EXCURSION FLORA
OF THE
BRITISH ISLES

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OF THE

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THIRD EDITION

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PREFACE TO THE THIRD EDITION

The immense task of compiling a *Flora Europaea* has now been completed after more than twenty years of taxonomic, nomenclatural and distributional investigations by botanists of almost all the countries of Europe, and its fifth and final volume will appear shortly. It seems to us important, in the interests of uniformity, that all national and regional floras within the area covered by that work should, as soon as possible, follow its taxonomic treatment and nomenclature unless there seem good grounds for doing otherwise. This is in no sense to imply that we believe *Flora Europaea* to have said the last word on the subject: substantial changes would undoubtedly need to be made in a new edition of the first volume, although it appeared only seventeen years ago. We feel, nevertheless, that a desirable approach to uniformity will remain a dream unless real efforts are made to attain it. There is the further point that twelve years have now elapsed since our second edition appeared, years of continued close study of the British flora, some of the results of which demand incorporation in a new edition.

In the Preface to our second edition we felt it important to explain why we refrained from adopting all the acceptable innovations in the single volume of *Flora Europaea* which had already been published. We gave as our chief reason that we did not wish to allow the *Excursion Flora* to diverge very far from the second edition of the larger Flora, since many users of the smaller book customarily referred to the larger for resolving difficulties or for more detailed accounts of critical groups. The position now is that a further edition of the large Flora cannot be contemplated for the present, even though extensive changes are clearly called for. We have therefore felt obliged to abandon our former attitude and have endeavoured not only to up-date the *Excursion Flora* but also to include in it a somewhat more detailed treatment than in the earlier editions of certain taxonomically difficult genera on which there has been important recent work, in particular of *Rosa*, *Alchemilla*, *Hieracium*, *Taraxacum* and *Festuca*. Brief accounts of subspecies have also been included so as to give some indication of the extent and nature of infra-specific variation where this is considerable.

The publication of the *Atlas of the British Flora* and its *Critical Supplement*, too, has made it readily possible to indicate the distribution of many species more precisely than hitherto. In an attempt to give something approaching the present geographical distribution we have, in general, ignored pre-1930 records. In the statements about distribution 'Great Britain' is to be taken as meaning England, Wales, Scotland and the smaller adjacent islands, while 'British Isles' includes also Ireland and the Channel Islands. Mention of counties refers to Watsonian vice-counties.

All this, together with many smaller additions, has entailed an appreciable lengthening, but we trust that the volume is still small enough and sufficiently easy to use to justify its continued designation as an 'excursion flora'.

Many botanists have supplied information and expert advice, and we wish to add to the lists of names already published those of Dr John J. B. Gill (*Cochlearia*), and of Dr Clive Stace, with whom one of us has discussed many taxonomic problems.

Finally we wish again to express our thanks to the many friends who have drawn attention to errors and omissions and have thus helped us to make keys and descriptions more accurate or more serviceable.

A.R.C.

September 1979 T.G.T.

PREFACE TO THE SECOND EDITION

In preparing a second edition of this Excursion Flora we have had to take account of some recent additions to the British species-list and some notable extensions to the recorded range of many native plants as well as of a large body of taxonomic and nomenclatural investigations completed since the appearance of the first edition. We have endeavoured to include some reference to all new species and to the more important modifications of known range. We have, for example, added *Minuartia recurva*, *Salix hibernica* and *Trifolium occidentale* and we have taken note of the rediscovery of *Erica ciliaris* in western Ireland, of the interesting find in the Isle of Man of the orchid *Neotinea intacta*, previously known only in Ireland, and of the increase in localities for *Phyllodoce caerulea* from one mountain in Scotland to two.

Taxonomic and nomenclatural studies are always in progress and make some changes inevitable if the Flora is to be kept up-to-date. Since the publication of the first edition, however, the Flora Europaea project has occasioned an exceptionally large and important volume of relevant research and has led to changes in knowledge and outlook that are bound to have implications for national floras within the area covered. The first volume of Flora Europaea includes, for instance, a modern treatment of European ferns so much in advance of anything previously available that we have decided to adopt it in this second edition of the Excursion Flora. We have made some other taxonomic and a few nomenclatural changes but we have refrained from incorporating all the innovations that will be found in Flora Europaea, even though most of them are likely to be generally adopted in the future. Our chief reason for this conservatism is our belief that many users of the Excursion Flora refer to the larger British Flora for resolving difficulties or for more detailed accounts of critical groups. This being so it seemed to us wrong to allow the Excursion Flora to diverge very far from the second edition of the larger Flora. The authors of plant names have been given in the form used in Flora Europaea, so that further information about them can be readily obtained by reference to Appendix I in that work.

We wish to record our gratitude to the many friends who have drawn our attention to errors and omissions and have helped us to make keys and descriptions more useful.

The initials of only two of us appear at the foot of this Preface. The untimely death in July 1966 of Dr E. F. Warburg, our collaborator and close friend for so many years, has been a very sad blow to us personally and to all concerned with taxonomic studies of the British flora.

A. R. C.

September 1967 T. G. T.

PREFACE TO THE FIRST EDITION

We have for some time been aware of the need for a shortened and therefore more readily portable and less expensive British Flora which would nevertheless retain many features of our *Flora of the British Isles*. In preparing this *Excursion Flora* we have had particularly in mind the requirements of the upper forms of schools and of university students taking botany as a degree subject. We have therefore provided descriptions of all species that are generally common in lowland districts of the British Isles and also of some others likely to be encountered in the neighbourhood of field centres and field stations. These descriptions are shorter than those in the larger *Flora* chiefly through the omission of certain categories of information provided there, including pollination mechanism, life-form, chromosome number and extra-British distribution. We have been careful not to shorten descriptions until they are mere lists of *differentiae* because we believe that confirming an identification from a key by reference to a fairly full description is an important part of taxonomic practice, and also that the drawing up of plant descriptions is a valuable exercise which we hope to encourage by setting this example.

Space has been saved chiefly by restricting the number of species described in detail and by omitting all text-figures except those illustrating the glossary of botanical terms. To avoid the serious disadvantages of incompleteness, and to increase the general usefulness of the work as an 'excursion flora', we have included in the keys all native species (apart from those of such critical genera as *Alchemilla*, *Sorbus* and *Euphrasia*, and of *Rubus* and *Hieracium*), many naturalized and a few casual species. Care has been taken to distinguish clearly in the keys between species of which full descriptions are provided later and those which are merely named in the key. For two genera only, *Alchemilla* and *Hieracium*, are keys provided which are incomplete in the sense that they serve only to distinguish between commonly encountered lowland species or aggregates. In each instance there is a clear warning that this is so.

Comparison of this *Excursion Flora* with the First Edition of the larger *Flora* will reveal three further kinds of difference. In the first place certain species are included which cannot be found in the larger *Flora*. These are for the most part native plants which had not yet been detected at the time of writing the larger *Flora*, and they include *Diapensia lapponica*, *Artemisia norvegica* and *Koenigia islandica*. Second, it will be seen that some taxonomic changes have been introduced, such as the separation of *Dactylorchis* from *Orchis*, *Tripleurospermum* from *Matricaria* and *Chamaemelum* from *Anthemis*, *Galium sterneri* from *G. pumilum* and *Callitriche platycarpa* from *C. stagnalis*; and, on the other hand, the merging of *Tanacetum* with *Chrysanthemum* and part of *Claytonia* with *Montia*. Third, there will be found purely nomenclatural changes, such as the substitution of *Cerastium atrovirens* Bab. for *C. tetrandrum* Curt., and several others. We intend to make these same changes in the Second Edition of the larger *Flora*. It is inevitable, even though regrettable, that continued research should necessitate periodic modifications of this kind.

The reduction in length to little more than one-third of that of the larger *Flora* has involved the omission of much that is of great interest to the serious student of the British flora. The Synopses of Classification, general

and special, have had to be dropped, no mention is made of the rarer naturalized aliens and few casuals are included. More important is the scanty reference to intraspecific variation, the restriction to keys of all uncommon species and the very elementary treatment of 'difficult' genera such as *Euphrasia*, *Rhinanthus*, *Rubus* and *Hieracium*. It is hoped that many of those who are introduced to the study of British plants through this *Excursion Flora* will be encouraged to widen and deepen their knowledge by later resort to the *Flora of the British Isles*.

In conclusion we have again to express our thanks to the many botanists who have given us expert advice. To the list of names in the larger *Flora* we should like to add P. W. Ball (*Salicornia*), C. Cook (*Sparganium*), K. M. Goodway (*Galium*), N. M. Pritchard (*Gentianella*), M. C. F. Proctor (*Helianthemum*) and D. P. Young (*Oxalis*). We owe a very special debt of gratitude to Mr J. E. Dandy, Keeper of Botany in the British Museum (Natural History), who has very generously allowed us to consult proofs of the forthcoming *British Plant List*, embodying the fruits of his invaluable nomenclatural and taxonomic researches, and has always been willing to discuss problems with us.

A. R. C.
T. G. T.
E. F. W.

January 1958

SEQUENCE OF ORDERS AND FAMILIES

PTERIDOPHYTA

LYCOPSIDA

LYCOPODIALES	1. Lycopodiaceae	
SELAGINELLALES	2. Selaginellaceae	
ISOETALES	3. Isoetaceae	

SPHENOPSIDA

EQUISETALES	4. Equisetaceae	

FILICOPSIDA

OPHIOGLOSSALES	5. Ophioglossaceae	
FILICALES	6. Osmundaceae	12. Thelypteridaceae
	7. Adiantaceae	13. Aspleniaceae
	8. Cryptogrammaceae	14. Athyriaceae
	9. Gymnogrammaceae	15. Aspidiaceae
	10. Hypolepidaceae	16. Blechnaceae
	11. Hymenophyllaceae	17. Polypodiaceae
MARSILEALES	18. Marsileaceae	
SALVINIALES	19. Azollaceae	

GYMNOSPERMAE

CONIFEROPSIDA

CONIFERAE	20. Pinaceae	22. Taxaceae
	21. Cupressaceae	

ANGIOSPERMAE

DICOTYLEDONES

ARCHICHLAMYDEAE

RANALES	23. Ranunculaceae	26. Nymphaeaceae
	24. Paeoniaceae	27. Ceratophyllaceae
	25. Berberidaceae	
RHOEADALES	28. Papaveraceae	30. Cruciferae
	29. Fumariaceae	31. Resedaceae
VIOLALES	32. Violaceae	
POLYGALALES	33. Polygalaceae	
CISTIFLORAE	34. Hypericaceae	35. Cistaceae
TAMARICALES	36. Tamaricaceae	37. Frankeniaceae
CENTROSPERMAE	38. Elatinaceae	41. Aizoaceae
	39. Caryophyllaceae	42. Amaranthaceae
	40. Portulacaceae	43. Chenopodiaceae
MALVALES	44. Tiliaceae	45. Malvaceae
GERANIALES	46. Linaceae	48. Oxalidaceae
	47. Geraniaceae	49. Balsaminaceae

SAPINDALES	50. Aceraceae	51. Hippocastanaceæ
CELASTRALES	52. Aquifoliaceae	54. Buxaceae
	53. Celastraceae	
RHAMNALES	55. Rhamnaceae	
ROSALES	56. Leguminosae	60. Parnassiaceae
	57. Rosaceae	61. Escalloniaceae
	58. Crassulaceae	62. Grossulariaceae
	59. Saxifragaceae	
SARRACENIALES	63. Droseraceae	64. Sarraceniaceae
MYRTALES	65. Lythraceae	69. Haloragaceae
	66. Thymelaeaceae	70. Hippuridaceae
	67. Elaeagnaceae	71. Callitrichaceae
	68. Onagraceae	
SANTALALES	72. Loranthaceae	73. Santalaceae
UMBELLALES	74. Cornaceae	76. Umbelliferae
	75. Araliaceae	
CUCURBITALES	77. Cucurbitaceae	
ARISTOLOCHIALES	78. Aristolochiaceae	
EUPHORBIALES	79. Euphorbiaceae	
POLYGONALES	80. Polygonaceae	
URTICALES	81. Urticaceae	83. Ulmaceae
	82. Cannabaceae	
JUGLANDALES	84. Juglandaceae	
MYRICALES	85. Myricaceae	
FAGALES	86. Betulaceae	88. Fagaceae
	87. Corylaceae	
SALICALES	89. Salicaceae	

METACHLAMYDEAE

ERICALES	90. Ericaceae	93. Empetraceae
	91. Pyrolaceae	94. Diapensiaceae
	92. Montropaceae	
PLUMBAGINALES	95. Plumbaginaceae	
PRIMULALES	96. Primulaceae	
CONTORTAE	97. Buddlejaceae	100. Gentianaceae
	98. Oleaceae	101. Menyanthaceae
	99. Apocynaceae	
TUBIFLORAE	102. Polemoniaceae	107. Orobanchaceae
	103. Boraginaceae	108. Lentibulariaceae
	104. Convolvulaceae	109. Acanthaceae
	105. Solanaceae	110. Verbenaceae
	106. Scrophulariaceae	111. Labiatae
PLANTAGINALES	112. Plantaginaceae	
CAMPANALES	113. Campanulaceae	114. Lobeliaceae
RUBIALES	115. Rubiaceae	118. Valerianaceae
	116. Caprifoliaceae	119. Dipsacaceae
	117. Adoxaceae	
ASTERALES	120. Compositae	

MONOCOTYLEDONES

ALISMATALES	121. Alismataceae	123. Hydrocharitacea
	122. Butomaceae	

NAJADALES	124. Scheuchzeriaceae	128. Ruppiaceae
	125. Juncaginaceae	129. Zannichelliaceae
	126. Zosteraceae	130. Najadaceae
	127. Potamogetonaceae	
ERIOCAULALES	131. Eriocaulaceae	
LILIIFLORAE	132. Liliaceae	135. Amaryllidaceae
	133. Trilliaceae	136. Iridaceae
	134. Juncaceae	137. Dioscoreaceae
ORCHIDALES	138. Orchidaceae	
ARALES	139. Araceae	140. Lemnaceae
TYPHALES	141. Sparganiaceae	142. Typhaceae
CYPERALES	143. Cyperaceae	
GLUMIFLORAE	144. Gramineae	

ARTIFICIAL KEY TO FAMILIES

(*For abbreviations see p. xxxiii.*)

1	Plant reproducing by spores; fls 0; always herbs.	*2*
	Plant reproducing by seeds; fls with stamens or carpels or both; often woody.	*29*
2	Stems jointed; lvs not green, forming a sheath at the nodes. 4. EQUISETACEAE	
	Stems not jointed; lvs green, not connate into a sheath.	*3*
3	Plants free-floating on water, much-branched; lvs small imbricate. 19. AZOLLACEAE	
	Plants rooted to the ground, terrestrial or aquatic.	*4*
4	Lvs not differentiated into lamina and petiole.	*5*
	Lvs with distinct lamina and petiole.	*8*
5	Lvs forming a basal rosette. 3. ISOETACEAE	
	Lvs not forming a basal rosette.	*6*
6	Lvs filiform, with circinate vernation. 18. MARSILEACEAE	
	Lvs lanceolate to ovate, vernation not circinate.	*7*
7	Stem robust; plant homosporous; lvs not ligulate. 1. LYCOPODIACEAE	
	Stem slender; plant heterosporous; lvs ligulate. 2. SELAGINELLACEAE	
8	Fertile lvs, or fertile parts of lvs, differing markedly from the sterile lvs or parts of lvs.	*9*
	Fertile lvs not markedly different from the sterile parts.	*13*
9	Lf looking like a stem with a fertile upper portion and a sterile lower portion, both of which may be simple or pinnate. 5. OPHIOGLOSSACEAE	
	Lvs crowded at the end of a stout stock, the inner fertile sometimes with a few pairs of sterile pinnae at base, the outer sterile.	*10*
10	Lvs 1-pinnate; pinnae entire. 16. BLECHNACEAE	
	Lvs 2- to 4-pinnate.	*11*
11	Fertile lvs with 2–3 pairs of sterile pinnae at base; growing in damp, ±peaty places. 6. OSMUNDACEAE	
	Fertile lvs without sterile pinnae at base.	*12*
12	Sori on or near the margin of the lf; growing on rocks, screens, or stone walls. 8. CRYPTOGRAMMACEAE	
	Sori on lower surface of lf; growing on shady, damp banks. Channel Is; very local. 9. GYMNOGRAMMACEAE	
13	Lvs not more than 1 cell thick (except for midrib), translucent. 11. HYMENOPHYLLACEAE	
	Lvs thicker, not translucent.	*14*
14	Lvs entire, or pinnatifid, or palmately lobed, or dichotomously forked 1–3 times.	*15*
	Lvs pinnately divided.	*17*
15	Lvs not pinnatifid. 13. ASPLENIACEAE	
	Lvs pinnatifid.	*16*
16	Lvs covered with scales beneath. 13. ASPLENIACEAE	
	Lvs not covered with scales beneath. 17. POLYPODIACEAE	

17 Sori covered by the inflexed margin of the lf. *18*
Sori not covered by the inflexed margin of the lf. *19*

18 Rhizome long, subterranean; pinnae not fan-shaped. Common. 10. HYPOLEPIDACEAE
Rhizome short, erect; pinnae fan-shaped. 7. ADIANTACEAE

19 Indusium absent. *20*
Indusium present. *23*

20 Pinnae entire. 17. POLYPODIACEAE
Pinnae divided. *21*

21 Lvs forming a crown. 14. ATHYRIACEAE
Lvs solitary. *22*

22 Lf divided into 3 nearly equal portions. 15. ASPIDIACEAE
Lf pinnately divided. 12. THELYPTERIDACEAE

23 Indusium a ring of hair-like scales surrounding the base of the sorus.
Small mountain plants; rare. 14. ATHYRIACEAE
Indusium not as above. *24*

24 Indusium hood-like, attached at lower side of sorus. 14. ATHYRIACEAE
Indusium not hood-like. *25*

25 Indusium peltate. 15. ASPIDIACEAE
Indusium not peltate. *26*

26 Sori orbicular. *27*
Sori ovate or linear. *28*

27 Sori marginal; indusium lying along vein. 12. THELYPTERIDACEAE
Sori not marginal; indusium lying across vein. 15. ASPIDIACEAE

28 Sori ovate; lower margin of indusium bent in the middle. 14. ATHYRIACEAE
Sori linear or ovate; lower margin of indusium straight. 13. ASPLENIACEAE

29 Ovules naked, either on the upper surface of scales arranged in cones or solitary and terminal on a short scaly axillary shoot; pollen-sacs two or more on the lower surface of a flat sporophyll, or several pendent from the apex of a peltate sporophyll, the male sporophylls always in cones; monoecious or dioecious trees or shrubs with small needle-like or scale-like (but green) lvs; perianth 0. CONIFERAE *30*
Ovules completely enclosed in a carpel; pollen-sacs 4 (or occasionally fewer) surrounding and adnate to a connective at the apex of a usually slender filament. ANGIOSPERMAE *32*

30 Lvs opposite or whorled; short shoots 0. 21. CUPRESSACEAE
Lvs alternate or in clusters on short lateral shoots. *31*

31 Ovules on the surface of scales arranged in cones; pollen-sacs two on the lower surface of a flat sporophyll; trunk usually single. 20. PINACEAE
Ovules solitary and terminal on short axillary shoots; pollen-sacs several on a peltate sporophyll; trunks usually several. 22. TAXACEAE

32 Herbs without chlorophyll, the lvs reduced to scales. *258* (J)
Green plants (if lfless at flowering time either trees or shrubs, or else herbs with only the fls showing above ground). *33*

13 Plant free-floating on or below surface of water, not rooted in mud. *34*
Land-plants or aquatics rooted in mud. *36*

14 Plant consisting of a discoid thallus (1–15 mm diam.), with or without roots from the lower surface; propagation mainly vegetative, so that several plants are often found joined together. 140. LEMNACEAE
Plants with obvious stems and lvs. *35*

15 Plant with small bladders on lvs, or on apparently lfless stems; lvs divided into filiform segments. 108. LENTIBULARIACEAE
Plant without bladders; lvs sessile, in a rosette, or long-petiolate and orbicular. 123. HYDROCHARITACEAE

16 Small herb with lvs linear and all basal; fls solitary, unisexual, axillary, the male on long stalks, the female sessile (*Littorella*). 112. PLANTAGINACEAE
Not as above. *37*

17 Perianth of two (rarely more) distinct whorls, differing markedly from each other in shape, size or colour. *38*
Perianth 0, or of 1 whorl, or of 2 or more similar whorls, or segments numerous and spirally arranged. *42*

18 Petals free (very rarely cohering at apex, free at base). *39*
Petals united at least at the base. *41*

19 Ovary superior. *40*
Ovary inferior or partly so. *99* (C)

10 Carpels and styles free, or carpels slightly united at the extreme base. *44* (A)
Carpels or styles or both obviously united, or ovary of one carpel. *51* (B)

11 Ovary superior. *116* (D)
Ovary inferior. *149* (E)

12 Perianth corolla-like, at least the inner segments usually brightly-coloured or white. *163* (F)
Perianth green and calyx-like, or scarious, or 0. *43*

13 Trees or shrubs. *186* (G)
Herbs. *205* (H)

GROUP A

Petals free, ovary superior, carpels and styles free or nearly so.

14 Sepals and petals 3. *45*
Sepals or petals more than 3. *46*

15 Aquatic plants; fls conspicuous; at least the upper lvs broad, flat, stalked; carpels ±numerous. 121. ALISMATACEAE
Small land plants of mossy appearance; fls axillary, inconspicuous; lvs small, oblong, rather fleshy, sessile; carpels 3 (*Crassula*). 58. CRASSULACEAE

16 Stamens numerous. *47*
Stamens twice as many as petals or fewer. *49*

17 Herbs; stipules 0; fls hypogynous. *48*
Herbs with stipules, or else shrubs; fls perigynous (sometimes only slightly so). 57. ROSACEAE

18 Fls c. 10 cm diam. 24. PAEONIACEAE
Fls much smaller. 23. RANUNCULACEAE

19 Lvs ternate, not fleshy; alpine plant (*Sibbaldia*). 57. ROSACEAE
Lvs simple. *50*

50 Lvs ±succulent; carpels in 1 whorl. 58. CRASSULACEAE
Lvs not succulent; carpels spirally arranged on a slender elongated receptacle (*Myosurus*). 23. RANUNCULACEAE

GROUP B

Petals free, ovary superior, carpels or styles or both united, or ovary of one carpel.

51 Fls actinomorphic. 52
Fls zygomorphic. 91

52 Stamens more than twice as many as petals (always more than 6), or stamens and petals both numerous. 53
Stamens at most twice as many as petals (never more than 12); or petals 2, stamens 6. 61

53 Aquatic plants with large cordate floating lvs and floating fls; petals more than 10. 26. NYMPHAEACEAE
Plant not aquatic. 54

54 Stamens all united below into a tube; fls pink or purple; lvs usually palmately lobed. 45. MALVACEAE
Stamens free or in bundles; lvs never palmately lobed. 55

55 Lvs very succulent, 3-angled; fls 8–12 cm diam., with numerous narrow magenta or yellow petals. 41. AIZOACEAE
Lvs not succulent; petals 5 or fewer. 56

56 Ovary surrounded by a cup-shaped hypanthium; ovule 1. 57. ROSACEAE
No cup-shaped hypanthium; ovules 2 or more. 57

57 Carpel 1; lvs 2-ternate, the lower lflets stalked. 23. RANUNCULACEAE
Carpels 2 or more; lvs not as above. 58

58 Trees; infl. with a conspicuous bract partly adnate to the infl.-stalk. 44. TILIACEAE
Herbs or low shrubs; bracts, if present, not adnate to the infl.-stalk. 59

59 Styles free; stamens united into bundles below. 34. HYPERICACEAE
Style 1 or 0; stigma simple; stamens free. 60

60 Sepals 2; petals 4; lvs toothed to pinnate. 28. PAPAVERACEAE
Sepals 5 (3 large, 2 small); petals 5; lvs entire. 35. CISTACEAE

61 Trees or shrubs. 61
Herbs. 62

62 Fls on the middle of lf-like cladodes; true lvs scale-like, colourless (*Ruscus*). 132. LILIACEAE
Fls not on cladodes; lvs green. 63

63 Per. segs in 2 or more whorls of 3; stamens 3 or 6. 64
Per. segs not in whorls of 3; stamens not 3 or 6. 65

64 Per. segs in more than 2 whorls; stamens 6; lvs broad. 25. BERBERIDACEAE
Per. segs in 2 whorls; stamens 3; lvs linear. 93. EMPETRACEAE

65 Lvs small and scale-like; fls numerous in dense spikes. 36. TAMARICACEAE
Lvs not scale-like, not particularly small. 66

66 Lvs opposite. 67
Lvs alternate. 68

67 Lvs palmately lobed. 50. ACERACEAE
Lvs simple, not lobed. 53. CELASTRACEAE

68 Plant with rusty tomentum; fls cream; stamens more than 5 (*Ledum*). 90. ERICACEAE
Plant not tomentose; fls greenish; stamens 4–5. 55. RHAMNACEAE

69 Sepals 2, petals 5. 40. PORTULACACEAE
Sepals more than 2; sepals and petals equal in number. *70*

70 Lvs modified into pitchers, 10–20 cm; stigma very large, umbrella-like. 64. SARRACENIACEAE
Lvs not modified into pitchers. *71*

71 Sepals and petals normally 6; fls perigynous with a long tubular or bell-shaped hypanthium. 65. LYTHRACEAE
Sepals and petals normally fewer than 6; fls hypogynous, or if perigynous then with flat to cup-shaped hypanthium. *72*

72 Lvs opposite or whorled. *73*
Lvs alternate or all basal. *80*

73 Lvs compound or lobed. 47. GERANIACEAE
Lvs entire. *74*

74 Lvs in a single whorl of usually 4 on the stem; fl. solitary, terminal. 133. TRILLIACEAE
Lvs opposite or in numerous whorls. *75*

75 Stipules present. *76*
Stipules 0. *77*

76 Stipules scarious; land plants. 39. CARYOPHYLLACEAE
Stipules not scarious; submerged aquatic plants. 38. ELATINACEAE

77 Sepals free or united at the base; petals always white. *78*
Sepals united to above the middle; petals white, pink or purple. *79*

78 Ovary 1-celled with free-central placentation; stamens usually twice as many as petals, if as many or fewer then lvs narrowly linear or plant ±hairy or sepals scarious-margined. 39. CARYOPHYLLACEAE
Ovary 4–5-celled with axile placentation; fertile stamens as many as petals; lvs obovate to oval; plant glabrous; sepals not scarious. 46. LINACEAE

79 Style long, simple (but stigmas free); placentation parietal; fls 5 mm diam., pink; stamens usually 6. 37. FRANKENIACEAE
Styles free; placentation free-central. 39. CARYOPHYLLACEAE

80 Lvs 3-foliolate with obcordate or cuneiform and emarginate lflets. 48. OXALIDACEAE
Lvs not 3-foliolate. *81*

81 Sepals and petals 2–3; fls greenish or reddish, in many-fld terminal panicles. 80. POLYGONACEAE
Sepals and petals 4–5. *82*

82 Both floral whorls green and sepal-like (calyx and epicalyx); fls small, with conspicuous concave hypanthium; lvs palmate or palmately lobed (*Alchemilla* and *Aphanes*). 57. ROSACEAE
Petals ±brightly coloured, never sepal-like. *83*

83 Sepals and petals 4; stamens 6, rarely 4. 30. CRUCIFERAE
Sepals and petals 5; stamens 5 or 10. *84*

84 Lvs covered with conspicuous red insectivorous glandular hairs. 63. DROSERACEAE
Lvs not conspicuously glandular. *85*

85 Style 1, stigma simple or shallowly lobed; anthers opening by pores. 91. PYROLACEAE
Styles, or at least the stigmas, more than 1, free; anthers opening by slits. *86*

86 Stigmas 5; petals blue, pink or purple, rarely white. *87*
Stigmas 2–4; petals white or yellow. *89*

87 Lvs lobed or pinnate. 47. GERANIACEAE
Lvs entire. *88*

88 Calyx-funnel shaped or obconic, scarious; lvs all ±basal; fls in heads or panicles. 95. PLUMBAGINACEAE
Sepals free, not scarious or scarious only at the margins; stem lfy; fls in loose cymes. 46. LINACEAE

89 Fls with conspicuous glandular-fimbriate staminodes; lvs ovate, cordate, entire. 60. PARNASSIACEAE
Staminodes 0; lvs not as above. *90*

90 Stamens 5; procumbent plant; lvs entire, linear-lanceolate; stipules scarious; fls very small (*Corrigiola*). 39. CARYOPHYLLACEAE
Stamens 10; fls conspicuous; other characters not as above. 59. SAXIFRAGACEAE

91 Fls saccate or spurred at base. *92*
Fls not saccate or spurred. *94*

92 Lvs much divided; corolla (apparently) laterally compressed; stamens 2, each with 3 branches bearing anthers, not connivent. 29. FUMARIACEAE
Lvs simple; corolla not compressed; stamens 5, connivent round the style. *93*

93 Sepals 5, ±equal, not spurred; petals 5, one spurred; stipules present; fls solitary, axillary; stem not translucent. 32. VIOLACEAE
Sepals 3, very unequal, one spurred; petals 3, not spurred; stipules 0; fls in few-fld infls; stem ±translucent. 49. BALSAMINACEAE

94 Stamens 8 or more all, or all but 1, united into a long tube; fls very zygomorphic, the petals ±erect. *95*
Stamens free; fls less zygomorphic, petals spreading. *96*

95 Fl. with upper sepal; anthers opening by pores; stigma tufted. 33. POLYGALACEAE
Fl. with upper petal; anthers opening by slits; stigma not tufted. 56. LEGUMINOSAE

96 Trees; lvs palmate. 51. HIPPOCASTANACEAE
Herbs; lvs not palmate. *97*

97 Fls in cymes (often umbel-like); ovary 5-lobed with long beak. 47. GERANIACEAE
Fls in racemes; ovary not lobed or 2-lobed, rarely beaked. *98*

98 Petals fimbriate or lobed; stamens more than 6. 31. RESEDACEAE
Petals entire or emarginate; stamens 6. 30. CRUCIFERAE

GROUP C

Petals free, ovary inferior or partly so.

99 Petals numerous. *100*
Petals 5 or fewer. *101*

100 Aquatic plants with floating fls and lvs. 26. NYMPHAEACEAE
Land plants with very succulent lvs. 41. AIZOACEAE

101 Petals and sepals 3. *102*
Petals and sepals 2, 4 or 5. *105*

102 Fls zygomorphic. 138. ORCHIDACEAE
Fls actinomorphic. *103*

103 Both whorls of per. segs petaloid. *104*
Outer or both whorls of per. segs sepaloid. 123. HYDROCHARITACEAE

104 Stamens 6. 135. AMARYLLIDACEAE
Stamens 3. 136. IRIDACEAE

105 Stamens numerous. 57. ROSACEAE
Stamens 10 or fewer. *106*

106 Submerged aquatic with lvs pinnately divided into filiform segments; fls monoecious or polygamous, in terminal spikes projecting above water-surface. 69. HALORAGACEAE
Land plants, or, if aquatic, then fls hermaphrodite and in umbels. *107*

107 Trees or shrubs. *108*
Herbs. *112*

108 Woody climber; fls in subglobose umbels, green. 75. ARALIACEAE
Not climbing; fls not in umbels. *109*

109 Lvs palmately lobed; petals shorter than sepals. 62. GROSSULARIACEAE
Lvs simple, not lobed. *110*

110 Both perianth-whorls petaloid; hypanthium long and tubular (*Fuchsia*). 68. ONAGRACEAE
Outer perianth-whorl sepaloid. *111*

111 Calyx-teeth very small; fls in corymbs; carpels 2, each with one ovule. 74. CORNACEAE
Calyx-teeth large; fls not in corymbs; ovules numerous in each carpel. 61. ESCALLONIACEAE

112 Both perianth-whorls green and sepaloid (calyx and epicalyx), or with an epicalyx as well as sepals and petals, or with a crown of long spines on the receptacle below the calyx; carpels 1 or 2, free from the receptacle and thus not truly inferior. 57. ROSACEAE
Inner perianth-whorl always petaloid, no epicalyx or crown of spines; ovary truly inferior. *113*

113 Petals 5; styles normally 2, rarely 3. *114*
Petals 4 or 2; style simple. *115*

114 Fls in heads or umbels; stamens 5; ovules 1 in each carpel. 76. UMBELLIFERAE
Fls not in heads or umbels; stamens 10; ovules numerous. 59. SAXIFRAGACEAE

115 Fls deep purple, in umbels subtended by 4 conspicuous white petaloid involucral bracts. 74. CORNACEAE
Fls not in umbels; no petaloid involucral bracts. 68. ONAGRACEAE

GROUP D

Petals united, ovary superior.

116 Stamens more than 10; outer per. segs longer than inner (*Consolida*). 23. RANUNCULACEAE
Stamens 10 or fewer. *117*

117 Stamens united into a tube, or 9 united, 1 free. *118*
Stamens all free. *119*

118 Lvs simple; fl. with upper sepal; stamens 8. 33. POLYGALACEAE
Lvs 3-foliolate; fl. with upper petal; stamens 10. 56. LEGUMINOSAE

119 Stamens twice as many as corolla-lobes (i.e. 8–10). *120*
Stamens as many as or fewer than corolla-lobes (i.e. 5 or fewer). *121*

120 Shrubs or trees; lvs not peltate; carpels united. 90. ERICACEAE
Succulent herb; lvs peltate; carpels free (*Umbilicus*). 58. CRASSULACEAE

121 Sepals 2; fls actinomorphic. *122*
Sepals more than 2 or fls zygomorphic (sometimes 2 conspicuous sepal-like bracts occur outside the calyx). *123*

122 Petals 2; fls in heads; lvs linear, terete. 131. ERIOCAULACEAE
Petals 5; fls not in heads; lvs flat. 40. PORTULACACEAE

123 Ovary deeply 4-lobed with 1 ovule in each lobe. *124*
Ovary not 4-lobed. *125*

124 Lvs spirally arranged. 103. BORAGINACEAE
Lvs opposite. 111. LABIATAE

125 Trees or erect shrubs. *126*
Herbs or creeping or cushion-like undershrubs. *129*

126 Lvs opposite. *127*
Lvs alternate. *128*

127 Stamens 2. 98. OLEACEAE
Stamens 4. 97. BUDDLEJACEAE

128 Lvs usually spiny; fls actinomorphic; anthers opening by slits. 52. AQUIFOLIACEAE
Lvs never spiny; fls zygomorphic; anthers opening by pores. 90. ERICACEAE

129 Stamens opposite the corolla-lobes. *130*
Stamens alternating with the corolla-lobes. *131*

130 Style 1; stigma 1. 96. PRIMULACEAE
Styles or stigmas more than 1. 95. PLUMBAGINACEAE

131 Lvs opposite. *132*
Lvs alternate or all basal. *137*

132 Carpels 2, free; style expanded into a ring below the stigma; trailing evergreen plants. 99. APOCYNACEAE
Carpels united; style not expanded into a ring below the stigma. *133*

133 Cushion-like or creeping undershrubs (high mountains). *134*
Herbs. *135*

134 Creeping; lvs elliptical or oblong; fls pink (*Loiseleuria*). 90. ERICACEAE
Cushion-like; lvs spathulate; fls white. 94. DIAPENSIACEAE

135 Flowers zygomorphic. 106. SCROPHULARIACEAE
Flowers actinomorphic. *136*

136 Land plants; lvs sessile. 100. GENTIANACEAE
Aquatic plants with floating lvs on long petioles (*Nymphoides*). 101. MENYANTHACEAE

137 Calyx- and corolla-lobes 4(–5); stamens 4 or 2. *138*
Calyx- and corolla-lobes and stamens 5. *144*

138 Stamens 2; lvs and bracts not spine-toothed. *139*
Stamens 4. *140*

139 Ovary 1-celled; corolla spurred; carnivorous bog or aquatic plants with lvs all basal or else divided into filiform segments. 108. LENTIBULARIACEAE
Ovary 2-celled; corolla not spurred; lvs not as above. 106. SCROPHULARIACEAE

140 Lvs all basal. *141*
Lvs not all basal. *142*

141 Corolla scarious; stamens exserted. 112. PLANTAGINACEAE
Corolla not scarious; stamens included. 106. SCROPHULARIACEAE

142 Bracts spine-toothed; corolla 1-lipped. 109. ACANTHACEAE
Bracts not spine-toothed; corolla weakly zygomorphic or 2-lipped. *143*

143 Ovules numerous. 106. SCROPHULARIACEAE
Ovules 4. 110. VERBENACEAE

144 Ovary 3-celled; stigmas 3, or if only 1 then 3-lobed. *145*
Ovary 2-celled; stigmas 2 or 1, not 3-lobed. *146*

145 Erect herb; lvs pinnate. 102. POLEMONIACEAE
Cushion-like; lvs spathulate; fls white 94. DIAPENSIACEAE

146 Ovules 4 or fewer; twining or prostrate herbs; lvs cordate or hastate; corolla shallowly lobed. 104. CONVOLVULACEAE
Ovules numerous; ±erect herbs or woody climbers; corolla-lobes conspicuous. *147*

147 Aquatic or bog plants; lvs orbicular or ternate; corolla fringed. 101. MENYANTHACEAE
Land plants; lvs neither orbicular nor all ternate (but some may be ternate in a woody climber); corolla not fringed. *148*

148 Fls numerous, in terminal spikes or racemes (sometimes aggregated into panicles); corolla-tube very short; stamens spreading (*Verbascum*). 106. SCROPHULARIACEAE
Fls solitary or in cymes (sometimes scorpioid); corolla-tube long, or, if short, then anthers connivent. 105. SOLANACEAE

GROUP E
Petals united, ovary inferior.

149 Stamens 8–10, or 4–5 with filaments divided to the base. *150*
Stamens 5 or fewer, filaments not divided. *151*

150 Herb; fls in heads, green; lvs ternate. 117. ADOXACEAE
Low shrubs or prostrate creeping undershrubs; fls pink or white, not in heads; lvs simple. 90. ERICACEAE

151 Fls in heads surrounded by an involucre; herbs (rarely slightly woody). *152*

Fls not in heads, or if in heads then with 2 bracts only and plant a woody climber. *155*

152 Anthers coherent into a tube round the style. *153*
Anthers free. *154*

153 Ovules numerous; calyx-lobes conspicuous, green; fls blue (*Jasione*). 113. CAMPANULACEAE
Ovule 1; calyx represented by hairs or scales; fls rarely blue. 120. COMPOSITAE

154 Ovules numerous; corolla-lobes long and narrow, longer than tube. 113. CAMPANULACEAE
Ovule 1; corolla-lobes shorter than tube. 119. DIPSACACEAE

155 Lvs in whorls; fls actinomorphic; petals 4. 115. RUBIACEAE
Lvs not in whorls; fls zygomorphic, or if not then petals 5. *156*

156 Fls zygomorphic. *157*
Fls actinomorphic. *159*

157 Fls in corymbs. 118. VALERIANACEAE
Fls in terminal racemes or spikes. *158*

158 Anthers coherent into a tube round the style; pollen powdery. 114. LOBELIACEAE
Anthers 2, free; pollen cohering in pollinia. 138. ORCHIDACEAE

159 Herb, climbing by tendrils. 77. CUCURBITACEAE
Herbs, shrubs or woody climbers; tendrils 0. *160*

160 Lvs opposite. *161*
Lvs spirally arranged. *162*

161 Stamens 4 or 5; usually shrubs or woody climbers; if herbs either prostrate and creeping or with lf-like stipules. 116. CAPRIFOLIACEAE
Stamens 1–3; herbs, ±erect and without lf-like stipules. 118. VALERIANACEAE

162 Stamens opposite corolla-lobes; stigmas capitate; fls white (*Samolus*). 96. PRIMULACEAE
Stamens alternating with corolla-lobes; stigmas 2–5; fls normally blue or purple. 113. CAMPANULACEAE

GROUP F

Perianth entirely petaloid or in several series, the inner petaloid.

163 Stamens numerous. *164*
Stamens 12 or fewer, or fls female. *167*

164 Aquatic plants with floating lvs and fls. 26. NYMPHAEACEAE
Terrestrial plants. *165*

165 Succulent prostrate plant with 3-angled lvs. 41. AIZOACEAE
Lvs not 3-angled. *166*

166 Carpels free, rarely united and then per. segs numerous. 23. RANUNCULACEAE
Carpels united; petals usually 4; sepals 2, falling as fl. opens. 28. PAPAVERACEAE

167 Fls crimson, in ovoid heads without an involucre; lvs pinnate (*Sanguisorba*). 57. ROSACEAE
Fls not in heads, or if so then with an involucre. *168*

168 Ovary superior. *169*
Ovary inferior or fls male. *177*

169 Perianth strongly zygomorphic, spurred or saccate at base; stamens 2, each with 3 anther-bearing branches; lvs much divided (sepals 2, but bract-like and soon falling). 29. FUMARIACEAE
Perianth actinomorphic or slightly zygomorphic, and then neither spurred nor saccate. *170*

170 Shrubs. *171*
Herbs. *174*

171 Fls borne on the surface of lf-like cladodes; true lvs small and scale-like (*Ruscus*). 132. LILIACEAE
Fls not on cladodes. *172*

172 Per. segs 4, continued below into a coloured hypanthium. 66. THYMELAEACEAE
Per. segs 6 or more, free. *173*

173 Low heath-like shrubs with inconspicuous axillary fls (if per. segs 8, pink-purple, in 2 differing whorls, see *Calluna* in Ericaceae, p. 231). 93. EMPETRACEAE
Tall shrubs with yellow fls in racemes or panicles. 25. BERBERIDACEAE

174 Per. segs 5. *175*
Per. segs 6, rarely 4. *176*

175 Stigma 1, capitate; stipules 0 (*Glaux*). 96. PRIMULACEAE
Stigmas 2–3; stipules sheathing, scarious. 80. POLYGONACEAE

176 Stamens 8(–9); ovules scattered over whole inner surface of carpels; aquatic plant. 122. BUTOMACEAE
Stamens 6, rarely 4; ovules on axile placentae; plants not aquatic. 132. LILIACEAE

177 Trees or shrubs; calyx present but very small and rim-like or with minute teeth. See *149* (Group E, p. xxv).
Herbs. *178*

178 Lvs in whorls of 4 or more. 115. RUBIACEAE
Lvs not in whorls. *179*

179 Fls in heads surrounded by a common involucre. *180*
Fls not in heads though sometimes shortly stalked in compact umbels. *181*

180 Stamens free; fls hermaphrodite. 119. DIPSACACEAE
Anthers cohering in a tube round the style, or fls unisexual. 120. COMPOSITAE

181 Per. segs 3, or perianth with a long tube swollen below and a unilateral entire limb; lvs ±orbicular, cordate, entire. 78. ARISTOLOCHIACEAE
Per. segs 5 or 6; lvs not as above. *182*

182 Per. segs 5; fls small; ovules 1 or 2. *183*
Per segs 6; fls large, ovules numerous. *185*

183 Fls in simple cymes; lvs spirally arranged, narrowly linear, small. 73. SANTALACEAE
Fls in umbels or superposed whorls, or if in cymes then lvs opposite. *184*

184 Stamens 5; per. segs free; fls in umbels or superposed whorls; lvs spirally arranged. 76. UMBELLIFERAE
Stamens 1–3; per. segs united; fls in cymes or panicles; lvs opposite. 118. VALERIANACEAE

185 Stamens 6. 135. AMARYLLIDACEAE
Stamens 3. 136. IRIDACEAE

GROUP G

Trees or shrubs; perianth sepaloid or 0.

186 Parasitic on the branches of trees; lvs opposite, obovate or oblong, thick, leathery; stems green. 72. LORANTHACEAE
Not as above. *187*

187 Root-climber; fls in umbels. 75. ARALIACEAE
Not climbing; fls not in umbels. *188*

188 Fls borne on the surface of flattened evergreen lf-like cladodes; true lvs colourless, scale-like (*Ruscus*). 132. LILIACEAE
Fls not on cladodes; lvs green. *189*

189 Lvs opposite or subopposite. *190*
Lvs spirally arranged or in 2 ranks (alternate). *194*

190 Lvs evergreen, thick, leathery, entire; styles 3. 54. BUXACEAE
Lvs deciduous; styles 4, 2 or 1. *191*

191 Fls in catkins. 89. SALICACEAE
Fls not in catkins. *192*

192 Lvs pinnate; perianth 0; stamens 2 (*Fraxinus*). 98. OLEACEAE
Lvs simple; perianth present; stamens 4 or more. *193*

193 Lvs palmately lobed 50. ACERACEAE
Lvs simple, not lobed 55. RHAMNACEAE

194 Lvs evergreen, less than 10 × 2 mm, dense, oblong or linear, entire; shrubs to 1 m or less *195*
Lvs relatively longer or broader, not particularly dense, usually deciduous and if evergreen then 30 mm, or more. *196*

195 Procumbent; stamens 3; stigmas 6–9; lvs leathery; moors, etc. 93. EMPETRACEAE
Erect; stamens 5; stigmas 2; lvs fleshy; maritime (*Suaeda*). 43. CHENOPODIACEAE

196 Lvs pinnate (present at flowering time). 84. JUGLANDACEAE
Lvs simple (sometimes 0 at flowering time). *197*

197 Fls, at least in the male, in catkins or in tassel-like heads on long pendulous stalks. *198*
Fls not in catkins or stalked heads. *203*

198 Dioecious; perianth 0; fls always solitary in the axil of each bract. *199*
Monoecious, though sexes usually in separate infls; perianth present at least in the fls of one or other sex. *201*

199 Scales of catkins fimbriate or lobed at the tip; fls of both sexes with a cup-like disk; ovules numerous (*Populus*). 89. SALICACEAE
Scales of catkins entire; disk 0. *200*

200 Ovules numerous; lvs without resin glands, not aromatic when crushed; fls of both sexes without bracteoles but with nectaries at the base, placed above or below the fl.; stamens with long filaments (*Salix*). 89. SALICACEAE
Ovule 1; lvs dotted with resin glands, strongly aromatic when crushed; male fl. without nectaries or bracteoles, female fl. with 2 lateral bracteoles; filaments short. 85. MYRICACEAE

201 Fls of both sexes with perianth; styles 3 or more; fr. large and nut-like, partly or completely enclosed in a hard cup or shell. 88. FAGACEAE
Perianth present in one sex only; styles 2; fr. small, or large and nut-like; cup if present papery or lf-like. *202*

202 Male fls 3 to each bract; perianth present; fr. small, in the axils of the accrescent bracts which persist till maturity and form cone-like structures. 86. BETULACEAE

Male fls solitary in the axil of each bract; perianth 0; fr. not borne in cones, surrounded by a papery or lf-like cup formed from the bracts. 87. CORYLACEAE

203 Lvs and twigs densely covered with silvery or brown peltate scales; dioecious; fls very small, male with 2 free per. segs; female with tubular perianth having 2 small lobes at its apex. 67. ELAEAGNACEAE

Plant without peltate scales; fls hermaphrodite; per. segs 4 or more. *204*

204 Deciduous trees; fls in sessile clusters, appearing before the lvs; perianth ±bell-shaped, the stamens inserted at its base; styles 2. 83. ULMACEAE

Evergreen shrub; fls in short-stalked racemes; perianth continued downwards into a long, cylindrical tube, the stamens inserted high on the tube; style 1. 66. THYMELAEACEAE

GROUP H

Herbs, perianth sepaloid or 0.

205 Perianth 0 or represented by scales or bristles, minute in fl. but sometimes elongating in fr.; the fls in the axils of specialized chaffy bracts which are usually arranged along the rhachis of spikelets, sometimes themselves aggregated into compound infls; lvs always ±linear and grass-like, sheathing below. *206*

Perianth present, or if minute or absent then fls not arranged in spikelets nor the bracts chaffy; lvs various. *207*

206 Fls with bract above and below; lvs ±jointed at the junction with the sheath, commonly with a prominent projecting ligule; sheaths usually open; stems terete or flattened, usually with hollow internodes. 144. GRAMINEAE

Fls with a bract below only; lvs not jointed at the junction with the sheath; ligule, if present, not projecting, sheaths usually closed; stem often 3-angled; internodes nearly always solid. 143. CYPERACEAE

207 Aquatic plants; lvs submerged or floating; infl. sometimes rising above the surface of the water. *208*

Land plants, or if aquatic then with stiffly erect stems and with lvs as well as fls rising above the surface of the water. *223*

208 Lvs divided into numerous filiform segments. *209*

Lvs entire or toothed. *210*

209 Lvs pinnately divided; fls in a terminal spike (bracts sometimes lf-like). 69. HALORAGACEAE

Lvs dichotomously divided; fls solitary, axillary. 27. CERATOPHYLLACEAE

210 Fls in a spike surrounded by a petaloid spathe (*Calla*). 139. ARACEAE

Without petaloid bracts or spathe. *211*

211 Fls sessile or nearly so, arranged in heads. *212*

Fls in spikes or in the axils of the lvs. *214*

212 Heads with many small fls, solitary at the ends of the lfless stalk. 131. ERIOCAULACEAE

Heads few-fld and terminal, or lateral on lfy stems. *213*

213 Fls unisexual, the male heads above, the female heads below. 141. SPARGANIACEAE
Fls hermaphrodite. 134. JUNCACEAE

214 Fls in spikes. *217*
Fls axillary, solitary or in few-fld clusters. *215*

215 Fls unisexual, arranged on one side of a flattened spadix; perianth 0; marine. 126. ZOSTERACEAE
Fls hermaphrodite, arranged all round or on two sides of a terete rhachis; fresh or brackish water but not truly marine. *216*

216 Per. segs 4; carpels remaining sessile; usually freshwater. 127. POTAMOGETONACEAE
Perianth 0; fruiting carpels on long stalks; brackish pools and ditches. 128. RUPPIACEAE

217 Female fls with very long filiform perianth-tube, resembling a pedicel and raising them to the surface of the water. 123. HYDROCHARITACEAE
Tube and pedicel short or 0. *218*

218 Carpels 2–6, free; lvs narrowly linear, quite entire, not whorled. 129. ZANNICHELLIACEAE
Carpels united or 1 only; lvs broader, or if narrowly linear then finely toothed or whorled. *219*

219 Perianth with 4–6 segments; stamens 4 or more. *220*
Perianth 0, or entire, or with 2 segments; stamen 1. *221*

220 Per. segs 4; ovary inferior; lvs ovate (*Ludwigia*). 68. ONAGRACEAE
Per. segs 6; ovary superior; lvs obovate. 65. LYTHRACEAE

221 Lvs in whorls of 8 or more; fls hermaphrodite; style 1. 70. HIPPURIDACEAE
Lvs opposite or in whorls of 3; fls unisexual; styles 2–3. *222*

222 Lvs narrowly linear with sheathing base, finely (or minutely) spiny-toothed, the apex acute; ovary terete, not lobed. 130. NAJADACEAE
Lvs (at least the upper) usually spathulate; if all linear, then entire and with an emarginate apex; base not sheathing; ovary flattened, 4-lobed. 71. CALLITRICHACEAE

223 Twining plants; fls unisexual. *224*
Not climbing or, if climbing, fls hermaphrodite. *225*

224 Lvs opposite, palmately lobed; per. segs 5. 82. CANNABACEAE
Lvs spirally arranged, cordate, entire; per. segs 6. 137. DIOSCOREACEAE

225 Lvs linear, ± grass-, rush- or iris-like; plants of wet places. *226*
Lvs not linear or, if so, small and not at all grass-like. *231*

226 Fls unisexual, the male and female in separate infls or in parts of the same infl. *227*
Fls hermaphrodite. *228*

227 Fls in globose heads, the male and female in separate heads. 141. SPARGANIACEAE
Fls in dense cylindrical spikes, male above and female below. 142. TYPHACEAE

228 Fls in dense spikes borne laterally on a flattened lf-like stem (*Acorus*). 139. ARACEAE
Infl. not as above. *229*

229 Carpels united only at extreme base; fls in racemes. 124. SCHEUCHZERIACEAE
Carpels ±completely united. 230

230 Fls in spikes; perianth herbaceous. 125. JUNCAGINACEAE
Fls not in spikes or racemes; perianth scarious. 134. JUNCACEAE

231 Lvs compound. 232
Lvs simple or 0. 235

232 Fls in heads. 233
Fls not in heads. 234

233 Lvs simply pinnate; style 1 (rarely 2), stamens 4 or numerous. 57. ROSACEAE
Lvs ternate (sometimes 2 or 3 times); styles 3–5; stamens apparently 8–10 (4 or 5 with filaments divided to base). 117. ADOXACEAE

234 Stamens numerous; no epicalyx. 23. RANUNCULACEAE
Stamens 4 or 5 (rarely 10); epicalyx present. 57. ROSACEAE

235 Infl. umbellate, consisting of several male fls (each of 1 stamen) and one female fl. (appearing as a stalked ovary) all surrounded by 4 or 5 crescent-shaped or roundish glands; juice milky (*Euphorbia*). 79. EUPHORBIACEAE
Infl. not as above; juice not milky. 236

236 Infl. a dense spike with female fls below and male fls above; lvs hastate (*Arum*). 139. ARACEAE
Infl. not as above; lvs not hastate. 237

237 Lvs 0; stems green and succulent, jointed; perianth flush with the stem; salt-marsh plants (*Salicornia*). 43. CHENOPODIACEAE
Lvs obvious, green; stems not succulent. 238

238 Lvs spirally arranged or all basal (rarely the lower opposite). 239
Lvs all opposite or whorled. 249

239 Stamens 12 or more. 240
Stamens 8 or fewer. 241

240 Per. segs 5, with a whorl of honey-lvs within; lvs palmately lobed (*Helleborus*). 23. RANUNCULACEAE
Per. segs 3, without honey-lvs; lvs reniform, entire (*Asarum*). 78. ARISTOLOCHIACEAE

241 Stipules ±scarious, united into a sheath. 80. POLYGONACEAE
Stipules free or 0. 242

242 Lvs large and rhubarb-like, all basal; fls in dense, many-fld spikes from the base, much shorter than the lvs (*Gunnera*). 69. HALORAGACEAE
Lvs not rhubarb-like; fls not in basal spikes. 243

243 Stamens twice as many as per. segs; lvs reniform, cordate (*Chrysosplenium*). 59. SAXIFRAGACEAE
Stamens as many as per. segs or fewer; lvs neither reniform nor cordate. 244

244 Stipules lf-like; perianth of 4 segments with an epicalyx of 4 segments outside; lvs palmately lobed (*Aphanes* and *Alchemilla*). 57. ROSACEAE
Stipules very small or 0; perianth without epicalyx. 245

245 Ovary inferior. 73. SANTALACEAE
Ovary superior. 246

246 Fls in simple ebracteate racemes (*Lepidium*). 30. CRUCIFERAE
Fls not in simple, ebracteate racemes. 247

247 Styles 2 or more, free or united below; stigmas simple; fls mostly 5-merous. *248*
Style 1; stigma feathery, tufted; fls 4-merous (*Parietaria*). 81. URTICACEAE

248 Perianth herbaceous. 43. CHENOPODIACEAE
Perianth scarious. 42. AMARANTHACEAE

249 Lvs toothed or lobed. *250*
Lvs entire. *253*

250 Fls hermaphrodite; stems creeping or decumbent. *251*
Fls unisexual; aerial stems erect. *252*

251 Ovary inferior, not lobed; styles 2; fls in dichotomous cymes (*Chrysosplenium*). 59. SAXIFRAGACEAE
Ovary superior, 5-lobed, prolonged into a long beak bearing 5 stigmas; fls solitary or very few on long axillary peduncles (*Erodium*). 47. GERANIACEAE

252 Plant with stinging hairs; per. segs 4 or 2; stamens 4; style 1; stigmas feathery (*Urtica*). 81. URTICACEAE
Plant without stinging hairs; per. segs 3; stamens 9 or more; styles 2, simple (*Mercurialis*). 79. EUPHORBIACEAE

253 Perianth 0 or obscurely 2-lobed or of 2–3 segments. *254*
Perianth of 4 or more segments. *256*

254 Per. segs 3; stamens 3 (*Koenigia*). 80. POLYGONACEAE
Perianth 0 or of fewer than 3 segments; stamen 1 (plants ±aquatic). *255*

255 Lvs whorled; fls hermaphrodite; style 1. 70. HIPPURIDACEAE
Lvs opposite; fls monoecious; styles 2. 71. CALLITRICHACEAE

256 Ovary inferior; style 1; per. segs 4 (*Ludwigia*). 68. ONAGRACEAE
Ovary superior. *257*

257 Per. segs 6 or 12, inserted on a bell-shaped hypanthium; style 1; plant ±aquatic; lvs obovate. 65. LYTHRACEAE
Per. segs 4 or 5, usually free (if on a bell-shaped hypanthium, then lvs linear); styles 2 or more, free; land-plants. 39. CARYOPHYLLACEAE

GROUP J

Herbs without chlorophyll; lvs scale-like.

258 Fls zygomorphic. *259*
Fls actinomorphic. *260*

259 Per. segs free. 138. ORCHIDACEAE
Per. segs united into a tubular corolla. 107. OROBANCHACEAE

260 Erect saprophyte. 92. MONOTROPACEAE
Twining parasites (*Cuscuta*). 104. CONVOLVULACEAE

SIGNS AND ABBREVIATIONS

agg.	aggregate, incl. 2 or more spp. which resemble each other closely.
C.	central.
c.	about (*circa*).
f.	forma.
fil.	*filius*.
fl.	flower, flowering time; plural fls.
-fld	-flowered.
fr.	fruit, fruiting.
incl.	including.
infl.	inflorescence, inflorescences.
lf	leaf; plural lvs.
lfless	leafless.
lflet	leaflet.
lfy	leafy.
per. seg.	perianth segment.
p.p.	*pro parte*.
sp.	species; plural spp.
ssp.	subspecies; plural sspp.
var.	variety.
0	absent.
×	Preceding the name of a genus or sp. indicates a hybrid.
±	more or less.
*	Preceding the name of a sp. or genus indicates that it is certainly introduced.

Measurements without qualification (e.g. lvs 4–7 cm) refer to lengths; lvs 4–7 × 1–2 cm means lvs 4–7 cm long and 1–2 cm wide. Measurements or numbers enclosed in brackets (e.g. lvs 4–7(–10) cm) are exceptional ones outside the normal range.

Note on Keys

Species of which a full description is provided are in heavy type, the trivial name being preceded by a serial number. Where there is no full description the name of the species is in italics and unnumbered, the trivial name being preceded by the initial letter of the generic name and followed by the authority for the name. But where, in keys to genera, certain species are keyed out individually, their names are printed in italics, preceded by the serial number of the genus with authorities omitted.