FLORA OF AUSTRALIA

Volume 1 Introduction

2nd edition

Section 5: Key and Glossary

Glossary

A.McCusker

This PDF was published before the Commonwealth Government moved to Creative Commons Licensing.

© Commonwealth of Australia 1999.
This work is copyright. Apart from any use as permitted under the *Copyright Act 1968*, no part may be reproduced or distributed by any process or stored in any retrieval system or data base without prior written permission from the copyright holder. Requests and inquiries concerning reproduction and rights should be addressed to: **abrs@environment.gov.au**

GLOSSARY

Compiled by A.McCusker[1]

This glossary contains terms used in all volumes of the *Flora of Australia*, but with particular reference to the flowering plant volumes (Vols 2–50). It includes terms defined in the Supplementary Glossaries of each volume published up to 1998. Some general terms used for other groups are included. Specialised glossaries for the ferns, gymnosperms and their allies will appear in *Flora of Australia* Vol. 48, for bryophytes in *Flora of Australia* Vol. 51 and for lichens in *Flora of Australia* Vol. 54. Specialised terms required only for particular volumes or families will continue to be inserted as required as Supplementary Glossaries in future volumes. A consolidated, continually updated, version of this Glossary is available on the ABRS Website.

Where alternative terms are given, the unbracketted alternative is the preferred terminology for use in *Flora of Australia*.

abaxial: *of the side or surface of an organ*, facing away from the axis. cf. **adaxial**.

abscission: the normal shedding from a plant of an organ that is mature or aged, e.g. a ripe fruit, an old leaf. adj. **abscissile**.

acarodomatia: domatia adapted to provide shelter to beneficial mites.

accessory fruit: a fruit, or group of fruits derived from one flower, in which the conspicuous, fleshy portion develops from the receptacle and is shed with the true fruit(s) attached.

accrescent: continuing to increase in size after maturity, as the calyx of some plants after flowering.

accumbent: *of the orientation of an embryo*, with the radicle lying against the edges of the two cotyledons.

achene: a dry, indehiscent fruit formed from a superior ovary of one carpel and containing one seed which is free from the pericarp (often applied, less correctly, to the one-seeded fruits of Asteraceae). cf. **cypsela**.

acicle: a slender, stiff, needle-like prickle. adj. **acicular**. Fig. 126B.

aciculate: finely scored on the surface, as if scratched by a pin.

acrodromous: with two or more primary or strongly developed secondary veins running in convergent arches towards the leaf apex. Arches not recurved at base.

acropetal: arising or developing in a longitudinal sequence beginning at the base and proceeding towards the apex. cf. **basipetal**.

acrostichoid: *of sporangia*, densely covering the abaxial surface of the fertile frond, i.e. not in distinct groups; *of ferns*, having the sporangia arranged as above.

acrotonic: *of flowering seasonal growth units (seasonal shoots)*, producing leaves below the inflorescence, cf. **basitonic.**

actinomorphic: *of flowers*, radially symmetrical; symmetrical about more than one plane passing through the axis of the flower. cf. **peloric**, **zygomorphic**.

aculeate: prickly.

acumen: a long, tapering point.

---

[1] c/- Australian Biological Resources Study, GPO Box 636, Canberra, Australian Capital Territory 2601.

acuminate: tapering gradually to a protracted point. Fig. 126Y.

acute: terminating in a distinct but not protracted point, the converging edges separated by an angle less than 90°. Fig. 126Z.

adaxial: facing towards the axis. cf. **abaxial**.

adnate: fused to an organ of a different kind, e.g. applied to a stamen fused to a petal.

adventitious: arising in abnormal positions, e.g. roots arising from the shoot system, buds arising elsewhere than in axils of leaves.

adventive: introduced to an area recently. cf. **introduced**, **naturalised**.

aerenchyma: tissue incorporating large, gas-filled spaces interspersed with the cells in a characteristic pattern.

aestivation: the arrangement of sepals and petals or their lobes in an unexpanded flower bud. cf. **vernation**. Fig. 136A–D.

aggregate fruit: a cluster of fruits formed from the free carpels of one flower. cf. **syncarp**.

albumen: = **endosperm**.

allantoid: sausage-shaped.

allopatric: *of two or more taxa,* having different ranges of distribution. cf. **sympatric**.

alternate: *of leaves or other lateral organs*, borne singly at different heights on the axis; *of floral parts*, on a different radius, e.g. describing the position of stamens with respect to petals. cf. **opposite**. Fig. 130K, L.

alternitepalous: *of floral parts*, inserted alternately with the tepals.

alveolate: pitted or honeycombed on the surface.

amplexicaul: *of a leaf base*, stem-clasping. Fig. 128C.

anastomosis: fusion to form a network, e.g. of veins in a leaf blade.

anatropous: *of an ovule*, inverted so that the micropyle faces the placenta. Fig. 136L.

anauxotelic: applied to inflorescences, parts of inflorescences or to axes that do not end in a flower, and in which growth does not continue beyond the flowering region, cf. **auxotelic.**

androdioecious: having bisexual flowers and male flowers, on separate plants.

androecium: the stamens of one flower collectively.

androgynophore: a stalk bearing both the androecium and gynoecium of a flower above the level of insertion of the perianth.

androgynous: having male and female flowers in the same inflorescence.

andromonoecious: having bisexual and male flowers, on the same plant.

androphore: a stalk bearing the androecium.

anemophilous: pollinated by wind.

angiosperm: a seed-bearing plant whose ovules, and hence seeds, develop within an enclosed ovary. cf. **gymnosperm**.

angustiseptate: with narrow partitions, cf. **latiseptate**.

annual: a plant whose life span ends within one year after germination.

annular: arranged in or forming a ring.

annular corona: raised fleshy tissue, usually in a ring, on the corolla around the base of the staminal column but not closely adnate to it.

annulus: a ring; *in ferns*, the elastic ring of cells, forming part of the sporangium wall, that initiates dehiscence.

anterior: *of floral organs*, on the side of the flower farthest from the axis. cf. **posterior**.

anther: the pollen-bearing part of a stamen. cf. **filament**. Fig. 132A–I.

antheridium: the fertile organ of a male gametophyte or the male organ of a bisexual gametophyte, in which male gametes are formed.

anthesis: the time of opening of a flower.

anthocarp: a false fruit consisting of the true fruit and the base of the perianth, as in Nyctaginaceae.

anticous: anterior, at the front, i.e. close to the leading or distal edge of the leaflet.

antipetalous: inserted in front of the petals; opposite the petals.

antisepalous: inserted in front of the sepals; opposite the sepals.

antrorse: bent, and pointing towards the apex. cf. **retrorse**.

apetalous: without petals.

apical: *of a placenta*, at the top of the ovary. Fig. 136J.

apiculum: a short, abrupt, flexible point, adj. **apiculate**. Fig. 126CC.

apocarpous: *of a gynoecium*, consisting of two or more carpels which are free from one another or almost so.

apomict: a plant that produces viable seed without fertilisation.

appendage: a structure arising from the surface or extending beyond the tip of another structure.

appressed: pressed closely against a surface (or another organ) but not united with it.

aquatic: living in or on water for all or a substantial part of the life span (generally restricted to fresh/inland waters).

arborescent: resembling a tree (applied to non-woody plants attaining tree height and to shrubs tending to become tree-like in size). cf. **dendroid**.

arcuate: curved like a bow.

areole: a space between the threads of a net; *in Cactaceae*, a cluster of hairs/spines/bristles borne at the node of a leafless stem; *in Mimosaceae (for example)*, a distinct, oblong or elliptical area on the face of a seed, bounded by a fine line; *on leaf laminas:* the space bounded by the finest veins. adj. **areolate**.

aril: a structure partly or wholly covering the testa of a seed and formed by expansion of the funicle. adj. **arillate**.

aristate: having a stiff, bristle-like awn or tip. Fig. 126W.

aristulate: having a small awn.

article: a segment of a jointed stem, or of a fruit with constrictions between the seeds.

articulate: jointed; having joints where separation may occur naturally; *of a stem*, having nodes.

ascending: growing erect after an oblique or semi-horizontal beginning.

asexual: not forming part of a cycle which involves fertilisation and meiosis.

asperulate: slightly rough to the touch.

attenuate: tapering gradually.

auricle: an ear-shaped appendage at the base of a leaf, leaflet or corolla lobe. adj. **auriculate**. Fig. 126T.

autapomorphic: *of a character*, derived and unique to a given taxon or monophyletic group.

autochthonous: *of the inhabitants of a region*, original; earliest known; (applied to an element of the Australian flora rich in endemics and believed to have been evolving in Australia for a long period of time).

autotrophic: independent of other organisms in respect of organic nutrition; able to fix carbon dioxide, by photosynthesis, to form carbohydrates.

auxotelic: applied to inflorescences, parts of inflorescences or to axes that do not end in a flower, and in which growth continues beyond the flowering region, cf. **anauxotelic.**

awn: a bristle-like appendage, e.g. on the tip or back of the lemma of a grass floret.

axil: the angle between a leaf or bract and the axis bearing it. adj. **axillary**. Fig. 133B.

axile: on an axis; *of a placenta*, on the central axis of the ovary. Fig. 136E.

axis: a stem, (commonly used for the main stem of a whole plant or of an inflorescence).

baccate: berry-like; *of seeds*, having a succulent or pulpy testa; *of fruits*, having the seeds embedded in pulp.

barbed trichome: a trichome with terminal or lateral retrorse projections, each projection being a barb. Fig. 139G.

barbellae: short, straight, stiff hairs or barbs.

barbulae: in *Scaevola* (Goodeniaceae), outgrowths on the margin of the wings or in the throat of the corolla, sometimes with apical hairs or papillae.

basal: at the base; *of a placenta*, at the base of the ovary. Fig. 136I.

basifixed: attached at or by the base, e.g. *of anthers*, by the base of the connective. cf. **medifixed**, **versatile**.

basipetal: developing, in sequence, from the apex towards the base. cf. **acropetal**.

basiscopic: *of the first lateral vein of a leaflet on the side nearer the leaf base*, pointing towards the base.

basitonic: *of flowering seasonal growth units (seasonal shoots)*, producing no leaves (but sometimes some bracts) below the inflorescence, cf. **acrotonic.**

beak: a prominent terminal projection, especially of a carpel or fruit.

beard: a tuft, line or zone of hairs. Fig. 138J.

berry: a fleshy or pulpy indehiscent fruit with the seed(s) embedded in the fleshy tissue of the pericarp. cf. **drupe**, **pyrene**.

biennial: a plant whose life span extends for more than one but less than two years after germination.

bifacial: *of leaves*, flat or channelled with distinct adaxial and abaxial surfaces.

bifid: divided, for about half the length, into two parts. cf. **bipartite**.

bifid trichome: a trichome divided into two branches. Fig. 139H.

bifoliate: *of plants*, having two leaves.

bifoliolate: *of leaves*, having two leaflets.

bigeminate: in two pairs; *of pinnate leaves*, having only two pairs of pinnae.

bilabiate: two-lipped, e.g. of a corolla in which fusion of an anterior group and a posterior group of petals extends beyond the top of the corolla tube.

bilamellate: consisting of two plates or lamellae.

bilocular: having two cavities.

bipartite: divided, nearly to the base, into two parts. cf. **bifid**.

bipinnate: *of leaves*, twice pinnately divided. cf. **pinnate**, **tripinnate**. Fig. 127N.

biseriate: arranged in two rows or whorls.

bisexual: bearing both male and female organs together, e.g. on the same gametophyte or in the same flower.

biternate: twice ternate, the three pinnae each divided into three pinnules. Fig. 127K.

blade: the expanded part of a leaf or petal. cf. **lamina**, **limb**.

bole: the trunk of a tree, below the lowest branch. cf. **canopy**.

brachyblast: a short branch; a spur shoot.

bract: a leaf-like structure, different in form from the foliage leaves and without an axillary bud, associated with an inflorescence or flower.

bracteole: a small bract-like structure borne singly or in pairs on the pedicel or calyx of a flower.

branched trichome: trichome divided into two or more branches. Fig. 139H–J.

bristle: a rigid trichome similar to a pig's bristle. Fig. 139D.

brochidodromus: pinnate venation in which the secondary veins do not terminate at the margins but are joined in a series of prominent arches.

bulb: a storage organ, usually underground, made up of a stem and leaf bases, the food reserves being stored in the inner, fleshy leaf bases.

bulbel (= **bulblet**): a bulb arising from another bulb.

bulbil: a small, deciduous bulb (or tuber) formed in the axil of a leaf or replacing flowers in an inflorescence, and functioning to propagate the plant vegetatively. Fig. 125E.

bullate: having a blistered or puckered surface; *of a leaf surface*, prominently raised (like a bubble) between veins.

burr: a rough or prickly propagule consisting of a seed or fruit and associated floral parts or bracts.

buttress: a flange of tissue protruding from the base of the main trunk of a tree.

caducous: falling off early.

caespitose: growing in tufts.

callus: a protruding mass of hardened tissue, often formed after an injury but sometimes a regular feature of the plant, e.g. on the labellum of some orchids and on the axis of the spikelet of some grasses. adj. **callose**; pl **calli**.

calycine: belonging to the calyx; with a well-developed calyx.

calyptra: *in mosses*, a cap-like structure covering or partly covering the capsule and derived from the neck of the archegonium; *in a flower*, (= operculum), a cap formed by fusion or cohesion of perianth parts and covering the stamens and carpels in the bud.

calyx tube: a tube formed by fusion or cohesion of sepals. cf. **hypanthium**.

calyx: the sepals of one flower collectively.

campanulate: bell-shaped.

campylotropous: *of an ovule*, orientated transversely (i.e. with its axis at right angles to its stalk) and with a curved embryo sac. Fig. 136M.

canaliculate: with a longitudinal groove or channel.

canescent: more or less grey-pubescent, hoary.

canopy: the branches and foliage of a tree. cf. **bole**.

capillary: *of hairs etc*., very slender.

capitate: *of an inflorescence*, with the flowers unstalked and aggregated into a dense cluster; *of a stigma*, globose, like the head of a pin.

capitellate: shaped like, or aggregated into, a very small head.

capitulum (= head): a dense cluster of sessile flowers. adj. **capitate**. Fig. 133F.

capsule: a dry fruit formed from two or more united carpels and dehiscing at maturity to release the seeds. Figs 133J–M, 134C, D.

carinate: keeled.

carpel: an organ (generally believed to be a modified foliar unit) at the centre of a flower, bearing one or more ovules and having its margins fused together or with other carpels to enclose the ovule(s) in an ovary, and consisting also of a stigma and usually a style.

carpophore: *in ferns*, the stalk of a sporocarp; *in a fruit*, the stalk of a mericarp.

caruncle (= **strophiole**): an outgrowth of a seed coat, near the hilum.

caryopsis: a dry, indehiscent, one-seeded fruit in which the seed coat is closely fused to the fruit wall (characteristic of grasses).

cataphyll: a scale leaf associated with a vegetative propagating organ such as a rhizome or perennating bud; a simple, scale-like leaf.

catkin: a spike in which the flowers are unisexual and without conspicuous perianth.

caudate: having a narrow tail-like appendage. Fig. 126X.

caudex: a thick, erect trunk, especially of cycads.

caudicle: a thread to which a pollen mass is attached in Orchidaceae and Asclepiadaceae; the part of a pollinarium that connects the corpusculum with the pollinia.

cauliflorous: *of plants*, with flowers (and fruits) borne on a well-developed trunk or major branch. cf. **cauline**. Fig. 133E.

cauline: *of leaves*, borne on an aerial stem; *of flowers or fruits*, borne on old wood. cf. **cauliflorous**).

cell: the basic unit of plant structure consisting, at least when young, of a protoplast surrounded by a wall.

centrifugal: directed, or developing, from the centre or axis outwards.

centripetal: directed, or developing, from the outside towards the centre or axis.

chaff: thin, dry unfertilised ovules among the fully developed seeds of a fruit; thin, membranous scales or bracts. Fig. 137A.

chalaza: the part of an ovule to which the end of the stalk (funicle) is attached.

chartaceous: papery.

chasmogamous: pollinated when the flower is open. cf. **cleistogamous**.

chlorophyll: pigment(s) constituting the green colouring matter of plants and absorbing radiant energy in photosynthesis.

chromosome: a thread-like structure in the nucleus of a cell, containing a linear sequence of genes.

cilia: *in gametes, spores etc.*, minute hair-like protoplasmic protrusions whose movement confers motility on the cell; *in vascular plants*, hairs more or less confined to the margins of an organ. sing. cilium; adj. **ciliate**. Fig. 139A.

ciliolate: minutely ciliate.

cincinnus: a monochasial, cymose inflorescence with flowers arising alternately from one side of an axis then the other.

cinereous: ash-grey, as of wood ash.

circinnate (= **circinate**)**:** spirally coiled, with the tip innermost.

circumsciss: (to) break open along a transverse line around the circumference. adj. **circumscissile**. Fig. 133J.

cladode: the photosynthetic stem of a plant whose foliage leaves are absent or much reduced. cf. **phyllode**.

cladophyll: a flattened, leaf-like photosynthetic stem not bearing leaves or scales. cf. **phylloclade**.

class: a major taxonomic rank, between order and division.

clathrate: latticed or pierced with apertures like a trellis.

clavate: club-shaped.

claw: a narrow, stalk-like basal portion of a petal, sepal or bract.

cleistogamous: self-pollinated and setting fertile seed but the flowers never opening. cf. **chasmogamous**.

clone: a set of organisms produced from one parent by vegetative reproduction.

cobwebbed: covered with long, weak, loosely entangled, thin hairs, resembling spiderwebs; usually white. Fig. 137B.

coccus: a one-carpel unit of a schizocarp or lobed fruit, becoming separate at maturity. pl. **cocci**.

cochlear: *of the arrangement of corolla lobes in a bud*, a variant of imbricate aestivation. Fig. 136A.

cochleate: coiled like a snail-shell.

cohesion: the sticking together of floral parts of the same whorl without organic fusion. adj. **coherent**.

collateral: situated side by side; adjacent and on the same radius of an axis.

colleter: a group or tuft of mucilaginous secretory hairs, often found near the base of the leaf lamina and on the calyx in Apocynaceae and Asclepiadaceae.

colliculate: covered with small, rounded or hillock-like elevations (n. **colliculae**). Fig. 134M.

colpate: *of a pollen grain*, having elongate apertures.colporate: *of a pollen grain*, having apertures with pores within colpi. cf. **porate**.

columella: a little column; the central, persistent axis of a schizocarpic fruit; the axis of a cone or cone-like fruit.

column: the lower part of an awn in grasses, when distinctly different in form from the upper part; (= **gynostemium**) a structure in Orchidaceae, Asclepiadaceae and Stylidiaceae, extending above the ovary of a flower and incorporating stigma, style and stamens.

coma: a tuft, especially of hairs on a seed. adj. **comose**. Fig. 138K.

commissure: a join or seam; the interfacing of two fused carpels in an ovary.

complicate: *of leaves*, the lamina (or part of the lamina) folded upon itself.

compound: *of a leaf*, having the blade divided into two or more distinct leaflets; *of an inflorescence*, made up of an aggregate of smaller inflorescences.

compressed: flattened in one plane, either dorsally (bringing the front and back closer together) or laterally (bringing the sides closer together).

concolorous: coloured uniformly; the same colour on both sides. cf. **discolorous**.

conduplicate: folded together, with the fold-line along the long axis (e.g. *of cotyledons in a seed*).

cone: *in gymnosperms and club-mosses*, a group of sporophylls arranged compactly on a central axis; (loosely) *in Casuarinaceae*, a woody multiple fruit incorporating the bracts and bracteoles associated with the flowers; (loosely) *in Petrophile and other Proteaceae* the semi-woody multiple fruit made up of nutlets in the axils of closely imbricate floral bracts which become woody.

conflorescence: a compound inflorescence consisting of two or more unit inflorescences, in which the main axis does not end in a flower but the axes of the branches do so.

connate: fused to another organ (or other organs) of the same kind. Fig. 128G.

connective: the part of an anther that connects the lobes.

connivent: coming into contact; converging.

contorted: see convolute.

convolute: *of the arrangement of corolla lobes in a bud*, a form of imbricate aestivation in which each segment has one edge overlapping the adjacent segment, like a furled umbrella. Fig. 136C.

cordate: *of a leaf blade*, broad and notched at the base; heart-shaped (in two dimensions). Fig. 126Q.

cordiform: shaped like a heart (in three dimensions).

coriaceous: leathery.

corm: a fleshy, swollen stem base, usually underground, in which food reserves are stored between growing seasons.

corniculate: bearing, or terminating in, one or more small horns.

corolla: the petals of a flower collectively.

corolline corona: fleshy ridges or outgrowths of tissue attached to the corolla tube, usually in the lobe sinuses.

corona: a ring of tissue arising from the corolla, perianth or filaments of a flower and standing between the perianth lobes and the stamens.

corpusculum: the central part of a pollinarium.

cortex: the region of a stem or root surrounding the vascular cylinder but inside the epidermis.

corymb: a racemose inflorescence in which the pedicels of the lower flowers are longer than those of the flowers above, bringing all flowers to about the same level. Fig. 131G.

costa: a rib; a midrib or middle-nerve (when it is the only nerve).

costate: ribbed.

costule: the midvein of a pinnule.

cottony: with long, soft, weak, filamentous hairs, somewhat flocculent and entangled, like the cotton of *Gossypium* seeds. Fig. 137C.

cotyledon: the primary leaf (or one of two or more primary leaves) of an embryo.

crenate: with small, rounded teeth; scalloped. Fig. 127T.

crenulate: minutely scalloped. Fig. 127U.

crisped: curled.

crown: the part of a tree or shrub above the level of the lowest branch.

crownshaft: *in palms*, a conspicuous cylinder formed by the tubular base of leaf sheaths at the top of a stem.

crustaceous: brittle.

cryptogam: (literally) a plant whose sexual reproductive parts are not conspicuous; a plant that produces spores, not seeds, in its sexual reproductive cycle; *among vascular plants*, ferns and fern allies. cf. **phanerogam**.

cucullate: hooded; hood-shaped.

culm: an aerial stem; *in grasses, sedges, rushes, etc.*, the stem bearing the inflorescence.

cuneate: wedge-shaped. Fig. 126N.

cupule: a small cup.

cupuliform: nearly hemispherical, shaped like a cupola (dome).

curvinerved: with curved parallel veins.

cushion, floral: a swollen floral axis on which several small flowers are borne.

cuspidate: tapering into a sharp, rigid point. Fig. 126AA.

cyathium: an inflorescence of unisexual flowers surrounded by a cup of involucral bracts, as in *Euphorbia*.

cyclic: *of floral organs*, several borne at the same level on the axis; whorled. cf. **spiral**.

cyme: an inflorescence in which each flower, in turn, is formed at the tip of a growing axis and further flowers are formed on branches arising below it. adj. **cymose**. cf. **raceme**. see also **dichasial cyme**, **monochasial cyme**. Fig. 131E, F.

cymule: a diminutive cyme, usually few-flowered.

cypsela: a dry, indehiscent, one-seeded fruit formed from an inferior ovary. cf. **achene**.

cystolith: a stalked structure growing from a cell wall into the cell cavity, encrusted with calcium carbonate.

deciduous: falling seasonally, e.g. of the leaves or bark of some trees. cf. **evergreen**.

declinate: angled downwards or forwards. cf. **decurved**.

decompound: more than once compound.

decumbent: spreading horizontally but then growing upwards.

decurrent: extending downwards beyond the point of insertion, e.g. of a lamina extending downwards to form a flange along the petiole.

decurved: angled downwards and curved or curled.

decussate: in opposite pairs, with successive pairs borne at right angles to each other.

definite: of a constant number; *of stamens*, twice as many as the petals or sepals, or less; *of an inflorescence*, ending in a flower or an aborted floral bud.

deflexed: bent abruptly downwards. cf. **inflexed**.

dehiscent: breaking open at maturity to release the contents. Figs 132A–E, 133J–M.

deltoid (= **deltate**): triangular with the sides of about equal length. Fig. 126L.

dendritic: *of a trichome*, with branches arising along the main axis, i.e. tree-like. Fig. 139I.

dendroid: tree-like in form but not in size. cf. **arborescent**.

dentate: toothed. Fig. 127R.

denticle: a small tooth; in *Coprosma* (Rubiaceae), thick papillate tubercles on the margin of the interpetiolar stipules. Fig. 133K.

denticulate: finely toothed. Fig. 127S.

depressed: flattened as if pressed down from the top or end.

determinate: *of growth or branching*, with a bud or flower terminating the growth of the main axis; *of an inflorescence*, see definite.

dextrorse: turned towards the right. cf. **sinistrorse**

diadelphous: having the stamens united into two groups, or all but one united in a group and one free.

diaphanous: extremely thin and transparent.

dichasium: a cymose inflorescence with opposite branching below the flower which terminates each axis. pl. **dichasia**. cf. **monochasium**.

dichasial cyme: an inflorescence composed of dichasia. Fig. 131E.

dichlamydeous: *of a flower*, having two whorls of perianth parts.

dichotomous: forking into two equal branches resulting from division of the growing point.

diclinous: having the stamens and the carpels in separate flowers.

dicotyledon: a flowering plant whose embryo has two (rarely more) cotyledons (seed leaves). cf. **monocotyledon**.

didymous: borne in pairs; *of anthers*, having two lobes, with scarcely any tissue connecting them.

didynamous: *of stamens*, four in number, two being distinctly longer than the other two.

digitate: branching from the axis or stalk like the fingers of a hand. Fig. 127H.

dimidiate: appearing to be halved, as when half an organ is so much smaller than the other that it seems absent.

dimorphic: of two different forms.

dioecious: having the male and female reproductive structures on separate plants. cf. **monoecious**.

diplecolobous: *of cotyledons in a seed*, twice folded transversely.

diploid: having two of the basic sets of chromosomes in the nucleus. cf. **haploid**, **polyploid**.

diplostemonous: with stamens in 2 whorls.

disc: a plate or rim of tissue, derived from the receptacle of a flower, occurring between whorls of floral parts.

discolorous: of different colours; *of leaves*, having the two surfaces different in colour; variegated. cf. **concolorous**.

dissepiment: a partition (septum) within an ovary or fruit, derived by fusion of adjacent carpels.

distal: remote from the point of origin or attachment. cf. **proximal**.

distichous: arranged in two rows on opposite sides of a stem and thus in the same plane. Fig. 130L.

diurnal: *of flowers*, opening only during daylight hours.

divaricate: widely spreading and often ±horizontal.

divergent: of like structures spreading widely but separating by degrees from axis, attachment, or point of reference and from each other, e.g. branches of pappus of *Carthamnus lanatus*.

division: the major taxonomic rank within the Plant Kingdom. Alternative name for **phylum**.

domatia: small structures on the lower surface of a leaf in some woody dicotyledons, located in the axils of the primary veins and usually consisting of depressions partly enclosed by leaf tissue or hairs. sing. **domatium**. Fig. 125A–C.

dorsal: *of a lateral organ*, (relating to the side) facing away from the axis, i.e. the 'back'; *of a thallus*, facing away from the substratum. cf. **ventral**.

dorsifixed: attached at or by the back.

dorsiventral: having structurally different upper and lower surfaces.

drupe: a succulent fruit formed from one carpel, having the seed(s) enclosed in an inner stony layer of the fruit wall. adj. **drupaceous** (which is often used to mean drupe-like but not strictly a drupe). cf. **berry**, **pyrene**.

duplicate: folded twice.

echinate: bearing stiff, stout, prickly hairs. Fig. 134K.

edaphic: pertaining to the soil.

eglandular: without glands.

elaiosome: an appendage of a seed, usually rich in oil, attractive to fauna (especially ants) and hence an aid to dispersal by such fauna.

elater: in *Equisetum*, an appendage to the spore.

elliptic: oval in outline, widest at the centre. Fig. 126H.

emarginate: having a broad, shallow notch at the apex. Fig. 126FF.

embryo: a young plant contained within an archegonium or seed.

emersed: *of leaves, flowers, etc.*, rising above the surface of water in which the plant is rooted.

enation: an epidermal outgrowth.

endemic: having a natural distribution confined to a particular geographical region.

endocarp: the innermost layer of the wall of a fruit; *in a drupe*, the stony layer surrounding the seed.

endosperm: nutritive tissue in a seed, in angiosperms triploid and formed in the embryo sac after fertilisation, in gymnosperms haploid and derived from the sterile portion of the female gametophyte. cf. **perisperm**.

ensiform: sword-shaped.

entire: having a smooth margin, not dissected or toothed. Fig. 127O.

entomophilous: pollinated by insects.

ephemeral: short-lived.

epicalyx: a whorl of bracts, just below a flower, looking like a second calyx.

epicarp: the outer layer of the wall of a fruit, i.e. the 'skin'. Also known as the exocarp.

epicormic: *of buds, shoots or flowers*, borne on the old wood of trees (applied especially to shoots arising from dormant buds after injury or fire).

epicortical: on top of the bark, i.e. outside the bark.

epidermis: the outermost layer of cells of an organ, usually only one cell thick.

epigeal: *of germination*, having the cotyledon(s) emerging from the seed coat and becoming photosynthetic. cf. **hypogeal**.

epigynous: *of floral parts (especially stamens)*, attached above the level of insertion of the ovary, and arising from tissue that is fused to the ovary wall. cf. **hypogynous**, **perigynous**. Fig. 135D, E.

epipetalous: borne on the petals. Fig. 135C.

epiphyllous: growing on leaves, e.g. the vegetatively derived plantlets of some Crassulaceae; *of bryophytes, lichens, fungi*, growing upon leaves but not parasitic on them.

epiphyte: a plant growing on, but not parasitic on, another plant (often loosely applied to plants, such as orchids, that grow on vertical rock faces). cf. **parasite**, **saprophyte**.

episepalous: *of stamens*, borne on the sepals.

equilateral: *of stamens*, with anthers regularly spaced around the style.

equitant: *of a leaf*, folded in half along the midline so that the adaxial surface disappears from view, and overlapping the edges of a similarly folded leaf on the opposite side of the stem (at least at the base).

eremean: belonging to regions of low, irregular rainfall.

erose: *of a margin*, finely and irregularly eroded or incised.

eucamptodromous: pinnate venation in which the secondary veins do not terminate at the margins but which gradually diminish inside the margin, connected to the superadjacent secondary veins by a series of cross-veins without forming prominent marginal loops.

eusporangiate: *of ferns*, having sporangia with walls more than one cell thick. cf. **leptosporangiate**.

evergreen: bearing green leaves throughout the year. cf. **deciduous**

excentric: to one side; off centre.

exine: the outer layer of the wall of a pollen grain or spore.

exocarp (= **epicarp**)**:** the outer layer or "skin" of a pericarp.

exserted: protruding, e.g. of stamens with respect to a corolla tube.

exstipulate: without stipules.

extrafloral: *of nectaries*, not within the flower.

extrastaminal: outside the stamens.

extravaginal: *of a shoot*, arising from an axillary bud which breaks through the sheath of the subtending leaf.

extrorse: *of anthers*, opening away from the centre of the flower. cf. **introrse**.

facultative: *of parasites*, optional. cf. **obligate**.

falcate: sickle-shaped. Fig. 126F.

family: a group of one to many genera believed to be related phylogenetically, usually clearly separable from other such groups; the major taxonomic group between genus and order.

farinaceous: containing starch grains; mealy; resembling flour.

fascicle: a cluster, adj. **fasciculate**.

favulariate: *of a surface*, finely ribbed, the ribs separated by zig-zag furrows.

felted: covered with very dense, interlocked and matted trichomes having the appearance or texture of felt or woollen cloth, cf. tomentose. Fig. 137D.

fenestrate: having openings or translucent areas ('windows').

fertilisation: the union of male and female gametes.

filament: the stalk of a stamen; a thread one or more cells thick.

filiform: thread-like. Fig. 126C.

fimbriate: *of a margin*, fringed with long slender hair-like processes (called fimbriae). Fig. 139B.

fimbrillate: minutely fimbriate.

fistular: hollow throughout its length.

flabellate (= flabelliform): fan-shaped.

flaccid: limp; tending to wilt. cf. **turgid**.

flagelliform: long and very slender, like a whip-lash.

flexuose (= **flexuous**)**:** bent from side to side in a zig-zag form.

floccose: bearing tufts of soft hairs or wool which tend to rub off and adhere in small masses. Fig. 137E.

floral: belonging to or associated with a flower.

floret: a grass flower, together with the lemma and palea that enclose it (often also applied to the individual small flowers in Cyperaceae and Asteraceae).

flower: the sexual reproductive structure of the angiosperms, typically consisting of gynoecium, androecium and perianth and the axis bearing these parts.

foliaceous: leaf-like.

follicle: a dry, dehiscent fruit formed from one carpel and dehiscing along the line of fusion of its edges. Fig. 134B.

forb: a non-woody plant other than a grass, sedge, rush, *etc*. cf. **herb**.

-form: superficially resembling; e.g. umbelliform (inflorescence resembling but not truly an umbel).

foveate: pitted. Fig. 134F.

free-central: *of placentation*, with the ovules borne on a free-standing central placenta within the ovary. Fig. 136F.

free: *of floral organs*, not fused or united with other similar organs.

frond: a leaf, especially of a fern, cycad or palm.

fruit: the seed-bearing structure in angiosperms, formed from the ovary after flowering.

frutescent: becoming shrub-like (woody).

fruticose: shrub-like.

fugacious: falling or withering away very early.

fulvous: dull yellowish brown or yellowish grey.

funicle (= **funiculus**)**:** the stalk of an ovule.

fusiform: spindle-shaped, i.e. narrower at both ends than at the centre.

gamete: a cell or nucleus that fuses with another, of opposite sex, in sexual reproduction.

gametophyte: a plant, or phase of a plant's life cycle, that bears gametes.

gamopetalous: see sympetalous.

gamophyllous: having the leaves or perianth segments united by their margins, at least at the base.

gamosepalous: having the sepals united by their margins, at least at the base.

gemma: a bud or bud-like organ capable of reproducing the plant. *pl.* **gemmae**.

geniculate: bent abruptly like a knee joint.

genotype: the total complement of hereditary factors (genes) acquired by an organism from its parents and available for transmission to its offspring. cf. **phenotype**.

genus: a group of species believed to be related phylogenetically and usually clearly separable from other such groups, or a single species without close relatives; the major taxonomic rank between species and family. pl. **genera**.

geophyte: a plant whose perennating buds are buried in the soil.

gibbous: *usually of a calyx or corolla*, with a large hump or pouch-like swelling.

glabrate: glabrous, but obviously having previously had an indumentum.

glabrescent: becoming glabrous.

glabrous: without hairs.

gland: a structure, within or on the surface of a plant, with a secretory function.

glandular: bearing glands; functioning as a gland.

glandular trichome: trichome terminating in a gland or functioning as a secretory organ or accumulatory organ. Fig. 139C.

glaucous: blue-green in colour, with a whitish bloom (as in the juvenile leaves of many *Eucalyptus* species).

globose: nearly spherical.

glochid: a barbed hair or bristle.

glomerule: a small compact cluster. adj. **glomerulate**. Fig. 133G.

glumaceous: glume-like, tending to be chaffy or membranous in texture.

glume: a bract in the inflorescence of a grass, sedge or similar plant.

grain: a fruit characteristic of grasses (= **caryopsis**); pollen grain, a microspore of a seed plant, or the partially developed gametophyte formed from it.

granulate: *of a surface*, granular.

guard cells: the two cells that open and close the stomata to allow gas exchange.

gymnosperm: a seed plant with the ovules borne on the surface of a sporophyll. cf. **angiosperm**.

gynobasic: *of a style*, arising near the base of the gynoecium, e.g. between the lobes of the ovary.

gynodioecious: having bisexual flowers and female flowers on separate plants. cf. **gynomonoecious**.

gynoecium: the carpels of a flower collectively.

gynomonoecious: having bisexual and female flowers on the same plant cf. **gynodioecious**.

gynophore: a stalk bearing the gynoecium above the level of insertion of the other floral parts.

gynostegial corona: collective term for the staminal and interstaminal coronas, both of which are associated with the gynostegium. cf. **interstaminal corona**, **staminal corona**.

gynostegium: a structure formed by the fusion of the stamens and the gynoecium in Asclepiadaceae. cf. **column**.

habit: the growth form of a plant, comprising its size, shape, texture and orientation.

habitat: the environment in which a plant lives.

hair: an elongate single-celled or multi-celled outgrowth from the epidermis, without vascular tissue.

half-inferior: *of an ovary*, partly below and partly above the level of attachment of the perianth and stamens. Fig. 135D.

halophyte: a plant adapted to living in highly saline habitats; a plant that accumulates high concentrations of salt in its tissues.

haploid: having a single set of chromosomes in the nucleus (i.e. having each gene locus represented only once).

hastate: spear-shaped; *of a leaf blade*, narrow and pointed but with two basal lobes spreading approximately at right angles. Fig. 126R.

haustorium: an absorbing organ through which a parasite obtains chemical substances from its host.

head: see capitulum. Fig. 133F.

helicoid: coiled; *of a cymose inflorescence*, branching repeatedly on the same side. cf. **scorpioid**.

hemiparasite: an organism which lives on and derives part of its nourishment from a different organism, and is partially self-supporting.

herb: any vascular plant that never produces a woody stem. cf. **forb**.

herbaceous: not woody; soft in texture.

hermaphrodite: = **bisexual**.

hesperidium: a fleshy indehiscent fruit derived from a single pistil, with an outer leathery rind and septate interior (e.g. *Citrus*).

heteroblastic: having the adult parts of the plant (especially the leaves) distinctly different in form from the juvenile parts.

heterogamous: producing flowers of two or more kinds with respect to their fertile organs, e.g. male and female or bisexual and female. cf. **homogamous**.

heteromorphic (= **heteromorphous**): of two or more distinct forms.

heterosporous: producing two kinds of spores (male and female, or microspores and megaspores). cf. **homosporous**.

heterostylous: species in which flowers are similar except that the stigmas and anthers are held at different levels relative to each other, because style length differs between plants. cf. **homostylous**.

hilum: the scar on a seed coat at the place where it was attached to its stalk during development.

hirsute: bearing coarse, rough, relatively long hairs. cf. **villous**. Fig. 137F.

hispid: bearing stiff, bristly hairs. Fig. 137G.

hispidulous: minutely hispid.

hoary: covered with a greyish layer of very short, closely interwoven hairs.

holotype: a single specimen or illustration designated by the author of a plant (or animal) name, at the time of original publication, which fixes the application of the name; the 'voucher specimen' of a name.

homogamous: having flowers of only one kind. cf. **heterogamous**.

homosporous: producing only one kind of spore in the sexual reproductive cycle, and hence one gametophyte which produces both male and female gametes. cf. **heterosporous**.

homostylous: species in which the flowers have stigmas and anthers held at the same level relative to each other on all plants. cf. **heterostylous**.

horizontal: lying in a plane parallel with the surface of the organ, usually applied when the organ is also oriented horizontally.

host: an organism on which a parasite lives and by which it is nourished (also applied, loosely, to a plant supporting an epiphyte).

hyalescent: becoming translucent.

hyaline: translucent, almost like clear glass.

hybrid: an offspring of genetically different parents (in a Flora, usually applied where the parents are of different species).

hygroscopic: absorbing water (and undergoing movements or changes brought about by changes in water content).

hypanthium: a cup or tube bearing floral parts above the base, and often above the top, of the ovary of a flower, e.g. in many Myrtales. cf. **calyx tube**.

hypocotyl: the part of the stem of an embryo or young seedling below the cotyledonary node.

hypodermis: a clearly differentiated layer of cells below the epidermis.

hypogeal: *of germination*, having the cotyledon(s) remaining within the seed coat. cf. **epigeal**.

hypogynous: arising below the level of insertion of the ovary (often applied, loosely, to a *flower* in which the sepals, petals and stamens are inserted below the ovary). cf. **perigynous**, **epigynous**. Fig. 135A, C.

imbricate: *of perianth parts*, having the edges overlapping in the bud. cf. **valvate**. Fig. 136A–C.

imparipinnate: having an uneven number of pinnae, by virtue of having one terminal pinna. cf. **paripinnate**. Fig. 127M.

incised: cut deeply, sharply and often irregularly (an intermediate condition between toothed and lobed). Fig. 127D.

included: enclosed, not protruding.

incrassate: thickened; *of a pollen grain*, with thickened margins around the apertures.

incumbent: *of the orientation of an embryo*, with the cotyledons lying face to face and folded downwards beside the radicle; *of anthers*, lying against the inner face of the filament.

incurved: bent or curved inwards or upwards; *of leaf margins*, curved towards the adaxial surface.

indefinite: variable in number; numerous; *of stamens*, more than twice as many as the petals or sepals; *of an inflorescence*, not terminating in a flower (i.e. having a continuing, terminal growing point).

indehiscent: not opening at maturity.

indeterminate (= **monopodial**)**:** *of growth*, the condition in which the terminal bud persists and produces successive lateral branches; *of an inflorescence*, when the floral axis is not terminated by a flower, ie a racemose inflorescence. cf. **cymose**.

indumentum: the epidermal appendages, e.g. hairs or scales, collectively. Figs 137, 138.

induplicate: folded inwards so that the outer faces of the margins are in contact.

indurated: hardened.

indusium: tissue covering the sorus of a fern; a hollow pollen-cup surrounding the stigma in Goodeniaceae.

inferior: *of an ovary*, at least partly below the level of attachment of the other floral parts. cf. **superior**. Fig. 135D, E.

inflexed: bent sharply upwards or forwards. cf. **deflexed**.

inflorescence: the group or arrangement in which flowers are borne on a plant.

infraspecific: of lower taxonomic rank than species.

infructescence: the grouping or arrangement in which fruits are borne on a plant.

insectivorous: catching, and ostensibly feeding on, insects.

inserted (*on*): attached to; arising from.

integument: a covering; one of the outer layers of tissue of an ovule.

intercalary: between two points. Fig. 133D.

intercalary growth: extension or growth from an **intercalary meristem**, i.e. neither from the apex nor the base.

intercalary inflorescence: an inflorescence that either arises in an internodal position, or one originally terminal but ceasing to be so when vegetative growth subsequently resumes from the stem apex. Fig. 133D.

internode: the portion of a stem between the level of insertion of two successive leaves or leaf pairs (or branches of an inflorescence).

interpetiolar: *of stipules*, between the petioles of two opposite leaves. cf. **intrapetiolar**.

interrupted: *of an inflorescence*, having the flowers unevenly distributed along the axis, with conspicuous gaps.

interstaminal corona: fleshy lobes, often connate into a tube, attached to the base of the staminal column in the interstaminal areas. cf. **gynostegial corona**.

intramarginal: situated inside but close to the margin, e.g. of a vein in a leaf.

intrapetiolar: between a petiole and the subtending stem. cf. **interpetiolar**.

introduced: not indigenous; not native to the area in which it now occurs. cf. **adventive**, **naturalised**.

introrse: *of anthers*, dehiscing towards the centre of the flower. cf. **extrorse**.

involucre: a group of bracts enveloping a condensed inflorescence; a layer of tissue enveloping particular structures, e.g. an archegonium in Bryophyta, sporangia in Hymenophyllaceae.

involucel: involucre of bractlets surrounding a secondary inflorescence such as the base of an umbellule.

involute: rolled inwards; *of a leaf*, with the margins rolled towards the adaxial surface. cf. **revolute**. Fig. 130C.

irregular: see zygomorphic.

isobilateral (= **isolateral**)**:** having structurally similar upper and lower surfaces.

isotype: a specimen which is a duplicate of the holotype, i.e. part of the same collection.

jugate: paired.

juvenile: *of leaves*, formed on a young plant and different in form from the adult leaves.

karyoevolution: evolutionary change in the chromosome set, expressed as changes in number and gross structure of the chromosomes; (more broadly), evolutionary relationships between taxa as indicated by karyotype differences.

karyotype: the gross morphology of the chromosome set, described in terms of number, length, centromere position, *etc*.

keel: a ridge like the keel of a boat; *in Fabaceae*, a boat-shaped structure formed by fusion of the two anterior petals of a flower.

keeled: *of leaves, petals or bracts*, folded and ridged along the midrib.

kwongan: low sand heath or sand plain sclerophyllous vegetation common in south-western W.A.

labellum: a lip; *in Orchidaceae*, the distinctive median petal that serves as an alighting platform for pollinating insects; *in Zingiberaceae and Costaceae*, a (usually showy) structure derived from petaloid staminodes.

laciniate: slashed into narrow, pointed lobes. Fig. 127E.

lacrymiform: tear-shaped, i.e. more or less ovoid or obovoid.

lacuna: a gap or cavity.

lamella: a thin, plate-like layer; middle lamella, the layer between the walls of two adjacent cells.

lamellose: composed of or arranged in layers or thin plates.

lamina: the blade of a leaf.

lanceolate: *of a leaf*, about four times as long as it is broad, broadest in the lower half and tapering towards the tip. Fig. 126G.

latex: a viscous fluid exuded from the cut surfaces of the leaves and stems of certain plants.

latiseptate: with broad partitions. cf. **angustiseptate**.

latrorse: turned sideways, i.e. not towards or away from axis; *of anthers*, opening laterally, i.e. towards adjacent anthers.

leaflet: one of the ultimate segments of a compound leaf.

lectotype: a specimen or illustration selected from among those cited with the original description to serve in place of a holotype where the holotype is missing or destroyed, or where no holotype was designated.

legume: a fruit characteristic of the families Mimosaceae, Caesalpiniaceae and Fabaceae, formed from one carpel and either dehiscent along both sides, or indehiscent; *in particular*, such a fruit that is grown as an edible crop; a crop species in the family Fabaceae.

lemma: the lower of two bracts enclosing a grass flower.

lenticel: a loosely-packed mass of cells in the bark of a woody plant, visible on the surface of a stem as a raised powdery spot, through which gaseous exchange occurs.

lenticular: shaped like a biconvex lens.

lepidote: covered with small, membranous scales.

leptosporangiate: *of ferns*, having sporangia with walls only one cell thick. cf. **eusporangiate**.

liane: a climbing or twining plant (usually applied to woody climbers).

lignified: woody, due to the deposition of lignin in cell walls.

lignotuber: a woody swelling at the base of the shoot system below or just above the ground, containing adventitious buds from which new shoots develop if the top of the plant is cut off or burnt (common in the shrubby eucalypts ('mallee') and in many other fire-tolerant Australian shrubs).

ligulate: bearing a ligule; strap-shaped.

ligule: a strap-shaped structure; a membranous or hairy appendage on the adaxial surface of a leaf, especially in grasses, at the junction between sheath and blade; a small adaxial appendage near the leaf base in some pteridophytes; the corolla limb in ray flowers of Asteraceae. Fig. 130 I.

limb: the upper, free, spreading portion of a corolla or perianth that is connate at the base.

linear: very narrow in relation to the length, and with the sides parallel. cf. **lorate.** Fig. 126D.

linguiform: tongue-shaped.

lithophyte: a plant that grows on the surface of unweathered rock.

lobulate: having small or indistinct lobes.

loculicidal: *of the dehiscence of a fruit,* along lines coinciding with the centres of loculi. cf. **septicidal**. Fig. 134D.

loculus: an enclosed compartment within an organ e.g. an ovary, an anther. pl. **loculi**.

lodicule: one of a pair of tiny scales in a grass floret, between the lemma and the fertile parts of the flower, which may be reduced perianth segments.

lomentum: a legume having distinct constrictions or lines of abscission between the seeds and breaking into one-seeded segments when mature.

lorate: *of leaves*, strap-shaped (moderately long with the two margins parallel). cf. **linear**.

lumen: the cavity of a plant cell.

lyrate: deeply lobed, with a large terminal lobe and smaller lateral ones. Fig. 127A.

macrospore: = **megaspore**.

mallee: a growth habit in which several woody stems arise separately from a lignotuber (usually applied to shrubby eucalypts); a plant having the above growth habit; vegetation dominated by such plants.

mammillate: having small nipple-shaped projections.

marcescent: withering without falling off.

marginal: occurring at or very close to the margin; *of a placenta*, on the (fused) margins of the carpel, i.e. along the suture. Fig.136H.

mealy: covered with meal-like or flour-like particles. Fig. 137H.

medifixed: attached by or at the middle, e.g. *of anthers*,with filament attached at the middle of the connective. cf. **basifixed**, **versatile**.

megagametophyte: a plant body or cell lineage, formed by vegetative growth of the megaspore, that produces the female gametes of a heterosporous plant.

megasporangium: the larger of the two kinds of sporangia produced in the sexual life cycle of a heterosporous plant.

megaspore: the larger of the two kinds of spores produced in the sexual life cycle of a heterosporous plant, giving rise to the female gametophyte.

megasporophyll: a specialised leaf upon which (or in the axil of which) one or more megasporangia are borne.

meiosis: the two-stage division of a diploid nucleus, occurring once in every sexual life cycle, in which gene recombination occurs and the number of chromosomes characteristic of the sporophyte plant is halved prior to the production of gametes.

mellitophily: an insect-flower pollination syndrome involving bees.

mentum: *in Orchidaceae*, a spur formed by extension of the base of the column.

mericarp: one segment of a fruit that breaks at maturity into units derived from the individual carpels. cf. **schizocarp**.

meristem: growing regions of a plant in which cells that have retained their embryonic characteristics, or have reverted to them secondarily, divide to produce new cells.

-mery: the number of parts per whorl that characterises a particular flower (generally constant for the perianth whorls and less often for the whorl(s) of stamens also). adj. **-merous**.

mesocarp: the fleshy portion of the wall of a succulent fruit inside the skin and outside the stony layer, if any, surrounding the seed(s).

mesophyll: photosynthetic tissue of a green plant; *of vegetation*, characteristic of moist habitats and with soft, fairly large leaves predominating; a leaf with an area within the approximate range 20–180 cm^2.

microgametophyte: a plant body or cell lineage, formed by vegetative growth of the microspore, that produces the male gametes of a heterosporous plant.

microphyll: small leaf.

micropyle: a small canal through the integument(s) of an ovule, persisting as a pore in the seed coat.

microsporangium: the smaller of the two kinds of sporangia produced in the sexual life cycle of a heterosporous plant.

microspore: the smaller of the two kinds of spores produced in the sexual life cycle of a heterosporous plant, giving rise to the male gametophyte.

microsporophyll: a specialised leaf upon (or in the axil of) which one or more microsporangia are borne.

midrib: the central, and usually the most prominent, vein of a leaf or leaf-like organ.

monadelphous: *of stamens*, united by their filaments into one bundle.

moniliform: cylindrical but constricted at regular intervals like a string of beads.

monocarpic: flowering and fruiting only once during its life span.

monochasium: a cymose inflorescence with the branches arising singly. pl. **monochasia**. cf. **dichasium**.

monochasial cyme: an inflorescence composed of monochasia. Fig. 131F.

monochlamydeous: *of a flower*, having only one whorl of perianth parts.

monoclinous: having male and female reproductive organs in the same flower.

monocotyledon: a flowering plant whose embryo has only one cotyledon (seed leaf). cf. **dicotyledon**.

monoecious: having the male and female reproductive structures in separate flowers but on the same plant. cf. **dioecious**.

monophyletic: derived from a single ancestral line. cf. **polyphyletic**.

monopodial: *of growth*, with a persistent terminal growing point producing many lateral organs successively; *of a stem*, growing in the above manner. cf. **sympodial**.

monotypic: containing only one taxon of the next lower rank (e.g. applied to a family containing only one genus). cf. **polytypic**.

morphocline: a graded series of character states of an homologous character.

morphology: the form and structure of an organism or part of an organism; the study of form and structure.

motile: actively moving; self-propelled.

mucilage: slimy material exuded by certain plants or plant organs. adj. **mucilaginous**. Fig. 139C.

mucous: slimy.

mucro: a sharp, abrupt terminal point. adj. **mucronate**. Fig. 126BB.

mucronulate: with a very small mucro; diminutive of mucronate.

multiplanar: *of divided leaves*, with the lobes held in several to many planes.

muricate: rough on the surface; covered with short, hard tubercles or hard outgrowths of the epidermis. Fig. 134J.

muriculate: rough with minute, short, hard points.

muticous: pointless, blunt, awnless.

mycorrhiza: a symbiotic union between a fungus and a plant root.

naked: *of sporangia*, not covered by an indusium; *of seeds*, exposed on the surface of a sporophyll (not enclosed within an ovary); *of flowers*, without perianth; *of protoplasts or gametes*, not bounded by a cell wall.

naturalised: introduced and reproducing itself without human assistance. cf. **adventive**, **introduced**.

navicular: boat-shaped.

nectary: a gland that secretes nectar. adj. **nectariferous**.

neotype: a specimen or illustration selected to serve in place of a holotype, where all of the material on which the name was originally based is missing or destroyed. cf. **lectotype**.

nerve: a vein.

nest-fronds: specialised, shield-like, basal fronds in some ferns (e.g *Platycerium)*which accumulate leaf-litter.

neuter: sterile (e.g. of flowers in which neither the androecium nor the gynoecium is functional in reproduction).

nocturnal: *of flowers*, opening only at night.

node: the level (transverse plane) of a stem at which one or more leaves arise.

nomen conservandum: a name of a family, genus or species that has been formally accepted under the *International Code for Botanical Nomenclature* as the correct name contrary to the usual principles of botanical nomenclature; abbrev. *nom. cons*.

nomen illegitimum: a name which, at the time of its publication, was superfluous (because it included the type of an earlier name which should have been adopted) or had already been applied to another plant; abbrev. *nom. illeg*.

nomen nudum: a name published without a diagnosis or description of the entity to which it was applied, and without reference to either; abbrev. *nom. nud*.

nomen rejiciendum: a name rejected in favour of a 'nomen conservandum'; abbrev. *nom. rej*.

nucellus: the central tissue of an ovule, within which the megaspore mother cell is formed.

nut: a hard, dry, indehiscent fruit formed from two or more carpels but containing only one seed.

obconical: cone-shaped but attached at the narrower end.

obcordate: *of a leaf blade*, broad and notched at the tip; heart-shaped but attached at the pointed end. Fig. 126GG.

oblanceolate: similar in shape to lanceolate but attached at the narrower end.

obligate: *of parasites*, unable to survive without the host. cf. **facultative**.

oblique: *of a leaf or leaflet*, larger on one side of the midrib than on the other, i.e. asymmetrical. Fig. 126U.

obloid: (a three-dimensional shape) with short, parallel sides and rounded ends, as if composed of two hemispheres linked together by a short cylinder.

oblong: having the length greater than the width but not many times greater, and the sides parallel. Fig. 126E.

obovate: similar in shape to ovate but attached at the narrower end. Fig. 126J.

obsolescent: non-functional but not reduced to a rudiment.

obsolete: reduced to a rudiment, or completely lacking. cf. **rudimentary**, **vestigial**.

obtrullate: a 2-dimensional shape resembling a trowel blade with the broadest axis above the middle and a length : breadth ratio between 3 : 2 and 2 : 1.

obtuse: blunt or rounded at the apex, the converging edges separated by an angle greater than 90°. Fig. 126DD.

ochrea: a sheath, formed from two stipules, encircling the node in Polygonaceae. Fig. 129B.

ontogeny: the development of a single organism, i.e. the sequence of stages through which it passes during its lifetime.

operculum: a lid or cover; the upper part of an organ, becoming detached or partially detached at maturity by abscission of transverse dehiscence; *in Eucalyptus*, a cap covering the bud and formed by fusion or cohesion of perianth parts. adj. **operculate**. Fig. 133L.

opposite: *of leaves*, borne at the same level but on opposite sides of the stem; *of floral parts*, on the same radius. cf. **alternate**. Fig. 130M.

orbicular: circular or nearly so. Fig. 126K.

order: a taxonomic grouping of families believed to be closely related (sometimes a single family with no apparent close relatives); the major taxonomic rank between family and class.

orthotropous: *of an ovule*, erect so that the micropyle points away from the placenta. Fig. 136K.

ostiole: an opening or pore, e.g. at the apex of a fig.

ovary: the basal portion of a carpel or group of fused carpels, enclosing the ovule(s).

ovate: a two dimensional shape, like a section through the long axis of an egg, and attached by the wider end. cf. **ovoid**. Fig. 126I.

ovoid: egg-shaped (in three dimensions). cf. **ovate**.

ovulate: with ovules.

ovule: a structure in a seed plant within which one or more megaspores are formed and which develops into a seed after fertilisation. Fig. 136E–M.

ovuliferous: bearing ovules (e.g. applied to scales in a megasporangiate cone in gymnosperms).

ovulode: sterile structures on the placenta.

palea: *in a grass floret*, the upper one of the two bracts enclosing a flower.

palmate: *of a leaf*, divided into several leaflets which arise at the same point. Figs 127I, 128J.

palmatifid: *of a leaf*, deeply (but not completely) divided into several lobes which arise (almost) at the same level. cf. **pinnatifid**, **palmate**, **palmatisect**. Fig. 127G.

palmatinerved: *of leaves*, palmately nerved, i.e. with the (main) nerves radiating from one basal point.

palmatisect: a condition intermediate between palmate and palmatifid, with the green tissue of the lamina completely divided into several segments, but the segments not fully separated at the base. Fig. 127H.

palynology: the scientific study of pollen.

pandurate: fiddle-shaped.

panicle: a compound raceme; an indeterminate inflorescence in which the flowers are borne on branches of the main axis or on further branches of these. Fig. 131D.

paniculate: indeterminate and much branched.

pantoporate: *of a pollen grain*, with rounded apertures all over the surface.

papilla: a small, elongated protuberance on the surface of an organ, usually an extension of one epidermal cell. adj. **papillose**. Figs 134N, 137I.

pappus: a tuft (or ring) of hairs or scales borne above the ovary and outside the corolla in Asteraceae and possibly representing the calyx; a tuft of hairs on a fruit. Fig. 138L.

parapatric: *of distributions of two taxa or populations*, having non-overlapping but contiguous ranges.

paraphyletic: a group of taxa derived from a single ancestral taxon, but which does not contain all the descendants of the most recent common ancestor.

paraphyses: sterile filaments in the fruiting bodies of non-vascular plants.

parasite: an organism living on or in a different organism and deriving nourishment from it. cf. **saprophyte**, **epiphyte**.

paratype: a specimen or illustration, other than the holotype, isotype or one of the syntypes, that was cited with the original publication of a name.

parenchyma: plant tissue consisting of mature, living cells that are relatively unspecialised in function.

parietal: attached to the margins of a structure; *of placentation*, having the ovules attached to placentas on the wall of the ovary. Fig. 136G.

paripinnate: having an even number of pinnae by virtue of having a pair in the terminal position. cf. **imparipinnate**. Fig. 127L.

-partite: divided, almost to the base, into segments (commonly applied to a style).

pectinate: comb-like.

pedate: *of a palmate or palmately-lobed leaf*, having the lateral segments divided again.

pedicel: the stalk of a flower. adj. **pedicellate**.

peduncle: the stalk of an inflorescence; *in ferns*, the stalk of a sporocarp. adj. **pedunculate**.

pellucid: transparent.

peloric: actinomorphic, *of a flower which, from its taxonomic context, would be expected to be zygomorphic*, e.g. in Orchidaceae.

peltate: *of a leaf*, having the stalk attached to the lower surface of the blade, not to the margin (also applied, in the same sense, to other stalked structures). Figs 126K, 139L.

pendulous: drooping; *of ovules*, attached at the top of the ovary and hanging downwards from an apical placenta.

penicillate: pencil-shaped; tufted like an artist's brush.

penninerved (= **penniveined**): having conspicuous lateral veins divergent from the midrib and lying approximately parallel to each other.

pentamerous: *of a flower*, having five parts in each floral whorl (not necessarily including the gynoecium).

pepo: *literally*, a pumpkin (Latin); a fruit with firm skin, pulpy interior, many seeds and a single locule.

perennate: maintain a dormant, vegetative state throughout non-growing seasons.

perennial: a plant whose life span extends over more than two growing seasons.

perfoliate: *of a sessile leaf or bract*, having its base completely wrapped around the stem. Fig. 128F.

perianth: the calyx and corolla of a flower, especially where the two are similar.

pericarp: the wall of a fruit, developed from the ovary wall.

perigynous: *of perianth segments and stamens*, arising from a cup or tube (hypanthium) that is free from the ovary but extending above its base. cf. **hypogynous**, **epigynous**. Fig. 135B.

perisperm: nutritive tissue in an angiospermous seed, formed from the nucellus. cf. **endosperm**.

persistent: remaining attached to the plant beyond the expected time of falling (e.g. of sepals not falling after flowering).

petal: a member of the inner whorl of non-fertile parts surrounding the fertile organs of a flower, usually soft and coloured conspicuously.

petaloid: like a petal; soft in texture and coloured conspicuously.

petiole: the stalk of a leaf. Fig. 128A.

petiolule: the stalk of a leaflet.

phalange: a bundle comprising several structures fused together; a group of connate carpels, e.g. in Pandanaceae.

phanerogam: (literally) a plant with conspicuous reproductive parts; a plant reproducing by seeds. cf. **cryptogam**.

phenotype: the physical characteristics of an organism; the outward expression of characteristics conferred on an organism by its genotype. cf. **genotype**.

phloem: the tissue in the conducting system of a plant through which metabolites (products of chemical reactions in the plant) are transported.

phyllichnium: *in Casuarinaceae*, the ridge of a branchlet segment; pl. **phyllichnia**.

phylloclade: a very leaf-like, photosynthetic stem of a plant whose true leaves are much reduced. cf. **cladophyll**.

phyllode: a leaf whose blade is much reduced or absent, and whose petiole and rachis have assumed the functions of the whole leaf. cf. **cladode**.

phyllotaxy: the arrangement of leaves on a stem (when spiral, often expressed quantitatively as the fraction of the circumference of the stem that separates two successive leaves).

phylogeny: the evolutionary development of a plant group, i.e. its derivation from its ancestors and the relationship among its members. adj. **phylogenetic**.

phylum: an alternate name for division, the major taxonomic rank below kingdom.

pilose: hairy, the hairs soft and clearly separated but not sparse. Fig. 137J.

pinna: a primary segment of the blade of a compound leaf. pl. **pinnae**.

pinnate: divided into pinnae; once-compound. cf. **bipinnate**, **tripinnate**. Figs 127L–M, 128I.

pinnatifid: cut deeply (but not to midrib) into lobes that are spaced out along the axis (of the leaf). cf. **palmatifid**. Fig. 127B.

pinnatipartite: *of leaves*, pinnatifid, where the lobes pass beyond the middle (or are within the middle third) and the parenchyma is not interrupted.

pinnatisect: dissected down to the midrib but having the segments confluent with it. Fig. 127C.

pinnule: a leaflet of a bipinnate leaf.

pistil: a free carpel or a group of fused carpels.

pistillode: a sterile pistil, often rudimentary.

pith: the central region of a stem, inside the vascular cylinder.

placenta: a region, within an ovary, to which ovules are attached.

placentation: the arrangement of placentas, and hence of ovules, within an ovary. Fig. 136E–J.

plesiomorphic: *of a character*, ancestral or primitive.

plicate: folded back and forth longitudinally like a fan. Fig. 130E.

plietesial: monocarpic but living for several years before flowering.

plumose: like a feather; with fine hairs branching from a central axis. Fig. 139J.

plumule: the portion of an embryo that gives rise to the shoot system (as distinct from the root system) of a plant. cf. **radicle**.

pneumatophore: an air-vessel; an organ containing aerenchyma; *in particular*, a root of a mangrove plant, growing above the substratum.

pod: a leguminous fruit. Fig. 134A.

pollen: the microspores of seed plants; the powdery mass of microspores shed from anthers.

pollen-grain: see grain.

pollen presenter: *of many Proteaceae*, a structural modification, usually a swelling, of the style around or below the stigma which enables pollen, shed in the bud, to be retained.

pollen-sac: see sac.

pollination: the transfer of pollen from the male organ, where it is formed, to the receptive region of a female organ, e.g. from anther to stigma.

pollinarium: the complex structure found in flowers of Asclepiadaceae where the pollen masses of the two adjacent anther-lobes (thecae) are united for dispersal as a unit. The pollinarium consists of two pollinia, two caudicles and a corpusculum. plur. **pollinaria**.

pollinium: a cohering mass of pollen grains from one anther-lobe (theca), transferred as a unit in pollination. pl. **pollinia**.

polygamodioecious: with bisexual and male flowers on some plants, and bisexual and female flowers on others.

polygamomonoecious: with bisexual flowers and unisexual flowers of both sexes on the same plant.

polygamous: having bisexual and unisexual flowers on the same or different plants.

polymorphic: having more than two distinct morphological variants.

polypetalous: with free petals. cf. **gamopetalous**.

polyphyletic: composed of members that originated, independently, from more than one evolutionary line. cf. **monophyletic**.

polyploid: having more than two of the basic sets of chromosomes in the nucleus.

polytypic: containing more than one taxon of the next lower rank. cf. **monotypic**.

pome: a fleshy (false) fruit, formed from an inferior ovary, in which the receptacle or hypanthium has enlarged to enclose the true fruit.

porate: *of a pollen grain*, with rounded apertures only. cf. **colporate**, **colpate**.

poricidal: *of anthers or capsules*, opening by pores. Fig. 133M.

porrect: *of a trichome*, having branches spreading more or less horizontally from the top of an erect stalk. Fig. 139K.

posterior: *of floral parts*, on the side of the flower nearest to the axis. cf. **anterior**.

powdery: covered with fine, powdery particles.

praemorse: appearing bitten off at the end.

prickle: a hard, pointed outgrowth from the surface of a plant, involving several layers of cells but not containing a vein. Fig. 139E.

process: *as part of a plant*, a projecting outgrowth or appendage.

procumbent: trailing or spreading along the ground but not rooting at the nodes.

proliferous: able to reproduce vegetatively from the shoot system, e.g. by stems rooting at the nodes (as in *Conostylis)*; producing plantlets on leaves or fronds (*Pteris*) or in the inflorescence (*Isolepis)*.

propagule: a structure with the capacity to give rise to a new plant, e.g. a seed, a spore, part of the vegetative body capable of independent growth if detached from the parent.

prophyll: a leaf formed at the base of a shoot, usually smaller than those formed subsequently.

prostrate: lying flat on the ground.

protandrous: having the male sex organs maturing before the female; *of a flower*, shedding the pollen before the stigma is receptive. cf. **protogynous**.

prothallus: a gametophyte body, especially in bryophytes, ferns and related plants.

protogynous: having the female sex organs maturing before the male; *of a flower*, shedding the pollen after the stigma has ceased to be receptive. cf. **protandrous**.

proximal: near to the point of origin or attachment. cf. **distal**.

pruinose: having a whitish, waxy, powdery bloom on the surface.

pseudanthium: a compact inflorescence of several to many small flowers which simulates a single flower.

pseudo-: false; apparent but not genuine.

pseudostipel: extensions of dorsal ridges on the petioles (e.g. of *Neptunia*.

puberulous: covered with minute, soft, erect hairs. Fig. 137K.

pubescent: covered with short, soft, erect hairs. Fig. 137L.

pulverulent: as though dusted over with powder.

pulvinate: cushion- or pad-shaped, resembling a pulvinus.

pulvinus: a swelling at the base of the stalk of a leaf or leaflet, often glandular or responsive to touch. Fig. 130J.

punctate: marked with dots.

puncticulate: minutely dotted.

pungent: ending in a stiff, sharp point; having an acrid taste or smell.

pustulate: covered with small pustule- or blister-like elevations.

pyrene: the 'stone' (endocarp plus seed) of a succulent fruit. cf. **berry**, **drupe**.

quincuncial: *of the arrangement of corolla lobes in a bud*, a variant of imbricate aestivation. Fig. 136B.

raceme: an indeterminate inflorescence in which a main axis produces a series of flowers on lateral stalks, the oldest at the base and the youngest at the top. adj. **racemose**. Fig. 131C.

racemule: secondary raceme in a compound raceme or umbellate inflorescence.

rachilla: (= **rhachilla**) *of palms and woody monocotyledons*, the lateral or secondary branches of the inflorescence; *of a grass spikelet*, the axis above the glumes.

rachis: (= **rhachis**) the axis of an inflorescence or a pinnate leaf; pl. **rachises**. **secondary rachis:** the axis of a pinna in a bipinnate leaf.

radical: *of leaves*, clustered at the base of the stem.

radicle: the portion of an embryo that gives rise to the root system of a plant. cf. **plumule**.

ramiflorous: *of flowers and fruits*, borne below the current leaves on recently formed woody branches. cf. **cauliflorous**.

ramuliflorous: flowering on branchlets.

raphe: the part of the stalk of an anatropous ovule that is fused along the side of the ovule.

raphides: needle-like crystals that occur in bundles in the vacuoles of some plant cells.

ray: *in woody stems*, a radial band of cells traversing the conducting elements; *of a compound umbel*, one of the first (lower) series of branches of the inflorescence axis.

ray floret: a zygomorphic flower in Asteraceae.

receptacle: the axis of a flower (= **torus**); *in ferns*, an axis on which sporangia arise.

reclinate: bent back from the axis, attachment, or point of reference, but not curving. cf. **declinate**.

recurved: curved or curled downwards or backwards.

reflexed: bent sharply downwards or backwards.

regular: see actinomorphic.

reniform: kidney-shaped. Fig. 126O.

replum: a longitudinal partition in an ovary, formed between parietal placentas.

resupinate: twisted through 180°, e.g. as with the ovary of most Orchidaceae.

reticulate: forming a network. Fig. 134E.

retinaculum: a hook-like structure to which another structure is tethered; *in Orchidaceae and Asclepiadaceae*, the structure to which pollen masses are attached; *in Acanthaceae*, the persistent stalk of an ovule.

retrorse: bent, and pointing away from the apex. cf. **antrorse**.

retuse: with a very blunt and slightly notched apex. Fig. 126EE.

revolute: rolled downwards or backwards; *of a leaf lamina*, with the margins rolled towards the abaxial surface. cf. **involute**. Fig. 130B.

rhachilla: see rachilla.

rhachis: see rachis.

rhipidium: a compound cyme with the lateral branches developed alternately on one side and then the other.

rhizoid: a thread-like, unicellular absorbing structure occurring, in the vascular plants, in gametophytes of ferns and some related plants.

rhizome: an underground stem, usually growing horizontally. Fig. 125G.

rhizophore: *in Selaginella*, a leafless stem that produces roots.

rhomboid: quadrangular, with the lateral angles obtuse. Fig. 126M.

root: unit of the axial system of a plant which is usually underground, does not bear leaves, tends to grow downwards and is typically derived from the radicle of the embryo. cf. **adventitious.**

rootstock: a short, erect, swollen structure at the junction of the root and shoot systems of a plant (loosely: the root system).

rostellum: *in Orchidaceae*, a beak-like upward extension of the stigma.

rostrate: beaked.

rosulate: clustered into a rosette, e.g. of basal leaves of some annual and biennial forbs.

rotate: circular and flattened, e.g. of a corolla with a very short tube and spreading lobes.

rudimentary: poorly developed and not functional. cf. **vestigial**, **obsolete**.

rugose: deeply wrinkled.

rugulose: covered with minute wrinkles.

ruminate: mottled in appearance, e.g. of bark, or of the food reserves in a seed.

runcinate: deeply lobed and with the lobes slanted away from the apex. Fig. 127F.

runner: a slender, prostrate or trailing stem which produces roots and sometimes erect shoots at its nodes. cf. **stolon**.

sac: a pouch or cavity; **pollen-sac:** a cavity, in an anther, in which pollen is formed; **embryo-sac:** a large, multi-nucleate cell in which an egg nucleus is formed and fertilised, and in which an embryo begins to develop.

saccate: pouched.

sagittate: shaped like an arrow-head. Fig. 126S.

salverform: *of a sympetalous corolla*, salver-shaped, i.e. with a slender tube and abruptly expanded flat, rotate limb (like the corolla of *Primula*).

samara: a dry, indehiscent fruit with its wall expanded into a wing.

saprophyte: an organism deriving its nourishment from dead organic matter and usually lacking chlorophyll. cf. **epiphyte**, **parasite**.

scaberulous: slightly or minutely rough to the touch, minutely scabrous.

scabridulous: slightly rough; diminutive of scabrous.

scabrous (= **scabrid**)**:** rough to the touch. Fig. 138A.

scalariform: having a ladder-like pattern.

scale: a reduced or rudimentary leaf, e.g. surrounding a dormant bud; a thin flap of tissue of epidermal origin, e.g. at the base of a stamen in Simaroubaceae; a thin scarious trichome which is flattened and variously shaped. Fig. 139L.

scandent: climbing.

scape: the stem-like, flowering stalk of a plant with radical or rosulate leaves.

scarious: dry and membranous.

schizocarp: a dry fruit formed from more than one carpel but breaking apart into 1-carpel units when ripe. cf. **mericarp**.

sclerenchyma: mechanical tissue with heavily thickened cell walls.

sclereid: a cell (usually elongated) with a strongly lignified wall.

scleromorph: a plant whose leaves (or stems, if leafless) are hard in texture, usually having thick cuticle and containing many fibres. cf. **xeromorph**.

sclerophyllous: with leaves stiffened by sclerenchyma.

scorpioid: *of a cymose inflorescence*, branching alternately on one side and then the other, with the main axis coiled like the tail of a scorpion. cf. **helicoid**.

scribble: irregular lines on the bark of some eucalypts, being the old tunnels burrowed by moth larvae between bark layers and exposed when the outer layer falls.

secund: with all the parts grouped on one side or turned to one side (applied especially to the grouping of flowers in an inflorescence or stamens in a flower).

seed: a propagating organ formed in the sexual reproductive cycle of gymnosperms and angiosperms, consisting of a protective coat enclosing an embryo and food reserves. Fig. 134E–N.

segment: a part or sub-division of a divided organ; one of a group of similar organs named collectively, e.g. one petal = a segment of a corolla.

semicraspedodromus: pinnate venation in which the secondary veins branch just inside the margin, one of the branches terminating at the margin, the other joining the superadjacent secondary vein.

sepal: a member of the (usually green) outer whorl of non-fertile parts surrounding the fertile organs of a flower.

sepaloid: looking like sepals, e.g. *of bracts*, usually green and arranged in a ring beneath a flower.

septate: divided internally by partitions.

septicidal: *of the dehiscence of a fruit*, along lines coinciding with the partitions between loculi. cf. **loculicidal**. Fig. 134C.

septifragal: *of the dehiscence of a fruit*, the valves or backs of the carpels breaking away leaving the septa intact.

septum: a partition. pl. **septa**.

seriate: in rows or whorls.

sericeous: silky; covered with silky hairs.

serrate: toothed, with asymmetrical teeth pointing forward. Fig. 127P.

serrulate: finely serrate. Fig. 127Q.

sessile: without a stalk (when applied to a stigma, indicates that the style is absent, the stigma being 'sessile' on the ovary). Fig. 128B.

seta: a bristle or stiff hair; terminal seta: an appendage to the tip of an organ, e.g. to the primary rachis of a bipinnate leaf in *Acacia*. adj. **setaceous**.

setiferous: bearing setae.

setose: covered with bristles.

setulose: covered with fine bristles; resembling a fine bristle.

sheath: the lower portion of of a grass leaf, clasping the stem; one of the wing-like extensions to the margins of the petiole which wrap around and enclose the stem; **closed sheath:** one in which the wings are fused to form a cylinder; **open sheath:** one with a slit on the side opposite to the lamina. Fig. 128D, E.

shrub: a woody plant less than 5 metres high, either without a distinct main axis, or with branches persisting on the main axis almost to its base.

sigmoid: doubly curved in opposite directions like the letter S.

siliceous: containing silica.

silicula: a short siliqua, not more than twice as long as its width.

siliqua: a dry, dehiscent fruit formed from a superior ovary of two carpels, with two parietal placentas and divided into two loculi by a false septum between the placentas.

silky: densely covered with fine, soft, straight, appressed hairs, with a lustrous sheen and satin-like to the touch. Fig. 138B.

simple: undivided; *of a leaf*, not divided into leaflets; *of a hair or an inflorescence*, not branched.

sinistrorse: turned towards the left. cf. **dextrorse**.

sinuate: with deep, wave-like depressions along the margin. cf. **undulate**. Fig. 127V.

sinus: a notch or depression in the margin of an organ.

smooth: of surfaces, even, without roughness or indumentum.

solitary: *of flowers*, borne singly, not grouped in an inflorescence.

sorus: *in ferns*, a discrete group of sporangia. pl. **sori**.

spadix: a spicate inflorescence with a stout, often succulent axis. Fig. 133H.

spathaceous: like a spathe; with a spathe.

spathe: a large bract ensheathing an inflorescence. Fig. 133H.

spathella: a closed membranous sac which envelopes the immature flower in some Podostemaceae, rupturing irregularly as the pedicel elongates at anthesis.

spathulate (= **spatulate**)**:** spoon-shaped; broad at the tip and narrowed towards the base. Fig. 126P.

species: a taxon comprising one or more populations of individuals capable of interbreeding to produce fertile offspring.

spike: an unbranched, indeterminate inflorescence in which the flowers are without stalks. adj. **spicate**. Fig. 131B.

spikelet: a unit of the inflorescence in grasses, sedges and some other monocotyledons, consisting of one to many flowers and associated glumes. Fig. 131A.

spine: a stiff, sharp-pointed structure, formed by modification of a plant organ, e.g. a lateral branch or a stipule. adj. **spinulose**. Figs 134I, 139F.

spinescent: ending in a spine; modified to form a spine.

spinose: bearing spines.

spiral: *of leaves or floral organs*, borne at different levels on the axis, in an ascending spiral. cf. **cyclic**. Fig. 130K.

sporangiate: bearing spores (or pollen).

sporangiophore: the stalk of a sporangium; *in Botrychium*, the branched axis bearing sporangia.

sporangium: a structure within which spores are formed. pl. **sporangia**.

spore: a simple propagule, produced either sexually or asexually, and consisting of one or a few cells.

sporocarp: a fruiting body containing sporangia.

sporogenous: *of cells or tissues*, spore-generating.

sporophyll: a specialised leaf-like organ on which one or more sporangia are borne.

sporophyte: a plant, or phase of a life cycle, that bears the spores formed during the sexual reproductive cycle.

spur: a tubular pouch at the base of a perianth part, often containing nectar.

stamen: one of the male organs of a flower, consisting typically of a stalk (filament) and a pollen-bearing portion (anther). adj. **staminate**. Fig. 132J–M.

staminal corona: fleshy outgrowths of tissue, attached dorsally to the staminal column at the base of the filaments or on the backs of the anthers. cf. **gynostegial corona**.

staminode: a sterile stamen, often rudimentary, sometimes modified (e.g. petaloid).

staminophore: a band of tissue around the apex of the hypanthium in a eucalypt flower, on which the stamens are inserted.

standard: (= **vexillum**)**:** the posterior petal in the flower in Fabaceae and Caesalpiniaceae.

stellate: star-shaped; consisting of star-shaped cells; a branched trichome with six or more branches radiating from a single point. Fig. 139K.

stem: the main axis or a branch of the main axial system of a plant, developed from the plumule of the embryo and typically bearing leaves.

stigma: the pollen-receptive surface of a carpel or group of fused carpels, usually sticky.

stinging trichome: a hollow trichome seated on a gland which, when broken, secretes an irritating fluid.

stipe: a small stalk; *in ferns*, the petiole of a frond.

stipel (= stipella): stipule-like appendage at the base of a leaflet (in unifoliolate leaves, inserted on the petiole, not on the stem). pl. **stipellae**. adj. **stipellate**. Fig. 129J.

stipitate: stalked; borne on a stipe; *of an ovary*, borne on a gynophore.

stipule: one of a pair of appendages at the bases of leaves in many dicotyledons. Fig. 129A–I.

stolon: a prostrate or trailing stem that produces roots at the nodes. cf. **runner**. Fig. 125F.

stoloniferous: having stolons; trailing over the soil surface and rooting at the nodes.

stoma: a pore; a pore in the epidermis of a leaf or other aerial organ, providing for gaseous exchange between the tissues and the atmosphere. pl. **stomata**.

stomium: a region of dehiscence, e.g. of an anther in flowering plants. pl. **stomia**.

stone cell: a ±isodiametric sclereid.

stramineous: straw coloured.

striate: striped with parallel longitudinal lines or ridges. Fig. 134H.

strigose: with sharp, stiff hairs which are appressed to the surface. Fig. 138C.

strigulose: minutely strigose.

strobilus: a 'cone' consisting of sporophylls borne close together on an axis.

strophiole: see caruncle.

struma: a cushion-like swelling, e.g. at the apex of staminal filaments in *Dianella*.

style: an elongated part of a carpel, or group of fused carpels, between the ovary and the stigma.

stylopodium: a disc-like enlargement of the base of the style.

subulate: narrow and tapering gradually to a fine point. Fig. 126A.

sulcate: grooved; furrowed.

superior: *of an ovary*, borne above the level of attachment of the other floral parts, or above the base of a cup (hypanthium) that is free from the ovary and bears the perianth segments and stamens. cf. **inferior**. Fig. 135A–C.

suture: a line of junction between two fused organs; a line of dehiscence.

syconium: a multiple fruit with a hollow centre, e.g. in *Ficus* (fig). Fig. 133I.

sympatric: *of two or more species*, having coincident or overlapping ranges of distribution. cf. **allopatric**.

sympetalous: (= **gamopetalous**)**:** with the petals united by their margins, at least at the base. cf. **polypetalous**.

sympodial: *of growth*, without a single, persistent growing point; changing direction by frequent replacement of the growing apex by a lateral growing point below it; *of a stem*, growing in the above manner. cf. **monopodial**.

synandrium: an androecium with the anthers of the stamens cohering. cf. **syngenesious**.

synangium: a group of fruits fused into a single structure; *in ferns*, a group of fused sporangia.

synapomorphic: the common possession by two taxa of a derived, homologous character.

syncarp: a structure consisting of several united fruits, usually fleshy. cf. **aggregate fruit**.

syncarpous: *of a flower*, having two or more carpels, all fused together.

syngenesious: *of the stamens of one flower*, fused together by the anthers e.g. in Asteraceae. cf. **monadelphous**.

syntepalum: *in some Musaceae*, a unilaterally split tube formed by the coherence of 3 sepals and 2 petals.

syntype: one of two or more specimens cited by the author at the time of publication of a name if no holotype was designated; any one of two or more specimens simultaneously designated as types.

tannin: a complex, aromatic compound occurring in the bark of many shrubs and trees.

tanniniferous: producing tannins.

taproot: the main, descending root of a plant that has a single, dominant root axis.

taxon: a group or category, at any level, in a system for classifying plants or animals. pl. **taxa**.

tendril: a slender climbing organ formed by modification of a part of a plant, e.g. a stem, a leaf or leaflet, a stipule.

tenuiexinous: *of a pollen grain*, with a thin exine.

tepal: a perianth segment in a flower in which all the perianth segments are similar in appearance.

terete: cylindrical or nearly so; circular in cross-section. Fig. 130F.

terminal: at the apex or distal end. Fig. 133A.

ternate: in groups of three; *of leaves*, arranged in whorls of three; *of a single leaf*, having the leaflets arranged in groups of three. Fig. 127K.

ternatifid: *of leaves*, deeply cut into three lobes.

terrestrial: of or on the ground; *of the habitat of a plant*, on land as opposed to in water, or on the ground as opposed to on another plant.

testa: a seed coat.

tetrad: a group of four; four pollen grains remaining fused together at maturity, e.g. in Ericaceae, Epacridaceae.

tetradynamous: *of an androecium*, consisting of four stamens of the same length and two of a different length.

tetramerous: *of a flower*, having four segments in each perianth whorl, and usually four in each whorl of stamens also.

thallus: the vegetative body of a plant that is not differentiated into organs such as stems and leaves, e.g. the gametophytes of ferns, and Lemnaceae.

thigmotaxis: a response, by movement or growth, to a mechanical stimulus, e.g. the leaves of 'Sensitive Plant' (*Mimosa*), the leaf hairs of *Drosera*, or the tendrils of many climbing plants. adj. **thigmotactic**.

thorn: a modified plant organ, especially a stem, that is stiffened and terminates in a pungent point.

throat: *of a corolla tube*, the top, where the tube joins the lobes.

thyrse: a branched inflorescence in which the main axis is indeterminate and the lateral branches determinate in their growth. Fig. 131 I.

tomentellous: minutely tomentose.

tomentum: a covering of dense, matted, woolly hairs. adj. **tomentose**. Fig. 138D.

torus: see receptacle.

trabecula: a transverse partition dividing or partly dividing a cavity.

translator: applied to parts of a pollinarium, comprising the central part or corpusculum, and the arm-like structures or caudicles uniting the corpusculum with the pollinia.

trapeziform: having four straight unequal sides.

tree: a woody plant at least 5 metres high, with a main axis the lower part of which is usually unbranched.

trichome: an epidermal outgrowth, e.g. a hair (branched or unbranched), a papilla. Fig. 139.

trichotomous: branching almost equally into three parts.

trifid: deeply divided into three parts.

trifoliate: having three leaves.

trifoliolate: *of a leaf*, having three leaflets. Fig. 127J.

trigonous: triangular in cross-section and obtusely-angled. cf. **triquetrous**.

trimerous: *of a flower*, having three segments in each perianth whorl and usually three in each whorl of stamens also.

tripartite: divided into three parts.

tripinnate: *of leaves*, thrice pinnately divided.

triplicate: folded three times.

triquetrous: triangular in cross-section and acutely-angled; with three distinct longitudinal ridges. cf. **trigonous**.

tristichous: arranged in three rows on a stem, each row in the same plane.

tristylous: heterostylous species having three style lengths (short, mid, long), the flowers of any one plant having styles of the same length.

trulliform: shaped like a bricklayer's trowel, i.e. angular-ovate, broadest below the middle, rhomboid with the two lower equal sides shorter than the upper.

truncate: with an abruptly transverse end, as if cut off. Fig. 126V.

tuber: a storage organ formed by swelling of an underground stem or the distal end of a root.

tubercle: a small wart-like outgrowth.

tuberculate: covered with tubercles. Fig. 134L.

tuberous: swollen; *of roots*, tuber-like.

tumid: swollen; inflated.

tunic: *of a bulb or corm*, the thin membranous or fibrous outer layers.

turbinate: top-shaped, obconical.

turgid: swollen due to high water content. cf. **flaccid**.

turion: an over-wintering vegetative bud or specialised short shoot with modified leaves, arising from the stem, often near ground level. Fig. 125D.

type: a designated representative (standard) for a plant name. cf. **isotype**, **holotype**, **neotype**, **syntype**.

umbel: a racemose inflorescence in which all the individual flower stalks arise in a cluster at the top of the peduncle and are of about equal length. Fig. 131J, K.

umbellule: secondary umbel in a compound umbellate inflorescence.

uncinate: terminating in a hooked point.

undulate: wavy, i.e. not flat. cf. **sinuate**. Figs 127W, 130D.

unifoliate: having one leaf.

unifoliolate: *of a leaf*, basically compound, but reduced to only one leaflet.

unilateral: *of stamens*, with anthers grouped on one side of the style.

unilocular: *of an ovary, anther or fruit*, having only one internal cavity.

unisexual: bearing only male or only female reproductive organs.

united: fused together.

urceolate: urn-shaped.

utricle: a small bladder; a membranous bladder-like sac enclosing an ovary or fruit.

valvate: *of sepals or petals in a bud*, meeting edge to edge, not overlapping. cf. **imbricate**. Fig. 136D.

valve: a portion of an organ that has fragmented; *of a capsule*, the teeth-like portions into which the dehiscing part of the pericarp splits at maturity. Fig. 132E.

vascular: specialised for conduction of fluids; vascular plants: plants containing specialised conducting tissues.

vein: a strand of vascular tissue. Figs 128H–L.

velamen: a water-retaining outer layer of the aerial roots of some epiphytes, especially orchids.

velvety: very densely covered with fine, short, soft, erect hairs. Fig. 138E.

velum: a membranous covering; a veil.

venation: the arrangement of veins in a leaf.

ventral: *of a lateral organ*, facing towards the subtending axis; *of a thallus*, facing towards the substratum. cf. **dorsal**.

vernation: the arrangement of unexpanded leaves in a bud. cf. **aestivation**.

vernicose: varnished.

verrucose: covered with wart-like outgrowths, warted.

verruculose: covered with closely spaced, minute wart-like outgrowths.

versatile: *of anthers*, swinging freely about the point of attachment to the filament, which is approximately central. cf. **basifixed**, **medifixed**.

verticil: a whorl or circular arrangement of similar parts around an axis.

verticillaster: a false whorl of opposed cymes. Fig. 131H.

verticillate: arranged in one or more whorls; a false whorl of flowers in a pair of opposite dense cymes, especially in Lamiaceae.

vesicle: a bladder-like sac or cavity filled with gas or liquid. Fig. 138F.

vessel: a capillary tube formed from a series of open-ended cells in the water-conducting tissue of a plant.

vestigial: reduced from the ancestral condition and no longer functional. cf. **obsolete**, **rudimentary**.

vexillum: (= **standard**).

villous: shaggy with long, weak hairs. cf. **hirsute**. Fig. 138G.

viscid: *of a surface*, sticky; coated with a thick, syrupy secretion.

viscidium: *of orchids*, a viscid part of the rostellum which is clearly defined and removed with the pollinia as a unit, serving to attach the pollinia to an insect or other pollination vector.

viscous: *of a liquid*, not pouring freely; having the consistency of syrup or honey.

viviparous: *of seeds or fruits*, germinating before being shed from the parent plant.

wallum: coastal vegetation on sandy acidic soils, in south-eastern Qld.

warty: covered with wart-like protuberances. Fig. 138H.

whorl: a ring of leaves, bracts or floral parts borne at the same level on an axis. Fig. 130N.

wing: a membranous expansion of a fruit or seed, which aids dispersal; a thin flange of tissue extended beyond the normal outline of a stem or petiole; a lateral petal of a flower in Fabaceae.

woolly: very densely covered with long, soft, more or less matted or intertwined trichomes, resembling sheep's wool. Fig. 138I.

xeromorph: a plant having structural features usually associated with plants of arid habitats (such as hard or succulent leaves) but not necessarily drought-tolerant. cf. **scleromorph**, **xerophyte**.

xerophyte: a drought-tolerant plant. cf. **xeromorph**.

xylem: the tissue, in a vascular plant, that conducts water and mineral salts from the roots to the leaves.

zygomorphic: *of a flower or calyx or corolla*, bilaterally symmetrical, symmetrical about one plane only, usually the plane that bisects the flower vertically along the longitudinal axis. cf. **actinomorphic**, **peloric**.

Figure 125. A–C, Domatia, **A**, pits; **B**, pockets; **C**, hair tufts. **D–H**, Perennating/vegetative reproduction. **D**, turion; **E**, bulbils; **F**, stolons; **G**, rhizome; **H**, root suckers. Drawn by I.Telford.

Figure 126. A–P, Leaf shapes, **A**, subulate; **B**, acicular; **C**, filiform; **D**, linear; **E**, oblong; **F**, falcate; **G**, lanceolate; **H**, elliptic; **I**, ovate; **J**, obovate; **K**, orbicular and peltate; **L**, deltoid; **M**, rhomboid; **N**, cuneate; **O**, reniform; **P**, spathulate. **Q–V**, Leaf bases, **Q**, cordate; **R**, hastate; **S**, sagittate; **T**, auriculate; **U**, oblique; **V**, truncate. **W–GG**, Leaf tips, **W**, aristate; **X**, caudate; **Y**, acuminate; **Z**, acute; **AA**, cuspidate; **BB**, mucronate; **CC**, apiculate; **DD**, obtuse; **EE**, retuse; **FF**, emarginate; **GG**, obcordate. Drawn by H.Hewson.

Figure 127. Division of leaves. **A**, lyrate; **B**, pinnatifid; **C**, pinnatisect; **D**, incised; **E**, laciniate; **F**, runcinate; **G**, palmatifid; **H**, palmatisect (=digitate); **I**, palmate; **J**, trifoliolate; **K**, ternate (strictly, biternate); **L–M**, pinnate (**L**, paripinnate; **M**, imparipinnate); **N**, bipinnate; **O**, entire; **P**, serrate; **Q**, serrulate; **R**, dentate; **S**, denticulate; **T**, crenate; **U**, crenulate; **V**, sinuate; **W**, undulate. Drawn by H.Hewson.

Figure 128. A–G, Leaf attachment. **A**, petiolate; **B**, sessile; **C**, amplexicaule; **D**, closed sheath; **E**, open sheath; **F**, perfoliate; **G**, connate. **H–L**, Leaf venation. **H**, I-veined **I**, pinnate; **J**, palmate; **K**, longitudinal; **L**, parallel. Drawn by I.Telford.

Figure 129. Stipules. **A**, adnate to petiole; **B**, ochreate; **C**, encircling petiole base; **D**, scale-like; **E**, leafy; **F**, spine-like; **G**, hair-like; **H**, lacerate; **I**, gland-like; **J**, stipellae. Drawn by I.Telford.

Figure 130. A–E, Leaf marginal deflection. **A**, flat; **B**, revolute; **C**, involute; **D**, undulate; **E**, plicate; **F**–**H**, Leaf 3-dimensional shape. **F**, terete; **G**, triangular; **H**, quadrangular; **I**, ligule; **J**, pulvinae. **K–N**, Leaf arrangement. **K**, alternate (spiral); **L**, alternate (distichous); **M**, opposite; **N**, whorled. Drawn by I.Telford.

Figure 131. Inflorescence types. **A**, spikelet; **B**, spike; **C**, raceme; **D**, panicle; **E**, dichasial cyme; **F**, monochasial cyme; **G**, corymb; **H**, verticillaster; **I**, thyrse; **J**, umbel; **K**, compound umbel (arrow = vegetative bud; circle = flower). Drawn by I.Telford.

Figure 132. A–E, Anther dehiscence. **A**, pores; **B**, short slits; **C**, longitudinal slits; **D**, transverse slits; **E**, valves; **F–I**, Anther attachment to filament **F**, dorsal versatile; **G**, dorsal not versatile; **H**, basal; **I**, apical. **J–M**, Stamen fusion. **J**, free of each other; **K**, united into a tube; **L**, fused by anthers; **M**, grouped by bundles. Drawn by I.Telford.

Figure 133. A–E, Flower (or inflorescence) position. **A**, terminal; **B**, axillary; **C**, leaf-opposed; **D**, intercalary; **E**, cauliflorous. **F–I**, Unusual inflorescence types. **F**, capitula (heads); **G**, glomerule; **H**, spadix with spathe; **I**, syconiums (figs) (arrow = vegatitive bud; circle = flower or inflorescence). **J–M**, Capsule dehiscence **J**, circumscissile; **K**, denticidal; **L**, operculate; **M**, poricidal. Drawn by I.Telford.

Figure 134. A–D, Fruit showing dihiscence. **A**, pod; **B**, follicle; **C–D**, capsule (**C**, septicidal dehiscence; **D**, loculicidal dehiscence). **E–N**, Seed ornamentation. **E**, reticulate; **F**, foveate; **G**, irregular wrinkles; **H**, striations; **I**, spinulose; **J**, muricate; **K**, echinate; **L**, tuberculate; **M**, colliculate; **N**, papillose. Drawn by I.Telford.

Figure 135. Positions of floral organs. **A**, perianth and stamens hypogynous, ovary superior; **B**, perianth and stamens perigynous, ovary superior; **C**, perianth and stamens hypogynous, stamensepipetalous, ovary superior; **D**, perianth and stamens epigynous, ovary half-inferior; **E**, perianth and stamens epigynous, ovary inferior. Drawn by H.Hewson.

Figure 136. A–D, Aestivation. **A–C**, imbricate (**A**, cochlear; **B**, quincuncial; **C**, convolute); **D**, valvate. **E–J**, Placentation. **E**, axile; **F**, free-central; **G**, parietal; **H**, marginal; **I**, basal; **J**, apical. **K–M**, Orientation of ovules. **K**, orthotropous; **L**, anatropous; **M**, campylotropous. Drawn by H.Hewson.

Figure 137. Indumentum types. **A**, chaffy; **B**, cobwebbed; **C**, cottony; **D**, felted. **E**, floccose; **F**, hirsute; **G**, hispid; **H**, mealy; **I**, papillose; **J**, pilose. **K**, puberulous; **L**, pubescent. Drawn by M.Wilson (formerly Menadue).

Figure 138. Indumentum types **A**, scabrous; **B**, silky; **C**, strigose; **D**, tomentose. **E**, velvety; **F**, vesciculose; **G**, villous; **H**, warty; **I**, woolly; **J**, bearded. **K**, coma; **L**, pappus. Drawn by M.Wilson (formerly Menadue).

Figure 139. Trichome types **A**, ciliate; **B**, fimbriate; **C**, mucilage trichome; **D**, bristle. **E**, prickle; **F**, spine; **G**, barbed trichome; **H**, bifid trichomes; **I**, dendritic trichomes; **J**, plumose trichomes; **K**, stellate trichomes; **L**, peltate scales. Drawn by M.Wilson (formerly Menadue).