaculum round.

Nidophobic epiphyte of mid to upper zones in rft., monsoon rft. and vine thickets, mangroves, swamp forest and open communities adjacent to these; from Daintree R. to C. York Pen. and N.T.; also Malesia. Fl. wet season (summer and autumn). CAM plant.



....*L. teretifolia* Gaud., *Voy. Freyc. Bot.*,
p. 427, t.37 (1826)

genus *Phalaenopsis* Bl. ca. 35, SE Asia, Malesia; Aust. 1.

A moderately large, monopodial epiphyte with broad leaves and short internodes. Stems growing \pm horizontally, ca. 1.5 cm wide (incl. leaf-bases, with 5-10 mm internodes roots somewhat flattened, 4-6 mm wide, creeping,

Phalaenopsis

grey. Leaves obovate, obtuse or rounded with slightly unequal sides, thickly leathery, 10-30 cm long, arching to pendulous, ca. 3-6 or more per lead. Inflorescence up to 60 cm or more long, branched in larger ones, with up to ca. 30 flowers, usually arching. Flowers ca. 5-7 cm diam., very widely opening, white with some yellow and a few red markings on the labellum; dorsal sepal ovate, laterals ovate/rhomboid, petals very broad ovate and clawed; labellum side-lobes \pm oblong with a contracted base with a few basal, red streaks. Midlobe triangular/hastate, the apex with 2 filiform, recurved processes, disc with a prominent, double-headed, yellow, red-spotted callus and attached to the column-foot by a narrow, clawed section; pollinia 2, \pm lacking caudicles, stipe attached to the retinaculum apex. A horizontal, fan-like epiphyte of mid zones in rft. and monsoon rft. or vine thicket, sometimes rather exposed in the dry season in semi-deciduous communities; from near Townsville north to N.G., usually at moderate altitudes. The sp. ranges through Malesia to Taiwan: the Aust. material is assigned to var. *papuana* Schltr. which differs from the type mainly in details of the labellum callus and pollinarium and is confined to Aust. and N.G. Fl. wet season (summer and autumn). CAM plant.

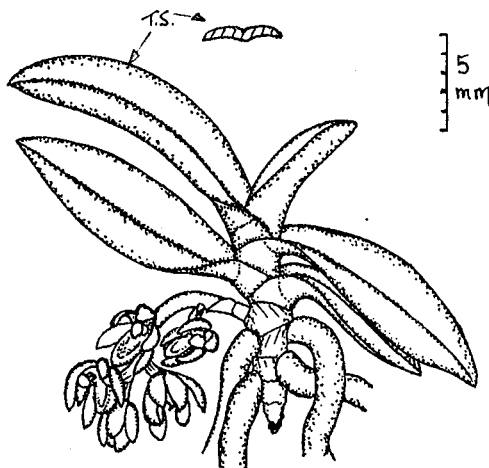


-*P. amabilis* B., Bijdr., p. 294 (1825) (Syn.
P. rosenstromii F.M. Bail.,
P. amabilis var. *rosenstromii*
(F.M. Bail.) Nicholls)

Drymoanthus, Peristeranthus

genus Drymoanthus W.H. Nicholls 3, 1 N.Z., 1 N. Cal., 1 Aust.

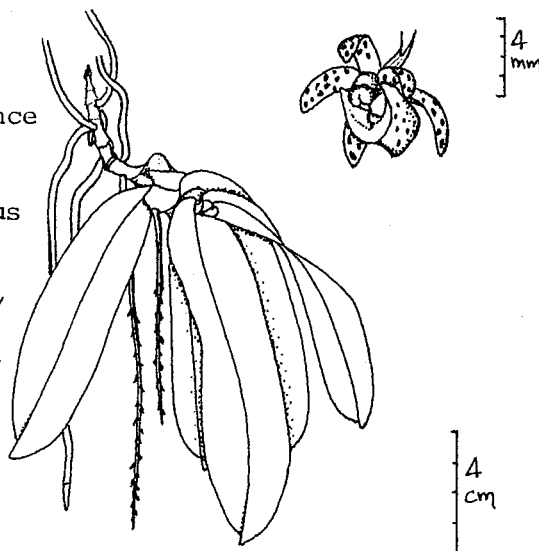
A very small monopodial epiphyte with short internodes and \pm fan habit. Roots mostly creeping, ca. 1 mm diam., some aerial. Leaves 2-5, elliptical to oblong, acute and somewhat mucronate, leathery to subsucculent; 5-25 mm long. Inflorescence shorter than leaves, peduncle usually shorter than rachis. Flowers 2-7, moderately expanding, ca. 2.5 mm diam., greenish, the labellum largely white; perianth segments linear-oblong/obovate/spathulate, obtuse, slightly channelled inside; labellum simple, boat-shaped; column without a foot; pollinia 2, each cleft into 2 unequal halves and lacking caudicles; stipe narrow. Fan-like epiphyte of mid zones, especially near creeks, in rft and in cloud rft from ca. 200 m to at least 1000 m alt. from the Burdekin R to the Atherton Tbl. Fl. summer.



....D. minutus W.H. Nicholls, Victn. Natlst. 59:175
(1943)

genus Peristeranthus T.E. Hunt Monotypic, endemic Aust.

A moderate-sized monopodial epiphyte. Stems essentially growing horizontally often branching from older parts, becoming semi-pendulous, internodes ca. 5-10 mm long; roots ca. 2-3 mm diam., long-creeping. Leaves 3-20 or so, oblong 5-25 cm long, tips unequal sided, leathery, pendulous if large, light green, striped paler longitudinally. Inflorescence ca. as long as the leaves, peduncle very much shorter than rachis. Flowers numerous 4-6 mm dia., pale green, spotted crimson; perianth segments subequal, narrow oblong/linear, incurved; labellum \pm pouch-shaped, the inner, front wall with a conical callus, side-lobes triangular. Pollinia 2, each cleft into 2 unequal halves and



Peristeranthus, Schoenorchis

with short caudicles, moderately long stipe and small retinaculum. Semi-pendulous, sometimes clump-forming epiphyte of lower zones in rft. from Hastings R. NSW to the Bloomfield R., Qld, low altitudes in the S to at least 1000 m in the tropics. Fl. spring.

....P. hillii (F.Muell.) T.E. Hunt, Qld. Natlst. 15:17-21
(1954) (Syn. *Saccolabium hillii* F.Muell.,
Ornithochilus hillii
(F.Muell.) Benth.)

genus Schoenorchis Bl. ca. 20, trop. Asia to SW Pac.;
Aust. 2

Small to very small, monopodial epiphytes with \pm fleshy leaves. Stems tending to grow erect, often pendulous and upcurved when long; branching from older sections; roots 1 mm diam. or less, mostly creeping, mostly from the plant base. Leaves mostly linear, channelled above, rounded beneath. Inflors. shorter or longer than leaves, flowers very small, white, not widely opening, ca. 2-3 mm long, the labellum with a saccate spur; pollinia 2, each cleft into halves.

1. *Leaves linear, 30-60 x 1.5-2.5 mm, as thick as wide, 3-6 mm apart, becoming reddish- or purplish-suffused in strong light; inflor. not branched, peduncle much shorter than rachis; spur \pm at rightangles to the rest of the labellum.* Sepals elliptical obtuse or mucronate, \pm recurved petals oblong to obovate, obtuse, labellum side-lobes low, very broad triangular, midlobe broad ovate to \pm semicircular; spur globular, slightly laterally compressed; pollinia with caudicles and relatively long, narrow stipe, retinaculum narrow. Clump-forming epiphyte on twigs in mid zones of rft. and monsoon rft. from the Tully R. north to N.G. Fl. late wet and early dry season. CAM plant.



....S. densiflora Schltr., in Fedde, Rep. Beih.
1:986 (1913)

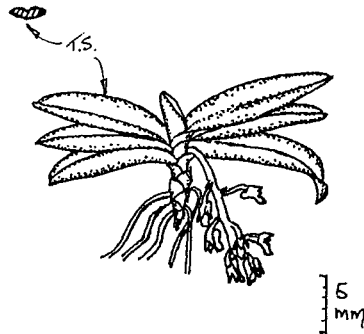
Schoenorchis, Taeniophyllum

1*. Leaves narrow elliptical to linear, 20-30 x 2.5-5 mm at least twice as wide as thick, ca. 1 mm apart, becoming yellow-green on exposure to strong light; inflorescence usually branched (not so in small specimens); peduncle equal to or longer than rachis; spur in line with rest of labellum.

Perianth segments ovate, acute and finally blunt, petals smaller; labellum side-lobes very indistinct, midlobe \pm triangular, spur broad ovoid/cylindrical; pollinia \pm sessile on a broad stipe, retinaculum broad.

Epiphytic on twigs over creek in McIlwraith

Ra. (Known from a single locality). Fl. mid dry season.



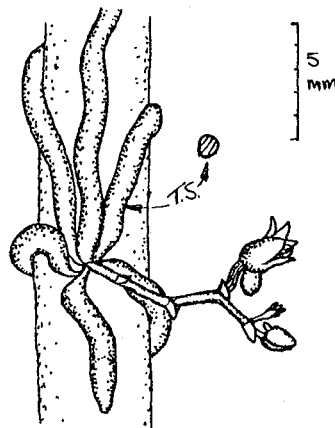
....*S. sarcophylla* Schltr., in Fedde, Rep. Beih.
1:987 (1913)

genus *Taeniophyllum* Bl. ca. 120, Old World trop.; Aust. 4

Very small, leafless and virtually stemless, monopodial, root-tuft epiphytes. Roots terete or flattened, creeping or aerial. Leaves vestigial, reduced to minute papery scales; internodes extremely short. Inflorescences filiform with a long peduncle and short rachis; flowers small, opening sequentially, labellum simple or almost so, except for a basal spur. Pollinia 4, in 2 pairs, \pm without caudicles, stipe narrow, retinaculum small.

1. Roots round in cross-section; labellum apex with a backward-pointing, filiform process above (this is rather easily broken off) sepals fused for $\frac{1}{4}$ to $\frac{1}{3}$ of their length. Roots ca.

1 mm diam., greenish white, mostly creeping. Flowers 3-4 mm long, pale green, yellowing with age; free parts of perianth segments triangular acute, somewhat recurved, labellum boat-shaped, spur ovoid to globular. Creeping-root-tuft epiphyte, mostly on twigs and small branches in moderately to well exposed sites in rft. margins and



Taeniophyllum

more open communities near rft; from Dorrigo, NSW to C. York Pen.; also SE Asia and Malesia. (Fig. 3h, p.5)

....*T. glandulosum* Bl., Bijdr. 6:t.3, f.70 (1825)

(Syn. *T. wilkianum* T.E. Hunt, probably *T. muelleri* Lindl. ex Benth., etc. - see Garay & Sweet, 1974)

1*. *Roots somewhat flattened; labellum apical filiform process lacking; sepals free.*

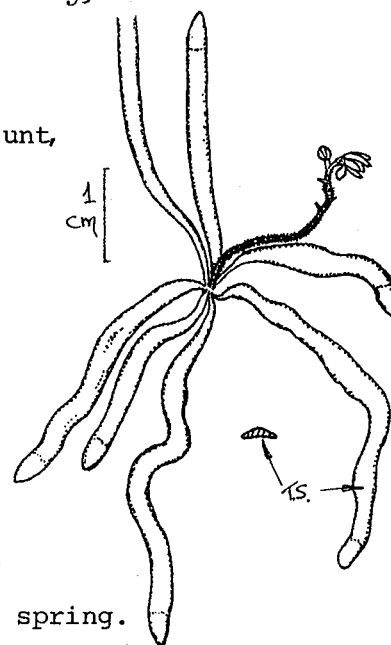
2. *Roots mostly creeping, lacking whitish striations; inflorescences hairy, 1-2 cm long; flowers less than 3 mm long.*

3. *Flowers yellow, moderately widely opening; roots 1.5-2.5 mm wide, green and often slightly glaucous.*

Inflorescence up to ca. 1.5 cm long.

Sepals narrow triangular, finally blunt, channelled somewhat, petals shorter, broader and blunter; labellum when flattened \pm circular with a blunt, shortly drawn out apex, the sides column embracing under normal conditions; spur broad ovoid/pyriform, on a short constricted section and oblique to the line of the labellum.

Creeping root-tuft epiphyte of lower zones in rft; S. Atherton Tbl. Fl. spring.



....*T. flavum* Dockrill, N. Qld. Natl. 28:7 (1960)

3*. *Flowers pale yellowish-white, only slightly opening, roots ca.*

*1 mm wide, pale grey-green. Inflorescence up to ca. 2 cm long; perianth segments ovate, obtuse, somewhat pouched; labellum boat-shaped with a tooth at the top of the apex, side-lobes crescentic; spur sub-cylindric, in line with the labellum. Creeping-root-tuft epiphyte, of similar ecology to *T. glandulosum*. Recorded only from the Paluma Ra near Townsville, at ca. 600 m altitude.*

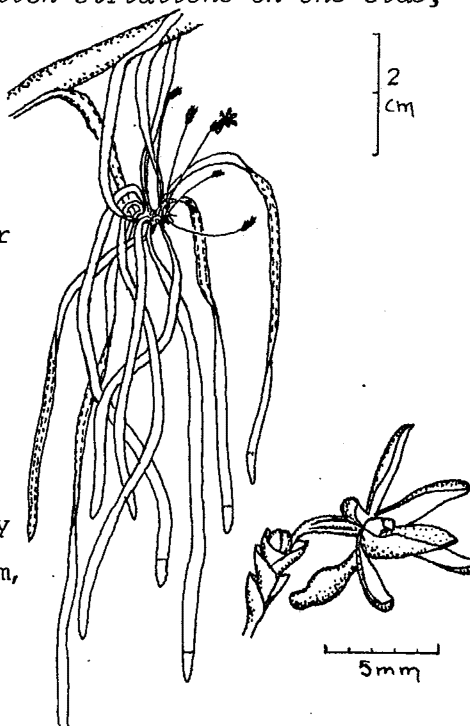
Fl. late spring.

....*T. lobatum* Dockrill, Victn. Natl. 73:45 (1956)

Robiquetia

2*. Roots mostly aerial, with small whitish striations on one side; inflorescence glabrous 2-5 cm long;

flowers 6-8 mm long. Roots 1-2 mm wide, dull green, up to 30 cm long, tangled. Inflorescence rachis very short, bearing persistent, triangular floral bracts in two ranks; flowers up to 15, yellow, perianth segments \pm alike, narrow oblong obtuse, channelled inside, sepals slightly larger; labellum ovate, obtuse, indistinctly, 3-lobed; spur slightly longer than the rest of the labellum, \pm cylindrical, dilated towards the end, then contracted and slightly upturned. Aerial root-tuft



epiphyte of mid to lower zones in semi-deciduous vine thickets of the McIlwraith Ra. from lowland to ca. 500 m; also N.G. Fl. wet season (summer mainly).

....T. malianum Schltr., in Fedde, Repert. Beih
1:1022 (1913)

genus Robiquetia Gaud. ca. 20, India, SE Asia to SW Pac.;
Aust. 2

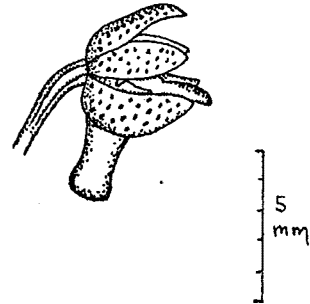
Moderately small to moderately large, monopodial epiphytes. Stems becoming rather long and pendulous, internodes of medium length, roots 3-6 mm diam., creeping or pendulous. Leaves oblong to narrow oblong, the tips unequal-sided and obtuse, leathery or subsucculent. Inflorescences as long as or somewhat longer than the leaves, pendulous, the peduncle shorter than the leaves; flowers numerous, small, not widely opening, the labellum with a moderately long, hollow spur. Pollinia 2, cleft, caudicles lacking, stipes relatively long and thin, retinaculum moderate to small.

1. Leaves 10-25 x 2.5-6 cm, not spotted, long persistent so that most of the stem bears leaves; flowers ca. 6-8 mm long, red-spotted. Stems to 1.5 m long, usually with a few branches from the older sections,

Robequetia

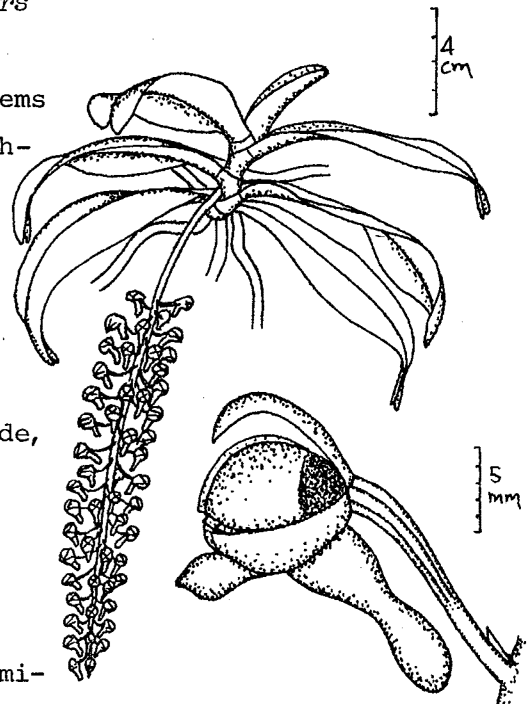
sometimes many, internodes usually at least equal to leaf width. Inflorescence, up to ca. as long as the leaves with many, cream to greenish or light brown, red-spotted flowers.

Perianth segments \pm ovate, acute; labellum side-lobes short, truncate, curved, mid-lobe \pm triangular with a somewhat drawn out, finally blunt tip; spur ca. 4 mm long. Pendulous clump-forming epiphyte, or sometimes lithophyte of lower zones in rft. up to ca. 600 m alt. from Rockingham Bay to Iron Ra., C. York. F. late wet season (autumn). CAM plant.



....R. tierneyana (Rupp) Dockrill, Aust. Sarcanth., p. 7, pl. 18 (1967) (Syn. *Saccolabium tierneyana* Rupp)

1*. Leaves 6-12(-15) x 1.5-3 cm, usually with some degree of fine red spotting, especially on the leaf sheaths and lamina undersurfaces, 3-6 per stem regardless of length; flowers 12-14 mm long, usually with a single blotch at the base of each petal. Stems to 60 cm or more, occasionally branching; internodes shorter than leaf width. Inflorescence often longer than leaves, axis pink to dark red; flowers numerous, green with a cream to yellow spur; Perianth segments broad obovate, somewhat concave inside, sepals obtuse, petals rounded; labellum side-lobes crescentic, mid-lobe fleshy, conical/ovoid; spur ca. 6-8 mm long. Pendulous fan epiphyte of lower zones in monsoon rft and semi-deciduous vine thickets of McIlwraith and Iron Ra. areas, C. York Pen. Fl. late wet, to mid dry season. CAM plant.



....R. wassellii Dockrill, Aust. Sarcanth. 7, pl. 19 (1967)

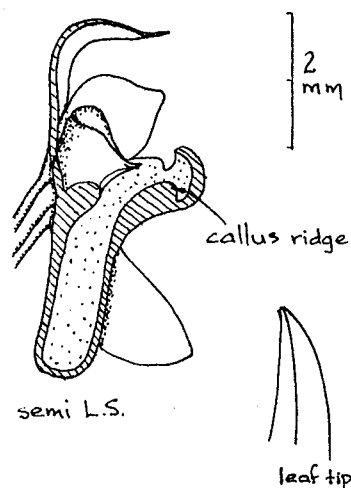
Saccolabiopsis

genus *Saccolabiopsis* J.J. Sm. ca. 5, Malesia; Aust. 2

Very small, monopodial epiphytes with very short internodes. Roots 1-2 mm diam., mostly creeping, stems short. Leaves narrow ovate, elliptic or narrow obovate, dull, light green to yellow-green, ± leathery. Inflorescences as long as, or longer than the leaves, few- to many-flowered; flowers very small, rather narrow, not widely opening, labellum with a hollow spur. Pollinia 2, cleft into unequal halves, stipe slender, relatively long.

1. *Leaf tips acute; labellum with a thickened callus ridge inside, across between the midlobe and the spur orifice, midlobe turned up and incurved;*

anther dark red. Stems usually 1-3 cm long; leaves 105 narrow elliptical, leathery, dull, light olive-green, often finely spotted dark red, 1.5-6 cm long. Inflorescence of ± even thickness, pendulous; flowers ca. 10-30, 3-4 mm long, green or yellow-green, labellum white; dorsal sepal oval, obtuse, somewhat hooded, laterals falcate oblanceolate, obtuse, petals broad obovate; labellum side-lobes low, obliquely and broadly triangular, midlobe rounded, cupped. Small, pauciflorous, fan

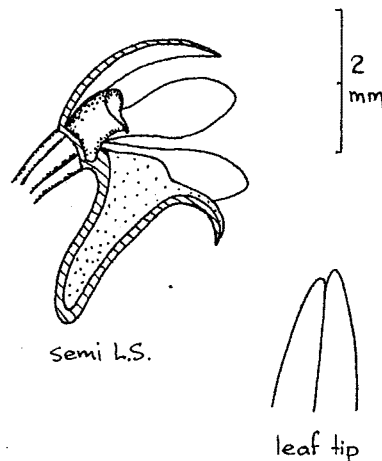


epiphyte of lower zones in dry rft. and deciduous vine thickets from ca. the tropic to Iron Ra., C. York. at altitudes up to ca. 300 m. Fl. late spring and early summer. CAM plant. (Fig. 8f, p. 227)

....*S. armitii* (F. Muell.) Dockrill, Aust. Sarcanth.,
 30, pl. 20 (1967) (Syn.
Sarcochilus armitii
 F. Muell., *Cliesostoma*
armitii (F. Muell.)
 F.M. Bail., *C. orbiculare*
 Rupp, *Saccolabium*
orbiculare (Rupp) Rupp,
S. armitii (F. Muell.)
 Rupp)

Saccolabiopsis, Trachoma

- 1*. Leaf tips obtuse, notched and unequal sided; labellum lacking such callus ridge, midlobe downturned; anther yellow-green. Stems to 2 cm long, leaves 3-6, rather pale green, 1-4 cm long, narrow ovate to narrow oblong, sometimes somewhat falcate. Inflorescence \pm pendulous/spreading, thickest in the middle; flowers 4-15, 3-4 mm long; perianth segments \pm obovate; labellum side-lobes low, transverse oblong, \pm erect, midlobe triangular, decurved, apex rounded. Small fan epiphyte on smaller branchlets over or near creeks, known only from gorges of the lower Bellenden Ker Ra., Qld. Fl. spring.



....*S. rectifolia* (Dockrill) Garay, Bot. Mus. Lflts. Harv. 23:198 (1972) (Syn. *Robequetia rectifolia* Dockr.)

genus *Trachoma* Garay at least 7, Malesia - SW Pac.; Aust. 3

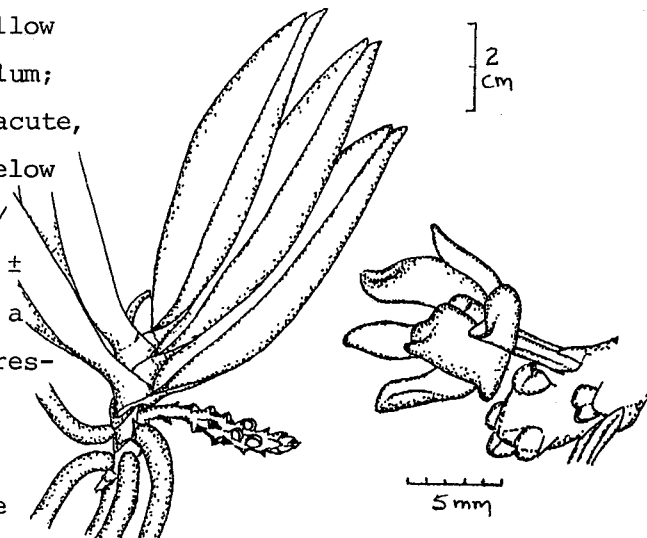
Moderately small to small monopodial epiphytes with somewhat fleshy leaves and thick, short, fleshy inflores. axes. Stems short, internodes short. Flowers produced in several batches, lasting one day only, yellowish; labellum \pm slipper-shaped with a short spur; pollinia 2, each cleft into unequal halves, with caudicles, narrow stipe and relatively broad retinaculum.

1. Leaves 8-15 cm long.

2. Leaves erect to spreading, lanceolate to narrow elliptic; stems growing erect; roots 3-4 mm diam.; perianth plain whitish; leaves 8-14 cm long, tips notched and the sides unequal and obtuse, subsucculent to fleshy, light green to yellow-green. Inflorescences 2-4 cm long, the peduncle ca. 2 mm diam., and rachis 3-4 mm diam. Flowers developing and opening in 2 or 3

Trachoma

batches of 2-6 or so, moderately expanding, ca. 1 cm diam., cream with some dark yellow on the top of the labellum; sepals oblong, broadly acute, slightly dilated just below the apex, petals linear/narrow oblong; labellum \pm saccate with or without a very short spur, low, crescentic side-lobes and a fleshy, shortly pointed midlobe. Erect fan-type epiphyte of mid zones in semi-deciduous monsoon rft. of C. York Pen. Also India to Malesia. Fl. mainly wet season (summer). CAM plant.



....*T. rhopalorrhachis* (Rchb. f.) Garay, Bot. Mus.

Lflts. Harv. Univ.

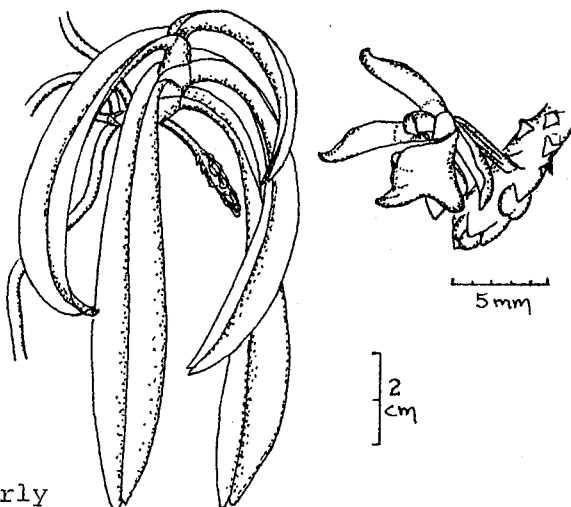
23:208 (1972) (Syn.)

Dendrocolla rhopalorrhachis
Rchb.f., *Sarcochilus brachyglottis* Hook. f.,

Dendrocolla brachyglottis
(Hook.f.) Ridl., *Saccolabium*
rhopalorrhachis (Rchb. f.)

J.J. Sm., *S. papuana* Schltr.)

2*. *Leaves pendulous, oblanceolate; stems horizontal to arching upwards; roots ca. 2 mm diam.; perianth segments with a single, dull red blotch near the base.*
Leaves to 16 cm long, the tips unequally notched, light green to yellowish. Inflorescence slightly more slender than in the above sp., mode of flowering the same and flowers ca. the same size but segments narrower and more pointed, fairly

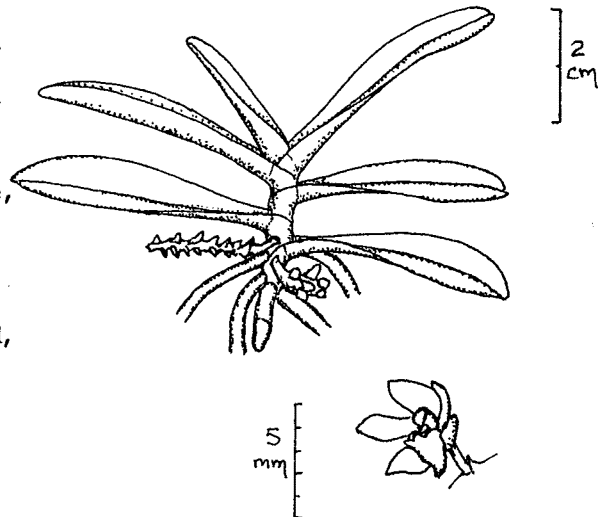


Trachoma, Micropera

widely opening; petals and lateral sepals somewhat falcate; flower colour cream-white with orange-yellow on the labellum midlobe. Drooping fan-like epiphyte of \pm clean surfaces in mid zones of semi-deciduous monsoon rft. of the McIlwraith Ra.

....T. affe. rhopalorrhachis

- 1*. *Leaves 3-8 cm long.* Roots not numerous, ca. 2 mm diam. Leaves narrow oblong to narrow elliptical or oblanceolate, tips acute to obtuse, notched, with the sides unequal, subsucculent. Inflorescence 0.5-2 cm long, ca. 2-3 mm wide, producing flowers in 2 or 3 batches of 1-4; flowers lasting one day, ca. 4 mm diam., opening moderately, dull greenish-yellow with a white labellum and column; sepals obovate/oblong, obtuse, petals oblanceolate/spathulate, rounded acute; labellum saccate with a short, rounded, forward-pointing spur, side margins thickened so that only a slit remains between, apex \pm conical, fleshy. Fan-like epiphyte of mid zones of rft. in gorges up to ca. 500 m, Bellenden Ker Ra. and nearby. Fl. autumn. CAM plant.



....T. subluteum (Rupp) Garay, Bot. Mus. Lflts. Harv.
Univ. 23:208 (1972)

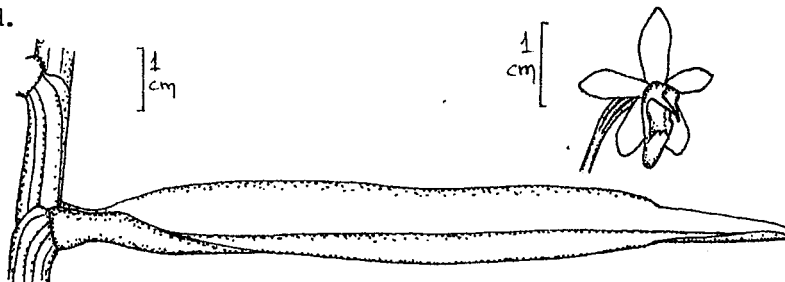
genus *Micropera* Garay 13, SE Asia to SW Pac.; Aust. 1

A moderately large, monopodial epiphyte with elongate, erect, semi-woody stems. Roots 1.5-4 mm diam., mostly aerial, some creeping; internodes length several times stem width. Lvs. 6-20 narrow oblong or elliptical/linear 10-15 cm long, somewhat channelled, thickly, leathery to subsucculent, suddenly narrowing slightly but noticeably, ca. 1-3 cm from the blunt, sometimes notched apex, the basal 1-2 cm somewhat pinched in to ca. stem

Micropera, Pomatocalpa

width. Inflorescence \pm ascending, 15-25 cm long, rachis much shorter than peduncle, 8-20 flowered.

Flowers 1.5-2 cm long, cream, widely opening, facing upwards; dorsal sepal oblanceolate, obtuse, laterals



obovate, obtuse to rounded, petals somewhat falcate elliptical, obtuse to rounded; labellum \pm shoe-shaped; column broadening upwards with a very prominent rostellum; pollinia 2, cleft into equal halves, on a long slender stipe, caudicles lacking. A medium - elongate ascending, often branching, epi. of mid to upper zones in lowland rft. from the Tully R. to Iron Ra.; also Malesia. Fl. late wet season (autumn). CAM plant.

....M fasciculata (Lindl.) Garay, Bot. Mus. Lflts. Harv.

Univ. 23:186 (1972)

(Syn. *Saccolabium*

fasciculatum Lindl., *S. coplandii*

F.M. Bail., *Sarcanthus papuanus* J.J.Sm.,

Cleisostoma keffordii F.M. Bail.,

Camarotis keffordii (F.M. Bail.) J.J.Sm.)

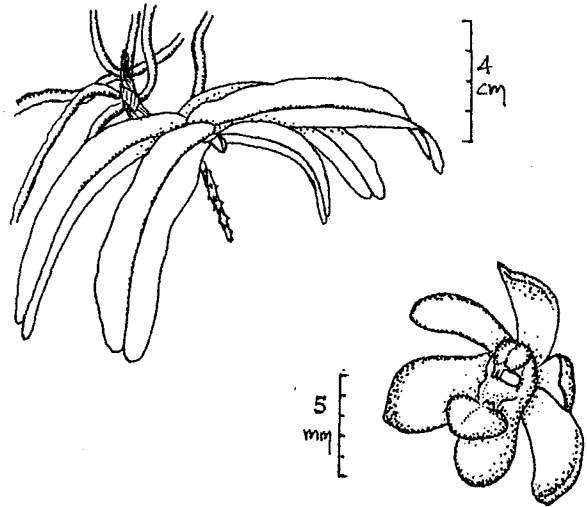
genus Pomatocalpa Breda ca. 60, SE Asia to SW Pac.; Aust. 2

Moderate to fairly large monopodial epis. with narrow oblong to narrow elliptical leathery, unequally bilobed lvs. Stems contracted and \pm horizontal or elongate and erect. Inflorescences long, paniculate, \pm erect, or short, racemose and down-pointing. Flowers widely opening, the perianth segments subsimilar, \pm oblanceolate/narrow oblong; labellum with a prominent, rounded, saccate spur. Pollinia 2, cleft into unequal halves.

1. Stem contracted, internodes ca. 2-5 mm long, growing \pm horizontal to oblique; lvs. 5-15(-25) cm long; inflorescences 3-10 cm long, down-pointing, flowers 3-15(-30), in a simple raceme, opening \pm simultaneously. Lvs. from thinly leathery to subsucculent, \pm flat, slightly

Pomatocalpa

keeled beneath. Inflorescence peduncle much shorter than rachis, both somewhat fleshy, 3-4 mm diam. Fls. yellowish with red-brown markings, 7-10 mm diam.; labellum midlobe white, semicircular, relatively prominent, fleshy, side-lobes transverse oblong or broadly triangular, sac short, wide, rounded cylindrical, with a valve-like partition sloping upwards from the middle of the back inside wall to the front of the spur mouth, notched at its apex. Fan-like epi. of mid zones in rft. and monsoon rft., mostly below ca. 500 m., from the tropic to the Iron Ra. area, C. York. Fl. spring. CAM plant.

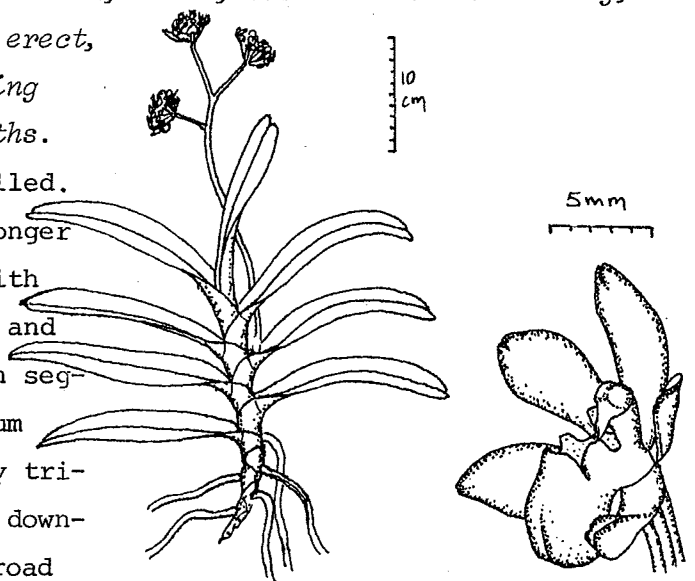


....*P. macphersonii* (F. Muell.) T.E. Hunt, Qld. Natlst.

16:27-29 (1958)

(Syn. *Saccolabium macphersonii* F. Muell.
Cleisostoma macphersonii (F. Muell.) Bth.,
Sarcochilus macphersonii (F. Muell.)
 F.M. Bail. *Sarcanthus macphersonii*
 (F. Muell.) Rupp)

1* *Stem elongate, internodes ca. 2-4 cm, erect; lvs. 20-30(-45) cm long; inflorescences to 50 cm long, erect, branched, fls. numerous, opening ± in succession over many months. Lvs. stiffly leathery, channelled. Inflorescence peduncle much longer than rachis. Fls. greenish with some maroon at the base, tips and on the midline of the perianth segments, 12-15 mm diam.; labellum midlobe not prominent, broadly triangular/ovate, white, fleshy, down-curved, side-lobes truncate broad*



Trichoglottis

triangular, white, sac ovoid with a longitudinal groove in front outside and a valve-like partitition rather like that of the above sp. Vanda-like epi., occasionally lithophyte, of mid to upper zones in monsoon rft. of the McIlwraith Ra. Fl. dry season.

....*P. marsupiale* (Krzl.) J.J. Sm., Nat. Tijds. Ned.-Ind.
72:32 (1912)

(Syn. *Cleisostoma*

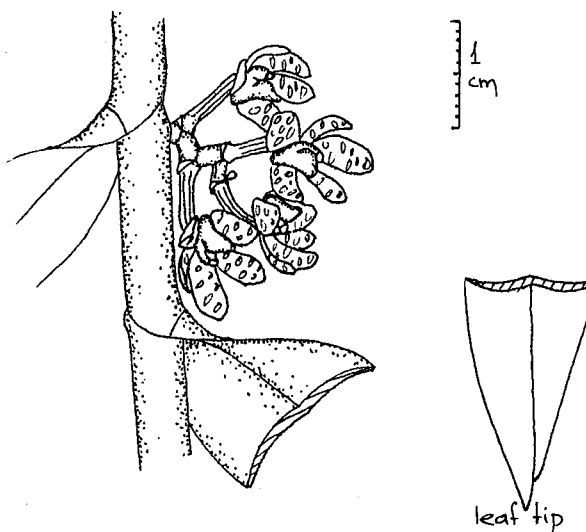
marsupiale Krzl., *P. sphaeroceras* J.J. Sm.,
P. orientale J.J. Sm.)

genus *Trichoglottis* Bl. ca. 60, India to Taiwan, Malesia; Aust. 1

A moderately large, monopodial epi. with elongate, erect to pendulous stems up to 60 cm long which branch from the basal parts; internodes 1.5-3 cm long. Lvs. narrow elliptical to narrow oblong or lanceolate, 7-14 cm long, convex above, concave below, subsucculent, apices acute with the sides uneven.

Inflor. a very contracted, flexuose raceme, usually 4-flowered, often two per node and as many as 10 per stem simultaneously. Fls. moderately expanding, 8-14 mm diam., perianth cream with red markings, labellum white with mauve-purple markings; dorsal sepal obovate/oblong, obtuse, laterals triangular/oblong, obtuse and slightly drawn out, petals oblanceolate obtuse; labellum with a

saccate spur immoveably fixed to the column base, side-lobes thickened, transverse oblong, midlobe broad ovate/rhomboid, obtuse, thick, lamina centre shortly hairy; column apex with broad, rounded "shoulders". Pollinia 2, cleft into unequal halves, lacking caudicles, stipe slender, retinaculum small. A mostly pendulous, tufted epi. of mid to lower zones in monsoon rft., occasionally in drier, semi-deciduous thickets, in the lower elevations of the McIlwraith R. and Iron Ra. area. Fl. wet season. CAM plant. (Fig. 8e, p.227)



....*T. australiensis* Dockrill, Orchadian 2:106-107
(1967)

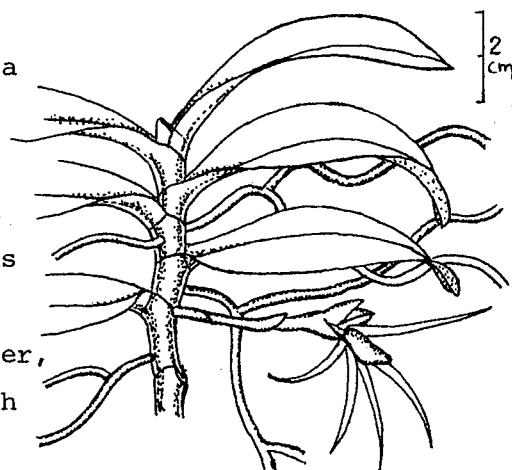
Thrixspermum

genus *Thrixspermum* Lour. ca 100 SE Asia to SW Pac.; Aust. 2

Small to moderate sized, monopodial epi. with ascending, + elongate stems and flowers which last less than a day. Roots, stems etc. usually somewhat tangled. Lvs subsucculent/leathery, oblong to elliptical. Inflor. with a long peduncle and short rachis; flowers produced in several batches of 1-3 or so; labellum with a short, saccate spur which has a callus near the top, front, inside of the spur; pollinia 2, each cleft into unequal halves, stipe short, retinaculum small.

1. *Leaves 7-25 cm long, stem somewhat flattened and winged with the keeled leaf sheaths; flowers arranged in 2 ranks, the bracts keeled and flattened, "crab's claw" shaped.*

Internodes ca 1-1.5 cm long, stems to ca 30 cm long, branching in old plants; roots ca 2-3 diam. Lvs oblong to elliptical, the tips obtuse and notched with unequal sides. Inflor. up to ca as long as the lvs, producing flowers over many months; fls 1 or 2 opening together, 4-6 cm diam., widely expanding, greenish cream, the labellum spotted red in the basal half; perianth segments linear, tapering to an acute apex, labellum side-lobes crescentic, truncate on the apical end, midlobe fleshy, margins incurved + hemiconical, sac shortly hairy inside. A tangle epiphyte of mid zones, among twigs, in lowland rft from the Burdekin R. to Iron Ra.. Fl. irregular.

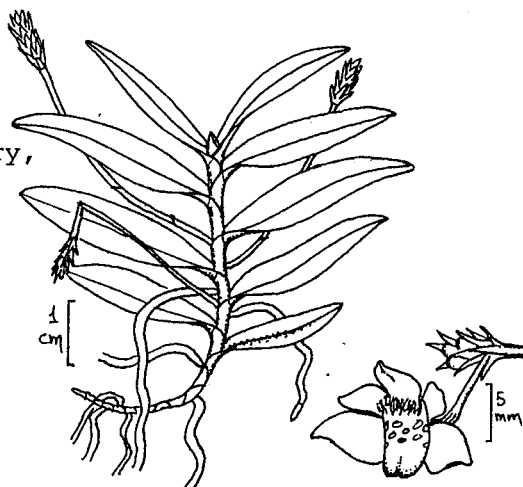


....*T. platystachys* (F.M.Bail.) Schltr., *Orchis* 5:55 (1911) (Syn. *Sarcochilus platystachys* F.M.Bail.)

- 1*. *Leaves 2-6 cm long, stem cylindrical, not winged; flowers spirally arranged, bracts and rachis not flattened.* Internodes ca 3-6 mm long, stems to ca 20 cm long, often branching from the base; roots ca 1-1.5 mm diam.. Lvs oblong, elliptical or tending to lanceolate, the tips usually notched and often uneven. Inflor. usu. as long or longer than the lvs, flowering over many months. Fls, 1-4 opening simultaneously, 1-1.5 cm diam., widely opening, cream, the labellum whitish with brown-red markings under the midlobe; perianth segments ovate to obovate, the

Thrixspermum, Mobilabium

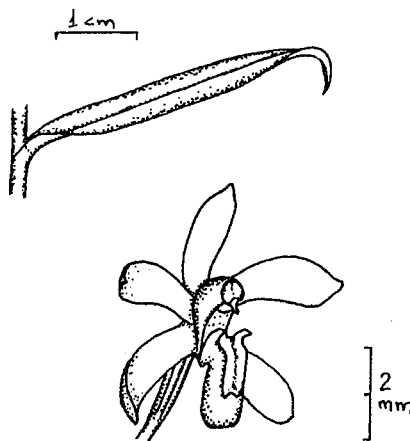
petals narrower and somewhat falcate; labellum side-lobes oblique, broad triangular, midlobe cupped, sac fleshy, most of the inside of the labellum hairy, the margins glandular-hairy. Tangle epiphyte of mid or outer zones among twigs and smaller branches, esp. overhanging streams; Tully R. to Iron Ra. area, lowland. Fl. irregular. CAM plant.



....*T. congestum* (F.M.Bail) Dockrill, Aust. Sarcanth. p. 27, pl. 35 (1967) (Syn. *Cleistostoma congestum* F.M.Bail., *T. album* Rupp)

genus *Mobilabium* Rupp 1, Aust.

A small, monopodial epi. with an elongate ascending stem and narrow lvs. with strongly downcurved tips. Roots 1.5-2.5 mm diam., rather stiff; stems to ca 60 cm long with 8-15 mm internodes, sometimes branching from the older parts. Lvs linear, the margins decurved, 2-7 cm long, the apical 1-2 cm down curved and often curled under, rather stiffly leathery. Inflor. usu. not longer than the lvs., peduncle shorter than rachis, \pm spreading, 5-15 flowered. Fls. ca 4-5 mm diam., moderately widely opening, greenish yellow, the column and labellum red-marked; perianth segments oblanceolate, obtuse and slightly drawn out, petals somewhat falcate; labellum moveably hinged to a column foot, side-lobes falcate, midlobe very small, triangular, spur solid, lamina with a callus ridge running across; pollinia two, cleft into subequal halves, with short caudicles and stipe, retinaculum ovate. A medium ascending epiphyte of mid to upper zones of rft and related communities or sometimes in solitary trees in cleared areas, mostly at altitudes above ca 500 m; from the Burdekin R. to the Bloomfield R.. Fl. spring. CAM plant.



....*M. hamatum* Rupp, N.Qld.Natlst 13:2-3 (1946)

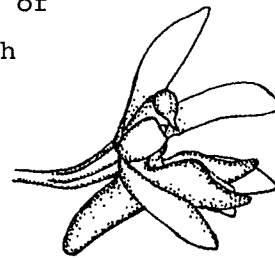
Plectorrhiza

genus Plectorrhiza Dockrill 2, E. Aust., 1 Lord Howe I.

Small monopodial epiphytes with elongate, wiry stems and numerous aerial roots. Roots ca 1.5 mm diam.; stem commonly to 20 cm (rarely to 60 cm) long, internodes 4 or 5 mm long. Lvs up to 20 or more, leathery, narrow lanceolate or narrow elliptical to narrow oblong. Inflors. 1-8 pendulous, with somewhat flexuose racemes; fls. fairly widely opening, perianth narrow, greenish; labellum spurred with an inward-pointing cylindrical, hairy callus at its mouth; pollinia 2, cleft into unequal halves, lacking caudicles; stipe long and narrow, retinaculum rather small, lanceolate.

1. *Leaves dull, mid green to yellow-green, tips acute; labellum spur ± parallel to the ovary.* Lvs 3-10 cm long, narrow lanceolate to narrow oblong.

Fls 3-15, ca 5 mm diam., usu. a combination of light and dark green or green and brown with the labellum mostly white; perianth segments oblong/ovate; labellum sessile on a short column foot, indistinctly three-lobed, spur ± terete. Tangle epiphyte among twigs in lower to upper, mostly mid to



2
mm



leaf
tip

upr. zones in rft and related communities from E. Vic. to the Bloomfield R., N.Qld.. Fl. spring. CAM plant. Tangle Orchid (Fig. 3p, p.5)

....P. tridentata (Lindl.) Dockrill, Aust. Sarcant. 27, pl. 14

(1967) (Syn. *Cleisostoma*

tridentata Lindl., *Saccolabium calcaratum*

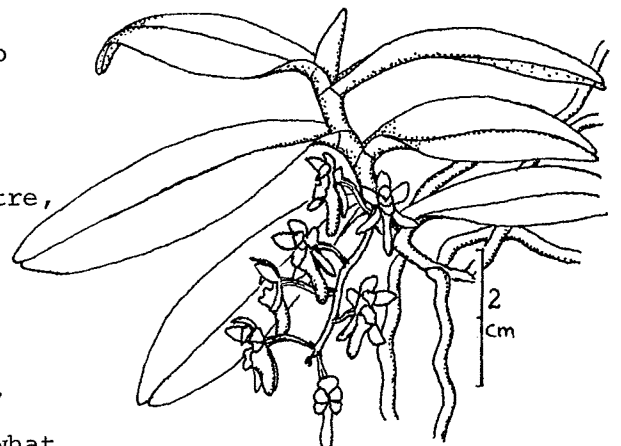
F. Muell., *Sarcochilus tridentatus* (Lindl.)

Rchb. f., *Thrixspermum tridentatum* (Lindl.)

Rchb. f., *Sarcanthus tridentatus* (Lindl.) Rupp)

- 1*. *Leaves shiny, dark to mid green, obtuse and unequally notched; labellum spur ± at right angles to the ovary.*

Leaves 4-10 cm long, narrow oblong to narrow elliptical. Flowers 3-20, ca 1 cm diam.; perianth segments pale green with a brown blotch in the centre, labellum and column white, spur pale green; perianth segments narrow obovate; labellum side-lobes low, transverse oblong tending to bilobed, midlobe concave triangular, spur somewhat



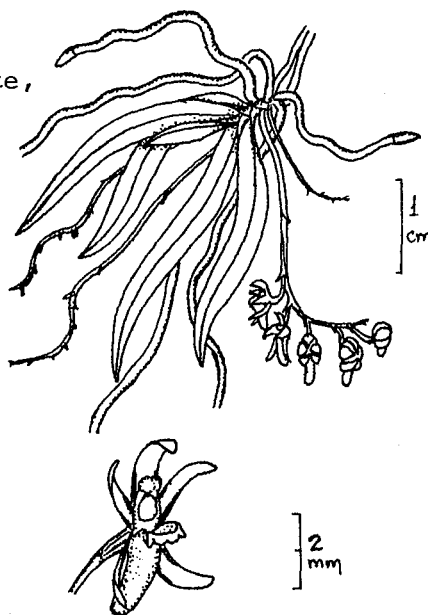
Plectorrhiza, Papillilabium

compressed laterally and basally curved forward. Tangle epiphyte of mid to lower zones, among twigs in rft and monsoon rft from the Noosa R., Qld to the McIlwraith Ra. Fl. summer.

....*P. brevilabris* (F.Muell.) Dockrill, Aust.Sarcanth.28, pl.12
(1967) (Syn. *Cleisostoma brevilabre* F.Muell., *Sarcochilus brevilabris* (F.Muell.) F.M.Bail., *Saccolabium brevilabre* (F.Muell.) Rupp., *S. loaderanum* Rupp)

genus *Papillilabium* Dockrill 1, S.E.Aust.

A very small, contracted-stemmed, monopodial epiphyte. Roots both aerial and creeping, ca 1 mm diam.; stems to ca 4 cm long, internodes 1-2 mm long. Lvs 2-8, linear/lanceolate, usu. straight, acute. Fls 3-8, ca 5 mm diam, moderately expanding, in 1-4, + twisted, secund racemes. Perianth segments linear, pale green, often basally edged red, apically incurved; labellum white to yellow-green, sessile on a short, thick column foot, side-lobes oblique triangular/oblong, rounded midlobe short and bifid, disc thick and papillose inside, spur hollow, tapering. Pollinia 2, cleft into slightly unequal halves, narrowed into very short caudicles and with a narrow stipe and small retinaculum. Fan-like tangle epiphyte of twigs in lower to mid zones of rft and other moist, sheltered communities from the Illawarra area, NSW to S.E.Qld. Fl. spring.



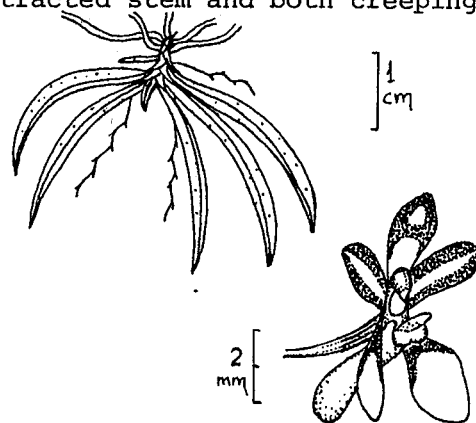
....*P. beckleri* (F.Muell. ex Benth.) Dockrill, Aust.Sarcanth.31,
pl.7 (1967) (Syn.

Cleisostoma beckleri F.Muell. ex Benth.,
Sarcochilus beckleri (F.Muell. ex Benth.) F.Muell.
Sarcanthus beckleri (F.Muell. ex Benth.) Rupp,
Saccolabium virgatum T.E.Hunt)

Schistotylus, Pteroceras

genus Schistotylus Dockrill 1, E.NSW

A very small, monopodial epiphyte with a contracted stem and both creeping and aerial roots. Stems up to ca 2 cm long, internodes 1-2 mm long. Lvs 3-7, linear, sometimes somewhat falcate, 2-4 cm long, narrowly acute, often lightly spotted black. Inflor: 1-3 racemes with flexuose rachises; fls 4-8, 5-6 mm high, strongly fragrant, perianth greenish with large purple markings, ovate, petals tending to falcate; labellum cream to white, sessile, side-lobes falcate, midlobe short and thick, spur parallel to ovary, cylindrical. Pollinia 2, cleft into \pm equal, thin halves, with very short caudicles, stipe narrow, retinaculum of moderate size. Fan-like tangle epiphyte of mid to lower zones in subtrop. and temp. rft of the upper Bellinger and Macleay Rs and Dorrigo Plateau, NSW. Fl. spring.



....*S. purpuratus* (Rupp) Dockrill, Aust. Sarcanth. 30, pl. 43
(1967) (Syn. *Cleisostoma purpuratum* Rupp, *C. gemmatum* Rupp, *Sarcanthus purpuratus* (Rupp) Rupp, *S. gemmatus* (Rupp) Rupp)

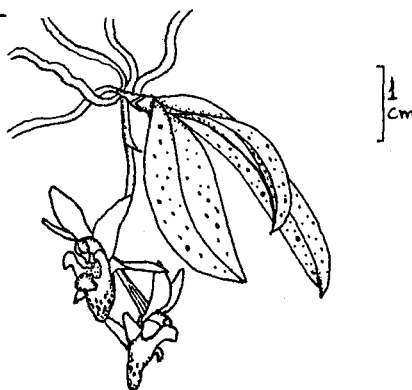
genus Pteroceras Hassk. ca 30, SE. Asia, Malesia; Aust. 2.

Small monopodial epiphytes with contracted stems and internodes 2-4 mm long. Roots 1-2 mm diam., mostly creeping. Leaves thinly leathery, usu. somewhat falcate, tips acute. Inflors. considerably shorter than the lvs, bearing 1-6 widely opening flowers, 10-15 mm diam.. Labellum hinged on a rather long column foot, with a rather long and forward-projecting, hollow spur, the relatively long, narrow side-lobes widest in the apical half and a rather less prominent midlobe; discal calli lacking. Pollinia 2, cleft into subequal halves, sessile on a short, broad stipe with a moderately large retinaculum.

1. *Labellum spur glabrous inside, broadest near the base, side-lobes spathulate, often somewhat hooked at the apex; lvs oblong to narrow oblong or oblanceolate, usu. spotted purple-black, 1.5-7 x 0.5-1.7 cm. Perianth green to olive-brown often somewhat reflexed, sepals oblanceolate, petals narrow triangular and \pm falcate; labellum white to cream, midlobe cushion-like the front margin somewhat downcurved and*

Pteroceras, Rhinerrhiza

marked purple, spur apex marked red-purple, side-lobes streaked red inside and edges of column-foot/perianth base red-lined. Small to very small fan-like epi. of mid to lower zones in rft and ecotonal communities from the Hunter R. NSW to the Bunyah Mts Qld. Fl. spring.



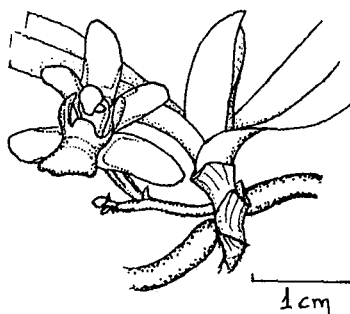
....P. spathulatus (Rogers) Garay, Bot. Mus. Lflts. Harv. Univ.

23:194 (1972) (Syn. *Sarcochilus*

spatulatus Rogers, *Parasarcochilus spathulatus*

(Rogers) Dockrill)

- 1*. *Labellum spur hairy inside, broadest near the apex, side-lobes narrow obovate, rounded; lvs narrow lanceolate to narrow oblong to linear, 5-12 x 0.8-1.5 cm. Perianth white to yellow with a red band at the base, slightly incurved, oblong obtuse; labellum white to cream, the spur with a red band across the middle, side-lobes with a couple of red streaks, midlobe small, transverse narrow oblong, the upper edge curved backwards. Small fan-like epiphyte of lower zones in monsoon rft above ca 400 m in the McIlwraith Ra. Fl. early wet season (early summer).*



....P. hirticalcar (Dockrill) Garay, Bot. Mus. Lflts. Harv. Uni.

23:194 (1972) (Syn.

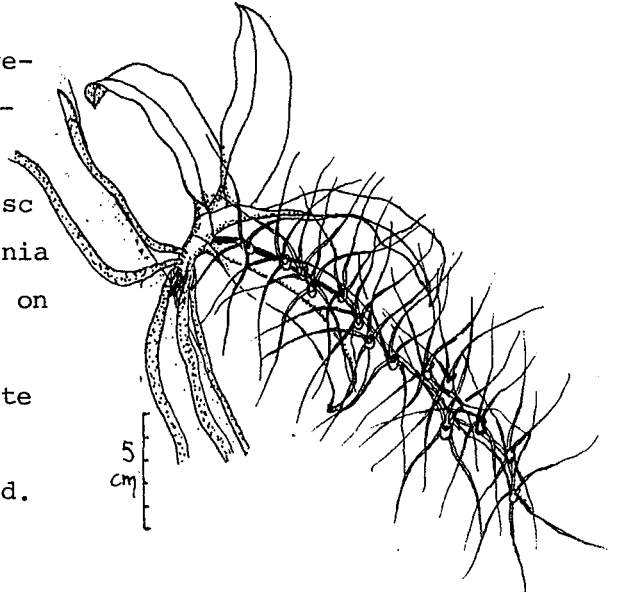
Parasarcochilus hirticalcar Dockrill)

genus *Rhinerrhiza* Rupp 2, 1 NE India, 1 E. Aust.

A moderate sized monopodial epiphyte with a contracted stem and rough-surfaced roots. Stems to 15 cm long, usu. growing \pm upwards to horizontal; internodes ca 3-5 mm long. Roots extensively creeping, flattened somewhat, the surface finely warty, dull grey-green. Lvs 2-7, oblong obtuse to lanceolate obtuse, the margins wavy and often minutely toothed, esp. near the apex, keeled beneath, dull, dark green and leathery, 4-15 cm long. Fls. numerous in 1-4 dense, subpendulous racemes to 30 cm long, lasting only a day

Rhinerrhiza, Sarcophilus

or two. Perianth yellowish with orange-red markings, segments very narrow; labellum side-lobes \pm oblong, \pm column-embracing, midlobe shortly saccate, disc with a prominent, lobed callus. Pollinia 2, cleft into subequal halves, sessile on the short, relatively broad stipe, retinaculum \pm oblong. Fan-like epiphyte of mid to lower zones in rft from the Hunter R. NSW to the Atherton Tbl. Qld. Fl. spring.



....*R. divitiflora* (F. Muell. ex Benth.) Rupp, Victn. Natl. St. 67: 206 (1951) (Syn.

Sarcophilus divitiflorus F. Muell. ex Benth.)

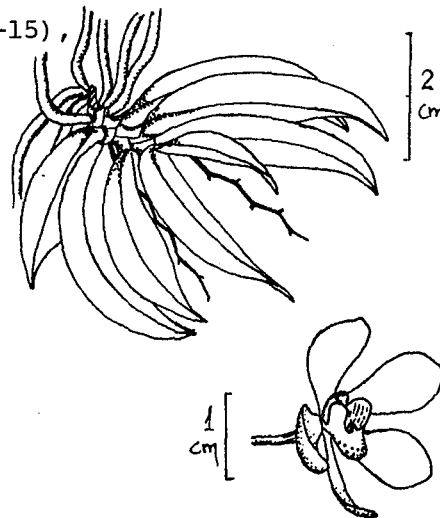
genus *Sarcophilus* R.Br. 12, Aust., 1 sp. NG and SW Pac.

Moderately to very small monopodial epiphytes and lithophytes with contracted to medium-elongate stems. Roots 1.5–6 mm diam., \pm round in cross-section, mostly creeping. Lvs mostly laminate but fleshy and narrow in a few, oblong to lanceolate or linear, often somewhat falcate, acute or acuminate to obtuse and unequally emarginate. Fls few to 20 or more, in pendulous racemes; perianth segments subequal, \pm widely opening and showy; labellum three lobed to some extent and saccate, side-lobes prominent, midlobe less so and thickened to form a short, solid spur in front of the sac, disc with a longitudinally grooved or bilobed callus in the centre and a less prominent one at the base of each side-lobe (calli absent in *S. weinthalii*). Column rather short with a well developed foot, to which the lateral sepals are basally joined. Anther rostrate, pollinia 2, each cleft into unequal halves, mostly sessile, or sometimes with short caudicles, on a rather short stipe and moderate-sized retinaculum.

1. *Leaves laminate, i.e., at least 4 times wider than thick and rather thinly leathery to subsucculent, not marked (exc. S. dilatatus).*
2. *Leaves up to 2.5 cm wide; fls not numerous and lasting a week or more; plants of the subtropics or higher altitude tropics (ca 700 m +).*
3. *Stems contracted and internodes up to ca 7 mm long; growing almost exclusively on trees; inflors usu. below the lvs.*

Sarcochilus

4. *Perianth white to cream or yellow, with or without markings; leaves light to mid-green and rather thickly and stiffly leathery.*
5. *Perianth not spotted, white; persistent, dead inflorescences black or dark brown. Lvs usu. falcate to some degree, lanceolate to oblanceolate, acute, (3-)5-10(-16) cm long. Inflor. peduncle up to as long as rachis; fls (1-) 3-10(-15), 1-4 cm diam.; moderately widely opening; perianth segments ovate to broad ovate, often with a light purple median stripe outside; labellum side-lobes \pm oblong, inside yellow, striped red, spur solid and sometimes spotted purple outside. Fan-like epiphyte of mid to upper zones in rft and related communities from extreme NE Vic. to the Bloomfield R., N.Qld.. Fl. spring. CAM plant. Orange-blossom Orchid.*



....*S. falcatus* R.Br., Prodr.332 (1918) (Syn. *Thrixspermum falcatum*(R.Br.)Rchb.f., *S. montanus* FitzG.)

- 5*. *Perianth cream to yellow, spotted purple-brown (this is visible several weeks before anthesis), persistent dead inflorescences straw-coloured to pale brown. Vegetatively \pm identical with the above sp. but the average size somewhat smaller. Fls 3-12, moderately widely opening, 10-15 mm diam., perianth segments obovate; labellum side-lobes oblong, falcate, rounded, calli lacking, midlobe lacking, spur blunt, solid and fleshy. Fan-like epiphyte of mid zones in drier subtrop. rft from Dorrigo, NSW into SE Qld. Fl. spring.*



....*S. weinthalii* F.M.Bail., Qld.Agric.J. 13:364(1903) (Syn. *S. longmanii* F.M. Bail., *Parasarcochilus weinthalii* (F.M. Bail.) Dockr.)

Sarcochilus

4*. Perianth greenish-yellow, green to olive to olive-brown or red-brown; leaves usually dull or dark green and rather thinly and plially leathery.

6. Perianth brown or greenish brown to red-brown; labellum side-lobes semi-circular to rounded oblong/falcate; inflorescences shorter than lvs with rachis thicker than peduncle; leaves EITHER mid green with minutely toothed margins, OR, dull or dark green, often spotted or reticulated reddish, with entire margins.

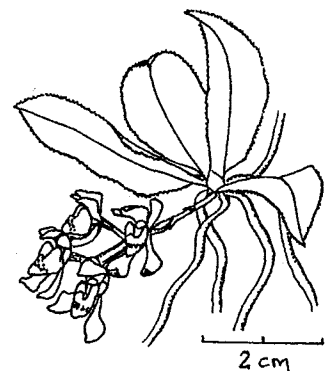
7. Leaves narrow lanceolate to narrow oblanceolate, acute, the margins entire, not undulate, dull or dark green, often spotted or reticulated reddish; perianth greenish brown to dark red brown, the segments narrow spathulate, acute. Fls 2-6(-10), widely opening, porrect, 10-15 mm high, colour darkening towards segment apices the basal sections often barred; labellum white, marked yellow and reddish, midlobe small, blunt triangular and often notched, spur very short, discal calli prominent, glabrous. Small fan-like epiphyte of mid zones in drier rft from Richmond R., NSW to the Burnett R., SE Qld. Fl. spring.



....*S. dilatatus* F. Muell., *Fragm.* 1:191 (1895) (Syn.

S. bancroftii F.M.Bail., *Thrixspermum dilatatum* (F.Muell.) Rchb.f.)

7*. Leaves ovate to oblong, ± falcate, margins minutely toothed, often somewhat undulate, apices acute and somewhat uneven, mid to deep green, unmarked; perianth brown to brick-red, the segments broad spathulate, obtuse or rounded, often shortly drawn out. Rachis thicker than peduncle, fls 2-6(-10), moderately widely opening, segment bases white; labellum white, marked yellowish and brown, midlobe truncate triangular, spur solid, ± notched, discal calli not prominent, somewhat hairy. Fan-like epiphyte of mid to lower zones in moist rft above ca 800 m from the Cardwell Ra., prob. to ca the Big Tableland. Fl. spring.

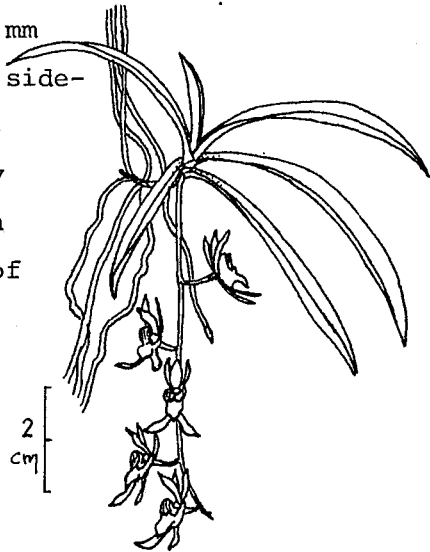


....*S. serrulatus* D.L.Jones, *Victn.Natlst.* 89:344-6 (1972)

Sarcochilus

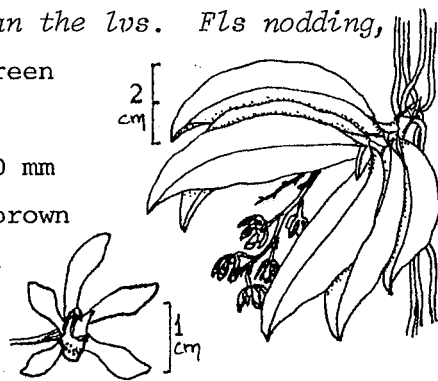
6*. Perianth greenish yellow to olive and olive-brown, labellum side-lobes falcate triangular or oblong; lvs dull mid to dark green, unmarked with entire margins; inflorescences shorter to longer than lvs, rachis not thicker than peduncle.

8. Leaves narrow lanceolate to narrow oblong or linear; labellum side-lobes broad oblong; inflorescences usu. longer than the leaves. Fls. porrect, (2-)5-10(15), perianth segments pale greenish yellow to olive brown, 7-15 mm long, oblanceolate; labellum white, side-lobes streaked reddish purple inside, midlobe small, ovoid, spur relatively long and thin, side calli higher than the central one. Fan-like epiphyte of mid to lower zones in temperate rft from Tas. to extreme SE Qld - rare, localised and at higher altitudes north of the Hunter R. Fl. late spring and summer.



....*S. australis* (Lindl.) Rchb.f., in Walp., Ann.bot.syst. 6:50 (1861) (Syn. *Gunnia australis* Lindl., *S. parviflorus* Lindl., *S. barklyanus* F. Muell., *S. gunnii* F. Muell.)

- 8*. Leaves oblong to ovate; labellum side-lobes falcate triangular; inflorescences usu. not longer than the lvs. Fls nodding, (2-)4-7(-12), perianth segments green to almost yellow, spatulate/oblanceolate acute to obtuse, 5-10 mm long; labellum white with rusty brown markings, midlobe short and thick, spur blunt, fleshy, discal calli developed + equally with an extra bifid one at the back of the disc. Fan-like epiphyte of lower zones in moist rft from SE NSW to NE Qld, at higher altitude in the tropics. Fl. late spring.

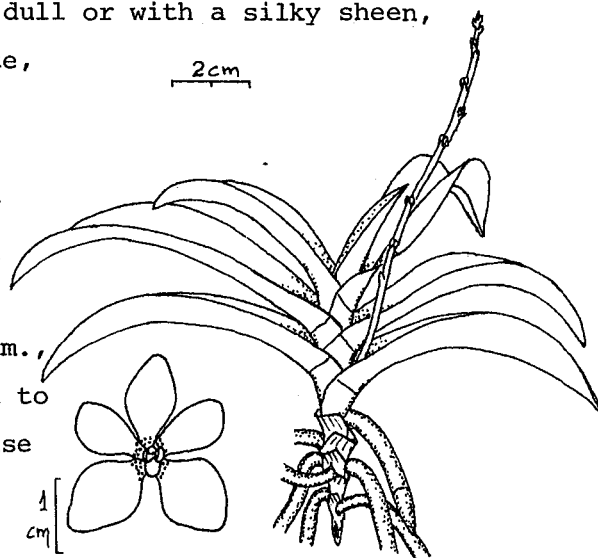


....*S. olivaceus* Lindl., Bot.Reg.25, misc. 32,27 (1839)

Sarcochilus

3*. *Stems somewhat elongate with internodes mostly more than 7 mm; almost exclusively rock plants; inflorescences mostly borne above the lvs.*

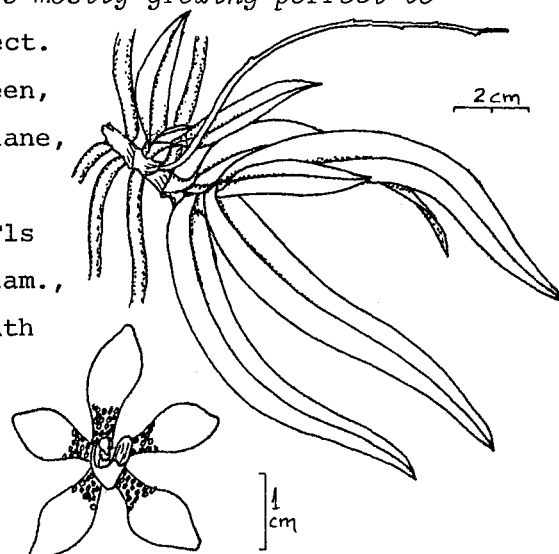
9. *Labellum height ca one fifth of dorsal sepal length, side-lobes ca as long as broad. Plants growing ± erect when short (up to ca 20 cm). Lvs usu. mid to light green, ± dull or with a silky sheen, channelled, narrow oblong, acute, 1-2.5 cm wide, 5-20 cm long, arching when large. Fls, 5-30, closely spaced, often the lower ones finishing while the apical ones in bud, mostly rather widely opening, ca 1.5-3 cm diam., white to cream, usu. with brown to red spotting on the perianth base and ovary; segments ovate to obovate; labellum side-lobes streaked red inside. Clump-forming lithophyte on cliffs and rock outcrops in rft ecotones and moist open forest etc. from Paterson district, NSW to SE Qld. Fl. spring*



....*S. hartmannii* F.Muell., *Fragm.* 8:248(1874) (Syn. *S. rubicentrum* FitzG.)

- 9*, *Labellum height about a half of dorsal sepal length, side-lobes ca twice as long as broad. Plants mostly growing porrect to subpendulous, occasionally suberect.*

Lvs often glossy, mid to dark green, usu. ± flattening out into one plane, narrow lanceolate, acute, often somewhat falcate, 6-20 cm long. Fls 4-15, widely opening, 2.5-3.5 cm diam., white, blotched red on the perianth base, sometimes the whole flower suffused red; perianth segments ovate obtuse, the lateral sepals larger; labellum side-lobes ± falcate, apically somewhat rounded,



streaked red inside, midlobe small, yellow. Clump forming lithophyte often growing into large, festooned masses; in rft, mostly rather

Sarcochilus

poorly illuminated, humid sites; from the upper Bellinger R., NSW to extreme SE Qld. Fl. late spring and early summer. Ravine Orchid.

....*S. fitzgeraldii* F.Muell., *Fragm.* 7:115 (1870)

- 2*. *Leaves more than 2 cm wide (usu. 3 cm or more); flowers numerous and lasting for one day only. Stems moderately elongate for the genus.*

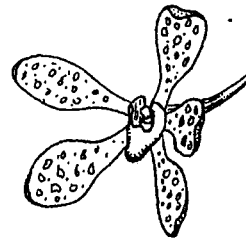
Lvs 10-30 cm long oblong or elliptical, tips obtuse and unequal sided, dull green to reddish mauve.

Racemes long and pendulous; fls widely opening, ca 1-2 cm diam., yellowish, spotted red-brown; perianth segments obovate/spathulate;

labellum side-lobes falcate oblong with acute apices, midlobe indistinct,

sac fleshy but hollow; discal callus not grooved or bifid, lateral ones well forward and elongate. Fan-like epiphyte of mid to lower zones in trop. rft and monsoon rft up to ca 300 m on C.York Pen..

Fl. somewhat irregular, mainly dry season. CAM plant.



1 cm

....*S. moorei* (Rchb.f.)Schltr., *in Fedde, Rep.Beih.* 1:967

(1913) (Syn. *Thrixspermum moorei*

Rchb.f., *T. beccarii* Rchb.f., *S. papuanus* Krzl.,

S. beccarii (Rchb.f.)F.Muell., *S. engleriana* Krzl.

S. solomonensis Rolfe, *S. ramuanus* (Krzl.)

Schltr., *Renanthera ramuana* Krzl.)

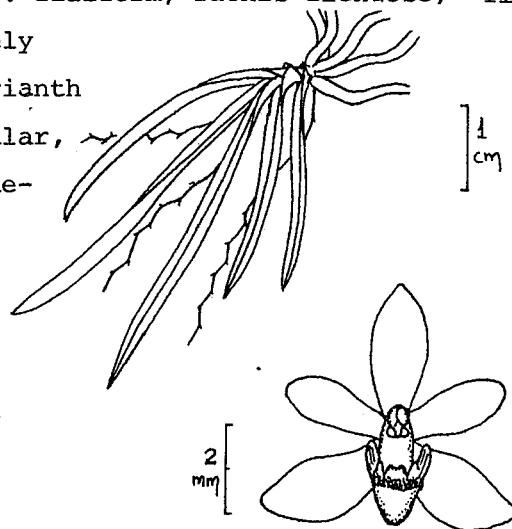
- 1*. *Leaves fleshy, up to ca 4 times wider than thick, linear to narrow oblong or narrow lanceolate, channelled, dull green and usu. spotted or suffused dark red, esp. underneath.*

10. *Plants epiphytic (S. hillii very rarely lithophytic) with pendulous inflorescences; labellum side-lobes up to ca as long as or slightly longer than the midlobe.*

11. *Labellum width between side-lobe apices ca half lateral sepal length, side-lobes shorter than midlobe; spur thickly fleshy, pronounced. Lvs linear, 1.5-10 cm long, dull grey-green and*

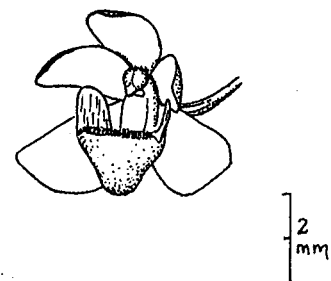
Sarcochilus

spotted dark purple-red. Inflor. filiform, rachis flexuose; fls. 2-10, 6-10 mm diam., rather widely opening pale pink to white; perianth segments obovate to almost circular, bluntly mucronate; labellum side-lobes falcate triangular and striped purple inside, midlobe densely glandular hairy inside, discal calli prominent, yellow. Very small, fan-like epiphyte of mid zones in rft, esp. drier grades, from near Bega, NSW to Fitzroy R. Qld. Fl. late spring and early summer. CAM plant.



....*S. hillii* (F.Muell.)F.Muell. Fragm. 2:94 (1860) (Syn. *Dendrobium hillii* F.Muell., *S. minutiflos* F.M.Bail.)

11*. *Labellum width ca equal to lateral sepal length, side-lobes ca equal to midlobe in length; spur not fleshy, almost lacking.* Plant and inflor. as in above sp. Fls white, moderately widely opening; perianth broad ovate to broad obovate, broadly acute to obtuse; labellum side-lobes oblique oblong, obtuse, striped purple inside, midlobe transverse oblong, hairy inside, upper edge yellow; discal calli not prominent, yellow. Very small, fan-like epiphyte of mid zones in dry rft and rft relict scrub from the Fitzroy R. to S.Cape York Pen.. Fl. late spring and early summer.



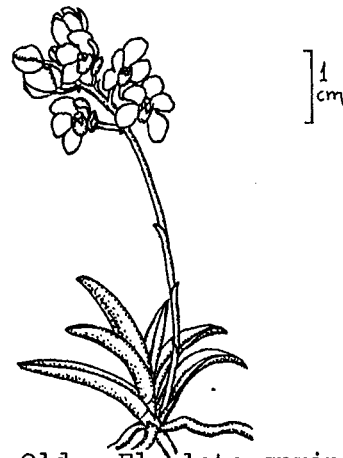
....*S. tricallatus* (Rupp)Rupp., Proc.Linn.Soc.NSW 76:54 (1951)

10*. *Plants lithophytic with erect or spreading inflorescences; labellum side-lobes longer than the midlobe.*

12. *Labellum midlobe free from the side-lobes or mostly so, side-lobes oblong with an obliquely rounded apex, disc densely hairy; peduncle bracts 4-9 or more. Lvs 2-8 cm long, usu. + heavily spotted with dark red or purplish black, often finely warty, linear. Fls 3-14(-30),*

Sarcochilus, Chiloschista

moderately opening, \pm cup-shaped, mostly pale pink but ranging from white to dark pink; perianth segments obovate, 5-7(-10) mm long, labellum side-lobes lightly and shortly hairy inside, midlobe broad, short spatulate, hairy inside and at the apex. Tuft or clump-forming fan-like lithophyte of \pm open communities, esp. in drier gorge country in the E. fall of the Gt Dividing Ra. from the Hastings R. NSW to the Atherton Tbl. Qld. Fl. late spring and summer. Fairy Bells.



....*S. ceciliae* ssp. *ceciliae* F.Muell., *Fragm.* 5:42 (1865)

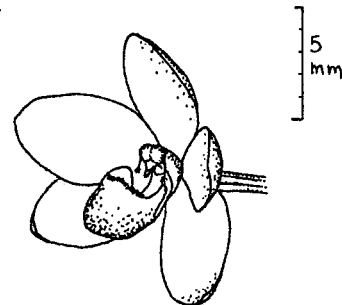
(Syn. *S. eriochilus*
FitzG.)

- 12*. *Labellum midlobe connate with the side-lobes which are triangular falcate, rounded obtuse; disc slightly hairy; peduncle bracts 2-4.* Leaves shorter, broader and thicker than the above sp., \pm unspotted. Fls larger, thicker textured and more deeply coloured than the above and petals narrower (1.8 mm vs 3 mm). Labellum midlobe shallowly notched and shortly hairy/papillose, disc slightly hairy. Fan-like lithophyte, sometimes forming small tufts, of \pm open communities, Atherton Tbl. and nearby. Fl. late spring and early summer.

....*S. ceciliae* F.Muell., ssp. *roseus* Clemesha, *Orchadian* 2: 92-94 (1967)

genus *Chiloschista* Lindl., ca 5, SE Asia, Malesia, Aust. 1

Small, leafless root-tuft, monopodial epiphytes with roots very flattened and rough-surfaced. Stem very contracted and growing towards the substrate, roots initially 1 mm wide or less but soon broadening out to 4-10 mm, 1-3 mm thick, dull grey green to dark green, the growing tips dark red and glossy, the surface finely warty, up to 60 cm long but usu. much shorter. Inflors 5-15 cm long, the filiform peduncle equal to or shorter than rachis; fls produced in batches of 1-6, several times per season, lasting only one day, white, the labellum spur with some yellow in front and the side-lobes edged red, 10-15 mm diam., rather widely opening; perianth segments broad ovate to oval, obtuse or rounded; column foot prominent, labellum hinged to its base and lateral sepals to its sides;



Chiloschista

labellum 3-lobed and saccate, side-lobes oblong obtuse or rounded, spur front wall thickly fleshy, densely hairy inside, midlobe small, triangular, downcurved, also, a terete, yellow, hair-topped callus projects upwards from the spur base. Anther with a dark red, filiform, gland-tipped appendage from each side. Pollinia 2, cleft into unequal halves, white, sessile on a rather narrow stipe and moderate-sized retinaculum. Lower zones of rft, mangroves, swamp forest etc. Tully R. to C. York Pen., also NW Aust. CAM plant. (Fig. 3i, p.5)

....C. *phyllorhiza* (F. Muell.) Schltr., Bot. Jb. 56:492
(1921) (Syn. *Sarcochilus*
phyllorhiza F. Muell.)

Provisional List

The spp. listed below have been included in works on Australian plants but are excluded from this flora because of doubt regarding their validity as true spp. or as to whether they are *bona fide* natives. Some of the reasons for doubt are listed below :

1. Dubious spp., in which one or more of the following apply:
 - a) the original descriptions are insufficiently detailed to clearly be identified as separate from other, established spp., and,
 - b) the type material is not known to be in existence, or,
 - c) is in such a condition that it is considered inadvisable to dissect or otherwise disturb, or,
 - d) does not contain sufficient parts to clearly differentiate it from established spp., and
 - e) new specimens have not since been collected that can be clearly ascribed to them.

Under this category are :

Cleisostoma nugentii F.M. Bail., Proc. Roy. Soc. Qld. 11 : 17 (1895); possibly referable to *Saccolabiopsis armitii* (F.Muell.) Dockrill

Liparis swenssonii F.M. Bail., Qld. Ag. J. 16 : 564 (1906); probably referable to *L. reflexa*(R.Br.)Lindl.

Sarcochilus harriganae Rupp., Proc. Linn. Soc. N.S.W. 63 : 128 (1938); probably referable to *Pteroceras spathulatus*(Rogers)Garay

Taeniophyllum muelleri Lindl.ex Benth. Fl. Aust. 6 : 291 (1873); probably referable to *T. glandulosum* Bl.

2. Spp. doubtfully Australian : circumstances surrounding the collection, transport, handling, preserving, labelling, etc., of the specimens in question, give rise to doubts regarding their actual origin; they are usually single specimens with no subsequent collection having been made in Australia. Such spp. include :

Dendrobium johnsoniae F. Muell.

Dendrobium purpureum Roxb.

Dryadorchis barbellata Schltr. (Syn. *Sarcochilus brevirachis* W.T. Upton)

Eria sp. (probably *E. braddonii* Rolfe - from the undertermined description by I.Walters in *Orchadian* 3(12):160-161)

Vanda tricolor Lindl.

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