

# Keys for the determination of families of pleurocarpous mosses of Africa

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Extracted from: Clés pour la détermination des familles et des genres des mousses pleurocarpes (Musci) d'Afrique *Bull. Jard. Bot. Nat. Belg.* **48**: 135-181 (1978)

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The identification of tropical African mosses is fraught with difficulty, not least because of the sparseness of recent taxonomic literature. Even the determination of specimens to family or genus can be problematical. The paper by Petit (1978) is a valiant attempt to provide workable keys (and short descriptions) to all the families and genera of African pleurocarpous mosses, and remains the only such comprehensive treatment. Whilst the shortcomings of any such keys apply, the keys have nonetheless proved to be of assistance in placing specimens in taxonomic groups. However, for the non-French reader, the use of the keys can be a tedious business, necessitating frequent recourse to dictionaries and grammars.

Members of the BBS have made collections in a number of tropical African countries in recent years, including on the BBS expedition to Malawi and privately to Madagascar, Tanzania and Zaire. This provided the impetus for making a translation of Petit's keys. Neither of us is an expert linguist, and doubtless in places, some of the subtleties of the language have escaped us. A rather free translation has sometimes proved necessary in order to give the sense of the text. Magill's *Glossarium Polyglottum Bryologicae* has been valuable in assisting with technical terms. Figures from Petit (1978) are mentioned, and for these and for keys to genera and for familial and generic descriptions, reference should be made to the original paper.

We are grateful for comments of previous drafts from Nick Hodgetts, Brian O'Shea and Ron Porley, and would be grateful for any suggestions for further amendments.

Notes on key:

- Original references to illustrations are included, although these are not included on the web version.
- Numbers preceding family names refer to the original paper, which contains a key to genera in each family. Some of these keys will appear in this www version (e.g. Sematophyllaceae), but not all, and some will be replaced by more recent keys.
- No attempt has been made to update the allocation of genera to families in line with recent opinion, although some new names have been shown where this will help in accessing recent literature.

## Groups

Group A. Leaves with double nerves, 1/3 or more the length of the leaf. Leaves often asymmetric.

Group B. Leaves papillose or mamilllose, and/or stems and branches with paraphyllia.

Group C. Leaves asymmetric, falcate or secund, and/or adjacent leaves differing in size or form according to their lateral, dorsal or ventral position. Stems and branches often dorsi-ventral and sometimes complanate, or plants sometimes dendroid.

Group D. Leaves characterised by an ill-defined "nerve zone", or by a single nerve radiating or branching above or from the base. Alar cells often as clearly differentiated as in Groups E and F following.

Group E. Leaves with alar cells in a discrete group: either a row of several large inflated cells (*Sematophyllum*-type) or a group of several small cells, coloured and/or with thickened walls (*Hypnum*-type), or these cells otherwise different.

Group F. (We are undecided on the meaning of Group F, so three alternatives are given, the first being an interpretation, the others more exact translations.)

- Leaves with a large triangular area of differentiated cells on each side of the leaf, the differentiated cells ascending higher on the margin than by the nerve.
- Leaves furnished with a more or less well-defined group of cells along the margin, more or less larger at the base, and narrowing towards the leaf tip.
- Marginal cells more or less differentiated; usually arising from a broader basal area, which tapers upwards to form a triangular 'wing'.

Group F includes species of Fabroniaceae in which this differentiated area is absent or not very apparent, but having in common leaves less than 0.75mm long, sometimes feathery-ciliate or strongly dentate (figs 46-49).

Group G. Leaves wider at base than at line of attachment, with rounded basal angles which appear as lobes not attached to the stem or branch.

Group H. Pleurocarpous mosses not belonging to any of the preceding groups.

### Group A. Leaves with double nerves

1	Leaves more or less equal, not or slightly asymmetric (fig 34)	25. Pilotrichaceae: <i>Hypnella</i> , <i>Pilotrichum</i>
	Leaves of differing shape, asymmetric (figs 36, 37, 39)	28. Hookeriaceae: <i>Callicostella</i> , <i>Cyclodictyon</i> , <i>Hookeriopsis</i> , <i>Lepidopilidium</i> , <i>Lepidopilum</i>

## Group B. Leaves papillose... and/or with paraphyllia

1	Stems and branches with paraphyllia	2
	Stems and branches lacking paraphyllia	7
2	Nerve double (fig 87)	44. Hylocomiaceae : <i>Hylocomium</i>
	Nerve single	3
3	Leaf cells linear or elongate, very rarely less than twice as long as wide. Alar cells and often basal cells strongly differentiated from lamina cells	4
	Leaf cells isodiametric or slightly elongate, very rarely more than twice as long as wide. Alar and basal cells resembling other leaf cells	5
4	Leaf cells mamilllose (fig 86)	42. Hypnaceae: <i>Rhytidium</i>
	Leaf cells smooth (fig 60)	37. Amblystegiaceae: <i>Cratoneuron</i>
5	Leaf ovate, rounded at the apex; cells isodiametric; nerve reaching about 1/2 way (fig 27)	21. Neckeraceae: <i>Leptodon</i>
	Leaf apex acuminate; cells elongate or isodiametric; nerve usually reaching beyond half way	6
6	Leaf more or less ovate, gradually and often shortly acuminate; paraphyllia few	35. Leskeaceae: <i>Leskea</i> , <i>Pseudoleskea</i> , <i>Pseudoleskeopsis</i>
	Stem leaves usually triangular-deltoid, often more or less abruptly acuminate; paraphyllia numerous (figs 53, 55, 56).	36. Thuidiaceae: <i>Haplocladium</i> , <i>Hylocomiopsis</i> , <i>Pekelium</i> , <i>Raiiella</i> , <i>Thuidium</i>
7	Leaf asymmetric and/or adjacent leaves differing	8
	Leaf with diffuse " nerve-zone" (as group D), or nerve absent (figs 10, 11)	8. Hedwigiaceae: <i>Hedwigia</i> , <i>Braunia</i> , <i>Hedwigidium</i>
	Leaves with differentiated alar cells (as Group E)	12
	Leaves with basal cells ascending margin, forming a triangular area differentiated from rest of lamina (as Group F)	14
	None of the preceding options in 7	16
8	Dorsal leaves much smaller than lateral leaves (fig 8)	5. Racopilaceae: <i>Racopilum</i>
	Dorsal and lateral leaves the same size	9
9	Nerve single and obvious	10
	Nerve short and double, or absent	42. Hypnaceae: <i>Ectropothecium</i>
	Nerve double and long (fig 36)	28. Hookeriaceae: <i>Callicostella</i>
10	Leaves falcato-secund (fig 86)	42. Hypnaceae: <i>Rhytidium</i>
	Leaves straight	11
11	Leaf cells with a large truncate papilla	27. Distichophyllaceae: <i>Adelothecium</i>
	Leaf cells with a small rounded papilla (fig 28)	21. Neckeraceae: <i>Pinatella</i> , <i>Porothamnium</i> , <i>Porotrichum</i>
	Alar cells large and few (figs 73, 74, 76, 79)	41. Sematophyllaceae: <i>Acanthorrhynchium</i> , <i>Heterophyllum</i> , <i>Taxithelium</i> , <i>Trichostelium</i> , <i>Warburgiella</i>
12	Alar cells many, and relatively small	13
	Leaf without a nerve. Laminal cells with many very small papillae (fig 9)	8. Hedwigiaceae: <i>Rhacocarpus</i> (now in Rhacocarpaceae)
13	Leaf with a nerve. Laminal cells with a single	16. Trachypodaceae: <i>Trachypodopsis</i> , <i>Trachypus</i>

	papilla on the lumen, or cell walls crenulate-papillose (fig 18)	
	Leaf with long nerve ; margin with multicellular teeth	14. Prionodontaceae: <i>Prionodon</i>
14	Leaf margin without multicellular teeth	15
	Nerve double and short (fig 68)	39. Entodontaceae: <i>Trachyphyllum</i>
15	Nerve single	10. Leucodontaceae: <i>Leucodontopsis</i>
	Nerve single	17
16	Nerve absent, or short and double	22
	Leaf with margin of narrow cells	15. Rutenbergiaceae: <i>Rutenbergia</i>
17	Leaf lacking a distinct margin of narrow cells	18
	Leaf cells more or less isodiametric	19
18	Leaf cells elongate	21
	Leaves elongate, forming a sheath (sometimes short) at the base (fig 3)	3. Orthotrichaceae: <i>Leptodontiopsis, Macromitrium, Orthotrichum, Zygodon</i>
19	Leaves ovate, not sheathing at base	20
	Leaf cells in lower leaf adjacent to nerve, elongate and radiating (divergent) (fig 24)	19. Meteoriaceae: <i>Papillaria</i>
20	Leaf cells in lower leaf not radiating (divergent) (figs 50,51)	35. Leskeaceae: <i>Leskea, Lindbergia, Pseudoleskea</i>
	Cells in the upper part of the leaf with projecting distal points (fig 86)	42. Hypnaceae: <i>Rhytidium</i>
21	Leaf cells with one or several papillae per lumen (figs 22,25)	19. Meteoriaceae : <i>Aerobryidium, Aerobryopsis, Aerobryum, Floribundaria</i>
	Papillae numerous on more or less isodiametric cells (fig 1)	1. Erpodiaceae: <i>Erpodium</i>
22	Papillae numerous on elongate cells (fig 76)	41. Sematophyllaceae: <i>Taxithelium</i>
	Leaf cells with a single papilla	23
	Leaf cells short; papilla on the lumen (fig 51)	35. Leskeaceae: <i>Pseudoleskeella</i>
23	Leaf cells elongate, terminating in a papilla	24
	Cell wall thicker than half the width of the lumen (fig 35)	25. Pilotrichaceae: <i>Chaetomitrium</i>
24	Cell wall much thinner than half the width of the lumen	25
	Nerve double (fig 83)	42. Hypnaceae: <i>Gollania, Mittenothamnium</i>
25	Nerve absent, or double but very indistinct (fig 80)	41. Hypnaceae: <i>Glossadelphus</i>

### Group C. Leaves asymmetric..... and/or neighbouring leaves differing

1	Leaf with two long nerves (see Group A)	28. Hookeriaceae
	Leaf with a single nerve, two short nerves, or nerve absent	2
2	Dorsal or ventral leaves clearly much smaller than lateral leaves, and/or differing from the lateral in shape	3
	Leaves not clearly differentiated into dorsal, ventral or lateral	7
3	Leaf with a single nerve, (more or less short in Cyathophoraceae)	4

	Leaf without a nerve, or with a short double nerve; ventral leaves much smaller than dorsal; leaves without margins	6
4	Dorsal leaves smaller than lateral leaves; leaves occasionally with an obscure margin	5. Racopilaceae: <i>Racopilum</i>
	Ventral leaves smaller than lateral leaves; leaves usually with a distinct margin	4
5	Moss branched in a dendroid or pinnate fashion (figs 43, 44)	31. Hypopterygiaceae: <i>Hypopterygium</i> , <i>Lopidium</i>
	Moss with primary branches unbranched	32. Cyathophoraceae: <i>Cyathophorella</i>
6	Leaf cells elongate, without papillae on the lumen (fig 85)	42. Hypnaceae: <i>Rhacopilopsis</i>
	Leaf cells rounded, papillose	1. Erpodiaceae: <i>Aulacopilum</i>
7	Leaf cells isodiametric, or, if more or less elongate, then cell-ends not pointed (parenchymatous tissue)	8
	Leaf cells elongate, pointed at both ends (prosenchymatous tissue)	9
8	Leaf with a regular margin of linear cells reaching the apex (fig 41)	27. Distichophyllaceae: <i>Distichophyllum</i>
	Leaf without a regular margin, but sometimes with linear cells forming an irregular margin not reaching the apex (figs 28, 31)	21. Neckeraceae: <i>Cryptoleptodon</i> , <i>Neckera</i> , <i>Thamnium</i> , <i>Neckeropsis</i> , <i>Pinatella</i> , <i>Porothamnium</i> , <i>Porotrichum</i>
9	Leaves with a single long nerve	10
	Leaves with a short nerve, double or rarely single, or without a nerve	12
10	Leaf falcate or secund above, and more or less symmetric at the base (figs 58, 60)	37. Amblystegiaceae: <i>Cratoneuron</i> , <i>Drepanocladus</i>
	Leaf more or less straight or asymmetric from the base	11
11	Alar cells unequally distributed on either side of the nerve, sometimes strongly so (fig 70)	40. Plagiothecaceae: <i>Stereophyllum</i>
	Alar cells equally distributed on either side of the nerve	21. Neckeraceae: <i>Porothamnium</i> , <i>Porotrichum</i> , <i>Thamnium</i>
12	Alar cells clearly differentiated	13
	Alar cells not clearly differentiated	15
13	Leaves falcato-secund, acuminate at apex	14
	Leaves straight, apex usually acute	39. Entodontaceae: <i>Entodon</i>
14	Alar cells small, in a group (fig 81)	42. Hypnaceae: <i>Hypnum</i> , <i>Ctenidium</i> (but <i>Ctenidium</i> spp. do not occur in Africa)
	Alar cells large, in a row (fig 74)	41. Sematophyllaceae: <i>Rhaphidorrhynchium</i> , <i>Trichosteleum</i> , <i>Warburgiella</i>
15	Leaf tissue very lax; cells 12-30 $\mu$ wide	16
	Leaf tissue of narrow cells, less than 10 $\mu$ wide	17
16	Leaf cells 20-30 $\mu$ wide (fig 42)	30. Leucomiaceae: <i>Leucomium</i>
	Leaf cells 12-23 $\mu$ wide (fig 82)	42. Hypnaceae: <i>Vesicularia</i>
17	Leaf-branch flat ; leaves complanate, strongly transversely-undulate and remaining spread-out when dry, 1.5-2.5 $\mu$ long	21. Neckeraceae: <i>Neckera</i>
	Branches and/or leaves not as <i>Neckera</i> . The three families following are poorly	18

	delimited	
18	Leaves clearly decurrent along the stem and branches (examine attached leaves) (fig 71).	40. Plagiotheceae: <i>Plagiothecium</i>
	Leaves not or slightly decurrent	19
19	Lateral leaves often with a fold. Pseudoparaphyllia and propagules absent (fig 67)	39. Entodontaceae: <i>Entodon</i>
	Lateral leaves without, or sometimes with a fold. Pseudoparaphyllia and/or propagules sometimes present (fig 84)	42. Hypnaceae: <i>Ectropothecium</i> , <i>Isopterygium</i> , <i>Taxiphyllum</i>

### Group D. Leaf with a nerve-zone, or nerve radiating or branching

1	Nerve radiating or branched	2
	Ill-defined nerve-zone in place of a nerve	4
2	Cells papillose (fig 24)	19. Meteoriaceae: <i>Papillaria</i>
	Cells not papillose	3
3	Robust, leaf apex strongly dentate (fig 13)	10. Leucodontaceae: <i>Antitrichia</i>
	Slender, leaf apex may be toothed, but not dentate (fig 12)	9. Cryphaeaceae: <i>Schoenobryum concavifolium</i> , <i>Cryphaea</i> , <i>Forsstroemia producta</i>
4	Leaf margin narrowly revolute and/or the apex hyaline (figs 10, 11)	8. Hedwigiaceae: <i>Braunia</i> , <i>Hedwigia</i> , <i>Hedwigidium integrifolium</i>
	Leaf margin plane or more or less recurved, apex not hyaline (figs 14, 15)	10. Leucodontaceae: <i>Leucodon</i> , <i>Pterogonium</i>

### Group E. Leaf with distinct alar cells

1	Aquatic plants with leaves in three ranks, or leaves cordate at base	6. Fontinalaceae: <i>Fontinalis</i> , <i>Wardia</i>
	Plants terrestrial (very rarely aquatic: <i>Calliergon</i> )	2
2	Alar cells large, inflated, fewer than 5 (rarely more), in a row, sometimes with several large cells above that row	3
	Alar cells many, and differing from other leaf cells in shape, colour and/or wall thickness	4
3	Cells papillose (figs 73, 74, 76)	41. Sematophyllaceae: <i>Acanthorrhynchium</i> , <i>Papillidiopsis</i> , <i>Radulina</i> , <i>Taxithelium</i> , <i>Trichostelium</i> , <i>Warburgiella</i>
	Cells not papillose (figs 75, 77, 78)	41. Sematophyllaceae: <i>Acroporium</i> , <i>Sematophyllum</i> , <i>Rhaphidorrhynchium</i> , <i>Rhaphidostichum</i> , <i>Wijkia</i>
4	Leaf cells finely granular-papillose	8. Hedwigiaceae : <i>Rhacocarpus</i> (now Rhacocarpaceae)
	Leaves concave, boat-shaped, in two ranks (fig 26)	20. Phyllogoniaceae : <i>Phyllogonium</i>
	Leaves concave, imbricate, in several regular ranks	19. Meteoriaceae : <i>Pilotrichella</i> , <i>Squamidium</i>
	Leaves and cells not as in 4 above	5
5	Nerve single	6
	Nerve absent, or double and very short	8

6	Aquatic or wetland mosses. Leaves concave, shortly-pointed to rounded at apex	37. Amblystegiaceae: <i>Calliergon</i>
	Epiphytic, epilithic or terrestrial mosses; leaves acute to acuminate at apex	7
7	Leaves longitudinally undulate (fig 63)	38. Brachytheciaceae: <i>Palamocladium</i>
	Leaves without longitudinal undulations	27. Lembophyllaceae: <i>Isothecium, Plasteurhynchium</i>
8	Leaf cell-walls porose	17. Myuriaceae: <i>Myurium</i>
	Leaf cell-walls more or less evenly thickened	9
9	Leaves falcato-secund (fig 81)	42. Hypnaceae: <i>Hypnum</i>
	Leaves straight (figs 76,79)	41. Sematophyllaceae: <i>Heterophyllum, Macrohymenium, Taxithelium</i>

### Group F. Basal cells in a differentiated triangular group - and Fabroniaceae

1	Leaves about 1mm long or shorter; basal cells differentiated, or if not, then leaves ciliate-pinnate or margin strongly dentate and/or shorter than 0.75mm long (figs 46-49)	34. Fabroniaceae: <i>Fabronia, Leptoischyrodon, Rhizofabronia, Schwetschkea</i>
	Leaves longer than 1mm, and basal cells forming a triangular area distinct from laminal cells	2
2	Nerve single	3
	Nerve short and double, or absent	5
3	Cells isodiametric or elliptical, having a single papilla over the lumen (fig 16)	14. Prionodontaceae: <i>Prionodon</i>
	Cells elongate, non-papillose, or with a single terminal papilla	4
4	Leaf margin plane, or revolute only at the base (fig 69)	39. Entodontaceae: <i>Levierella, Pterigynandrum</i>
	Leaf margin revolute to near apex (fig 13)	10. Leucodontaceae: <i>Antitrichia, Leucodontopsis</i>
5	Leaf cells finely granular-papillose (fig 9)	8. Hedwigiaceae: <i>Rhacocarpus</i> (now Rhacocarpaceae)
	Leaf cells non-papillose, rarely with a terminal papilla	6
6	Cells in the upper part of the leaf rhomboidal or elliptic. Nerve absent (fig 14)	10. Leucodontaceae: <i>Leucodon</i>
	Cells in the upper part of the leaf linear. Nerve usually short and double, rarely absent (figs 65, 66, 68)	39. Entodontaceae: <i>Entodontella, Erythrodontium, Pterigynandrum, Pylaisiobryum, Trachyphyllum</i>

### Group G. Leaf wider at base than line of attachment.

1	Leaf with a single nerve	2
	Leaf without a nerve, or nerve double and short	4
2	Leaf margin toothed; leaf cells with a single papilla over the lumen (fig 18)	16. Trachypodiaceae: <i>Trachypodopsis</i>
	Leaf without a margin	3
3	Leaf cells with one more papillae (figs 22,	19. Meteoriaceae: <i>Aerobryopsis, Floribundaria, Papillaria</i>

	24, 25)	
	Leaf cells non-papillose (fig 19)	18. Pterobryaceae: <i>Calyptothecium</i> , <i>Orthostichopsis</i>
4	Aquatic mosses; alar cells large	6. Fontinalaceae: <i>Wardia</i>
	Epiphytic mosses; leaves concave boat-shaped, in two ranks (fig 71)	20. Phyllogoniaceae: <i>Catagonium</i>
	Epiphytic mosses, with long and pendant stems and branches (fig 23)	19. Meteoriaceae: <i>Pilotrichella</i>
	Mosses with erect branches, sometimes with dendroid branching	18. Pterobryaceae: <i>Calyptothecium</i> , <i>Hildebrandtiella</i> , <i>Orthostichidium</i> , <i>Renauldia</i>

## Group H. Pleurocarpus mosses not in preceding groups

1	Leaf without a nerve, or nerve double and short	2
	Leaf with a single long nerve	10
2	Leaf cells isodiametric or short, smaller towards the margin (fig 1)	1. Erpodiaceae: <i>Erpodium</i>
	Leaf cells more than 3 times as long as wide	3
3	Aquatic mosses; leaves decurrent, sometimes in three ranks and keeled. Leaves with differentiated alar cells	6. Fontinalaceae: <i>Fontinalis</i>
	Mosses terrestrial (with the exception of several species of <i>Vesicularia</i> )	4
4	Leaf cells large, 12-30 $\mu$ wide	5
	Leaf cells long and narrow, less than 10 $\mu$ wide	6
5	Leaf cells 20-30 $\mu$ wide (fig 42)	30. Leucomiaceae: <i>Leucomium</i>
	Leaf cells 12-23 $\mu$ wide (fig 82)	42. Hypnaceae: <i>Vesicularia</i> , <i>Ectropothecium</i>
6	Leaves concave-boat-shaped, in two ranks (fig 72)	20. Phyllogoniaceae: <i>Catagonium</i>
	Leaves not concave-boat-shaped, not in two ranks	7
7	Leaves strongly decurrent along the stem and branches, margin denticulate or entire (fig 71)	40. Plagiotheciaceae: <i>Plagiothecium</i>
	Leaves not or slightly decurrent, margin often dentate	8
8	Leafy stems and branches more or less rounded (in cross-section). Leaves oblong, concave, shortly and abruptly-acuminate at apex (fig 23)	19. Meteoriaceae: <i>Pilotrichella</i>
	Leafy stems and branches more or less complanate. Leaves narrowly-ovate to ovate-oblong, apex acute or rarely acuminate; lateral leaves plicate	9
	Leafy stems and branches rarely rounded, sometimes more or less complanate. Leaves of various shapes, apex usually acuminate or longly-acuminate (fig 83, 84)	42. Hypnaceae: <i>Breidleria</i> , <i>Ectropothecium</i> , <i>Isopterygium</i> , <i>Mittenothamnium</i> , <i>Taxiphyllum</i> , <i>Trachythecium</i>
9	Leaves 1.5-2mm long; basal cells differentiated from other leaf cells (fig 67)	39. Entodontaceae: <i>Entodon</i>



	Leaves 1-1.5mm long; basal cells not or slightly differentiated from other leaf cells (fig 80)	41. Hypnaceae: <i>Glossadelphus</i>
10	Upper part of leaf bistratose, and/or margin two or more cells thick	11
	Laminal and marginal cells unistratose	12
11	Leaf margin and nerve of the same structure, and not merging towards the leaf apex (fig 33)	23. Echinodiaceae: <i>Echinodium</i>
	Leaf margin and nerve of differing structure, and merging gradually towards the leaf apex	37. Amblystegiaceae: <i>Sciaromium</i>
12	Leaf cells less than 3 times as long as wide	13
	Leaf cells more than three times as long as wide	21
13	Leaf with distinct margin of linear cells	14
	Leaf margin multicellular-dentate (fig 54)	36. Thuidiaceae: <i>Herpetineuron</i>
	Leaf margin without differentiated cells, not multicellular-dentate	15
14	Leaves more or less lanceolate; cells slightly elongate (fig 40)	26. Daltoniaceae: <i>Daltonia</i>
	Leaves elliptic to obovate; cells isodiametric (fig 41)	27. Distichophyllaceae: <i>Distichophyllum</i>
15	Sheathing base of leaf with a region of elongate cells very different from other leaf cells	16
	Leaf without differentiated cells in basal sheath	17
16	Leaf cells not papillose; peristome single (fig 2)	2. Ptychomitriaceae: <i>Ptychomitrium</i>
	Leaf cells papillose or not; peristome usually double (figs 3,5,6)	3. Orthotrichaceae: <i>Macromitrium</i> , <i>Orthotrichum</i> , <i>Rhacithecopsis</i> , <i>Rhacithecium</i> , <i>Schlotheimia</i> , <i>Ulota</i>
17	Leaf cells elongate and more or less radiating from the nerve particularly at the base; cells isodiametric towards the margin (fig 12)	9. Cryphaeaceae: <i>Cryphaea</i> , <i>Forsstroemia</i> , <i>Schoenobryumconcauifolium</i> .
	Leaf cells near the nerve not differing from other leaf cells (this does not always hold for some taxa in Leskeaceae)	18
18	Leaf margin dentate (part of lumen included in the tooth); leaves more than 1.5mm long (fig 28)	21. Neckeraceae: <i>Porothamnium</i>
	Leaf entire or denticulate, the teeth formed only by the thickening of the cell-wall and/or leaves less than 1mm long	19
19	Leaves broadly ovate-triangular, leaf-width at base exceeding leaf-length (fig 32)	22. Lembophyllaceae: <i>Rigodium</i>
	Leaf width at the line of attachment to the stem clearly less than leaf-length	20
20	Leaf less than twice as long as wide, and/or apex acuminate (figs 50, 52)	35. Leskeaceae: <i>Lindbergia</i> , <i>Pseudoleskeopsis</i> , <i>Pseudoleskea</i> , <i>Regmatodon</i> (now <i>Regmatodontaceae</i> ).
	Leaf more than twice as long as wide,	3. Orthotrichaceae: <i>Groutiella</i> , <i>Macromitrium</i> , <i>Schlotheimia</i>

	and/or apex rounded or obtuse (figs 3, 6)	
21	Leaf cells porose throughout the leaf; mosses epiphytic	18. Pterobryaceae: <i>Jaegerina</i>
	Leaf cells not porose, except sometimes the cells at the leaf base	22
22	Moss epiphytic; leaves 2-3mm long	23
	Moss terrestrial or aquatic, occasionally epiphytic (it is difficult to delimit the two following families - Brachytheciaceae and Amblystegiaceae - and their genera)	24
23	Leaf cells about 10 x 60 $\mu$ ; leaves without alar cells	19. Meteoriaceae: <i>Lindigia</i>
	Leaf cells about 5 x 50 $\mu$ ; leaves with alar cells (fig 63)	38. Brachytheciaceae: <i>Palamocladium</i>
24	Branch leaves triangular-deltoid, more or less decurrent at the base, apex rather abruptly acuminate. Stem leaves usually very different in shape from the rather elliptical branch leaves (fig 62)	38. Brachytheciaceae: <i>Eurhynchium</i> , <i>Eurhynchiella</i> , <i>Oxyrrhynchium</i>
	Nerve terminated by a cell projecting from the dorsal side of the leaf	38. Brachytheciaceae: <i>Eurhynchium</i> , <i>Eurhynchiella</i> , <i>Oxyrrhynchium</i> , <i>Schimperella</i> , <i>Rhynchostegium</i>
	Leaves concave, longitudinally undulate, usually longer than 1.5mm (fig 61)	38. Brachytheciaceae: <i>Brachythecium</i>
	Leaves squarrose, and often more or less inrolled	37. Amblystegiaceae: <i>Campylium</i>
	Leaves widely ovate, rounded at the base, apex acute to obtuse (fig 59)	37. Amblystegiaceae: <i>Hygrohypnum</i> , <i>Hygroamblystegium</i> , <i>Platyhypnidium</i>
	Leaves widely ovate to oblong, more or less concave, apex rounded and sometimes cucullate, auricles sometimes present (fig 57)	37. Amblystegiaceae: <i>Calliergon</i>
	Leaves narrowly triangular, longly acuminate at the apex; plants often of wet habitats (figs 58, 60)	37. Amblystegiaceae: <i>Cratoneuron</i> , <i>Drepanocladus</i>
	None of the preceding groups	25
25	Leaf cells about 5 times as long as wide	37. Amblystegiaceae: <i>Amblystegium</i>
	Leaf cells usually much more than 5 times as long as wide (fig 61)	38. Brachytheciaceae: <i>Brachythecium</i> , <i>Rhynchostegiella</i> , <i>Rhynchostegium</i>