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A NEW ILLUSTRATED
BRITISH FLORA

Part I.
LYCOPODIACEÆ to SALICACEÆ

by

ROGER W. BUTCHER, D.Sc., F.L.S.

DRAWINGS BY

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1961
LEONARD HILL [BOOKS] LIMITED
EDEN STREET, LONDON, N.W.1

PREFACE

WHEN some time ago it became obvious that due to our greatly increased knowledge of the British Flora, my *Further Illustrations* would need drastic revision, it seemed to me that if I enlarged this work to embrace the whole of the British Flora, I should be providing that up-to-date illustrated and comprehensive work which had from time to time been suggested to me by botanists who had greatly valued the *Further Illustrations*. As my gifted collaborator and artist, Miss F. E. Strudwick, had died in 1942, I had to find other assistance. Since the task of drawing some 1,500 plants is a large one and would have taken a very considerable time if done by a single person, I decided to invite the assistance of several people so that we could complete the work in a reasonable period. The result of my appeal was most gratifying, as the list of the contributors and their work shows. To these, for their painstaking and unstinted assistance, I express my deepest gratitude. I trust also that the disadvantage of varieties of style has been completely offset by the general excellence of their work. Miss Strudwick's drawings have been incorporated in their obvious positions. Each drawing bears the artist's signature.

I have, in these new drawings and descriptions, followed the plan and arrangement that proved so acceptable in the original work. The descriptions of *Further Illustrations* have been rewritten to fit in with the remainder of the work, and I have, in all cases possible, added seeds which are a valuable aid to identification of many plants, but greatly neglected.

As my aim was to make all the drawings from living specimens obtained usually from their native habitats, the problem even of collecting these was a big one, but it was made very easy for me by the ungrudging assistance I have had from all those people I approached. Among these have been, firstly, the Governors of Dauntsey School, Market Lavington, and Mr. Marsden-Jones, who have supplied me freely with plants from their excellent collection of living wild plants, and also the following: Miss F. Baker, C. H. Barnes, Miss F. M. Barton, P. Benoit, Miss E. Booth, Mrs. W. Boyd-Watt, Dr. R. D. Brooke, Dr. R. C. L. Burgess, O. Buckle, Miss D. Cadbury, Misses D. and N. Churchman, F. H. Codrington, Dr. R. David, F. H. Day, Dr. J. G. Dony, Miss U. K. Duncan, E. A. Ellis, Mrs. M. Fetherstone, R. S. R. Fitter, Miss W. Frost, J. C Gardiner, Miss J. Gibbons, Dr. H. Gilbert-Carter, Miss C. Goodman, Mrs. H. Gough, A. W. Graveson, R. D. Grose, Mrs. S. Gurney, Miss C. Gurney, R. H. Hall, R. J. and Mrs. Howitt, H. A. Hyde, Miss M. Jenkyn, S. T. Jermyn, D. H. Kent, Dr. J. W. G. Lund, Miss M. McCallum Webster, Miss M. Mason, Mrs. Milvain, J. McK. Moon, F. W. Murgatroyd, Malham Field Station, R. M. Payne, The Hon. Gwen Philipps, D. Ranwell, B. J. Ribbons, Dr. F. Rose, M. Rutterford, Mrs. M. Saunders, Dr. W. Sladen, Miss B. M. Sturdy, Mrs.

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The problem of obtaining seeds for drawing has been greatly eased by the kindness of the University of Durham in lending the Griffiths seeds collection; and I am very grateful to the Keeper of the Herbarium, Royal Botanic Gardens, Kew, and the Keeper of the Department of Botany, the British Museum, as well as to the late Mr. B. T. Lowne, for much help in this problem.

The author would also like to express his warmest thanks for their suggestions and help to his many friends, in particular, to J. E. Lousely, N. Y. Sandwith, D. MClintock and Dr. F. Rose, for help with both general and critical material; to the late W. C. R. Watson and E. S. Edees for help with *Rubi*; to Dr. Cyril West with *Hieracia*, to the late R. Graham with *Mentha*, to N. D. Simpson with *Euphrasia*, and to C. E. Hubbard with *Gramineae*.

LIST OF ABBREVIATIONS

cm. = centimetre.
C. = central
diam. = diameter.
in. = inches.
l.s. = longitudinal section.
M. = midland.
m. = metre.
mm. = millimetres.
p.p. = pro parte (in nomenclature indicates the author included other forms or species).
t.s. = transverse section.
var. = variety.
± = more or less.
× = times in figures; hybrid in nomenclature.
† = (in table) indicates many intermediate forms occur.
[ ] = (in table) refers to the number of the previous caption.
( ) = (in introduction and table) refers to the illustration number.

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Introduction to Descriptive Botany

THE object of a Flora is to enable one to identify and name any wild or native plant that grows in the country covered by the work, which in this case is the British Isles, not including the Channel Isles, whose flora belongs more logically to that of France. Owing to the activities of man, many plants have been deliberately or unintentionally introduced by him, and some of these now maintain themselves or are actually spreading as if they were native plants. It is always a problem to decide which of such introduced species should be given a place, and the choice must inevitably be that of the author alone. My criterion has been first to exclude all those that have been deliberately planted, such as many of our trees or shrubs in woods and copses, including familiar plants such as *Rhododendron* and *Fuchsia*; secondly, all those plants which are extensively grown as crops and whose identity is well known, such as tomato, radish or pea; thirdly, those plants which grow only so near gardens that they are obviously throw-outs from cultivation such as *Narcissus poeticus, Lysimachia ciliata*, etc. On the other hand, any plant that now grows and maintains itself in a healthy state under apparently wild conditions and which is likely to be unknown as a familiar garden plant, is included, such as *Acæna anserinifolia, Sarracenia purpurea, Veronica filiformis.* Even within these generalizations, it has been found that there could be no hard and fast rule, and some exceptions have been made with the object of making this book comprehensive.

1. It is usual to give the following names to indicate the origin of a plant:

Native. Those plants which grow and maintain themselves under natural conditions in this country.

Colonist. A plant, originally introduced from some other country, which not only maintains itself but has spread by natural means over large areas, e.g. *Veronica persica; Impatiens glandulifera.*

Denizen. A plant originally introduced but continuing to maintain itself in the small area which it first colonized though not spreading to any great extent, e.g. *Hypericum calycinum.*

Casual. A plant which occurs only for one or two seasons in a given locality.

Alien. An obviously introduced plant which does not come within any of the above definitions, such as garden throw-aways and plants of rubbish heaps.

An *endemic* plant is one that grows exclusively in one country or one area, e.g. *Sorbus arranensis* in Arran.

To make the identification of plants as straightforward as possible, not only is an illustration given of each one, with certain parts of the plant shown as magnified insets, but this is also accompanied by a de-

scription. It is the aim of any author of such a flora that his descriptions should be clear, concise, accurate and characteristic, so that the description can apply only to one species or one group of forms. Above all, it is desirable that such descriptions should be in ordinary, well-established language. For the purposes of accuracy, however, it is necessary to give a more precise meaning to many terms in general use and to employ some technical names not in common use. In the pages that follow, these technical and technically limited terms are explained and defined.

Before passing on to these in detail, there is one very important matter to enlarge upon and that is the dimensions of a plant and its many parts. Words such as long, wide, thick, as applied to dimensions are inconcise and may even, at times, be misleading, so they have, wherever possible, been replaced by an actual measurement. As few units as possible have been used for these. For small parts, the millimetre unit has been used exclusively and the centimetre is here ignored to maintain simplicity. With larger parts, the millimetre unit becomes too small, and since in England one is still accustomed to think in inches and feet, these units are used; the foot only with very large plants such as trees. In order, however, to meet the objection that this is mixing up two units of measuring systems, centimetres and metres are included in brackets. The measurements must be taken as an average and not as a constant in all cases. Where two figures are given, as in many seeds, the first is the vertical length and the second the width; a single figure without qualification refers to the greatest dimension, e.g. in a hair or a style, it is its length.

THE DESCRIPTION OF THE PLANT IN GENERAL

2. A plant in the botanical sense includes everything that has vegetable life and only a portion of these is described in this work. They are the plants which have flowers, stamens and seeds, and which are known as the *Phanerogams*, and one section of the plants with spores and without flowers, the *Cryptogams*. This section of the Cryptogams is characterized by having well-developed stems, and usually leaves, containing cells specially modified for conducting sap or strengthening the plant. Since these structures are called vessels or the *vascular system*, this group is referred to as the *Vascular Cryptogams* and includes the ferns. The *Phanerogam* are also vascular, but the mosses are *Non-vascular Cryptogams*.

3. One of the earliest known classifications of plants was into trees, shrubs, and herbs, because these were such obvious characteristics of the plant kingdom. A plant is, therefore, called *herbaceous* when all parts are soft or tough but not woody; the term *tree* is given to those plants, usually more than ten feet high when mature, and with a main stem or trunk, and strong, long-lived, woody branches; the term *shrub* to those plants with strong, long-lived, woody branches and usually without an isolated main stem or trunk and under ten feet high even when mature. Some woody plants such as the heathers and some willows, e.g. *Salix*

repens (879), creep along the ground, are only a few inches high, and are often called *undershrubs.*

4. The length of life of a plant is also important. Some germinate from the seed, grow, flower, produce seed and then wither away completely. If all this takes place within one season, the plant is called an *annual.*

If it takes two years, the first year the plant remaining only with leaves; it is called a *biennial.*

In exceptional cases, as with some of the orchids, the period may be even longer, but this is so rare that it has been little commented upon. As all these plants produce only one lot of seeds before dying, they are sometimes called *monosemitic.*

5. Other plants may flower and produce seed in a single season but not die after seeding, a vegetative condition persisting from season to season. Such plants are called *perennials.* In some plants, this annual flowering and seed production may go on only for a few years, and they are called *short-lived perennials*; in others such as the trees, flowering and fruiting is repeated annually very many times. Though all such plants are called perennials, they differ greatly in the fate of the vegetative parts in winter. Some trees remain leafy throughout the year, and they are called *evergreen.* Other trees shed all their leaves each autumn and the branches are bare through the winter. These trees are called *deciduous.*

Herbaceous plants may wither entirely above ground and life remains in some underground portion like a bulb or a rhizome; others have a rosette of leaves or some similar structure throughout winter. Distinguishing terms for these states have been drawn up by the Danish botanist, Raunkiaer, and are summarized in Clapham, Tutin and Warburg's *Flora of the British Isles* (abbreviated as *Fl. Br. Is.*), p. 1509, but for the sake of simplicity they are not used in this work.

6. In its perfect form, the plant consists of:

a. The *root* or descending axis which grows downwards and spreads in the earth or water to absorb nutriment and fix the plant to its substratum.

b. The stem or ascending axis which grows upwards. It usually branches and bears first one or more leaves in succession; secondly, one or more flowers; and finally, one or more fruits bearing the seeds.

c. The *leaves*, usually flat, green, and horizontal, and variously arranged on the stem and its branches.

d. The *flowers*, usually placed at or towards the extremities of branches and destined to bear the seeds.

e. The *fruit*, which is usually developed from the pistil of the flower and contains the seeds.

7. Special modifications of the normal plant may be seen in those species which obtain their nourishment by methods other than the carbon assimilation by green leaves and are therefore leafless and devoid of green chlorophyll. Those which attach themselves to and obtain nourishment from another plant are called *parasites* (1089), while those

which obtain their nourishment from decaying organic matter are called *saprophytes* (912).

THE ROOT

8. The root varies comparatively little in form, and is rarely used as a distinguishing character, partly because of its inaccessibility. Although roots usually grow from the base of the stem or stock, they can grow from the base of any bud or node of the stem. Such roots are usually called *adventitious* (92).

Roots may be woody or fleshy:

A *taproot* is a long, perpendicular, single root with very few branches (780).

A *fibrous* root is composed of thin, slender branches (651).

A *fusiform* root is a fleshy taproot tapering at both ends (150).

A *tuberous* root is one that has become swollen or thickened irregularly into one or two rounded masses called tubers (759).

The Stock and Underground Stems

9. The *stock* is the portion of the plant at the junction of the root and stem at about ground level. As well as the root, parts of the stem may remain wholly or partly underground to form part of the stock and it is then called *subterranean*. In this state, it takes on a varied structure and can be distinguished from a root proper because it has buds growing from it (690).

The various modifications of these underground stems are as follows:

A *stolon* is a slender, rooting, horizontal, underground stem that produces an aerial stem or leaves at its apex and usually lasts one season (690).

A *rhizome* is a slender to thick, rooting, horizontal, underground stem that produces an aerial stem or leaves at its apex and lasts several seasons (753).

A *runner* is a slender, above-ground, horizontal stem that produces stems and leaves at intervals (571).

An *offset* is a slender, above-ground stem that produces a new plant at its apex (198).

A *sobole* is similar to a stolon but is not fleshy and produces plants at intervals like a runner (252).

A *tuber* is a much-swollen, rounded, underground stem on which are one or more buds (76).

A *corm* is a condensed, erect, fleshy stem lasting for a year, the new corm being formed above or at the base of the old one. It is covered by a thin membrane formed of the old leaves (1501).

A *bulb* is a condensed, erect, fleshy stem and the fleshy leaf bases of the previous year, in the centre of which is the bud. Bulbs are *scaly* when the outer scales covering the bud are thick, and *tunicate* when the outer scales are thin and dry (1485).

Bulb-like structures with fleshy scales sometimes form in the axils of aerial stems (208) and they are then called *bulbils*.

A particular type of structure is seen in certain water plants. In autumn, on the lower axils of the leaves there is produced a vegetative bud which remains dormant in the mud throughout the winter. This is the so-called winter bud or *turion* (700).

THE STEM

10. The aerial part of a plant is very much more complex than the underground portion. There is usually a stem through which passes the circulating system of the plant. When the stem is broken, the fluid which oozes from it is the *sap*; if the sap is white and thick, it is called the *latex*. The stem bears the leaves, which may not always be flat, and subsequently, the stems bear flowers at their tips and after these wither, the fruit and seeds are formed.

11. There are several definitions of the direction of growth of a stem. It will be—

Erect when it is perpendicular to the ground (219).
Diffuse when spreading irregularly in all directions (346).
Ascending when growing upwards but not perpendicular to the ground (495).
Decumbent when first growing along the ground and turning upwards at the end or when, through weakness, it falls along the ground but the end remains erect or ascending (493).
Procumbent or *creeping* when the main stem grows along the ground but leaves and branches grow upwards from it at intervals (568).
Prostrate when all parts of the stem and leaves grow along the ground (172).

12. The clothing, shape, and sculpturing of the stem, are of very great importance, especially in defining varieties. The surface layer or skin of all parts of the plant is known as the *epidermis*. The definitions of clothing or *indumentum*—which is in reality outgrowth of the epidermis—will be relevant to leaves, floral parts and seeds, as well as stems.

13. A surface, therefore is—

Smooth when it is without any protuberance whatever.
Glabrous or *naked* when without any hairs of any kind.
Glaucous when the epidermis is a bluish-green and often covered with a fine bloom.
Pruinose when covered with a whitish bloom like hoar frost.
Striate when marked with parallel longitudinal lines (14).
Furrowed or *ribbed* when the lines are distinctly raised (83).
Viscid when covered with a sticky exudation (295).
Scabrid when rough to the touch (846).
Pilose when covered thinly with rather long, simple hairs (681).
Floccose when covered with soft, stellate hairs (192).
Pubescent when the hairs are short and soft and lie along the surface all in one direction (410).
Hirsute when covered densely with long, not very stiff hairs (411).

Hispid when covered thickly with rather stiff hairs (969).
Setose when bearing stiff, erect, rather bristly hairs (979).
Tomentose when the hairs are short, soft, rather intertwined and usually white (312).
Gland is a hair with a swollen tip usually secreting fluid (670).
Glandular-setose when the bristles are tipped with a rounded gland (601).
Glandular when covered with gland-tipped hairs or sessile glands (671).
Aciculate when bearing stiff, hair-like prickles (591).
Villous when the hairs are long and loosely imbricate or shaggy like wool (277).
Mealy when the hairs are very short, intricate and white and come off the surface like meal (372).
Hoary when the hairs are so short that they cannot be distinguished with the naked eye and yet give a general whitish hue to the epidermis (227).
Glochidiate when the bristles are hooked (1294A).

14. As well as hairs being of the variety indicated above, they may be simple or branched in a variety of ways. They are:

Plumose when they have secondary hairs like a feather (1323B).
Bifurcate when branched above with two equal branches (201E).
Stellate when branched below, the branches spreading like the rays of a star (194F).
Sometimes they may form flat, circular discs when the surface is said to be *scaly* (167B).

15. The shape or solid section of the stem is described as follows:

Terete when the stem is smooth and has no ribs or angles and its transverse section is circular (280).
Trigonous when there are three flat sides and the transverse section is triangular (1587D).
Triquetrous when there are three flat sides and the edges are winged and the transverse section is triangular with acute or produced angles (1654E).
Tetragonous or *quadrangular* when there are four flat sides to the stem and it is square in transverse section (687D).
Fistular when the stem is hollow (758).
Winged when there are longitudinal lines of thin tissue raised some distance above the stem as a whole (270A).
Filiform when the stem is very thin resembling a thread (332).

Prickles and Thorns

16. A *thorn* is a strongly pointed extremity of a branch (613) and can be identified because it usually has buds at the base.
A *spine* is the strongly pointed extremity or margin of a leaf or petiole and can be identified because the bud is in its axil (122).

A *prickle* is the strongly pointed "hair" that has become hardened or woody and can be identified by the fact that its origin is only in the epidermal layers and there is no bud (600). In the brambles, there are all stages from the large, hard prickle to the bristle and these stages are the *prickle*, *pricklet*, *acicle* and *bristle* in order of size and hardness.

17. A stem or branch also is:

Flaccid when it droops at the end when held upwards (98).
Flexuous when it is wavy or zigzag in outline (206).
Pendulous when it hangs downwards (447).
Strict when several branches are almost vertical and close together (216).
Appressed when it is touching alongside but not fused to a neighbouring branch (233, the pods).
Porrect when it is directed outwards and forwards (141).
Patent when it is directed outwards and somewhat downwards (180)
Secund when all the branches are on one side of the stem (906).
Divaricate when two branches grow away from each other at a wide angle (821).
Fasciculate when the branches are in bundles up the stem.
Dichotomous when a single stem branches into two branches of equal size (710).
Articulate or *jointed* when at some stage of their growth they can be pulled apart without tearing the tissue (11).

18. Though only rarely mentioned, the transverse section of a stem may reveal characters of value that are not shown in the gross outer morphology, a very good example of this being the *Equisetum* spp. (11-14). A section horizontal to the axis is called *transverse* (t.s.) and vertical to the axis *longitudinal* (l.s.). In a normal section, the following characters will appear:

The *epidermis*, which is a single, usually thickened layer of cells on the outside. If they are present, hairs will grow from this layer.
The *parenchyma*, which is the general cellular tissue of the inner parts of the stem.
The *vascular bundles*, which appear as rather denser clusters of thick-walled cells in the parenchyma, either in a definite ring or scattered irregularly.
The *pith*, which is usually in the centre of the stem and consists of light-coloured, thin-walled, regular cells.
One or more hollow spaces conveniently called *lacunæ*. Aquatic plants are usually characterized by having very large and often numerous lacunæ (16B). In land plants, there is usually only a single central one (684D).

19. *Stalk* is considered too loose a term to be employed in descriptive botany, and may be deemed to cover all kinds of stem structure. The following are the names specifically used:

Stem is the vegetative main or secondary axis bearing leaves, flowers and fruit.

Petiole is the main stalk of a leaf.

Peduncle is the main stalk of an inflorescence or the stalk of a solitary flower.

Pedicel is the stalk of a flower in an inflorescence.

Scape is the stalk of a flower when it grows from the crown of the root.

Rachis is the axis of a pinnate leaf or inflorescence from the first branch to the apex, though the word is used sometimes to include as well the petiole of such leaves. It is used chiefly in the *Polypodiaceæ*.

THE LEAF

20. Specific determination of a plant may at times be made from the leaf alone. Its shape, its sculpturing and its clothing are within wide limits specifically determined. It is necessary, however, to take as the pattern a well-developed intermediate leaf, and this applies in particular to trees, where the leaves of summer shoots and those growing from the roots (suckers) must be clearly differentiated from those of the main branches. Whilst the clothing of the leaf is also of importance, especially in micro-species, this character must, in particular, be taken along with other supporting ones and not by itself.

21. A leaf usually consists of three well-differentiated parts: the stalk or *petiole*; the flattened part, the *blade* or *lamina*; and usually, two small leaves or scales at the base of the petiole called the *stipules*. Any of these may be absent, and then the following terms are used:

Stipulate when there are stipules at the base of the leaf.

Exstipulate when there are no stipules (346C).

Sessile when there is no petiole (343E).

Examples of the blade being absent are very rare; in such cases, some other portion of the plant becomes leaf-like:

Phyllode is a leaf-like petiole (528).

Cladode is a leaf-like stem (1435).

22. There are several definitions of the manner in which a leaf arises from a stem:

The *node* is the junction of stem and leaf.

The *internode* is the portion of stem between two nodes.

The *axil* is the part between the base of the leaf and the stem; this is usually occupied by a bud.

There are few or no definitions applied to a *petiole* alone; the same terms are used as those for describing the stem.

23. The positions of a leaf may be defined as follows:

Radical leaves are those which grow from the crown of the plant or the base of the stem.

Cauline leaves are those which grow from the stem.

Opposite leaves arise opposite each other on the stem.

Decussate leaves is the term given when one opposite pair of leaves is placed at right angles to the pair below it (1120).

Alternate leaves arise singly and not opposite each other (210).

Whorled leaves is the term given when several leaves arise around the stem at the same node (357).

Intercalary leaves are cauline leaves between those that have branches in their axils and those that have flowers. It is used chiefly in *Rhinanthus.*

Distichous leaves are two series of leaves arranged one above the other in two diametrically opposite rows (827).

Amplexicaul or *clasping* leaves are those in which the two sides of the sessile base, clasp the stem horizontally (179).

Auricle is the overlapping base of the leaf (150).

In *perfoliate* leaves, the two clasping sides of the base of the stem are united on the opposite side so that the stem appears to grow through the blade (733).

Connate is the term given to two opposite leaves which are united along their bases so that the stem appears to grow through them (367).

Decurrent leaves have the edges and the main vein of the leaf continued down the stem in the form of a wing (219).

Sheathing leaves have the base of the blade and the more or less expanded petiole forming a vertical sheath for some distance above the node, e.g. most grasses (1780).

24. Leaves are more or less marked with veins which commence at the petiole and then trace a definite pattern on the blade. Their arrangement is termed the *venation*, and the variations are described as follows:

The *midrib* or *primary* vein is the main vein which passes from the petiole to the leaf tip.

Secondary veins are those which grow from the midrib. *Tertiary* those which grow from the secondary.

Nerves are prominent secondary veins; their number is important in some species.

A *pinnate* or *feather-veined* leaf has a midrib and several nerves or veins branching from it all up the leaf (846).

A *palmate-veined* leaf has a midrib and 2-8 prominent nerves or veins branching from it at its base (422).

A *reticulate-veined* leaf has the small tertiary veins joining each other to form a general network (885).

A *parallel-veined* leaf has several nerves of equal size growing parallel to each other from base to apex. These are characteristic of Monocotyledonous plants, the chief exception being that *Arum* and *Paris* have palmate veins, while *Plantago* in the Dicotyledons has parallel veins.

25. The blade of the leaf also varies in texture and consistency. Leaves may be:

Fleshy when thick and soft (165).

Succulent when they are thick, soft and juicy (630).

Coriaceous when they are firm, dry and very tough (448).
Membranous when they are thin, rather dry but flexible (353, stipule).
Scarious when thin and dry and rather stiff (317A).
Hyaline when thin and transparent (708).

26. There is also, as with the stem, variation in the appearance and clothing of the blade and the same terms are used, with the addition of the following:

A *glaucous* leaf is one covered with a bluish-green bloom (163).
A *scabrous* or *scabrid* leaf is one with hard hairs and is rough to the touch (980).
A *rugose* leaf has a wrinkled blade, e.g. *Primula* (925).

27. Leaves vary tremendously in shape, not only the blade as a whole but also its margin, its apex and base. The following terms are given to the apex. It is:

Obtuse when the sides meet at an obtuse angle (285B).
Acute when the sides meet at a point or acute angle (604).
Attenuate when the apex tapers gradually (532).
Acuminate when the apex is long, narrow and pointed (846).
Cuspidate when the apex contracts suddenly into a narrow tooth (466).
Apiculate when the apex ends in a long, almost linear point (335).
Mucronate when that point is short and sudden (470).
Aristate when that point is bristle-like (658D).
Truncate when the apex is cut off squarely (610).
Retuse when the apex is obtuse and slightly indented (475).
Emarginate when the apex is strongly indented at the end of the mid-rib (439).

28. Additional terms are needed for the base:

Cuneate, i.e. wedge-like, when the two sides meet the petiole at an angle (228).
Truncate when the two sides of the base are perpendicular to the petiole (388).
Sagittate when the two straight sides meet the petiole at an angle of more than 190 degrees (807).
Cordate, i.e. heart-shaped, when two convex sides meet the petiole or the stem (250).

29. The margin of a leaf may also be cut or divided in many ways. It is:

Entire when there is no toothing whatever (231).
Undulate or *wavy* when it is irregularly wavy (697).
Crenate when there are numerous, very rounded teeth (71).
Serrate when the teeth are acute and straight (615).
Biserrate when the teeth are uneven or of two sizes (854).
Dentate when the teeth are acute or rounded but are inclined at an angle (681).
Sinuate when the teeth are broad, rounded, and irregular (642).

Ciliate when the margin is bordered with a row of hairs (349E).
Fimbriate when the margin is fringed or torn into fine, thread-like divisions (681E).
Laciniate or *lacerate* when the margin is torn irregularly (791A).
Involute when the margin is turned inwards (176).
Revolute when the margin is turned outwards and downwards (281).

A diminutive is used where the toothing is very small, e.g. *dentate* becomes *denticulate*, *serrate serrulate*, etc. Where the toothing cannot be easily defined, the word toothed is used to embrace all the variations.

30. In addition to the shallow sculpturing of the margin, a leaf may be more deeply cut up or evenly divided into several small, leaf-like parts. An undivided leaf is known as a *simple* one, while if a single leaf is made up of several leaflets, it is called *compound*. When deeply divided but still a single leaf, it is said to be *lobed*. The *sinus* is the space between the two lobes.

31. The names given to the various shapes of flat leaves are as follows:
Oblong, *elliptical*, *triangular* and *rhomboidal* leaves correspond to the similar geometrical shapes of the same name.
A *deltoid* leaf has the form of the Greek Δ delta, i.e. triangular (380).
An *orbicular* leaf has a circular outline but the leaf base is free (277).
A *peltate* leaf also has a circular outline but the petiole is attached at the centre (713).
A *cordate* leaf is one shaped like a heart (250).
A *spathulate* leaf is oval and tapers to a narrow, flat portion below (292).
A *reniform* leaf is one shaped like a kidney (806).
An *ovate* leaf has an oval or egg-like outline with the narrower end at the top (275).
An *obovate* leaf has the narrower end at the base (626).
A *lanceolate* leaf has a narrow, elliptical outline (871).
Sagittate leaves are shaped as an arrow with two long, acute lobes, directed downwards (805).
Hastate leaves are shaped as a spear with two acute basal lobes directed outwards (388).
Panduriform leaves are shaped like a violin, i.e. ovate with a constriction in the middle (818).
Gladiate or *ensiform* leaves are shaped like a sword with a pointed apex and long, straight sides (1494).
A *linear* leaf is very long and narrow (304).
A *subulate* leaf is like an awl, pointed at the end and slightly flattened in the centre (195).
A *capillate* or capillary leaf is one with a slender, hair-like outline (99).
A *setaceous* leaf is one with a narrow, stiff, bristle-like outline (338).

32. Compound leaves are of three general shapes, as follows:
Ternate, when there is one terminal leaflet and two lateral ones, e.g. the clovers (488).

Biternate, when these leaflets are again divided into three (753).

Palmate or *digitate*, when five or more leaflets grow away from a common point at the top of the petiole (453).

Pinnate, when there are numerous leaflets growing all down the petiole, usually in opposite pairs and occasionally alternate. If there is a terminal leaflet, they are *imparipinnate* (513); if there is not a terminal leaflet, they are *paripinnate* (518).

Bipinnate, when these leaves are again divided and *tripinnate* when they are three times divided (725).

Pectinate is a pinnate leaf with parallel capillary segments (701).

A *runcinate* leaf is one in which the lobes or teeth are directed towards the base of the petiole (1369).

A *lyrate* leaf is a pinnate leaf in which the terminal lobe is much larger than the lateral ones (162).

33. With the intermediate, much divided leaves, the suffix *-fid* is used to denote little division and *-sect* to denote much division, so we have *pinnatifid* (223) and *pinnatisect* (233), *palmatifid* (424), and *palmatisect* (423) leaves.

THE STIPULES

34. These small organs at the base of the leaf (563C) are frequently of great value in determining a species, especially if the flower is not present. They may be small and simple; they may be leaf-like, or thin, membranous scales, and similar terms as for leaves are used in their description. Two special types of stipule need comment.

One is the *ochreate* stipule of the *Polygonaceæ*. Here the two are united in a tube around the node of the stem and they are always membranous (788D).

In the grasses and the sedges, the petiole is sheathing, and at its junction with the blade is a single, membraneous stipule called the *ligule* (1760).

35. Leaves may also be modified in special ways. They can become hard, rounded spines or minute scales. A *scale* is usually a leaf very much reduced in size, seldom green, and usually sessile. They are characteristic of winter buds of trees and of many underground stems. They also cover many of the petioles of the ferns (43D). In the former case, they are usually short, broad and close together, and more or less *imbricate*, that is, they overlap each other like tiles of a roof. They are termed *squarrose* when they have spreading or recurved, pointed tips (1255, the bracts).

THE BRACTS

36. An ordinary leaf subtends in its axil a bud or a leafy shoot. The leaf which subtends a flower in its axil is known as a *bract*. Bracts may, at times, be similar to or indistinguishable from the leaves, but usually they are simple and less divided or they may be completely different. Where there are a number of bracts in a whorl under the

flower or flowers, they are said to form an *involucre* (79). In the compound umbels of the *Umbelliferæ*, there is, at times, an *involucre* of *bracts* under the primary branches, and an *involucel* of *bracteoles* under the secondary branches (765). *Phyllaries* are the rather specialized bracts around the inflorescence of the *Compositæ* (1220-1370).

THE FLOWERING PORTION

37. The *Phanerogams* or flowering plants which comprise all except seventy of the plants described in this volume, develop their reproductive organs in the structure known as a flower, and it is on the variations of this organ that most classifications of the flowering plants are based. Before going on to discuss the variation within the flower itself, the way in which the flowers are arranged on the stem must be considered. This is known as the *inflorescence*. There are two main groupings:

A *definite* or *cymose* inflorescence is one in which the main axis ends in a flower and a secondary stem or stems grow from beneath the first flower.

An *indefinite* or *racemose* inflorescence is one in which the main axis gives off a secondary branch and continues to grow and lengthen afterwards.

The inflorescence is *lax* when the flowers are some distance apart.

A flower is *solitary* when it is borne singly on a peduncle.

It is *axillary* when it grows singly from the axil of a bract on the main stem.

38. The following are the chief types of *definite* inflorescence:

A *scorpioid cyme* is when the secondary branches all arise on the same side of the stem (981).

A *helicoid cyme* is when the secondary branches arise on alternate sides of the stem (993).

A *dichasium* or *dichotomous cyme* is when two secondary branches arise on opposite sides of the main axis each time (315).

It is often difficult to determine the exact succession of the flowers since they come out very irregularly. The more general term *cymose* or *cyme* is then used, and these forms are distinguished from the indefinite inflorescences by the central flower opening first and not the outer ones.

39. Examples of *indefinite* inflorescences are:

A *raceme* has simple stalked flowers on every side of a continuously elongating main axis (184).

A *panicle* has the secondary flowering stems, again branched (804).

A *spike* is similar to the panicle, but the flowers on the main axis are sessile (793).

In a *corymb*, the outer pedicels are longer than the upper, so that all flowers are brought up to the same height and a level-topped inflorescence is formed (614).

An *umbel* has several branches growing from a common point and they are usually the same length (607).

A *compound umbel* is an umbel in which the secondary stems are again branched in a similar manner (721).

A *capitulum* or *head* has many sessile flowers growing together from a flattened main axis (589).

A *catkin* is a spike with flowers of only one sex (857).

As with the definite inflorescences, some are difficult to determine, and for these the general term *racemose* is used. In the grasses, the final cluster of flowers is small and specialized, but is actually a small spike with one to many flowers in it, at the base of which are two specialized bracts called *glumes*. This inflorescence is usually termed a *spikelet*.

THE FLOWER IN GENERAL

40. A complete flower consists of two whorls of floral leaves surrounding and protecting (*a*) the *pistil* in the centre and (*b*) the *stamens* surrounding the pistil. The inner whorl of floral leaves is often conspicuous and brightly coloured and is known as the *corolla*, while the outer is usually green and is called the *calyx*. If these two whorls cannot be distinguished, it is called the *perianth*. Sometimes, also, the sepals are shed immediately the flower opens. They are then called *caducous* (130), or if they wither very quickly, they are *fugacious* (694). Sexually, the stamens form the male reproductive organ, while the pistil since it develops the seed, is considered to be the female organ.

A *perfect* flower is one that has all four whorls (84).

A *monochlamydeous* flower is one that has only a single outer whorl of floral leaves (789).

An *achlamydeous* or *naked* flower has no outer whorl of floral leaves, the stamens and pistil often being protected by scales (704).

A *hermaphrodite* flower has both stamens and pistil present (88B).

A *staminate* or *male* flower has no pistil or an abortive one (869A).

A *pistillate* or *female* flower has pistil but no stamens (869B).

A *neuter* flower has neither stamens nor pistil.

A *monœcious* plant is one in which there are separate male and female flowers on the same plant (857).

A *diœcious* plant is one in which there are separate male and female flowers on different plants (878).

A *polygamous* plant is one in which there are separate male, female and hermaphrodite flowers on the same plant or distinct plants.

A *sterile* flower is one which, though possessing stamens and pistil, does not produce seed.

A *self-sterile* flower is one which will not produce seed from fertilization of its own pollen.

41. Of these four (or three) series of organs in a flower, the most important characteristics for identification and description may be summarized briefly as follows:

a. The form or shape, especially of the two outer whorls.

b. Whether united as one or in separate parts.

c. The numbers of units or lobes present.
d. The position of one whorl in relation to the others, sometimes called its *insertion.*

THE CALYX AND COROLLA OR PERIANTH

42. The calyx is the outermost whorl of floral leaves; if only one such whorl is present, it is deemed to be the calyx and the corolla is thus absent. More conveniently, this single whorl may be called a *perianth.* The calyx is made up of *sepals* and the perianth of *phyllodes* or *segments,* though to the ordinary person these "sepals" (in the *Liliaceæ* or *Caltha,* for example) are similar to petals. The calyx is usually small and green except in, for example, some of the *Ranunculaceæ,* when it becomes as showy as a corolla, while the latter is either absent or greatly modified as nectaries. In such cases, or when there is a perianth so constructed, it is designated *petaloid* (72).

43. In most cases the corolla dominates the form of the flower. Often what is described of a flower, e.g. the colour, should be more correctly assigned to the corolla.

The corolla is made up of petals which may be:

Fugacious if withering very quickly (135).
Deciduous if shed soon after the flowers open (145).
Persistent if remaining on the flower till the fruit forms (470).

If the petal is contracted below into a stalk-like portion, this is called the *claw* (111B).

44. A flower is said to be *regular* or *actinomorphic* when it is symmetrical on any vertical axis (89) and *irregular* or *zygomorphic* when it is symmetrical only on one axis (524A). A slight irregularity of other whorls does not prevent the flower being termed regular if corolla or perianth be regular.

45. Various terms are used to describe the shape of calyx, corolla or perianth, more especially those in which the sepals or petals are united. These are:

Tubular when the greater part of perianth is in the form of a tube or a cylinder (784).
Campanulate when the greater part is in the shape of a bell, usually with sides diverging upwards or somewhat recurved (783).
Urceolate when the greater part is in the shape of an urn, very rounded, and the sides are converging upwards (887).
Crateriform when the lower part is cylindrical and the upper part expanded horizontally (925). In such cases, the tubular part is called the *tube* and the upper, expanded portion, the *limb.*
Infundibuliform or *funnel-shaped* when the lower part is cylindrical at the base and is enlarged upwards but not spread horizontally (996).
Rotate when the petals or sepals are united at the base but spread out horizontally without a cylindrical portion (1005).

Stellate when the petals or sepals are free or united only at the base and spread out horizontally like a star (327).

Throat. In flowers like *Primula veris* (925) the tubular portion of the corolla is called the *throat*, while the upper spreading lobes or segments are termed the *limb*.

46. The above are terms for regular flowers, and the following are applicable to irregular ones:

Bilabiate or *two-lipped* is when one portion of the corolla stands obviously apart from the other portion and in this way two lips are formed (1138). The upper part is sometimes called the upper lip and sometimes the *hood* or *helmet*.

Personate is when the tube is closed by the two lips or by a projection from the lower lip known as the *palate* (1016A).

Spurred when the lower part of the tube or a petal or sepal forms a conical hollow basal projection (248A).

Saccate is when the spur is short and round like a bag (1016A).

Gibbous when the projecting part is just a slight swelling (231A).

Papilionaceous is the specific term given to many *Leguminosæ* flowers where two petals unite as a *keel* or *boat*; one is erect and called the *standard*, while two others at the side of the keel spread like wings (528A).

Ligulate is when the corolla is like a strap or band. It is used chiefly for the flowers of the *Compositæ* (1376B).

47. The *form*, especially the apex of the calyx teeth, is a very valuable distinguishing character and the same terms are used here as in leaves.

In some cases, there is, below the calyx proper, a ring of small sepal-like bracts alternate with the sepals. This is called the *epicalyx* and is frequent in the *Rosaceæ* (558B).

UNION

48. Sepals or petals may be completely separated, in which case they are termed *polysepalous*, *polypetalous* or *polyphyllous* for calyx, corolla and perianth respectively; or they may be united together, when they are termed *gamosepalous*, *gamopetalous* and *gamophyllous* respectively. In the latter case the unjointed portion is often called a *lobe*, or if, as in the case of a calyx, the free part is very small, the *teeth*. The union or otherwise of the petals is one of the main divisions in the flowering plants, though in this there are some exceptions.

NUMBER OF PARTS

49. The number of the parts or lobes is a very important character. There are usually three or six lobes of the perianth and three or six stamens in the monocotyledons and this character is used, together with the others mentioned on page 37 to identify this group. The exceptions are few; one particular example is *Paris quadrifolia*. In the dicotyledons, the numbers are five, four, more rarely two, or multiples of these numbers. Allowance must always be made for aberrant mem-

bers of a species with odd numbers. This is not unusual in *Ranunculaceæ* and *Rosaceæ*.

POSITION OF PARTS

50. The insertion of the various parts in relation to each other, needs, perhaps, a little explanation. One should imagine a small, convex platform from which grow, in concentric rings, the sepals, petals, stamens and pistil. This platform is known as the *receptacle* or *thalamus*; the pistil or *gynœcium* in the centre is considered to be the point of reference for position, and when the other parts are arranged in concentric rings around this, they are called *hypogynous*, which simply means under the gynœcium, while the latter is called *superior* (828). Instead of being flat or convex, this receptacle may, at times, become concave, forming a cup or tube, and it will carry on its outer rim the calyx, corolla, and usually, the stamens, and so raise them above the base of the pistil, which remains at the bottom. The whorls are then termed *perigynous*, i.e. around the gynœcium (630B).

In a further development, the upper rim of this cup will contract over the pistil leaving only the upper part showing. The whorls are then termed *epigynous*, i.e. above the gynœcium; while the latter, or more particularly the ovary, is *inferior*. Two variations may also be noted in this state; in the first, this cup-like receptacle with the calyx may remain free from the pistil, although it completely covers it, e.g. in many *Rosaceæ* (638); in the second case, pistil and cup-like receptacle may be completely fused and inseparable as in the *Umbelliferæ* (727B).

51. Other terms sometimes used to indicate relationship of the petals and sepals to each other are:

Connivent, when two petals or perianth segments grow towards each other (365C).

Contiguous, when adjacent lobes or segments touch or overlap slightly (99).

SPECIAL STRUCTURES IN SEPALS AND PETALS

52. Flowers pollinated by insects frequently provide nectar as an attraction. This may be secreted at the base of the calyx or corolla tube, in the rim of the thalamus or receptacle, and at times, in a specially adapted part of calyx or corolla such as the spur of the violet, the special tubular petals of *Helleborus* (75B), the pore at the base of the petal of *Ranunculus* (83C). Such structures are termed *nectaries*.

THE STAMENS

53. There are two (or more accurately, three) parts of a stamen: the stalk or *filament*; the *anther* at the top of the filament in which is developed the *pollen* (646C). This in turn contains the male germ of reproduction. Filaments may be glabrous or hairy. They may be present or absent; when the latter, the anthers are, of course, sessile. Stamens without anthers are called *staminodes*. An anther may be one-, two- or four-celled, and may be attached to the filament by its

whole length, when it is termed *adnate* (783); at the base, when it is *basifixed*; or at a central point, when it is termed *dorsifixed*. In the latter case, it can be moved independently of the filament and it is then known as *versatile* (most grasses [1690F]). An anther splits open to shed the pollen. This may be by a longitudinal slit (1438A); by an elastic valve (122C); or by pores (888). In *Orchidaceæ*, the pollen is aggregated into a spongy mass which is known as a *pollinium* and is shed in one piece (1534B).

The morphology of the pollen grain is not usually used for the identification of species, chiefly because it requires the high-powered microscope, but there is no doubt that it has characters of value, since it is used quite extensively to identify species in glacial deposits.

54. The number of stamens to a flower is often a character of great importance. In some cases, they are numerous or very numerous and with no definite number, and, in this case, they are called *indefinite*. Otherwise, they may be any constant number from one to twelve. In such cases, they frequently bear a constant relation to the position and number of the petals, being either alternate with them or opposite them. Whilst in many cases the filaments are all about the same length, there are other times when they are of different lengths; for example, in the *Cruciferæ* (194B), there are two short and four longer, and they are known as *tetradynamous*; and in *Labiatæ* and *Scrophulariaceæ* they are two long and two short, and are known as *didynamous* (1124G).

55. Like the sepals and petals, parts of the stamens may be united. In the *Leguminosæ* there are ten stamens, of which nine may be united by their filaments, and one free, and they are called *diadelphous* (536B); or all ten may be united, when they are termed *monadelphous* (460A); while in the *Hypericaceæ* there are several bundles of stamens and then they are called *polyadelphous*. In the *Compositæ* the stamens are united by their anthers and they are then termed *syngenecious* (1323B), while in the *Orchidaceæ*, the stamens are fused to the ovary and then they are termed *gynandrous*.

56. Like petals and sepals, stamens may grow from the receptacle when they are *hypogynous* (75A); they may be inserted on the sepals (usually on the calyx limb) when they are *episepalous* (627A), or in a very large group, they are inserted on the petals and are *epipetalous* (960D), or, if on a perianth, *epiphyllous* (1456A). Also, like the petals, they may be *perigynous* or *epigynous*. If the stamens exceed in length a gamopetalous corolla, they are called *exserted*.

Stamens may, at times, be modified as nectaries (663), or may be spurred (888C), both of which characters are of considerable importance in classification.

THE PISTIL OR GYNŒCIUM

57. This structure, which is in the centre of the flower, contains the ovary and afterwards the seed, and is thus the female organ of reproduction. It is formed of *carpels*. It may make this structure plainer if

we imagine a leaf or bract with a lot of seeds hanging to its margin and sometimes on its surface, and call this the carpel. This, in various plants, becomes folded, twisted, united or modified in various ways. As a first example, it may roll up longitudinally and the two sides unite; thus is formed the pod of the legumes, with a single or double row of seeds inside (510D). Or it may be very short and bear only one seed, when the single seeded structure is formed. Such ovaries, consisting as they do of a single carpel, are called *monocarpous.* Where, as in the *Anemone,* there are many of these single carpels in one flower, either one-seeded or many-seeded, they are termed *apocarpous* (79B).

58. The apex of our carpel becomes elongated and is the *style,* while its tip is modified into a usually somewhat spongy organ which acts as the receiving point of the pollen, the male organ of reproduction. This is the *stigma.* Thus a pistil consists of *stigma, style* and *ovary,* the last being the portion in which are situated the unfertilized seeds which are called *ovules.*

59. In other cases, there may be several carpels in a single pistil which become fused together in various ways. Such pistils are termed *syncarpous.* The carpels of such a pistil may be united by their edges, when the ovary will appear to be one-celled or *unilocular,* and the ovules will be in clusters around the inner wall, each cluster representing the margin of a carpel. This arrangement is called *parietal* and the place where the ovules are attached is the *placenta.* Sometimes several carpels, each fused along its own margin, are united along the flat sides, so forming a *plurilocular* ovary of 2—many cells, with the ovules attached to the central axis. This placentation is called *axile* (1179B). In a third case, there is a central structure bearing ovules but there are no cell divisions between this and the outer portion (938C). This is called a *free-central* placentation. Probably a good interpretation of this is that the carpels are united in the lower part which bears seeds and they are folded on a horizontal axis, the outer wall being thus the upper portion of the carpels. Only stigma and styles here give a clue to the number of carpels.

60. The *style* may be long or short; there may be a single one, or many or several may be united in part or all the way. If there is no style, the stigma is sessile. *Heterostylous* plants are those in which the styles on different flowers are of two or more differing lengths (674A).

61. The *stigma* is actually the spongy platform which receives the pollen. The stigma may be a point at the top of the style, when it is sometimes called *punctiform* or *terminal* (205B); it may be a rounded head, when it is called *capitate* (689B), or there may be two or more stigmas on the top of the style, when it is *bifid, trifid, 4-fid,* etc. (685B), according to the number of stigmatic surfaces. In the *Urticaceæ,* the stigmas form a brush-like mass on the top of the ovary (843B), and in the grasses the stigmatic surface is a series of hairs along the two stigmas (1700F). In other plants the stigmatic surfaces may be lateral or take many shapes and can be branched, notched, lobed, or toothed.

THE SPECIAL STRUCTURE OF THE GRAMINEÆ (THE GRASSES)

62. The flowers and inflorescence of the grasses are so specialized that certain terms are used for these alone. Each cluster of a grass, like the ear of the oat, is actually an inflorescence. It is called a *spikelet* (1700A).

At the base of this spikelet are two scales, one just within the other and opposite to it. These, which are floral bracts, are called *glumes*; the first the outer, and the second the inner glume. In some grasses the glumes are shorter than the spikelets (1690A); in others they hide the spikelets (1820A).

Within these two scales, usually on a very short rachis or pedicel, are the flowers, sometimes single, at other times several. Each flower also has two scale-like bracts. The outer is usually firm and much like a glume. It is called the *lemma* (1700D) or outer pale.

The inner scale is thin and membraneous and often boat shaped. It is called the *pale*, *palea* or the *inner pale* (1700E).

Within this pale is the flower of 1-3 stamens and an ovary with one or two styles. In some species at the base of the ovary are two minute scales called *lodicules*. Glumes and lemma often terminate in a long, thin point called the *awn*. In addition, the inflorescence may take on a different appearance when flowering than when fruiting. To distinguish between these the flowering time is termed *anthesis* (1720).

THE FRUIT

63. In general terms, a fruit is something succulent or juicy that has seeds inside and is produced by a plant. To the botanist a fruit is any structure that contains the seed, and includes such things as the pea pod and dry structures such as the head of the poppy or the ear of the oat. Occasionally, instead of a dry seed developing within a flower, there appears a small seedling plant which is capable of growing directly with a new plant. Such plants are called *viviparous* (791).

64. The form of a fruit is a very important feature in the classification of plants and they are here described in detail. The first division is between dry and succulent fruits. After a flower is fertilized, the petals usually wither away and certain other parts become enlarged and modified to form the fruit. In most cases, the important, enlarged portion is the wall of the ovary, but the calyx, the perianth or even the receptacle may contribute. Any part, but especially the calyx, if it is enlarged, is called *accrescent* (247B). This modified external structure around the seed is called the *pericarp*; it may be differentiated into an outer layer, the *epicarp*; a middle layer, the *mesocarp*; and an inner layer, the *endocarp*.

65. The following division is made in *dry* fruits:

Dehiscent fruits are those that split open to release the seeds.

Indehiscent fruits are those that do not split but rot away after being shed.

Of *dehiscent* fruits:

A *follicle* is a many-seeded fruit formed of a single carpel that splits down one side (74C).

A *legume* is a few to many-seeded fruit formed of a single carpel which splits down two sides (524C).

A *capsule* is a fruit of several carpels that opens or splits by pores, as in the poppy (128B); valves, as in the St. John's Wort (272E); or teeth, as in the campions (300E). Where the valves are situated in the centre of a carpel, they are said to be *loculicidal*; if at the junction of the carpels, *septicidal*. *Siliqua* (160B, C) and *silicula* (200B, C) are special capsules of the Cruciferæ. These split along the junction of the carpels, fall away and leave the seeds hanging to a central portion called the *replum*. The *siliqua* is longer than broad and the *silicula* is as broad as or broader than long.

The *nut* is an indehiscent dry fruit with a single seed tightly enclosed in a dry, woody pericarp (859D).

The *achene* is an indehiscent dry fruit with the single seed loosely enclosed in a dry, horny pericarp (89D, E).

A small nut is often called a *nutlet*. In the case of many plants, a syncarpous ovary may have several nutlets adhering together when young but separating when mature. Such fruits are, at times, called *bipartite*, *tripartite*, *tetrapartite*, etc.—*schizocarps* according to the number of nutlets into which they split (732B, 417E).

66. Dry fruits may also, at times, develop special processes which aid in their scattering. Certain *Cruciferæ* and *Impatiens* (445B) have elastic valves and split open with some force, throwing the seeds clear of the mother plant. In other cases there is developed often from the calyx a ring of hairs or scales, as for example, in the dandelion (1370). This is called a *pappus*. Other fruits may have hooked bristles either formed from the style as in *Geum* (574C), or from the involucre of bracts as in *Arctium* (1295), or the wall of the pericarp as in *Circœa* (698). These become entangled in the woolly coats of certain animals and are carried great distances. In other cases, a wing may be developed from the ovary wall (*Fraxinus*) or the style (*Acer*) (447) or a bract (*Tilia*) (400B). Such fruits are sometimes called *samaras*.

67. *Succulent* or *fleshy* fruits are of three main groups:

The *berry* which has several seeds in a soft or pulpy pericarp formed of the ovary wall (668).

The *drupe* which has a single seed surrounded by a hard, woody wall, or endocarp, and a fleshy or juicy pericarp formed of the ovary wall, e.g. the plum (604).

The *pome* which has one or several seeds surrounded by a hard or horny pericarp and a fleshy portion formed from the calyx tube or receptacle (629).

The strawberry (*Fragaria*) (570B) is a special form of fruit, where the fleshy portion is formed from the central part of the receptacle.

The rose hip (599) is another special case where free, woody nuts are enclosed loosely in a fleshy calyx tube

THE OVULE AND THE SEED

68. After an ovule is fertilized, the central reproductive cell multiplies and at length forms the beginnings of the new plant, which is called the *embryo* and this is inside the seed. This embryo has three parts, the *radicle* which becomes the root; two (or one) succulent, fleshy, ovate or rounded masses, the *cotyledons* or seed leaves; and (usually protected in the clasp of these cotyledons) the shoot or *plumule*, which will form the growing shoot and leaves. When the seed grows, the cotyledons are often seen above ground and are then green, opposite, simple leaves, often a completely different shape from the normal leaves of the plant. At other times they remain below ground and rot away. If the seed, say of *Cheiranthus cheiri*, be examined (231D), a curved, vertical channel will be seen, extending from the base (as drawn) nearly to the top; this is actually a depression dividing the cylindrical and pointed radicle on the right from the rather ovate cotyledons on the left. It will be seen, further, that the cotyledons have curved over so that the tip of the root and the apex of the cotyledons point the same way. Plants with two cotyledons belong to the group called *dicotyledons*. In its ovular state, this is called an *anatropous* ovary and is the most usual pattern. If, however, the radicle points downwards and the cotyledons and plumule upwards (843D), the ovary is termed *orthotropous*, while intermediate states are given the term *campylotropous* (398C).

In the case of the seed with a single cotyledon, the primary character of the *monocotyledons*, the matter is rather more difficult to describe. The embryo here may be likened to one of those cardboard tubes with two or three rolls of paper inside it and solid at the base; the solid part represents the radicle, while the outer cardboard tube represents the cotyledon, though, in reality, this may be partly split down one side; the inner papers are the plumule or the next youngest leaves. On germination, the leaves of the plumule push themselves up through the top of the cotyledon in the manner that one pushes the paper out of the tube. Here, again, the ovules may be *anatropous* as in *Allium* or *orthotropous* as in most of the grasses.

THE ENDOSPERM

69. In many seeds the reserve food material is stored in the cotyledons which are, as a consequence, thick and become fleshy, the embryo filling the whole seed. In other cases the cotyledons are thin and the food is stored in a tissue surrounding the embryo. This storage tissue is known as the *endosperm*, and its presence or absence is an important character used in grouping the plants in their natural orders.

70. Since seeds have many well-defined characters and are often to be met with away from the plant or when there are no flowers by which to identify it, a careful drawing has been made for every species. This has always been done under a microscope and with the aid of a camera lucida. Whatever its situation in the fruit, the seed has been drawn, in all cases possible, with the radicle pointing downwards. There are many cases, however, where the ovary wall is hard and woody and does not

separate from the true seed, for example, the stone of *Prunus* or the achene of the *Compositæ*. In these cases, the nut or hard fruit is drawn instead, as being the organ most likely to be shed whole from the plant.

71. Four characters are of importance with the seed: first, its size; secondly, its shape; thirdly, the markings on the seed coat or *testa*; and fourthly, its colour. The first and fourth need no comment.

Terms similar to those for shapes of leaves are used for seeds but modified to imply that the shapes are solid:

Globular or *spherical* when they are rounded as a ball or globe (533D).

Ovoid when they are shaped as an egg or appear oval (68D).

Ellipsoid when the profile is an ellipse, i.e. equal at both ends (469C).

Lenticular when shaped like a disc or a convex lens (374C).

Cuneoid when wedge-like, similar to a division in an orange (712D).

Falcate when curved like a sickle (513C).

Helicoid when marked with a spiral like a snail's shell (161C).

Cylindrical when the profile is a rectangle or has somewhat tapering ends (834D).

Clavate when shaped like a club (690B).

Conical when the profile is triangular and it is shaped like a cone (825C).

Turbinate when shaped like a peg top (677C).

72. The markings on the seeds are described as follows.

The *hile* or *hilum* is a scar seen on some seeds which is where the seed has become detached from its stalk. It is very prominent in the *Leguminosæ*.

The *radicle*, or more accurately, the pattern of this organ, as it is impressed on the seed wall.

Rugose implies an irregular wrinkling in the seed (139D).

Verrucose or warty means that the seed has on its wall irregular raised lumps like warts (529D).

Papillose means that there are cylindrical processes called *papillæ* growing away from the surface (357D).

Tubercled or *tuberculate* when the raised portions are small and obtuse (527D).

Muricate when the processes are more raised and pointed but short (1372E).

Echinate when the processes are more sharply pointed (780B).

Honeycombed when the surface is covered with a much-raised network (129C).

Ridged or *ribbed* when the raised ribs are almost parallel (176D).

Pitted when the surface is covered with minute, usually round depressions (377C).

Punctate covered with minute holes or depressions.

Reticulate when the wall is marked like a net but the markings are not raised to any extent (222D).

Striate when the wall is marked with parallel lines that are not raised to any extent (624E).

SPECIAL STRUCTURES IN SEEDS AND FLOWERS

73. *Umbelliferæ.*—The seed here consists of two carpels which, when ripe, break into two independent seeds. In the carpel wall are three characters of considerable taxonomic importance:

1. *The Commissure.* This is the portion where the two carpels are originally joined together. It may be wide or narrow (732C).
2. *The Vittæ.* These are cylindrical or club-shaped vessels or glands in the pericarp or carpel wall which secrete oil. They are best revealed in a t.s. of the fruit and are remarkably constant in each genus (777B and C).
3. A longitudinal groove or channel is present in certain cases in which the radicle is placed. This shows up in a cross section and is also an important taxonomic feature (723).

SPECIAL STRUCTURE OF THE COMPOSITE INFLORESCENCE

74. What appears to be a flower in plants that belong to this order such as the Ox-eye daisy (*Chrysanthemum leucanthemum*), is, in reality, an inflorescence of many small flowers or *florets.* These may be of two kinds. First, there are those on the margin with an elongated, asymmetrical corolla termed *ligulate,* while the corolla is often known as the *ligule.* These form the *ray* and are often, though not invariably, barren. In the centre or *disc* are numerous, much smaller, regular flowers with a five-toothed corolla. These disc florets are described as *tubular.* In other cases, all the florets of the head are ligulate, e.g. the dandelion, while in the thistles they are all tubular.

The corolla is placed on the top of a single-seeded carpel, usually called an *achene,* but at times also a *caryopsis,* since it is not exactly like that of, say, *Ranunculus acris,* as the seed is adherent to the carpel, while in the latter it is loose. At the top of the achene there is often a ring of hairs or scales (1303A), called the *pappus.*

The whole head of florets is surrounded with and almost encased in a whorl or involucre of bracts, either simple or imbricated. Since these are more specialized than the usual bract, they are often termed *phyllaries* (1303B). They are very important organisms in the determination of the species.

STRUCTURE OF THE ORCHIDACEÆ

75. *Orchidaceæ.* The structure of the orchid flower has several unusual features which need special terms. The perianth has three outer and three inner segments referred to sometimes as sepals and petals; one segment of the inner whorl is usually larger than the other two and different in shape. It is called the *labellum* (1543A). The three segments opposite the labellum are at times arranged together to form the *hood* or *helmet* (1545B). In the centre of the flower, the stamens, instead of being around the pistil, are fused with it (1543B), there being a single stamen (rarely three) and a flattened pistil. This combined structure is called the *column.* The stamens also have a peculiar structure. Instead of each anther containing loose pollen grains these are coagu-

lated into two lumps: the *pollinia* (1537C), each with a stalk; the *caudicle*, and at its end a viscid mass the *viscidium* (1534). There are three stigmas, but often one of these is barren and forms a pointed or triangular process, the *rostellum* (1534A), between the centre of the anther.

THE REPRODUCTIVE ORGANS OF THE VASCULAR CRYPTOGAMS

76. In this group the seed, as the reproductive organ, is replaced by a rounded body known as the spore. Instead of in an ovary, the spore is developed in a special organ known as the *sporangium*. The organ on which the sporangium grows is called the *sporophyll*. This may be a large leaf-like structure as in the fern, a small scale as in *Lycopodium* (5B), or a special peltate structure as in *Equisetum* (15C).

Where several sporangia are grouped together in a manner similar to an inflorescence, this is called a *sorus* (46A), and is seen in small clusters on the back of the sporophyll of a fern (58A).

The sorus is often covered by a scale which is called the *indusium*. Although most of our native vascular cryptogams have spores of one size, a few, such as *Selaginella*, have spores of two sizes. The small ones are *microspores* (1C) and the large ones *megaspores* (6D).

Since the leaf-like structure in the fern bears reproductive organs, it is obviously different from a true leaf. It is, therefore, often referred to as a *frond*.

THE CHROMOSOMES

77. If reference is made to a modern flora such as *Fl. Br. Isles*, the reader will see a frequent reference to the chromosomes. Since the observation of these involves the high-powered microscope and specialized laboratory technique, they are not used in this work. It is hoped, however, that this brief description will help the uninitiated to understand the implications of these important structures.

All plants are built of cells, and a plant grows by means of dividing cells. A cell is filled with a substance called protoplasm, and in this is a specially dense portion called the *nucleus*. When a cell is dividing, the contents of the nucleus take the form of a thread, which shortly becomes cut up into a number of U-like, V-like, or comma-shaped portions. These are the *chromosomes*, and they can only be seen properly under the highest power of a microscope and after the material has undergone an elaborate preparation. The reader is referred to the first few chapters of Manton's book on the Pteridophyta to obtain full details as to how this is done.

The chromosomes in the dividing cell then split longitudinally, each half passing into one of the two new cells. The important point about these chromosomes is that they are, in very many cases, constant in number in any one species, and often the same number or a multiple thereof runs through a whole genus. If, therefore, as in the twin species *Rorippa officinalis* and *R. microphylla*, one of these has double the

number of chromosomes to the other, then it is strong supporting evidence that here are two separate species, though the vegetative differences between them may be at first neither striking nor profound. Some people would like to use these differences in the chromosomes as a main character in the classification of plants, but for field botany this is manifestly impossible because of the inaccessibility of the chromosomes for quick identification. That is why they are scarcely mentioned in the text of this work.

When the male and female germs unite in the ovule after fertilization, there will be in each cell two lots of chromosomes, one from pollen and one from ovule. So as to prevent doubling of the chromosome number in each generation, the germ cells of pollen and ovary previously undergo a special type of division that gives them half the normal number of chromosomes. This is the reduction division.

This smaller number of chromosomes is represented by the letter n so that when one sees in the description of a plant $2n=24$, this means that the chromosome number in the vegetative cell is 24 and in the pollen grain, for example, 12. The following terms are also used:

Haploid to indicate that the germ cells of the plant have the normal number of chromosomes.
Diploid to indicate that the cells of the plant have the $2n$ number.
Triploid that the cells of the plant have a $3n$ number.
Tetraploid that the cells of the plant have a $4n$ number.
Octoploid that the cells have an $8n$ number.
Polyploid that the cells have a number that is multiple of $2n$.

When, therefore, it is stated that *Rorippa officinalis* is a diploid and *R. microphylla* is a tetraploid, it is implied that the latter has double the number of chromosomes of the former.

AN OUTLINE OF CLASSIFICATION

78. Since the known species of flowering plants, something above 100,000 in number, are far too numerous for the human mind to study without classification or even to give names to them, systems of groupings and names have been written down from the earliest times. A system of names published by Linnæus has now been universally adopted. A common substantive name like *Ranunculus* is given to a number of plants that closely resemble each other in several important characters. This group is known as the *genus*. It is followed by a second adjectival epithet, the specific name. A *species* is the collective term given to a group of plants which so closely resemble each other that it appears that they are descended from a common ancestor with the same characteristics. It may be that, within a species, a certain number of individuals differ in one or two small and perhaps not constant characters such as hairiness, size of the flower, or shape of the seed. These obviously allied groups are often termed *varieties* and are usually written *Ranunculus aquatilis* var. *submersus*.

Unfortunately, there is in nature, no hard and fast division into well-marked, invariable units and the scope and limits of genus, species and

variety are interpreted differently by different botanists. Generally speaking, the more intensive the study of a group has been, the narrower have the definitions of these groups become. The size and concept of the genus has now been so narrowed down since the time of Linnæus that, in a small flora like that of Britain, it is in danger of losing its usefulness, as under a genus is grouped so few species. As an example taken from the *Flora of the British Isles*, the genus *Linaria*, quite well characterized by the spurred corolla, has ten species. This has been divided up, on variation of habit and seed, into four genera containing two, one, one and six species, respectively. However, to help the reader to understand both points of view, such species in dispute bear the segregate generic name in parenthesis after the more generally accepted name of wider scope.

A similar problem arises in the definition of species where one may observe, as in the Whitebeam trees (*Sorbus aria*), an almost infinite variation of size and shape of fruit and division of leaf. In their *Handbook of British Flora* Bentham and Hooker give one; in *Further Illustrations of British Plants* there are seven species; in *Flora of the British Isles* there are fifteen. It is a matter of personal judgment, and only further intensive study may answer the problem as to what view is correct. Since, in *British Flora*, only the species as interpreted by me are included, the collection may differ somewhat from other Floras. For this I must take full responsibility. As regards the old Strudwick drawings, I have included almost all of these, even where there is some doubt as to the correct assignment.

As a class, species, in some cases, undoubtedly grade into varieties, and in *Flora of the British Isles* the authors have attempted to get out of the dilemma by interpolating a new grade, the subspecies, for plants which have characteristics that would warrant putting them in either species or variety. To the author it seems that by interpolating a new division, the dilemma is increased twofold—namely, one has to decide whether a given plant is a species or subspecies, and whether another is a subspecies or variety. This classification is therefore not used in this book.

The genera are still far too numerous to study without further division, so those that resemble each other more than they do any other genera, are, again, grouped together in a family or Natural Order which bears the name as an adjectival plural of some name of a typical genus, e.g. *Ranunculaceæ*, or as some very marked character, e.g. *Leguminosæ* or *Papilionaceæ*. The natural order appears on the top of each page, but space will not allow for a summary of the salient characters, for which reference should be made to some other botanical text-book. Where the natural order has been recently divided, the segregate name appears as well in brackets.

The orders are grouped further into a few classes which have a few features in common, as for example, all with a single cotyledon being classed as the Monocotyledons.

Having thus grouped his plants into Orders, genera, species, etc., the author of a Flora has to decide in what order he should present them in

his book. It must be admitted that the study of plants would be greatly simplified if all floras had their plants in the same order, but, unfortunately, that is not the case. In fact, all authors seem to have chosen a different order and these differences are constantly increasing. The author of this book has no desire to add confusion and complication by yet another order, but he found it very difficult to choose which of four systems he would adopt.

Two objects have, apparently, been in the mind of most authors of a Flora: first, to make the arrangement as simple, as comprehensive and as natural as possible; and second, to start with the primitive plant and finish with the most highly evolved. Linnæus, who knew nothing about evolution, used the numbers of stamens and other floral parts as his basis, but no modern writer has attempted any order other than an evolutionary or developmental one. Unfortunately, all have differed in their opinion as to which are the simplest and which are the most evolved, and we have two widely used sequences of order, that of Bentham and Hooker, and that of Engler, with two other more recently published ones—that of Hutchinson (*The Families of Flowering Plants*) and *Flora of the British Isles.*

The Bentham and Hooker order of *Genera Plantarum* commences with those orders with free and numerous parts to all the whorls, e.g. the *Ranunculaceæ* passing to gradual reductions in numbers from free to united carpels and from superior, many-seeded ovaries, to inferior, one-seeded ovaries, and small, aggregate flowers of the *Umbelliferæ*. In all these, both calyx and corolla are usually present and the petals free. The next series has mostly a united or gamopetalous corolla, and with the exception of one or two orders, stamens growing on the corolla. In order to keep all plants with inferior ovaries together, this series has that which is, by general agreement, probably the most advanced group—namely, those plants with aggregate small flowers, in an anomalous position between two series of large, little-aggregated flowers, the *Caprifoliaceæ* and the *Primulaceæ*. The third series, which are considered advanced types with reduced perianth, follow more or less in order of the progressive reduction of this outer whorl. This is finally followed by the monocotyledons with the inferior ovaries first and those with a showy perianth, concluding with the sedges and grasses which have a reduced perianth and few seeds. In Bentham and Hooker's *Handbook of British Flora*, the Gymnosperms come after the *Achlamydeæ* because of their inflorescences, and the book has the Pteridophytes and ferns at the end. This order has been used in most British floras, in the large National Herbaria, in the *London Catalogue of British Plants*, and in some continental works such as Coste's *Flore de France.* Its chief recommendation is that most British botanists are familiar with it, and it is for this reason that the author would have preferred it.

In Engler's system, the plants with no perianth are considered the most primitive of the dicotyledons, and the monocotyledons more primitive than the dicotyledons; so his first series is the monocotyledons, commencing with the *Juncaceæ*, sedges and grasses and ending with the irregular-flowered, inferior ovary (*Orchidaceæ*). The next series commences with

the catkin-bearing plants and the orders with a one-whorled perianth, followed by the *Ranunculaceæ*, *Caryophyllaceæ*, and like Bentham and Hooker, then leading up to the aggregate flowers and the inferior ovary, finally to the *Compositæ*. This order is widely used in Europe, but, in spite of one or two attempts, it has not been adopted in this country. Since this work confines itself to the British flora only, a European system so little used in this country seems to have obvious disadvantages.

Hutchinson also considers the Monochlamydeæ to be reduced forms, and starts with the *Ranunculaceæ*, interpolates the Monochlamydeæ as being an unnatural grouping among the other plants in accordance with the ovary structure, and finishes with the *Compositæ*.

In the *Flora of the British Isles*, Clapham, Tutin and Warburg place their plants in an order which they say is in line with that of Bentham, but there are so many marked exceptions that it appears to be a new arrangement. No reasons are given for their arrangement, and these have to be surmised. The book commences with the Vascular Cryptogams, ending with the ferns. The Gymnosperms come next. This is in agreement with the accepted evolutionary order, but these groups are so small that they are, in any case, in the nature of an appendix to a Phanerogamic Flora. The first large deviation from Bentham and Hooker is the complete rejection of the Monochlamydeæ and Achlamydeæ as groups, the various orders being interpolated here and there, the reason for the choice of position being often difficult to comprehend. *Ceratophyllaceæ* comes with the other indefinite stamen plants like the *Ranunculaceæ*; the *Chenopodiaceæ* are considered to be closely allied to the *Caryophyllaceæ* because of the central seed. *Buxus* is completely separated from the *Euphorbiaceæ*. The series ends with the Achlamydeæ and the willows. The second series is, as in Bentham, the Gamopetalæ, but more logically this commences with superior-ovary plants and regular flowers, working to irregular flowers and finally to the inferior ovaries and small aggregated flowers of the *Compositæ*. The third series is the Monocotyledons in a similar series to the Dicotyledons—namely, the many-stamened apocarpous *Alismataceæ*, through the plants with regular perianth and superior ovary, and the inferior ovaries of the *Orchidaceæ*, and, finally, the specialized sedges and grasses. After very careful consideration, it has been decided to adopt this order as being the most useful, especially as a new standard reference list of British plants has just been published in this same sequence, and it is likely to be the order, with modifications, that British botanists will now use for some years. It is sincerely hoped, however, that these continually differing orders will one day be brought to an end by an internationally agreed, single, standard order.

GENERAL PLAN OF THE FLORA

As previously indicated, the order of the plants is that of the *Flora of the British Isles* with certain exceptions. The first is the utilitarian one —namely, to get on one page three drawings of the very small plants

when that need arises. The second is that the *Gramineæ* follow the order of Hubbard's excellent little book on the grasses in the Penguin Library, as it is clearly a standard work of reference.

Natural Orders are not discussed, it being felt that these are more fully dealt with in other works and the space required to deal with the matter adequately here would be more than can be afforded. The Natural Order does appear, however, at the top of every page.

Of the plates themselves there is little to say. As many as possible are presented half natural size, but a few are a third, some a quarter and some of the very small ones natural size. In all cases a scale indicates its reduction. The dissections have the magnification marked on them; those without a mark are the same size as the main plate. The only Strudwick plates that have been omitted are those which were included on a misunderstanding of the facts and where the case against specific rank has been adequately proved, e.g. the so-called *Rumex arifolius*.

The botanical name used varies somewhat from *Flora of the British Isles*, especially in cases where there has been a recent division of a genus. Here the two names appear, that of the subgenus in parenthesis, so that the reader may co-relate in his mind the old and the recent. Where a second name appears in italics, it should be deemed to be a recently used synonym.

A new departure is in the inclusion of an English name as well as the botanical one, and it is hoped that this will prove useful to those who cannot immediately master the intricacies of the ever changing Latin nomenclature. Many plants, however, have actually no properly assigned English, or colloquial name, as the plants may have been recently introduced or have not been noted as different by observers other than the specialized botanists. The names of these are in many cases invented by the author in the same way that he would, if necessary, use a new Latin name to describe a new species.

The locality from where the plant was obtained of which the drawing was largely made, is also now included, and a general statement of the flowering season, which the author—though he feels it can be only a rough estimate—hopes will prove to be more correct than simply stating the months.

Also included in the work is an analytical key. Since there is no text as such, this could not be incorporated in various parts of the book before the relevant genera. It therefore appears in the introduction as one very large table divided up so that easy reference may be made immediately to the larger families. It has been obviously impossible, however, to make this division to fit in with the order of the plants in the text. Where there is extensive hybridization between species, or where, because of apomicty or other reasons, specific characters are not clear cut or overlap, the groups have been so marked in the key, and in these parts the reader must use the differential characters with great caution.

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Artificial Key for the Identification of Flowering Plants and Vascular Cryptogams

NOTE.—This key aims at specific identification of plants only. The natural orders and genera are interpolated for convenience of reference, and are in italics. Numbers in parentheses refer to the illustrations. + indicates that there are intermediates or hybrids between these species and the characters given may overlap in some individuals. Number within [ ] refers to last caption.

PRELIMINARY DIVISION

A. Plants with flowers that produce stamens and pistils, and normally develop seeds. B.

A. Plants without true flowers and usually producing specialized structures containing single-celled spores (the sporangium) or aquatic plants which do not produce any flowers in this country. *Vascular Cryptogams and sterile plants* Group I—1

B. Seeds contained in a specialized organ (the ovary), and covered by it. C.

B. Seeds naked, developed at the base of a scale. *Gymnosperms* Group II—59

C. Dicotyledons; that is, plants which normally produce seeds with two cotyledons with the shoot between them; leaves usually with netted or palmate veins; floral parts often in fours or fives and stems with a ring of bundles. D.

C Monocotyledons; that is, plants which produce seeds with a single cotyledon and the shoot at the side; leaves usually with parallel veins; floral parts usually in twos, threes or sixes; stems with scattered bundles. *Monocotyledons* Group VIII, Vol II—1309

D. Corolla present as well as calyx, though sometimes the calyx is reduced to a rib, minute scales, or a ring of hairs. E.

D. Calyx or perianth only present. *Monochlamydeæ* Group V—675

D. Both calyx and corolla present. *Achlamydeæ* Group VI—804

E. Petals free (i.e. not joined). F.

E. Petals united, at least near the base. *Gamopetalæ* Group VII, Vol. II—836

F. Stamens hypogynous. *Thalamifloræ* Group III—61

F. Stamens epigynous or perigynous. *Caliciflorae* Group IV—387

GROUP I. VASCULAR CRYPTOGAMS AND STERILE PLANTS

1. Aquatic plants growing wholly submerged. 2
1. Terrestrial, or erect emergent bog plants. 8

2. Plants with well-developed stems growing into the water. 3
2. Plants with underground stocks in the substratum; or free-floating. 4

3. Leaves simple, flattened. *Hydrocharitaceæ* Vol. II—1362
3. Leaves divided. *Ceratophyllaceæ* 724

4. Plants floating freely on the water. 5
4. Plants rooted in the substratum under the water. 6

5. Plants with many small, imbricate leaves, and often producing ovoid sporangia. AZOLLA FILICULOIDES (66)
5. Plants with a few rounded or lanceolate fronds, occasionally developing true flowers. *Lemnaceæ* Vol. II—1310

6. Stem slender, creeping in the mud; leaves circinately coiled when young; sporophyll globular. PILULARIA GLOBULIFERA (65)
6. Stem disciform, leaves growing in a rosette and not coiled at apex; sporangia in the dilated base of the leaves. 7
6. Stem almost absent, leaves growing in a rosette but barren at the base; producing true flowers when on dry land. *Littorella* (1164) Vol. II

7. Leaves almost straight, dark green; megaspores almost smooth or shortly tubercled. ISOETES LACUSTRIS (7)
7. Leaves more recurved, rather light green; megaspores with long sharp spines. I. ECHINOSPORA (8)

8. Sporangia growing at the base of a veinless leaf, sometimes forming a leafy spike. *Lycopodiaceæ* 9
8. Sporangia in a terminal spike; stem jointed; leaves as a whorl of small teeth around each joint. *Equisetaceæ* 15
8. Sporangia in a simple or branched ± leafless spike; leaves flat, veined. 23
8. Sporangia growing in a cup-like receptacle towards the edge of a thin-veined leaf. *Hymenophyllaceæ* 25
8. Sporangia growing in clusters at the back or on the margin of a veined leaf. *Polypodiaceæ* 27

9. Leaves all radical, subulate; sporangia in the dilated base. ISOETES HYSTRIX (9)
9. Leaves cauline, ovate, small; sporangia orbicular or reniform at the base of a leaf. 10

10. Spores of one kind, very small. *Lycopodium* 11
10. Spores of two kinds, one larger.
SELAGINELLA SELAGINOIDES (6)

11. Sporophylls growing among the barren leaves; stem ascending.
LYCOPODIUM SELAGO (1)
11. Sporophylls growing in differentiated cones; stem creeping and rooting. 12

12. Sporophyll cones on long stalks with a few appressed leaves.
L. CLAVATUM (5)
12. Sporophyll cones sessile at the top of suberect, leafy branches. 13

13. Prostrate stem short, slender; cone-bearing branches simple.
L. INUNDATUM (2)
13. Prostrate stem long, wiry; cone-bearing branches numerous. 14

14. Cones ovoid; leaves green, spreading, acuminate.
L. ANNOTINUM (4)
14. Cones cylindrical; leaves rather glaucous, imbricate, in four rows, erect, acute. L. ALPINUM (3)

Equisetaceæ

15. Fertile stems appearing early and dying away after producing spores. 16
15. Fertile stems appearing early but becoming in the summer like the barren ones. 17
15. Fertile stems appearing in summer and persisting with the barren ones throughout the season. 18

16. Sporophyll cones 30-80 mm. long; sheaths on fertile stem numerous, each with 20-30 teeth; barren stem large, branches many, slender. EQUISETUM TELMATEIA (19)
16. Sporophyll cones 10-40 mm. long; sheaths on fertile stem few, with 2-12 teeth; barren stem medium, branches rather few, ascending. E. ARVENSE (18)

17. Whorled branches again branched. E. SYLVATICUM (16)
17. Whorled branches simple. E. PRATENSE (17)

18. Sporophyll cones very obtuse; both barren and fertile stems developing numerous branches. 19
18. Sporophyll cones acute or apiculate; barren stems with a very few branches not different from the main stem. 22
18. Sporophyll cones acute or apiculate; both barren and fertile stems developing numerous branches.
E. RAMOSISSIMUM (12)

19. Stems almost smooth; not grooved. E. FLUVIATILE (14)
19. Stems rough and with several marked ridges. 20

20. Sheaths with short, acute teeth; sporophyll cones appearing in summer on stems with secondary branches. E. PALUSTRE (15)
20. Sheaths with long subulate teeth; sporophyll cones appearing in early spring on simple stems. 21

21. Secondary branches very slender, mostly 3-sided; fertile stems branching after fruiting. E. PRATENSE (17)
21. Secondary branches somewhat coarse, mostly 4-sided; fertile stems dying after fruiting. E. ARVENSE (18)

22. Stem evergreen, almost unbranched, rough, with 14-20 grooves; sheath at length black; teeth caducous. E. HYEMALE (10)
22. Stem almost unbranched, rather stout, with 8-10 grooves; sheath at length black; teeth slender. E. TRACHYODON (11)
22. Stem with few basal branches, slender, with 4-10 grooves; sheath black, teeth short, acute, membranous. E. VARIEGATUM (13)
22. Stem very long and branched with 8-10 grooves; sheath with black band at top and bottom. E. RAMOSISSIMUM (12)

Filices

[8] 23. Plant over 18 in. (45 cm.) high; fronds bi-pinnate. OSMUNDA REGALIS (20)
23. Plant under 9 in. (20 cm.) high; fronds undivided. 24
23. Plant under 9 in. high; frond simply pinnate. BOTRYCHIUM LUNARIA (64)

24. Sterile frond lanceolate 10-25 mm. long. OPHIOGLOSSUM LUSITANICUM (62)
24. Sterile frond ovate or oblong; 25-150 mm. long. O. VULGATUM (63)

25. Indusium campanulate; receptacle projecting from it with a large bristle; fronds over 6 in. (15 cm.) long. TRICHOMANES SPECIOSUM (21)
25. Indusium 2-valved; receptacle not projecting; fronds rarely over 6 in. (15 cm.) long; segments once lobed. 26

26. Indusium rounded, toothed; fronds almost flat. HYMENOPHYLLUM TUNBRIGENSE (22)
26. Indusium ovoid, entire; pinnæ recurved from rachis. H. WILSONII (23)

Polypodiaceæ

[8] 27. Fronds of two kinds, the central ones fertile, erect, with narrow pinnæ, the outer barren, spreading and with wider pinnæ. 28

27. Fertile and barren fronds similar or nearly so. 29

28. Fronds (ovate in outline), bi- or tri-pinnate. CRYPTOGRAMMA CRISPA (25)

28. Fronds linear-lanceolate in outline, simply pinnate. BLECHNUM SPICANT (27)

29. Sori near the margins of the fronds and covered by the inrolled margin or a marginal indusium. 30

29. Sori on the underside of the fronds covered with chaffy scales or hairs. 31

29. Sori on the underside of the fronds bare, or covered by a scale-like indusium. 33

30. Tall, erect, stiff plant, with pinnate branches and sessile, narrow lobes. PTERIDIUM AQUILINUM (24)

30. Slender, small plants, with delicate fronds and triangular, fan-like lobes on very slender peduncles. ADIANTUM CAPILLUS-VENERIS (26)

31. Fronds pinnatifid with entire segments; sori linear, concealed by the scales. CETERACH OFFICINARUM (36)

31. Fronds pinnate, deeply toothed; sori circular, intermixed with chaffy hairs. 32

32. Rachis scales short, rather few; pinnæ triangular, ovate; length-breadth 1 : 1. WOODSIA ALPINA (61)

32. Rachis scales rather long, dense; pinnæ ovate-oblong; length-breadth 1 : 2. WOODSIA ILVENSIS (60)

33. Fronds undivided. PHYLLITIS SCOLOPENDRIUM (28)

33. Fronds divided, often deeply so. 34

34. Sori linear with a flap-like indusium. 35

34. Sori rounded and covered by a rounded indusium. 41

34. Sori rounded without an indusium. 54

35. Fronds with very narrow linear segments, forked ASPLENIUM SEPTENTRIONALE (35)

35. Fronds with broad segments, simply pinnate. 36

35. Fronds with medium or narrow segments, bi- or tri-pinnate. 38

36. Pinnæ ovate, more than 10 mm. long; rachis green, winged. A. MARINUM (31)

36. Pinnæ orbicular, less than 10 mm. long; rachis not winged. 37

37. Rachis black along the whole of its length. A. TRICHOMANES (32)
37. Rachis green except for the black base. A. VIRIDE (33)

38. Plant large, leaves bi-pinnate, pinnules oblong, sori oblong. ATHYRIUM FILIX-FŒMINA (37)
38. Plant small to medium, leaves bi-pinnate or pinnate, pinnules usually cuneiform. 39

39. Pinnæ decreasing in size towards the base of the leaf, ± lanceolate; bare portion of stem shorter than leafy part. ASPLENIUM OBOVATUM (30)
39. Lowest pinnæ the longest and usually on long stalks ± ovate; bare portion of stem as long as leafy part. 40

40. Fronds less than 100 mm. long, dull green; segments obovate, rachis green. A. RUTA-MURARIA (34)
40. Fronds shining green, often over 150 mm. long; segments lanceolate; rachis black. A. ADIANTUM-NIGRUM (29)

41. Fronds simply pinnate with sharp teeth. POLYSTICHUM LONCHITIS (45)
41. Fronds bi- or tri-pinnate. 42

42. Indusium flap-like, attached to the base of the sorus. 43
42. Indusium reniform, teeth of pinnæ not acuminate. 45
42. Indusium peltate with orbicular top, teeth of pinnules acuminate-aristate. 53

43. Outline of frond triangular, rhizome far-creeping. CYSTOPTERIS MONTANA (42)
43. Outline of frond lanceolate, rhizome tufted. 44

44. Pinnules distinct, with acute apices; spores tuberculate. C. FRAGILIS (39)
44. Pinnules distinct with emarginate apices; spores tuberculate. C. REGIA (40)
44. Pinnules overlapping with emarginate apices; spores rugose. C. DICKIEANA (41)

45. Sori central or near the midrib; lobes of pinnæ divided, often deeply so. 46
45. Sori near the margin of the pinnules; lobes of pinnæ entire. 52

46. Lowest primary pinnæ simply pinnate with mucronate teeth. DRYOPTERIS CRISTATA (50)

46. Lowest primary pinnæ simply pinnate with rather rounded teeth. 47

46. Lowest primary pinnæ bi- or tri-pinnate. 49

47. Plant with many crowns; frond about 12 in. (30 cm.) long; sori 2-5 on each pinnule. D. ABBREVIATA (48)

47. Plant with a single crown; fronds over 18 in. (45 cm.) long; sori 8-12 on each pinnule. 48

+48. Pinnules with rather deep and acute teeth all round and a subacute apex; pinnæ not discoloured at junction with rachis; rachis clothed rather thinly with pale brown scales. D. FILIX-MAS (46)

+48. Pinnules with rather shallow, rounded teeth mainly near the somewhat rounded apex; young pinnæ often discoloured at junction with rachis; rachis clothed thickly with dark brown scales. D. BORRERI (47)

49. Pinnules attached to the stem by a narrow base. D. VILLARSII (49)

49. Pinnules attached to the stem for some length. 50

50. Scales of the rachis usually with a dark central stripe. D. DILATATA (52)

50. Scales of the rachis concolorous. 51

51. Scales broad, entire; indusium entire, eglandular. D. LANCEOLATOCRISTATA (51)

51. Scales jagged; indusium toothed, glandular. D. ÆMULA (53)

52. Rachis without scales; rhizome far-creeping. D. THELYPTERIS (55)

52. Rachis with brown scales; rhizome short, stout. D. OREOPTERIS (54)

53. Fronds flaccid; basal pinnules of lowest pinnæ shortly stalked and often with a basal lobe. POLYSTICHUM SETIFERUM (43)

53. Fronds stiff; basal pinnules of lowest pinnæ sessile with an acute-angled wedge-like base. P. ACULEATUM (44)

54. Fronds simply pinnate. POLYPODIUM VULGARE (59)

54. Fronds bi- or tri-pinnate. 55

55. Primary pinnæ entire or undulate. PHEGOPTERIS POLYPODIOIDES (56)

55. Primary pinnæ deeply toothed or divided. 56

56. Lowest pair of pinnæ much larger than the others, giving the frond a triangular or rhomboid outline. 57

56. Lowest pair of pinnæ shorter or not much longer than the others, giving the frond an ovate or lanceolate outline. 58

57. Leaves glabrous, bright green; outline of frond broadly triangular. P. DRYOPTERIS (57)

57. Leaves glandular, dull green; outline of frond ovate-cordate. P. ROBERTIANA (58)

58. Plant slender, fragile; indusium sometimes present as a small flap. 44

58. Plant rather robust; pinnæ with acute teeth. ATHYRIUM ALPESTRE (38)

GROUP II. GYMNOSPERMS

59. Leaves flat-channelled; fruit a single seed, partly surrounded by a succulent, red aril. TAXUS BACCATA (70)

59. Leaves needle-like; male flowers in a cylindrical cluster; fruit a dry cone with two winged seeds in each scale. PINUS SYLVESTRIS (67)

59. Leaves channelled, stiff and pointed; male flowers in an ovoid cone; fruit a succulent berry with 2-3 wingless seeds. 60

60. Prostrate; leaves very stiff, incurved; berry ovoid. JUNIPERUS NANA (69)

60. Spreading or erect; leaves straight, lax, berry roundly ovoid. J. COMMUNIS (68)

GROUP III. THALAMIFLORÆ

61. Stamens more than 15 or a variable and indefinite number. 62

61. Stamens less than 15, usually a constant number. 132

62. Ovaries several, free, distinct. 63

62. Ovary single, fruit a berry. ACTÆA SPICATA (78)

62. Ovary single, but many-celled and dry. 112

63. Sepals and petals 3 each. *Alismataceæ*, Vol. II—1323

63. Sepals or petals or both 4 or more. 64

64. Each ovary with a distinct stigma or style; stamens free. *Ranunculaceæ* 65

64. Ovaries distinct but styles united in a column; stamens united around the styles. *Malvaceæ* 340

Ranunculaceæ

65. Calyx only present; petaloid. 66

65. Calyx sepaloid; corolla petaloid. 80

65. Calyx petaloid; petals modified, usually as tubular nectaries. 108

66. Leaves simple, cordate to rhomboid; fruit of many-seeded follicles. 67
66. Leaves compound; fruit of several, single-seeded achenes. 68

67. Plant usually erect but occasionally decumbent; leaves cordate, sepals overlapping. CALTHA PALUSTRIS (71)
67. Plant creeping and rooting at nodes; leaves deltoid; sepals not contiguous. C. RADICANS (72)

68. A climbing shrub. CLEMATIS VITALBA (81)
68. Herbaceous plants. 69

69. An involucre of leaf-like bracts present below the flower. 70
69. No involucre present. 71

70. Flowers white; achenes with a short beak. ANEMONE NEMOROSA (79)
70. Flowers purple; sepals silky; achenes with a long awn. A. PULSATILLA (80)

71. Plant 1-6 in. high; flowers in simple racemes. THALICTRUM ALPINUM (112)
71. Plant more than a foot high; panicle compact, flowers erect. T. FLAVUM (113)
71. Plant more than a foot high; panicle diffuse; flowers ± drooping. 72

72. Rhizome far-creeping; buds and bud scars some distance apart. 73
72. Rhizome short; buds and bud scars close together. 77

73. Achenes roundly ovoid. 74
73. Achenes narrowed, with one side almost straight. 75

74. Stigma large, horizontal; sepals blunt. T. CAPILLARE (118)
74. Stigma rather small, erect; sepals subacute. T. BABINGTONII (117)

75. Leaflets narrow; plant branched from the base. T. ARENARIUM (114)
75. Leaflets rather wide; plant branched from around the middle. 76

76. Robust plants with leaves large and as broad as long. 77
76. Rather stout to slender plants with smallish leaves longer than broad. 79

77. Achenes ovoid. 78
77. Achenes narrow, with one side almost straight. T. MAJUS (119)

78. Plant almost glabrous; achenes rather few, medium, 5 mm. long, rather compressed. T. UMBROSUM (120)
78. Whole plant glandular; achenes numerous, small, 4 mm. long, not compressed. T. EXPANSUM (121)

79. Achenes narrowly oval, compressed, glandular. T. MONTANUM (115)
79. Achenes broadly oval, little compressed, eglandular. T. COLLINUM (116)

80. Carpels solitary with two seeds; fruit a succulent berry; petals small, spathulate. ACTÆA SPICATA (78)
80. Carpels few, each with several seeds; petals large, spurred; fruit a follicle. AQUILEGIA VULGARIS (110)
80. Carpels numerous, each with a single seed; petals flat or minute; fruit an achene. 81

81. Carpels very numerous in a long, cylindrical spike, petals small, clawed or spurred. MYOSURUS MINIMUS (111)
81. Carpels in a globular head. 82

82. Petals red with no nectary at base. ADONIS ANNUA (109)
82. Petals yellow or white, with a scale or a nectary pore at base. 83

83. Land plants with yellow flowers. 84
83. Aquatic plants with white flowers. 95

84. Sepals 3; petals 7-12; leaves cordate. RANUNCULUS FICARIA (108)
84. Sepals 5; petals usually 5; leaves lanceolate or ovate. 85
84. Sepals 5; petals usually 5; leaves divided. 88

85. Flowers 20-30 mm. diam.; plant over 24 in. (60 cm.) high; achenes glabrous, pitted, margined. R. LINGUA (89)
85. Flowers under 20 mm. diam.; plant under 18 in. (50 cm.) high; achenes with a short point. 86

86. Basal leaves cordate; plant ± erect; achenes tubercled. R. OPHIOGLOSSIFOLIUS (92)
86. Basal leaves ovate to lanceolate; plant decumbent; achenes not tubercled. 87

87. Plant prostrate, stem filiform, rooting at each node; flowers 5-10 mm. diam. R. REPTANS (91)
87. Plant decumbent or creeping, sometimes rooting at a few nodes; flowers 7-14 mm. diam. R. FLAMMULA (90)

88. Achenes smooth, glabrous or hairy. 89
88. Achenes tubercled or spiny. 93

89. Flowers 5-10 mm. diam.; achenes very numerous in a cylindrical head, overtopping the flowers. R. SCELERATUS (93)
89. Flowers 15-25 mm. diam.; achenes not numerous, in an ovoid head. 90

90. Sepals reflexed when flowering. R. BULBOSUS (84)
90. Sepals spreading in flower. 91

91. Nectary at base of petal without a scale; leaves glabrous, achene with a curved beak, hairy. R. AURICOMUS (88)
91. Nectary at base of petal covered by a scale; leaves more or less hairy; achenes with a short point, glabrous. 92

92. Plant with long runners; flower stalks furrowed. R. REPENS (83)
92. Plant without runners, erect; flower stalks not furrowed. R. ACRIS (82)

93. Sepals reflexed in flower; achenes almost lenticular, with a ring of tubercles. R. SARDOUS (86)
93. Sepals spreading; achenes ovoid. 94

94. Erect plant with glabrous leaves and spiny achenes. R. ARVENSIS (85)
94. Small decumbent or prostrate plant with hoary leaves and tubercled achenes. R. PARVIFLORUS (87)

95. Floating leaves absent when the first flowers have faded. 96
95. Flat, floating leaves present. 101

96. Ultimate leaf segments long, comparatively few; achenes and receptacle glabrous or nearly so. R. FLUITANS (98)
96. Ultimate leaf segments short or rather short, numerous; achenes and receptacle hairy. 97

97. Leaf segments spreading in a flat, circular plane, rigid; flower 15-20 mm. diam., peduncles long. R. CIRCINATUS (99)
97. Leaf segments tassel or brush-like, not in one plane. 98

98. Peduncles exceeding the coarsely capillate, submerged leaves; flowers 12-15 mm. diam.; carpels 40-100 in a head, glabrous. R. BAUDOTII (107)
98. Peduncles exceeding the finely capillate, submerged leaves; flowers 20-30 mm. diam.; carpels under 40 in a head, bristly. 99

98. Peduncles about equalling the finely capillate, submerged leaves; flowers under 15 mm. diam.; carpels under 40 in a head, hairy or glabrous. 100

99. Leaf segments flaccid at flowering time; ultimate segments numerous. R. CALCAREUS (102)

99. Leaf segments stiff at flowering time; ultimate segments very numerous. R. SPHÆROSPERMUS (103)

100. Flowers 12-15 mm. diam.; leaf segments usually flaccid; achenes somewhat hairy. R. AQUATILIS var. SUBMERSUS (104)

100. Flowers 8-12 mm. diam.; leaf segments usually dark green, rigid; achenes bristly, crowded, compressed. R. TRICHOPHYLLUS (100)

100. Flowers 5-8 mm. diam.; leaf segments usually light green, flaccid; achenes glabrous or nearly so, loose and not very compressed. R. DROUETII (101)

101. Plants with both capillate submerged leaves and little-divided, floating ones. 102

101. Plants with only little-divided, floating leaves. 107

102. Flowers well over 10 mm. diam.; plants usually robust, upper leaves large and usually rather deeply lobed. 103

102. Flowers less than 10 mm. diam.; plants small, upper leaves small and scarcely lobed. 106

103. Segments of submerged leaves short, thick; floating leaves ternate in outline, with sharp, deep segments; carpels 40-100 in a head, small, glabrous. R. BAUDOTII (107)

103. Segments of submerged leaves short or long but slender; floating leaves orbicular to reniform in outline; carpels under 40, large, hairy. 104

104. Fruiting peduncles all about the same length and about equalling the length of the submerged leaves; floating leaves circular in outline, with sharp, deep segments. R. AQUATILIS (104)

104. Fruiting peduncles of varying lengths and exceeding the length of the submerged leaves; floating leaves cuneiform, reniform or peltate in outline with shallow, rounded segments. 105

105. Slender to rather robust plants, usually of still water and sometimes in running water; submerged leaves short, under 40 cm. long, segments very slender; flowers 12-20 mm. diam. R. PELTATUS (105)

105. Stout plants of running water; submerged leaves over 60 cm. long, segments rather coarse and long.
R. PSEUDOFLUITANS (106)

106. Flowers under 6-12 mm. diam.; submerged leaves usually produced with very fine, collapsing segments.
R. TRIPARTITUS (96)

106. Flowers 6-12 mm. diam.; submerged leaves very rare, with flat, rigid segments. R. LUTARIUS (97)

107. Flowers 6-10 mm. diam.; petals 5-veined, receptacle hairy; leaves deeply and narrowly 5-lobed. R. LUTARIUS (97)

107. Flowers 8-12 mm. diam.; petals 5-veined, receptacle glabrous; leaves orbicular-reniform, with 5 broad, shallow lobes.
R. LENORMANDI (95)

107. Flowers 3-6 mm. diam.; petals 3-veined, receptacle glabrous; leaves reniform, with 5 unequal, rounded and very shallow lobes. R. HEDERACEUS (94)

108. Flowers irregular. ACONITUM ANGLICUM (77)

108. Flowers regular. 109

109. Carpels 1-5; flowers cymose. 110

109 Carpels 5-15; flowers solitary. 111

110. Herbaceous; sepals spreading, green.
HELLEBORUS VIRIDIS (75)

110. Somewhat woody; sepals erect, tinged with red.
H. FŒTIDUS (74)

111. Sepals spreading, flower sessile, in a leafy bract.
ERANTHIS HYEMALIS (76)

111. Sepals curved, flowers globular, peduncled, without an involucre.
TROLLIUS EUROPÆUS (73)

* * * * *

[62] 112. Stamens free. 113

112. Stamens united by their filaments. *Hypericaceæ* 253

113. Petals many; aquatic plants with large cordate leaves.
Nymphæaceæ 114

113. Petals 4-10; terrestrial plants. 116

114. Flowers white. NYMPHÆA ALBA (123)

114. Flowers yellow. 115

115. Flowers 40-60 mm. diam.; stigma rays 15-20.
NUPHAR LUTEA (124)

115. Flowers 15-40 mm. diam.; stigma rays 8-10. N. PUMILA (125)

116. Sepals 2, caducous. *Papaveraceæ* 117
116. Sepals 4-5, not caducous. 125

117. Capsule ovoid, or subglobular. 118
117. Capsule long, linear. 124

118. Stigma sessile on the top of the capsule; flowers not yellow. 119
118. Stigma on the top of a short style; flowers yellow. MECONOPSIS CAMBRICA (134)

119. Capsule smooth. 120
119. Capsule covered with bristles. 123

120. Capsule globular. 121
120. Capsule ovoid. 122

121. Leaves glaucous, little divided, amplexicaul. PAPAVER SOMNIFERUM (133)
121. Leaves green, somewhat hairy, pinnately lobed. P. RHŒAS (128)

122. Leaflets pinnatifid, with rather wide lobes; sap usually white; capsule obovoid-oblong. P. DUBIUM (129)
122. Leaves bi-pinnatifid, with narrow segments; sap often yellow; capsule oblong. P. LECOQII (130)

123. Capsule globular. PAPAVER HYBRIDUM (131)
123. Capsule ovoid. P. ARGEMONE (132)

124. Capsule long, 2-celled; flowers large, 30-90 mm. diam. GLAUCIUM FLAVUM (135)
124. Capsule short, 1-celled; flowers small, 18-25 mm. diam. CHELIDONIUM MAJUS (136)

[116] 125. Petals fimbriate, flowers irregular. *Resedaceæ* 126
125. Petals entire, flowers regular. 128

126. Leaves simple. RESEDA LUTEOLA (240)
126. Leaves pinnatifid. 127

127. Petals yellow; leaf lobes few, sometimes again lobed. R. LUTEA (241)
127 Petals white; leaf lobes several, entire. R. ALBA (242)

128. Herbs or woody undershrubs. *Cistaceæ* 129
128. Trees. *Tiliaceæ* 339

129. An erect, hairy annual; style short, straight. HELIANTHEMUM GUTTATUM (279)

129. Woody, diffuse, much branched undershrubs; style curved. 130

130. Leaves without stipules; flowers less than 15 mm. diam. H. CANUM (282)

130. Leaves stipulate; flowers 25 mm. diam. 131

131. Flowers yellow; margin of leaf flat. H. CHAMÆCISTUS (280)

131. Flowers white; margin of leaf recurved. H. APENNINUM (281)

* * * * *

[61] 132. Flowers irregular. 133

132. Flowers regular. 164

Fumariaceæ

133. Sepals 2. *Fumariaceæ* 134

133. Sepals 4-6. 143

134. Fruit an elongate pod with several seeds. 135

134. Fruit a rounded nutlet with one seed. 136

135. Climbing annual with whitish flowers. CORYDALIS CLAVICULATA (137)

135. Erect, tufted perennial with yellow flowers. C. LUTEA (138)

136. Sepals as broad as the corolla tube. 137

136. Sepals half as broad as the corolla tube, or less. 139

137. Plant erect; leaf segments narrow, channelled; corolla about 5 mm. long; pedicel straight in fruit. FUMARIA MICRANTHA (145)

137. Plant rampant; leaf segments rather wide, flat; corolla about 10 mm. long; pedicel recurved or patent in fruit. 138

138. Flowers white; wing of upper petal not concealing keel; pedicels strongly recurved in fruit. F. CAPREOLATA (140)

138. Flowers purple; wing of upper petal concealing its keel; pedicels irregularly recurved in fruit. F. PURPUREA (141)

139. Leaf lobes linear or lanceolate; sepals small, not more than 2-3 mm. long; corolla not more than 10 mm. long. 140

139. Leaf lobes oblong, lanceolate; sepals medium, 4-5 mm. long; corolla 10-16 mm. long. 141

140. Leaf lobes linear, channelled, glaucous; sepals minute, 1 mm. long, corolla 4-6 mm. long; bract longer than fruiting pedicel. F. PARVIFLORA (148)

140. Leaf lobes linear-lanceolate, flat, green; sepals small, 2-3 mm. long; corolla 8-10 mm. long; bract shorter than fruiting pedicel. F. OFFICINALIS (146)

140. Leaf lobes linear-lanceolate, flat, green; sepals minute, 1 mm. long; corolla 5-6 mm. long; bract shorter than fruiting pedicel. F. VAILLANTII (147)

141. Lower petal with broad, spreading margins; corolla 12-16 mm. long; fruit 3 mm. diam. F. OCCIDENTALIS (139)

141. Lower petal with narrow, spreading or erect margin; corolla 9-14 mm. long; fruit 2·5 mm. diam. 142

142. Lower petal with erect margins; corolla 9-12 mm. long; fruit with neck as broad as pedicel tip, faintly rugose when dry. F. BORÆI (144)

142. Lower petal with spreading margins; corolla 10-13 mm. long; fruit with base equalling pedicel tip, ovoid, rugose when dry. F. BASTARDI (142)

142. Lower petal with spreading margins; corolla 11-14 mm. long; fruit with base narrower than pedicel tip, narrowly ovoid; smooth when dry. F. MARTINII (143)

[133] 143. Sepals 4, equal; petals 4, cruciform. *Cruciferæ* 168

143. Sepals 5 ± equal; corolla spurred. *Violaceæ* 144

143. Sepals 5; 2 inner ones larger than the others; corolla tubular, not spurred. *Polygalaceæ* 160

143. Sepals 3 unequal; corolla spurred; petals 3. *Balsaminaceæ* 378

Violaceæ

144. Two upper petals directed upwards at right angles to pedicel; three lateral directed forward; stigma narrow and truncate at summit. 145

144. Four upper petals spreading; stigma with a globose head. 155

145. Leaves solitary, growing at intervals from a long, creeping, slender rhizome. VIOLA PALUSTRIS (246)

145. Leaves numerous, growing from an aerial stem or from a thick stock. 146

146. Leaves growing from a thick, central stock; capsules globular, prostrate; aerial stem very short; sepals oval, obtuse. 147

146. Leaves growing from a ± elongated stem; capsules ovoid, erect; sepals narrow, acute. 150

+147. Flowers usually scented; leaves broadly cordate, with appressed hairs; plant with stolons. V. ODORATA (243)

+147. Flowers scentless; leaves narrowly cordate with spreading hairs; plant without stolons. 148

+148. Petals lanceolate; spur hooked at end. V. HIRTA (244)

+148. Petals almost linear, in the form of St. Andrew's cross, spur conical, not hooked. V. CALCAREA (245)

149. Pedicels and capsules downy; leaves obtuse; stipules large, ovate-lanceolate. V. RUPESTRIS (249)

149. Pedicels and capsules glabrous; stipules narrow, lanceolate. 150

150. Plant with all stems flowering; stipules toothed or subentire. 151

150. Plant with a central barren rosette of leaves; stipules fimbriate. 153

151. Plant soboliferous; petals broad, flat, contiguous. V. STAGNINA (252)

151. Plants without soboles; petals rather narrow, patent, non-contiguous. 152

152. Spur rather long, curved; petals deep or rather pale blue; leaves rather broad to narrow, cordate or subcordate. V. CANINA (250)

152. Spur short ± conical; petals very pale; leaves narrow, rounded or subcuneate at base. V. LACTEA (251)

+153. Spur pale, furrowed at apex; sepals accrescent in fruit. V. RIVINIANA (247)

+153. Spur dark, acute at apex; sepals not enlarged in fruit. V. REICHENBACHIANA (248)

154. Perennial plants with fine underground stolons. 155

154. Annual plants with fibrous roots. 157

155. Flowers 2·0-3·5 cm. diam., solitary on long pedicels; spur almost as long as sepals. V. LUTEA (254)

155. Flowers 16-20 mm. diam., several on erect, branched, leafy stems. 156

+156. Flowering stems numerous, growing from a branched, twiggy stem below the surface of the soil; stipule lobes arranged pinnately; spur of flower about equalling appendage. V. LEPIDA (255)

+156. Flowering stems rather few, growing from a slender stoloniferous base; stipule lobes arranged palmately; spur of flower rather longer than the appendage. V. CURTISII (256)

+157. Petals broad, usually tri-coloured and exceeding sepals; flowers 15-20 mm. diam. V. TRICOLOR (257)

+157. Petals rather narrow, usually pale yellow and shorter than the sepals; flowers under 10 mm. diam. 158

158. Flowers 2-4 mm. diam.; plant dwarf, pubescent.
V. KITAIBELIANA (253)

158. Flowers 8-10 mm. diam.; plant over 6 in. (150 mm.) high. 159

+159. Plant scarcely branched, small; stipule with terminal lobe entire.
V. ARVATICA (258)

+159. Plant branched at least at the base. V. OBTUSIFOLIA (259)

Polygalaceæ

[143] 160. Flowers 5-8 mm. long; inner sepal broader than the capsule. 161

160. Flowers 6-7 mm. long; inner sepals narrower than the capsule. 162

160. Flowers 3-5 mm. long; inner sepals narrower than the capsule. 163

161. Lower leaves lanceolate, alternate, not in a rosette.
POLYGALA VULGARIS (260)

161. Lower leaves oval lanceolate, opposite, crowded but not in a rosette. P. SERPYLLIFOLIA (262)

162. Lower leaves oval lanceolate, alternate, crowded but not in a rosette; inflorescence often one-sided.
P. OXYPTERA (261)

162. Lower leaves obovate, crowded and grouped in an irregular rosette; inflorescence dense, regular. P. CALCAREA (263)

163. Lower leaves ovate, in a distinct rosette; flowers 4-5 mm. long; sepals longer than the ripe capsule. P. AMARA (264)

163. Lower leaves ovate-spathulate, in a distinct rosette; flowers 2-3 mm.; sepals about as long as the ripe capsule.
P. AUSTRIACA (265)

[132] 164. Herbaceous plants. 165

164. Trees, shrubs or small, woody plants. 380

165. Leaves in a single whorl of usually 4 (sometimes 3-8).
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165. Leaves none. HYPOPITYS MONOTROPA Vol. II—(912)

165. Leaves alternate or radical. 166

165. Leaves opposite or in several whorls. 262

166. Carpels 5, free. *Crassulaceæ* 551

166. Carpels 5, united only by the beak-like apex.
Geraniaceæ 353

166. Carpels 1-5, united into a single ovary. 167

167. Sepals and petals 4, cruciform; stamens usually 6, 2 short and 4 long. *Cruciferæ* 168
167. Sepals and petals 2, 5 or 6, but not 4. 347

Cruciferæ

168. Fruit apparently not maturing in the British Isles. 169
168. Fruit a dehiscent pouch or pod opening by two longitudinal valves. 170
168. Fruit an indehiscent pouch or pod sometimes separating by transverse divisions. 248

169. Flowers white; leaves over 12 in. (30 cm.) long, lanceolate. COCHLEARIA ARMORACIA (190)
169. Flowers pink, leaves about 4 in. (8 cm.) long, pinnate, with bulbils in the axils. CARDAMINE BULBIFERA (208)

170. Fruit a pod considerably longer than broad (a siliqua). 171
170. Fruit a pouch about as broad as long (a silicula). 198

171. Stigma capitate; flowers yellow. 172
171. Stigma capitate; flowers white, red or purple. 232
171. Stigma bifid; flowers red, purple or sometimes yellow. 245

172. Apex of valve of fruit some distance below the stigma, making the pod beaked. 173
172. Apex of valves of fruit immediately below the stigma. 184

173. Seeds in a single row, over 1·7 mm. diam. 174
173. Seeds in two rows, small (1·2 mm.), ovoid, numerous. 183

174. Valves of fruit with a single vein or keel. 175
174. Valves of fruit with three or more veins. 179

175. Seeds spherical; valves convex, pod section circular; beak long. 176
175 Seeds ovoid; valves keeled; pod section quadrangular; beak very short. 178

176. Upper leaves entire, ± amplexicaul or sessile; pods spreading. 177
176. Upper leaves pinnatifid; pods appressed to stem. BRASSICA NIGRA (151)

177. All leaves glabrous and glaucous, upper not amplexicaul. B. OLERACEA (149)

177. Lower leaves usually hispid; upper amplexicaul. B. CAMPESTRIS (150)

178. Stem hairy; leaves pinnate, with narrow segments; flowers buff. B. GALLICA (152)

178. Stem glabrous; leaves pinnate, with a large terminal segment; flowers deep yellow. *Barbarea* 193

179. Leaves pinnatifid with narrow segments. 180

179. Leaves lyrate, the terminal lobe much larger than the others. 182

180. Leaves with 3-4 pairs of leaflets; stem glabrous. B. MONENSIS (153)

180. Leaves with 1-2 pairs of lobes; stem hairy. 181

181. Sepals equal to or exceeding the pedicels; stem thinly hairy; ovary glabrous. B. CHEIRANTHOS (154)

181. Sepals equal to or shorter than the pedicels; stem densely hairy; ovary hairy. B. WRIGHTII (155)

182. Beak rounded, seedless; valve glabrous, longer than beak; pods spreading. B. ARVENSIS (156)

182. Beak flat, seedless; valve hairy, rather shorter than beak; pods spreading. B. ALBA (157)

182. Beak swollen at base, with 0-2 seeds; valve hairy, about as long as beak; pods erect, appressed. B. INCANA (158)

183. Annual, with stems branched from base. Pod not stalked. DIPLOTAXIS MURALIS (159)

183. Biennial, with stems branched above. Pod stalked. D. TENUIFOLIA (160)

[172] 184. Leaves undivided, entire. ERYSIMUM CHEIRANTHOIDES (229)

184. Leaves compound, or if simple, deeply-toothed or lobed. 185

185. Stem leaves bi-pinnatisect, with fine linear lobes. SISYMBRIUM SOPHIA (237)

185. Stem leaves toothed or lobed, but lobes broad. 186

186. Pods short (under 20 mm. long), stout. 187

186. Pods long (over 20 mm.), usually slender. 192

187. Flowers white. 188

187. Flowers yellow. 189

+188. Seeds with a coarse, raised honeycomb pattern; mostly in two rows; pods 13-18 mm. RORIPPA NASTURTIUM-AQUATICUM (220)

+188. Seeds with a fine, faint network; mostly in a single row; pods 16-22 mm. R. MICROPHYLLA (221)

189. Pod 10-18 mm. long. R. SYLVESTRIS (222)
189. Pod under 8 mm. long. 190

190. Style long, almost as long as spherical pod. R. AUSTRIACA (225)
190. Style short. 191

191. Pods ovoid, straight; leaves variable, usually little divided. R. AMPHIBIA (224)
191. Pods oblong, curved; leaves with many narrow segments. R. ISLANDICA (223)

[186] 192. Plant glabrous; valves keeled; pod quadrangular. 193
192. Plant hairy, at least below; valves convex; pod round. 196

193. Upper stem leaves simple or with the terminal lobe much larger and wider than the lateral one. 194
193. Upper stem leaves ± pinnatifid, with the terminal lobe not much larger than the lateral one. 195

194. Flower buds glabrous; pods erect or rather spreading; terminal lobe of stem leaves obovate, deeply toothed at apex. BARBAREA VULGARIS (209)
194. Flower buds hairy; pods erect, appressed; terminal lobe of stem leaves ovate, hardly toothed at apex. B. STRICTA (210)

195. Basal leaves with broad terminal lobe and 4-6 side lobes; pod 20-25 mm. long. B. INTERMEDIA (211)
195. Basal leaves with narrow terminal lobe and 6-8 side lobes; pod 30-50 mm. long. B. VERNA (212)

196. Pods under 50 mm. long, closely appressed. SISYMBRIUM OFFICINALE (233)
196. Pods over 600 mm. long, spreading. 197

197. Flowers bright yellow; stem leaves hastate with narrow lobes. S. IRIO (234)
197. Flowers bright yellow; stem leaves hastate with broad, wide lobes. S. ORIENTALE (235)
197. Flowers pale yellow; stem leaves pinnate with rather narrow lobes. S. ALTISSIMUM (236)

[170] 198. Minute aquatic plant with subulate leaves. SUBULARIA AQUATICA (195)
198. Terrestrial plants with flat, broad leaves. 199

199. Pouch laterally compressed, with a narrow septum. 200
199. Pouch not compressed. 215
199. Pouch dorsally compressed, with a broad septum. 224

200. Each chamber of the pouch with one seed. 201
200. Each chamber of the pouch with two seeds. 209
200 Each chamber of the pouch with several seeds. 210

201. Seed completely free from the boat-shaped valve when the pouch is ripe. 202
201. Seed embedded in the woody valve when ripe; pouch separates into two parts. 208

202. Two adjacent petals much longer than the other two. IBERIS AMARA (175)
202. Petals all equal or absent. 203

203. Fruit winged at the top. 204
203. Fruit not winged. 206

204. Plant glaucous; seed large; upper stem leaves not clasping stem. LEPIDIUM SATIVUM (166)
204. Stem ± hairy; seed medium; upper stem leaves clasping. 205

205. Annual with a single stem, branched above; pouch covered with minute scales; style shorter than the apical notch. L. CAMPESTRE (167)
205. Perennial with several stems growing from the base; pouch without scales; style longer than notch. L. HETEROPHYLLUM (168)

206. Stem much-branched and wiry; leaves linear or pinnate; petals minute or absent. L. RUDERALE (169)
206. Stem little-branched, stout, erect; leaves ovate; petals evident. 207

207. Upper leaves narrowed at base; pouch ovate; plant tall. L. LATIFOLIUM (170)
207. Upper leaves auricled and clasping; pouch cordate; plant short. L. DRABA (171)

208. Fruiting racemes sessile; pod deeply wrinkled. CORONOPUS SQUAMATUS (172)
208. Fruiting racemes stalked; pods finely wrinkled. C. DIDYMUS (173)

209. Leaves all radical, lyrate, toothed; petals often unequal. TEESDALIA NUDICAULIS (183)
209. Stem leafy; leaves finely pinnate; petals equal. HORNUNGIA PETRÆA (182)

[200] 210. Pouch triangular. CAPSELLA BURSA-PASTORIS (181)
210. Pouch orbicular or obcordate. 211

211. Lower leaves entire or denticulate, with obtuse auricles; plants ± glaucous, scentless. 213
211. Lower leaves sinuate, dentate; upper with acute auricles; plants with the scent of garlic. 212

212. Pod orbicular, winged all round; seeds striate.
THLASPI ARVENSE (176)
212. Pods elliptical, narrowly bordered; seeds reticulate.
T. ALLIACEUM (177)

213. Annual plant; style shorter than a rather deep notch.
T. PERFOLIATUM (178)
213. Biennial plants; style longer than a rather shallow notch. 214

214. Pod with an emarginate apex; flowering in June.
T. ALPESTRE (179)
214. Pod with a truncate apex; flowering April onwards.
T. CALAMINARE (180)

[199] 215. Flowers white 216
215. Flowers yellow or yellowish. 223

216. Glabrous plants. 217
216. Plants covered with stellate hairs. 222

217. Leaves very large, lanceolate, entire or dissected.
COCHLEARIA ARMORACIA (190)
217. Leaves medium to small, rhomboid or cordate. 218

218. Some leaves cordate and some rhomboid or cuneate-based. 219
218. Leaves all stalked, cordate. C. DANICA (188)
218. Leaves all rhomboid or cuneate-based C. ANGLICA (189)

219. Maritime or coastal plants with thick leaves. 220
219. Mountain or inland plants with thin leaves. 221

220. Rather large or large straggling plants; basal leaves cordate; fruiting stems long. C. OFFICINALIS (184)
220. Very small, compact plants; basal leaves with truncate base.
C. SCOTICA (187)

221. Fruit ± net-veined; upper leaves with conspicuous auricles.
C. ALPINA (185)
211. Fruit veinless; upper leaves with inconspicuous auricles.
C. MICACEA (186)

[215] 222. Petals entire; pouch 2-seeded. ALYSSUM MARITIMUM (193)
222. Petals bifid; pouch many-seeded. A. INCANUM (194)

223. Plant covered with stellate hairs; filaments with basal appendage; leaves simple. A. ALYSSOIDES (192)
223. Plant glabrous or with simple hairs; filaments simple; leaves simple. CAMELINA SATIVA (239)
223. Plant glabrous; filaments simple; leaves deeply divided. *Rorippa* 187

[199] 224. Flowers yellow. 225
224. Flowers white. 226

225. Rather large plant 3-6 in. tall with hoary leaves; pouch 4-seeded. A. ALYSSOIDES (192)
225. Dwarf plant 1-2 in. tall with denticulate leaves and naked scape; pouch many-seeded. DRABA AIZOIDES (196)

226. Petals entire or slightly notched. 227
226. Petals deeply bifid. 230

227. Pouch 2-seeded; stems much-branched. A. MARITIMUM (193)
227. Pouch several-seeded; stems little-branched. 228

228. Dwarf plant with bare scape. D. NORVEGICA (199)
228. Dwarf to rather large plant with leafy scape. 229

229. Basal rosette well marked; leaves on stem narrowly ovate, stellately hairy; pouch twisted. D. INCANA (198)
229. Basal rosette scarcely developed; leaves on stem broadly ovate, toothed, with simple hairs; pouch flat. D. MURALIS (197)

230. Leaves all radical; hairs simple or bifid. 231
230. Stem leafy; hairs numerous, stellate. *Alyssum* 222

231. Pod narrowly ovoid, flat; hairs on leaves mostly forked and stellate. EROPHILA VERNA (200)
231. Pod orbicular, sometimes inflated; hairs on leaves forked and stellate. E. SPATHULATA (201)
231. Pod orbicular or obovoid, flat; hairs on the leaves mostly simple. E. PRÆCOX (202)

[171] 232. Leaves deeply divided or compound. 233
232. Leaves simple, entire or somewhat toothed. 238

233. Pod very short (under 15 mm.). *Rorippa* 187
233. Pod rather long, exceeding 20 mm. 234

234. Flowers white, large; stem weak. CARDMINE AMARA (204)
234. Flowers white or greenish, small. 235
234. Flowers pink, large; stem stiff. 237

235. Stem tall, erect, over 9 in.; leaf segments narrow, sharply-toothed, with stipule-like appendages. C. IMPATIENS (205)

235. Stem short, under 7 in.; leaf segments rather broad with rounded teeth and without stipules. 236

236. Stamens usually 6; ripe pods ascending, not overtopping the raceme. C. FLEXUOSA (206)

236. Stamens usually 4; ripe pods erect, overtopping the top of the raceme. C. HIRSUTA (207)

237. Leaf segments acute; bulbils in axils of leaves. C. BULBIFERA (208)

237. Leaf segments obtuse; no bulbils present. C. PRATENSIS (203)

238. Seeds in two rows; pods appressed, erect; stem leaves with acute auricles. TURRITIS GLABRA (219)

238. Seeds in a single row; pods spreading. 239

239. Leaves large, cordate, stalked, glabrous, sinuate. ALLIARIA PETIOLATA (232)

239. Leaves large, ovate; upper with rounded auricles, glaucous, entire. ERYSIMUM ORIENTALE (230)

239. Leaves small, ovate, usually toothed and with simple or forked hairs. 240

240. Flowers large, over 10 mm. diam.; petals spreading. 241

240. Flowers small, under 7 mm. diam.; petals suberect. 243

241. Leaves deeply-toothed, almost pinnatifid; flowers often diffused with pink. ARABIS PETRÆA (213)

241. Leaves slightly toothed; rosette obvious; flowers white. 242

242. Leaves green, ovate-lanceolate. A. ALPINA (214)

242. Leaves grey-green, rather narrowly lanceolate. A. CAUCASICA (215)

243. Pods keeled; leaves almost all radical; seeds very small, wingless. ARABIDIOPSIS THALIANA (238)

243. Pods flat; stem leaves always present; seeds medium, winged at least at apex. 244

244. Stem leaves narrowed at the base, not clasping. ARABIS STRICTA (218)

244. Stem leaves sessile with a rounded base and not clasping the stem; hairy only on the margin. A. BROWNII (217)

244. Stem leaves all clasping; the stem hairy all over. A. HIRSUTA (216)

[171] 245. Flowers yellow or red; leaves entire, glabrous. CHEIRANTHUS CHEIRI (231)

245. Flowers purple or pink; leaves hoary or toothed. 246

246. Leaves green, ovate, toothed, with few hairs; seed ovoid.
HESPERIS MATRONALIS (228)

246. Leaves grey and hoary; seeds flat, winged. 247

247. Leaves entire; pod without glands.
MATTHIOLA INCANA (226)

247. Leaves toothed; pod glandular. M. SINUATA (227)

[168] 248. Fruit a winged and flattened, 1-seeded pod.
ISATIS TINCTORIA (174)

248. Fruit not flattened. 249

249. Fruit elongated, of several 1-seeded segments clearly separated by transverse divisions; flowers white or yellow with purple veins. 250

249. Fruit rounded, the lower segment reduced to a stalk. 251

249. Fruit elongate, of two segments; the upper much larger than the lower. 252

250. Plant annual; pod rather shorter than the long beak; radical leaves with few distant lateral lobes.
RAPHANUS RAPHANISTRUM (161)

250. Plant perennial; pod longer than the rather short beak; radical leaves with several lateral segments close together.
R. MARITIMUS (162)

251. Fruit asymmetrical, warty and pointed; flowers yellow, leaves thin, green. BUNIAS ORIENTALIS (191)

251. Fruit almost spherical; flowers white, leaves thick, glaucous.
CRAMBE MARITIMA (163)

252. Upper part of fruit round; flowers yellow.
RAPISTRUM RUGOSUM (164)

252. Upper part of fruit ovate, pointed; flowers white and pink, maritime. CAKILE MARITIMA (165)

Hypericaceæ

[112] 253. Undershrubs with medium-sized flowers (15-20 mm. diam.); styles 3; fruit fleshy.
HYPERICUM ANDROSÆMUM (266)

253. Undershrubs with very large flowers (80-100 mm. diam.); styles 5; fruit dry. H. CALYCINUM (267)

253. Herbs with medium-sized or small flowers (5-30 mm. diam.); styles 2-3; fruit dry. 254

254. Leaves glabrous or glandular but not hairy. 255

254 Leaves hairy or woolly. 261

255. Stems very slender; flowers small (less than 12 mm. diam.); sepals as long as or longer than petals. 256

255. Stems usually stout; flowers medium sized (15-25 mm. diam.); sepals shorter than petals. 257

256. Styles 3; petals ovate; stems prostrate or diffuse. H. HUMIFUSUM (272)

256. Styles 2; petals narrow; stems erect. H. CANADENSE (278)

257. Stem ± erect, slender; leaves linear-lanceolate; inflorescence dense; sepals acute. H. LINARIFOLIUM (273)

257. Stem stiff, erect; leaves ovate-oblong; inflorescence lax; sepals ovate. H. PULCHRUM (274)

257. Stem stiff, erect; leaves lanceolate; inflorescence dense; sepals lanceolate. H. MONTANUM (276)

258. Stem with two longitudinal lines. H. PERFORATUM (268)

258. Stem with four ribs or wings. 259

259. Panicle small, closed; flowers 15 mm. diam.; stem with four wings. H. TETRAPTERUM (271)

259. Panicle open; flowers about 20 mm.; stem with 4 ridges. 260

260. Leaves flat; stem not winged; sepals obtuse; petals yellow. H. MACULATUM (269)

260. Leaves with an undulate margin; stem narrowly winged; sepals acute; petals suffused with red underneath. H. UNDULATUM (270)

261. Stem stiff, erect; leaves ovate; flowers many in an elongated cyme. H. HIRSUTUM (275)

261. Stem weak, decumbent; leaves woolly, orbicular-ovate; flowers almost solitary. H. ELODES (277)

[165] 262. Sepals 6; fruit 3-6 many-seeded follicles. *Crassulaceæ* 547

262. Sepals 2. *Portulacaceæ* 263

262. Sepals 3-6, capsule 1-seeded. 266

262. Sepals 3-6, capsule many seeded; or fruit a berry. 270

263. Flowers large, over 5 mm. diam.; stem leaves 2, sessile or connate; stamens 5. 264

263. Flowers under 4 mm. diam.; stem leaves many, base narrow; stamens 3. 265

264. Upper leaves connate; flowers white, 4 mm. diam.; petals entire. CLAYTONIA PERFOLIATA (367)

264. Upper leaves ovate, sessile; flowers 20 mm. diam.; petals bifid. C. SIBIRICA (368)

+265. Seeds tuberculate only on margin.
MONTIA INTERMEDIA (365D)

+265. Seeds tuberculate throughout and dull; plant usually erect, small. M. FONTANA (365)

+265. Seeds reticulate and shining; plant usually diffuse.
M. VERNA (366)

266. Leaves alternate, stipulate, oblong linear.
CORRIGIOLA LITTORALIS (359)

266. Leaves opposite, stipulate, ovate. 267

266. Leaves opposite, exstipulate, ovate or linear. 268

267. Annual and rather small; flower clusters confluent; fruit acute, exceeding calyx. HERNIARIA GLABRA (361)

267. Perennial with long diffuse stems; flower clusters separate; fruit obtuse, equalling calyx. H. CILIOLATA (360)

268. Sepals white, keeled; leaves ovate; fruit a brittle capsule.
ILLECEBRUM VERTICILLATUM (362)

268. Sepals greenish, nearly flat; leaves subulate; fruit within a woody calyx. 269

269. Annual. Sepals acuminate with a narrow, scarious border, erect in fruit. SCLERANTHUS ANNUUS (363)

269. Perennial. Sepals subobtuse with a wide, scarious margin, curving over in fruit. S. PERENNIS (364)

[262] 270. Sepals free or united at the base. 271

270. Sepals joined to at least half-way. 275

271. Sepals toothed or trifid; plant dwarf, flowers minute.
RADIOLA LINOIDES (416)

271. Sepals entire. 272

272. Style single; sepals 5; stamens 5. LINUM CATHARTICUM (415)

272. Styles 3-5; sepals 4-5; stamens 8-10. 273

273. Minute water plants; capsule many-celled. 274

273. Terrestrial plants; capsule 1-celled, many-seeded.
Caryophyllaceæ 276

274. Flowers stalked; petals 3; stamens 6; styles 3.
ELATINE HEXANDRA (285)

274. Flowers sessile; petals 4; stamens 8; styles 4.
E. HYDROPIPER (286)

275. Styles 3-5, free to the base. *Caryophyllaceæ* 276

275. Style single, shortly 5-cleft; leaves heather-like.
FRANKENIA LÆVIS (283)

Caryophyllaceæ

276. Sepals united in a tubular or campanulate calyx. 277
276. Sepals free. 298

277. No scales at the base of the calyx. 278
277. 2-4 scales at the base of the calyx. 293

278. Fruit a succulent berry. CUCUBALUS BACCIFER (303)
278. Fruit a dry capsule. 279

279. Styles 2; stock far-creeping. SAPONARIA OFFICINALIS (310)
279. Styles 3. 280
279. Styles 5 (rarely 4). 289

280. Fruiting calyx much inflated, free of the capsule. 281
280. Calyx not inflated. 282

281. Inflorescence with many flowers; prostrate, non-flowering shoots few or absent; capsule with erect teeth. SILENE VULGARIS (287)
281. Inflorescence with very few flowers; plant with numerous, prostrate, non-flowering shoots; capsule with recurved teeth. S. MARITIMA (288)

282. Calyx glabrous. 283
282. Calyx pubescent; rather tall plants. 284

283. Flowers solitary, stems about 2 in. high, growing from a moss-like base. S. ACAULIS (296)
283. Flowers in dense whorls, numerous, small. S. OTITES (291)

284. Flowers small, under 6 mm. diam.; petals lobed. 285
284. Flowers large, over 10 mm. diam.; petals deeply bifid. 286

285. Capsule ovoid, conical in fruit; leaves linear. S. CONICA (289)
285. Capsule ovoid, cylindric in fruit; leaves lanceolate. S. GALLICA (290)

286. Annuals with stout, hairy stem, and no basal rosette. S. NOCTIFLORA (295)
286. Perennials with slender, almost glabrous stem and a basal rosette. 287

287. Gynophore (stalk of the capsule) nearly half as long as capsule; coronal scale absent. S. ITALICA (294)
287. Gynophore less than half as long as capsule; coronal scale present. 288

288. Leaves lanceolate, gradually narrowed into a rather short petiole. S. NUTANS (292)

288. Leaves spathulate, suddenly narrowed into a rather long petiole. S. SALMONIANA (293)

289. Calyx lobes exceeding the petals. LYCHNIS GITHAGO (302)

289. Calyx teeth much shorter than petals. 290

290. Petals slightly notched. L. VISCARIA (298)

290. Petals 4-lobed; lobes linear. L. FLOSCUCULI (299)

290. Petals deeply bifid. 291

291. Small alpine; capsule with 5 teeth. L. ALPINA (297)

291. Robust lowland plants; capsule with 10 teeth. 292

292. Flowers usually red; capsule 10×8 mm., with long recurved teeth. L. DIOICA (300)

292. Flowers white; capsule 20×15 mm., with short erect teeth. L. ALBA (301)

[277] 293. Flowers small, grouped together at the top of the stem and surrounded by long bracts. 294

293. Flowers solitary or few, on long stalks without bracts. 295

294. Plant $\pm$ glabrous; scales broad, scarious. DIANTHUS PROLIFER (309)

294. Plant somewhat pubescent; scales narrow, herbaceous with long points. D. ARMERIA (304)

295. Petals fimbriate. D. PLUMARIUS (305)

295. Petals dentate or denticulate. 296

296. Epicalyx scales long-awned; leaves broadly linear. D. DELTOIDES (308)

296. Epicalyx scales abruptly mucronate; leaves narrowly linear. 297

297. Flowers 20-25 mm.; leaves with rough edges; peduncles 10-20 cm. D. GRATIANOPOLITANUS (307)

297. Flowers 30-40 mm.; leaves without rough edges; peduncles 20-50 cm. D. CARYOPHYLLUS (306)

[276] 298. Leaves without stipules. 299

298. Leaves with stipules; leaves either whorled or subulate. 335

299. Petals deeply to shallowly lobed. 300

299. Petals entire. 315

300. Styles 5. 301

300. Styles 3. 309

301. Stem leaves cordate, stalked, glabrous.
MYOSOTON AQUATICUM (321)

301. Stem leaves lanceolate or linear, sessile, tomentose. 302

302. Perennials with prostrate barren shoots; petals longer than calyx. 303

302. Annuals with no prostrate barren shoots; petals hardly exceeding the calyx. 306

303. Flowers in a many-flowered cyme; capsule greatly exceeding the sepals. CERASTIUM HOLOSTEOIDES (314)

303. Flowers almost solitary; capsule not greatly exceeding the sepals. 304

304. Leaves linear-lanceolate, tomentose. C. ARVENSE (311)

304 Leaves oblong-lanceolate, usually woolly. 305

305. Capsule almost straight; seeds cuneiform, comma-like, netted; sepals oblong-lanceolate. C. ALPINUM (312)

305. Capsule curved at apex; seeds pyriform, tubercled; sepals broadly lanceolate. C. ARCTICUM (313)

306. Bracts herbaceous; sepals hairy to the tip; petals deeply notched. 307

306. Bracts with scarious margins or tips; sepals with glabrous tips; petals little-notched. 308

307. Flowers in compact cymes; capsule twice as long as sepals, curved at tip; pedicel shorter than capsule; stamens 10
C. GLOMERATUM (315)

307. Flowers in loose cymes; capsules slightly exceeding sepals on a pedicel longer than capsule; stamens 4-5
C. ATROVIRENS (316)

308. Bracts with upper half membraneous; petals with simple veins.
C. SEMIDECANDRUM (317)

308. Bracts with narrow membranous margins; petals with branched veins. C. PUMILUM (318)

309. Plant with many decumbent rooting stems; capsule ± cylindrical with 6 short teeth. C. CERASTOIDES (319)

309. Plants erect or decumbent; capsule ovoid with 3 long valves. 310

310. Lower leaves cordate, petioled. 311

310. Lower leaves lanceolate or linear, sessile. 313

311. Petals about twice as long as sepals; capsule much longer than sepals. STELLARIA NEMORUM (322)

311. Petals absent or little longer than sepals; capsule not greatly exceeding the sepals. 312

312. Stamens usually 10, sepals 5·0-6·5 mm.; seeds 1·5 mm., globular with acute tubercles. S. NEGLECTA (325)

312. Stamens about 5; sepals 4·5-5·0 mm.; seed 0·9-1·3 mm., cuneoid. S. MEDIA (323)

312. Stamens 1-3; sepals 2·0-3·5 mm.; petals absent; seed 0·7 mm., globular with blunt tubercles. S. PALLIDA (324)

313. Petals deeply bifid, much shorter than sepals, lobes divergent. S. ALSINE (329)

313. Petals equalling or exceeding the sepals. 314

314. Capsules globular; petals notched less than half-way; flowers 20-30 mm. diam.; plant yellow-green. S. HOLOSTEA (326)

314. Capsules oblong-ovoid; petals bifid at least half-way; flowers 12-13 mm. diam.; plant glaucous, bracts glabrous. S. PALUSTRIS (327)

314. Capsule oblong-ovoid; petals bifid at least half-way; flowers 5-12 mm. diam.; plant green, bracts ciliate. S. GRAMINEA (328)

[299] 315. Styles 4-5; sepals 4-5. " 316

315. Styles 2-3; sepals 4-6. 325

316. An erect, glaucous annual, with narrow lanceolate leaves; capsule opening by 8 teeth. MŒNCHIA ERECTA (320)

316. Spreading green plants with linear leaves; capsule opening to the base with 4-5 valves. 317

317. Sepals and petals minute or none, 4; stamens 4; capsule with 4 valves. 318

317. Sepals and petals 5; stamens 10 or 5; capsule with 5 valves. 322

318. Branches long, procumbent, growing from a central barren rosette; petals present or absent. SAGINA PROCUMBENS (334)

318. Branches ascending or erect; no barren central rosette; petals very rarely present. 319

319. Leaves blunt or somewhat apiculate. S. MARITIMA (333)

319. Leaves awned. 320

320. Sepals spreading in fruit. S. APETALA (330)

320. Sepals erect in fruit, appressed to ripe capsule. 321

321. Stems 2-6 in. (5-15 mm.), rather strong; sepals glabrous, 2 pointed and 2 rather blunter; pedicels long. S. CILIATA (331)

321. Stems 1-4 in. (2-10 mm.), very slender; sepals all alike, glandular, hairy, rather blunt; pedicels long. S. FILICAULIS (332)

322. Petals longer than sepals. S. NODOSA (399)
322. Petals absent or little exceeding the sepals. 323

323. Calyx glandular. S. SUBULATA (338)
323. Calyx glabrous. 324

324. Plant forming small tufts and no rooting stems; sepals blunt with white edges; leaves blunt. S. INTERMEDIA (337)
324. Plant forming large, loose tufts, sepals blunt, without a white border; rooting stems long and slender; leaves awned. S. NORMANIANA (336)
324. Plant forming large, rather dense tufts; sepals subacute; rooting stems short, stout. S. SAGINOIDES (335)

[318] 325. Leaves linear. 326
325. Leaves lanceolate to ovate. 330

326. Petals well exceeding the sepals. ARENARIA VERNA (340)
326. Petals equalling or shorter than sepals, or absent. 327

327. Fruiting pedicels more than 20 mm. long. 328
327. Fruiting pedicels less than 20 mm. long. 329

328. Tufted perennial with basal rosettes. A. STRICTA (342)
328. Slender annual with few basal leaves. A. TENUIFOLIA (343)

329. Loosely tufted, dark green plant; capsule ovoid, with 5 teeth; petals white, ovate. A. RUBELLA (341)
329. Densely tufted, light green plant; petals minute or none; capsule cylindrical, with 3 valves A. SEDOIDES (344)

330. Thick-leaved plant; capsule large; seeds 1-4 large. A. PEPLOIDES (345)
330. Thin-leaved plants; capsules small to medium, with many small to very small seeds. 331

331. Petals shorter than the sepals 332
331. Petals much exceeding the sepals. 334

332. Leaves 3-nerved, over 15 mm. long; sepals 1-nerved; seed with a white appendage. A. TRINERVIA (346)
332. Leaves 1-nerved, under 10 mm. long; sepals 3-nerved; seeds cuneiform without appendage. 333

333. Capsule bottle-shaped with convex sides; stem stiff, bushy; seeds 0·7 mm. A. SERPYLLIFOLIA (347)

333. Capsule conical with straight sides; stem diffuse, slender; seeds 0·5 mm. A. LEPTOCLADOS (348)

334. Leaves ovate, ciliate all round the margin; sepals with hairy veins; flowers 8-10 mm. diam.; capsule ovoid with short, erect teeth. A. CILIATA (349)

334. Leaves ciliate only at base; sepals glabrous; flowers 7-8 mm. diam.; capsule conical with erect teeth. A. NORVEGICA (350)

334. Leaves ciliate only at base; sepals glabrous; flowers 7-8 mm. diam.; capsule constricted, with recurved teeth. A. GOTHICA (351)

[298] 335. Leaves subulate, several in a whorl at each node; flowers white. SPERGULA ARVENSIS (357)

335. Leaves ovate, 4 at most nodes; petals inconspicuous. POLYCARPON TETRAPHYLLUM (358)

338. Leaves subulate, in pairs at each node; petals conspicuous, usually pink, occasionally white. 336

336. Plant glabrous; flowers 9-12 mm.; all seeds broadly winged; capsule 10 mm. long. SPERGULARIA MEDIA (355)

336. Plant glabrous or glandular; flowers under 10 mm.; seeds mostly pyriform, but a few winged; capsule less than 7 mm. long. 337

337. Plant perennial, glandular-pubescent; flowers 8-10 mm.; capsule equalling the sepals; leaves awned, fleshy. S. RUPICOLA (354)

337. Plant annual, glabrous; flowers 6-8 mm.; capsule 6 mm., somewhat exceeding the sepals; leaves pointed, fleshy. S. MARINA (356)

337. Plant annual, glandular-pubescent; flowers 2 mm.; leaves awned, not fleshy. 338

338. Stipules lanceolate-acuminate, silvery; flowers 3-4 mm. diam., symmetrically arranged. S. RUBRA (352)

338. Stipules broadly triangular, brownish; flowers 2 mm. diam., arranged when mature on one side of the axis. S. BOCCONI (353)

Tiliaceæ

[128] 339. Leaves large, pubescent beneath; flowers pendulous; fruit strongly ribbed TILIA PLATYPHYLLAS (400)

339. Leaves small, glabrous, except on the veins beneath; flowers erect; fruit scarcely ribbed. T. CORDATA (401)

339. Leaves medium, glabrous except on the veins beneath; flowers pendulous; fruit somewhat ribbed.
T. EUROPÆA (402)

Malvaceæ

[64] 340. Epicalyx of 3 completely free segments. 341
340. Epicalyx of 3 joined segments. 345
340. Epicalyx of 6-9 segments. 346

341. Stem leaves palmately divided, with narrow segments.
MALVA MOSCHATA (403)
341. Stem leaves little divided. 342

342. Perennial; flowers large 25-40 mm. diam.; petals exceeding sepals. M. SYLVESTRIS (404)
342. Annuals; flowers small, less than 25 mm. diam.; petals not greatly exceeding sepals. 343

343. Flowers about 20 mm. diam.; nutlets pubescent, not reticulate. M. NEGLECTA (405)
343. Flowers 15-10 mm. diam.; nutlets reticulate. 344

344. Calyx little enlarged in fruit; nutlets with acute but not winged edges. M. PUSILLA (406)
344. Calyx enlarged in fruit; nutlets with keeled, wavy, lateral edges.
M. PARVIFLORA (407)

345. Woody biennial with pubescent leaves; epicalyx enlarged in fruit. LAVATERA ARBOREA (408)
345. Branched, herbaceous, rather hairy annual; epicalyx not enlarged in fruit, hispid. L. CRETICA (409)

346. Softly pubescent perennial, with little-divided grey leaves, erect.
ALTHÆA OFFICINALIS (410)
346. Hispid annual, with much-divided leaves. A. HIRSUTA (411)

[167] 347. Leaves all radical, clothed with red glands.
Droseraceæ 559
347. Leaves all radical, formed into tubular pitchers.
SARRACENIA PURPUREA (669)
347. Leaves flat, some cauline. 348

348. Leaves simple or somewhat toothed; fruit not beaked. 349
348. Leaves simple, toothed; fruit beaked. ERODIUM MARITIMUM (433)
348. Leaves pinnately or palmately divided; fruit beaked. 353
348 Leaves ternate *Oxalidaceæ* 376

349. Styles one or absent. 350
349. Styles 2-5, usually free to base. 351

350. Stigmas 3-4, sessile; capsule many-seeded.
PARNASSIA PALUSTRIS (663)
350. Stigmas 3, subsessile; capsule 1-seeded; stem leafy.
CORRIGIOLA LITTORALIS (359)
350. Stigma 1; style 1; capsule many-seeded. *Ericaceæ* (Vol. II) 836

351. Styles 2, each with a capitate stigma; capsule many-seeded; scape with few or no leaves. *Saxifragaceæ* 563
351. Styles 5; capsule 1-seeded; scape naked.
Plumbaginaceæ (Vol. II) 878
351. Styles 5; capsule several-seeded; stem leafy. *Linaceæ* 352

352. Annual or short-lived perennial; flowers pale, 10-12 mm. diam.; sepals all alike, pointed, 3-veined, bordered.
LINUM BIENNE (412)
352. Annual; flowers blue, 17-20 mm. diam.; sepals all alike, 3-veined, glabrous not bordered. L. USITATISSIMUM (413)
352. Perennial; flowers blue, 20-23 mm. diam.; inner sepals ovate-obtuse; outer ovate-acute, 3-veined, bordered.
L. ANGLICUM (414)

Geraniaceæ

[166] 353. Leaves palmately lobed or divided 354
353. Leaves pinnately divided or simple. 371

354. Flowers solitary, on long stalks. GERANIUM SANGUINEUM (423)
354. Flowers in pairs. 355

355. Perennial; flowers exceeding 15 mm. diam. 356
355. Annuals; flowers less than 10 mm. diam. 362

356. Petals deeply notched; flowers 15 mm. diam.
G. PYRENAICUM (424)
356. Petals entire or somewhat emarginate. 357

357. Petals dark purple; tips of sepals very short, mucronate.
G. PHÆUM (422)
357. Petals not dark purple; sepals with a long awn. 358

358. Petals rounded at apex, concolorous; leaves with 5-7 principal lobes. 359
358. Petals emarginate with veins darker than the rest; leaves with 3-5 principal lobes. 361

359. Petals pink; plant almost eglandular. G. ENDRESSII (419)
359. Petals violet or blue; plant glandular above. 360

360. Pedicels recurved in fruit; side lobes of leaves narrow, spreading, very acute; flowers blue. G. PRATENSE (417)
360. Pedicels erect in fruit; side lobes of leaves short, ascending, ± acute; flowers mauve. G. SYLVATICUM (418)

361. Leaves with 5 almost equal lobes; stem with spreading hairs. G. VERSICOLOR (420)
361. Leaves with 3 principal lobes and two smaller basal ones; stem almost glabrous. G. NODOSUM (421)

362. Leaves palmately cut or divided into 5 or more lobes or segments. 363
362. Leaves of 3 distinct segments which are pinnately cut or divided. 370

363. Calyx pyramidal with projecting angles; petals entire; leaves glabrous. G. LUCIDUM (430)
363. Calyx not deeply angular, ± cylindrical. 364

364. Leaves orbicular, seldom divided below the middle. 365
364. Leaves palmate; with deep, rather narrow lobes. 368

365. Petals entire; seeds pitted. G. ROTUNDIFOLIUM (427)
365. Petals emarginate; seeds smooth. 366

366. Petals deeply notched, twice as long as calyx. G. PYRENAICUM (424)
366. Petals not longer than calyx. 367

367. Petals deeply notched; carpels glabrous. G. MOLLE (428)
367. Petals slightly notched; carpels pubescent. G. PUSILLUM (429)

368. Peduncles long. G. COLUMBINUM (425)
368. Peduncles short, less than 15 mm. 369

369. Leaves much-divided; seeds pitted. G. DISSECTUM (426)
369. Leaves small, lower ones divided half-way to base. G. PUSILLUM (429)

370. Petals 9-12 mm.; anthers orange; carpels wrinkled to base. G. ROBERTIANUM (431)
370. Petals 6-9 mm.; anthers yellow; carpels not wrinkled near the base. G. PURPUREUM (432)

371. Leaves simple, deeply-toothed. ERODIUM MARITIMUM (433)
371. Leaves pinnate. 372

372. Segments of leaves ovate, coarsely toothed or shortly lobed, filaments of fertile stamens with a tooth at each side near the base. E. MOSCHATUM (434)

372. Segments of leaves deeply pinnatifid with toothed lobes, filaments of fertile stamens without a tooth. 373

+373. Carpels with a conspicuous pit and outer furrow; petals unequal. 374

+373. Carpels with a small pit and without a furrow; petals equal; plant prostrate. E. NEGLECTUM (438)

+374. Stamens suddenly enlarged at base. 375

+374. Stamens gradually enlarged at base; flowers 12 mm. diam. E. LEBELII (437)

+375. Petals unequal, two with spots at base; whole plant large and usually erect. E. PIMPINELLIFOLIUM (436)

+375. Petals unequal or subequal, not spotted; plant erect or prostrate, small or rather large. E. CICUTARIUM (435)

[348] 376. Plant with little aerial stem; flowers white. OXALIS ACETOSELLA (439)

376. Plant with a long, branched aerial stem. 377

377. Fruits with pedicel curved upwards after flowering; leaves stipulate. O. CORNICULATA (440)

377. Fruits with straight pedicel, erect to spreading after flowering; leaves exstipulate. O. EUROPÆA (441)

[143] 378. Leaves opposite or whorled; flowers pink or white, very large (over 80 mm. long). IMPATIENS GLANDULIFERA (445)

378. Leaves alternate; flowers yellow or orange. 379

379. Flowers orange, 18-20 mm. long; spur subulate, closely recurved. I. CAPENSIS (443)

379. Flowers yellow, 40 mm. long; spur conical, closely recurved. I. NOLI-TANGERE (442)

379. Flowers pale yellow, small (15 mm. long or less); spur straight. I. PARVIFLORA (444)

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[164] 380. Fruit dry, winged; leaves palmate. 381

380. Fruit succulent or dry, not winged; leaves simple, of elliptical outline. 382

381. Twigs pubescent; leaf lobes obtuse; wings of fruit spreading horizontally. ACER CAMPESTRE (446)

381. Twigs glabrous; leaf lobes acute; wings of fruit spreading at an acute angle. A. PSEUDOPLATANUS (447)

382. Leaves very small, scale-like, appressed to the stem; petals, sepals and stamens 5; seeds cottony. TAMARIX GALLICA (283)

382. Leaves about 15 mm. long, linear, thick and with recurved margin; sepals, petals and stamens 3. *Empetraceæ* (Vol. II) 842

382. Leaves wide, thick, ovate, with rusty tomentum; stamens more than 5. LEDUM GRŒNLANDICUM (Vol. II) (884)

382. Leaves lanceolate or ovate, thin, green glabrous; stamens 6 or less. 383

383. Petals and stamens 6; berry 1-2 seeded; twigs spiny. BERBERIS VULGARIS (122)

383. Petals 4 or 5; stamens as many, or twice as many. 384

384. Leaves opposite; fruit 4-lobed, red and orange. EUONYMUS EUROPÆUS (449)

384. Leaves alternate; fruit globular. 385

385. Petals white, alternating with stamens; leaves with prickly margins. ILEX AQUIFOLIUM (448)

385. Petals small, yellow or absent behind the stamens. 386

386. A thorny shrub; flowers diœcious; stamens 4; leaves minutely toothed. RHAMNUS CATHARTICUS (451)

386. No thorns; leaves entire; flowers hermaphrodite; stamens 5. R. FRANGULA (452)

GROUP F. CALYCIFLORÆ

387. Flower irregular (papilionaceous); stamens 10, all or 9 joined by the filaments. *Leguminosæ* 388

387. Flowers irregular, but stamens free. *Umbelliferæ* 610

387. Flowers regular. 463

Leguminosæ

388. Leaves simple or ternate, with or without leafy stipules. 389

388. Leaves pinnate with at least two pairs of leaflets. 435

388. Leaves digitate. LUPINUS NOOTKATENSIS (453)

389. All ten stamens united in one bundle. 390

389. Nine stamens united, one free. 398

390. Calyx distinctly two-lipped. 391

390. Calyx with 5 ± equal teeth. 396

391. Calyx glabrous; shrubs with small leaves and sometimes prickles. 392

391. Calyx pubescent; prickly shrubs with very few, simple, flat leaves soon lost. 395

392. Lips of calyx deeply-toothed. 393

392. Lips of calyx with very short teeth.
CYTISUS SCOPARIUS (460)

393. Lower branches prickly; pod short, inflated.
GENISTA ANGLICA (455)

393. Branches not prickly; pod narrow, flattened. 394

394. Leaves 10-20 mm., acute ciliate; flowers glabrous on long branches. G. TINCTORIA (454)

394. Leaves 3-5 mm., obtuse pubescent; flowers pubescent on short, side branches. G. PILOSA (456)

395. Flowers large, up to 15 mm. long; bracteole ovate, wider than the pedicel; pod longer than calyx. ULEX EUROPÆUS (457)

395 Flowers medium, 12-13 mm. long; bracteole minute, ovate, as wide as the pedicel; pod equalling or just exceeding calyx.
U. GALLII (458)

395. Flowers small, 7-8 mm. long; bracteole lanceolate, narrower than the pedicel; pod 4 mm. long, shorter than calyx.
U. MINOR (459)

396. Small, erect annual; pod cylindrical, hairy.
ONONIS RECLINATA (463)

396. Prostrate or erect perennial; pod ovoid, hairy. 397

397. Stem hairy all round; wings equalling keel; plant usually prostrate and unarmed. O. REPENS (461)

397. Stem with two lines of hairs; wings shorter than keel; plant usually erect and spiny. O. SPINOSA (462)

[389] 398. Plants without tendrils. 399

398. Plants with tendrils; leaves replaced by leaf-like phyllodes. 456

399. Pod much curved or spirally twisted; flowers in short racemes. 400

399. Pod straight or somewhat curved. 405

400. Pods without spines or bristles. 401

400. Pods with curved bristles. 403

401. Stout perennials with flowers more than 8 mm. long. 402

401. Slender annuals with flowers less than 3 mm. long.
MEDICAGO LUPULINA (467)

402. Pod curved or falcate; flowers yellow; leaflets narrow; stem round. M. FALCATA (464)

402. Pod with at least one complete spiral; flowers pale yellow or dingy purple; stem square. M. VARIA (465)

402. Pod with 2 or 3 curves; flowers purple or white; leaflets rather broad; stem square. M. SATIVA (466)

403. Stipules divided; plants glabrous. 404

403. Stipules almost entire; plants downy. M. MINIMA (468)

404. Leaves full, green; stipules laciniate; pod flat. M. POLYMORPHA (469)

404. Leaves with dark blotches; stipules dentate; pod subglobular. M. ARABICA (470)

405. Flowers in long racemes. 406

405. Flowers in umbels or dense heads. 408

406. Flowers less than 2 mm. long, small, yellow. MELILOTUS INDICA (474)

406. Flowers more than 5 mm. long, large, white. M. ALBA (473)

406. Flowers more than 5 mm. long, large, yellow. 411

407. Wings standard and keel all equal; pod pubescent, acute, black when ripe. M. ALTISSIMA (471)

407. Keel shorter than wings and standard; pod glabrous, obtuse, brown when ripe. M. OFFICINALIS (472)

408. Leaves ternate but stipules small; leaflets usually dentate. 409

408. Leaves ternate with leafy stipules; leaflets usually entire. 431

409. Pod 5-8 seeded, longer than the calyx. TRIGONELLA ORNITHOPODIOIDES (497)

409. Pod 1-4 seeded, usually shorter than calyx. 410

410. Flowers red, pink, white or very pale yellow. 411

410. Flowers yellow, reflexed and brown when faded. 428

411. Heads of flowers on long peduncles, usually exceeding the leaves. 412

411. Heads of flowers sessile, or shortly stalked, and not exceeding the subtending leaves. 423

412. Calyx inflated after flowering. TRIFOLIUM FRAGIFERUM (492)

412. Calyx little changed after flowering. 413

413. Flowers 2-5 in a head, reflexed after flowering, and peduncle curving downwards. T. SUBTERRANEUM (486)

413. Flowers more than ten in a head; peduncle remaining upright. 414

414. Flowers stalked, reflexed after flowering. 415

414. Flowers sessile, not reflexed. 416

415. Stem erect or somewhat decumbent, not rooting at nodes; flowers usually pink. T. HYBRIDUM (490)

415. Stem creeping and rooting; flowers white. T. REPENS (491)

416. Flower heads long, cylindrical when mature. 417

416. Flower heads round or ovoid when mature. 419

417. Corolla small, inconspicuous; calyx very hairy. T. ARVENSE (482)

417. Corolla showy, white or red, exceeding the somewhat hairy calyx. 418

418. Leaves obovate; hairs on stem spreading; flowers crimson or white. T. INCARNATUM (480)

418. Leaves obcordate; hairs on petioles appressed; flowers pink or whitish. T. MOLINERII (481)

419. Corolla longer than calyx, conspicuous, over 15 mm. long. 420

419. Corolla shorter than calyx, not obvious, under 10 mm. long. 422

420. Flowers pale yellow; leaves never spotted. T. OCHROLEUCON (476)

420. Flowers red or pink; leaves often spotted. 421

421. Calyx often pubescent; leaflets broadly lanceolate. T. PRATENSE (475)

421. Calyx glabrous; leaflets narrowly lanceolate. T. MEDIUM (477)

422. Calyx teeth very long, spreading as a star in fruit. T. STELLATUM (479)

422. Calyx teeth short, subulate, glabrous, erect in fruit. T. STRICTUM (487)

422. Calyx teeth short, lanceolate, somewhat ciliate, spreading in fruit. T. SQUAMOSUM (478)

423. Heads globular; calyx glabrous, with recurved teeth. 424

423. Heads ovoid or oblong; calyx pubescent, with stiff, spreading teeth. 425

424. Heads distant or distinct along the branches. T. GLOMERATUM (488)

424. Heads crowded together at the base of a very short stem. T. SUFFOCATUM (489)

425. Calyx teeth rigid and spreading after flowering. 426

425. Calyx teeth shortly subulate, erect or somewhat spreading after flowering. 427

426. Stem erect; heads more than ten-flowered. T. SQUAMOSUM (478)

426. Stem spreading; heads less than eight-flowered. T. SCABRUM (484)

427. Leaves obovate; stipules very broad; leaves pubescent above. T. STRIATUM (483)

427. Leaves oblong-lanceolate; stipules narrow; leaves hairy only below. T. BOCCONEI (485)

[410] 428. Flowers in 30-40 in a compact head; standard furrowed when faded. 429

428. Flowers not more than 20 in a head; standard scarcely striate. 430

429. Stipules half ovate; petiole of middle leaflet longer than the other two. T. CAMPESTRE (493)

429. Stipules linear, oblong; petioles all equal. T. AUREUM (494)

430. Heads 8-20 flowered; pedicels shorter than calyx tube. T. DUBIUM (495)

430. Heads 2-6 flowered; pedicels equalling calyx tube. T. MICRANTHUM (496)

[408] 431. Pod quadrangular, winged; flowers solitary, large. LOTUS SILIQUOSUS (506)

431. Pods rounded; flowers in umbels, rarely solitary, small to medium. 432

432. Perennial. Flowers usually more than 4 in the umbel, on long peduncles. 433

432. Annual. Flowers usually less than 4 in the umbel, on short peduncles. 434

433. Calyx teeth erect before flowering; upper leaves narrowly ovate, usually glabrous or somewhat hairy. L. CORNICULATUS (501)

433. Calyx teeth short, appressed in bud before flowering; upper leaves linear lanceolate, usually glabrous. L. TENUIS (502)

433. Calyx teeth spreading in bud; upper leaves broadly ovate, usually hairy. L. ULIGINOSUS (503)

434. Peduncles longer than leaves; pod 6-12 mm. long. L. HISPIDUS (504)

434. Peduncles shorter than leaves; pod 20-30 mm. long.
L. ANGUSTISSIMUS (505)

[388] 435. Leaves with a terminal leaflet (imparipinnate). 436
435. Leaves without a terminal leaflet (paripinnate). 445

436. Calyx inflated, enclosing the pod.
ANTHYLLIS VULNERARIA (500)
436. Calyx not inflated; pod usually longer than calyx. 437

437. Flowers in a dense head; pod with transverse joints.
CORONILLA VARIA (512)
437. Flowers 1-8 in a rounded head; pod with transverse joints. 438
437. Flowers in an elongated raceme; pod not jointed transversely. 440

438. Pod dividing into falcate sections; flowers yellow in a dense umbel. HIPPOCREPIS COMOSA (513)
438. Pod dividing into rounded segments; flowers white or yellow, solitary or in a lax umbel. 439

439. Umbel without bract; pod slender. ORNITHOPUS PINNATUS (498)
439. Umbel with pinnate, leaf-like bract at base; pod rather short, stout. O. PERPUSILLUS (499)

440. Pod flat, netted, 1-seeded; flowers pink or red; stipules scarious. ONOBRYCHIS VICIÆFOLIA (514)
440. Pod rounded and channelled in the middle; flowers yellow or purple, stipules leafy. 441

441. Keel of flower obtuse. 442
441. Keel of flower mucronate. 444

442. Stems 2-3 ft. long, with leaflets 25-30 mm. long and dingy yellow flowers. ASTRAGALUS GLYCYPHYLLOS (509)
442. Small plants with leaflets 10-22 mm. long and bluish or purple flowers. 443

443. Pods erect, not twice the length of the calyx; flowers 15 mm. long. A. DANICUS (507)
443. Pods spreading or pendulous, 3-4 times as long as calyx; flowers 12 mm. long. A. ALPINUS (508)

444. Flowers purple; flowering peduncles exceeding the leaves.
OXYTROPIS HALLERI (510)
444. Flowers yellowish; peduncles shorter than the leaves.
O. CAMPESTRIS (511)

[435] 445. Staminal tube obliquely truncate; style rounded or flat; hairy on the lower side or on both. 446

445. Staminal tube transversely truncate; style flat, bearded on its upper side. 457

446. Flowers 2 or more, in long, peduncled racemes. 447
446. Flowers sessile, and solitary or in pairs in the axils of the leaves. 453
446. Flowers 2 or more, in a sessile raceme in the axils of the leaves. VICIA SEPIUM (521)

447. Flowers less than 10 mm. long. 448
447. Flowers large, more than 10 mm. long. 450

448. Calyx teeth subequal, somewhat exceeding the tube; pod hairy, usually 2-seeded. V. HIRSUTA (515)
448. Calyx teeth unequal, upper two shorter than tube; pod glabrous, usually 4-seeded. 449

449. Fruiting peduncles equalling leaves; flowers 4 mm. long; pod 4-seeded. V. TETRASPERMA (516)
449. Fruiting peduncles exceeding leaves; flowers 8 mm. long; pods 5-8 seeded. V. TENUISSIMA (517)

450. Racemes 1-2 flowered; leaflets 1-2 pairs. V. BITHYNICA (526)
450. Racemes with many flowers; leaflets more than 2 pairs. 451

451. Tendrils absent; plant erect. V. OROBUS (519)
451. Tendrils present; plant climbing. 452

452. Flowers blue; upper calyx-teeth minute. V. CRACCA (518)
452. Flowers white with blue veins; upper calyx-teeth half the length of lower. V. SYLVATICA (520)

453. Flowers pale yellow. V. LUTEA (522)
453. Flowers purple and blue, or white. 454

454. Flowers about 6 mm. long; seeds tubercled. V. LATHYROIDES (525)
454. Flowers more than 10 mm. long; seeds smooth. 455

455. Leaves obovate or oblong; pod horizontal, splitting the calyx when ripe; seeds 6-10 mm. V. SATIVA (523)
455. Leaves lanceolate or narrowly so; pod patent, not splitting the calyx when ripe; seeds 2-4 mm. V. ANGUSTIFOLIA (524)

[398] 456. Flowers yellow, growing between two broad leaf-like stipules. LATHYRUS APHACA (527)
456. Flowers crimson, subtended by a grass-like leaf peduncle. L. NISSOLIA (528)

[445] 457. Tendrils present on most leaves. 458

457. Tendrils absent; leaves ending in a short point. L. MONTANUS (536)

458. Leaflets a single pair. 459

458. Leaflets 2 or more pairs. 462

459. Flowers yellow. L. PRATENSIS (530)

459. Flowers red or purple. 460

460. Pod hairy; stem winged. L. HIRSUTUS (529)

460. Pod glabrous; stem square and angled. L. TUBEROSUS (531)

460. Pod glabrous; stem winged. 461

461. Leaves narrowly linear-lanceolate; flowers 15-17 mm. long. L. SYLVESTRIS (532)

461. Leaves ovate or broadly lanceolate; flowers 20-30 mm. long. L. LATIFOLIUS (533)

462. Leaflets lanceolate; stipules narrow, half-saggittate; nodes medium; plant erect. L. PALUSTRIS (534)

462. Leaflets ovate; stipules broadly triangular; nodes very short; plant prostrate. L. JAPONICUS (535)

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[387] 463. Stamens an indefinite number, usually more than 10; carpels single and one-seeded or numerous and free. *Rosaceæ* 464

463. Stamens a definite number, usually 10 or less. 546

Rosaceæ

464. Ovary or ovaries exposed on a convex receptacle; the stamens usually perigynous. 465

464. Ovary or ovaries concealed within a concave receptacle or calyx tube; the stamens epigynous. 502

465. Fruit succulent. 466

465. Fruit dry. 484

466. Fruit a rounded mass of succulent drupes; woody plants, usually with stem prickles. *Rubus* 467

466. Fruit of dry achenes on a succulent receptacle; small herbaceous plants. 483

Rubus

467. Leaves simple; stem herbaceous; flowers solitary. RUBUS CHAMÆMORUS (540)

467. Leaves compound; flowers in inflorescences. 468

468. Stems annual, unarmed; stipules attached to stem; fruit red. R. SAXATILIS (541)

468. Stems woody, armed; stipules attached to petiole only, fruit red or black. 469

469. Leaves pinnate with 3-7 leaflets; fruit red, coming away from the receptacle when ripe. R. IDÆUS (542)

469. Leaves palmate with 3-5 and sometimes 7 leaflets; fruit black or blue-black, not separating from the receptacle. (Brambles) 470

470. Fruit generously covered with a bluish bloom; drupes very few; stems terete, very weak and usually trailing along the ground; leaflets 3; stipules lanceolate. R. CÆSIUS (543)

470. Fruit usually without bluish bloom; drupelets rather numerous; stems erect or arching; stipules linear or linear-lanceolate. 471

+471. No stalked glands on stem and inflorescence. 472

+471. Stalked glands present at least on the inflorescence. 479

+472. Stem suberect, not rooting, except perhaps at apex; leaves with 5-7 leaflets; inflorescence with few flowers; sepals green, spreading. *R. SUBERECTI (544)

+472. Stems arching and rooting; leaves with 3 or 5 leaflets; inflorescence usually many-flowered. 473

+473. Basal leaflets 5 in a leaf, sessile or subsessile; inflorescence with rather few flowers; drupes few, large, some often defective. *R. TRIVIALES (545)

+473. Basal leaflets 3-5 in a leaf; all petioled; inflorescence with many flowers; drupes numerous, usually perfect. 474

+474. Prickles numerous, scattered all round the stem and passing gradually into pricklets and stalked glands. 475

+474. Prickles confined to the angles much larger and clearly differentiated from the pricklets and stalked glands, if any. 476

+475. Stem strong, angled, arching and rooting; inflorescence large; petals usually pink. *R. HYSTRICES (554)

+475. Stem weak, terete, procumbent and rooting; inflorescence strict; petals usually white. *R. EGLANDULOSI (555)

+476. Stalked glands and acicles absent or few on the stem. 477

+476. Stalked glands and acicles numerous on stem and inflorescence. 478

* These names refer to groups not species.

+477. Stems slender, obscurely angled; flowers small; sepals spreading; stamens shorter than styles. *R. SPRENGELIANA (548)

+477. Stems robust, strongly angled; flowers rather large; sepals reflexed in fruit; stamens as long as or longer than styles. 483

+478. Leaflets usually green beneath, thin; inflorescence usually broad; sepals spreading or reflexed; flowers white or pink. *R. SILVATICI (546)

+478. Leaflets white or greyish beneath subcoriaceous; inflorescence narrow; flowers large and usually pink. *R. DISCOLORES (547)

+479. Acicles none or few on stem. 480

+479. Acicles numerous on stem and in inflorescence. 481

+480. Stalked glands few, unequal, always present on the stem; terminal leaflets suborbicular. *R. MUCRONATI (551)

+480. Stalked glands few, equal, often absent on stem; terminal leaflets ovate. *R. VESTITI (549)

481. Stalked glands, acicles and pricklets short and subequal on the stem. *R. RADULÆ (552)

481. Stalked glands, acicles and pricklets unequal on the stem. 482

482. Stalked glands and acicles rather unequal; panicle broad with truncate top; sepals with or without long points. *R. APICULATI (550)

482. Stalked glands and acicles more unequal; panicle large, pyramidal; sepals always with long points. *R. GRANDIFOLII (553)

[466] 483. Flowers small, under 15 mm.; leaves silky on both sides; pedicels with appressed or spreading hairs. FRAGARIA VESCA (570)

483. Flowers over 15 mm.; leaves green, hairy on both sides; pedicels with spreading hairs. F. MOSCHATA (571)

483. Flowers over 20 mm. diam.; leaves grey beneath and glabrous above; pedicels with appressed hairs. F. ANANASSA (572)

[465] 484. Achenes blunt or beaked. 485

484. Achenes with long awns. 500

485. Epicalyx absent. 486

485. Epicalyx present. 488

486. Shrub with undivided leaves and dense panicles of pink flowers. SPIRÆA SALICIFOLIA (537)

* These names refer to groups, not species.

486. Herb with compound leaves and racemes of white flowers. 487

487. Radical leaves with 8 or more pairs of sharply and deeply-toothed leaflets; carpels straight, erect. S. FILIPENDULA (539)

487. Radical leaves with 5 or fewer pairs of bluntly-toothed leaflets; carpels curved. S. ULMARIA (538)

488. Leaflets pinnate. 489

488. Leaflets ternate or palmate. 491

489. Flowers white, in terminal cymes. POTENTILLA RUPESTRIS (559)

489. Flowers purplish, in terminal cymes. P. PALUSTRIS (557)

489. Flowers yellow, solitary. 490

490. A small shrub; receptacle hairy. P. FRUTICOSA (556)

490. A low, creeping plant; receptacle glabrous. P. ANSERINA (560)

491. Flowers white. P. STERILIS (558)

491. Flowers yellow. 492

492. Leaflets 3 to a leaf. 493

492. Leaflets 5 to 7 to a leaf. 496

493. Petals minute, plant dwarf. P. SIBBALDI (569)

493. Petals as long as, or longer than, the calyx. 494

494. Plant creeping and rooting at nodes. P. ANGLICA (567)

494. Stem erect, not rooting. 495

495. Flowers forming a terminal cyme; petals exceeding sepals. P. NORVEGICA (563)

495. Flowers mostly solitary; petals about equalling sepals. P. ERECTA (566)

496. Leaves very white beneath; teeth narrow and acute. P. ARGENTEA (561)

496. Leaves green beneath. 497

497. Plant large, erect; flowers 20-25 mm.; leaflets often 7. P. RECTA (562)

497. Plant small, erect or decumbent; flowers under 12 mm. 498

497. Plant creeping and rooting; flowers 15-20 mm. 499

498. Plant forming a mat-like base; stipules of radical leaves long and linear; apex of leaves truncate. P. TABERNÆMONTANI (564)

498. Plant without prostrate, rooting stems, and not forming mats; stipules of radical leaves ovate; apex of leaves rather triangular. P. CRANTZII (565)

499. Petals 4 or 5; leaflets usually 3 but sometimes 5; epicalyx lobes equal to those of the calyx; plant only rooting at the upper nodes. P. ANGLICA (567)

499. Petals 5; leaflets always 5; epicalyx lobes longer than calyx lobes; plant rooting at all nodes. P. REPTANS (568)

[484] 500. No epicalyx; petals 8; leaves simple. DRYAS OCTOPETALA (575)

500. Epicalyx present; petals usually 5; leaves pinnatifid. 501

+501. Flowers erect; petals 5-8 mm., yellow, spreading, entire. GEUM URBANUM (573)

+501. Flowers drooping; petals 10-15 mm. long, reddish, erect, emarginate. G. RIVALE (574)

[464] 502. Herbs or creeping undershrubs. 503

502. Shrubs or trees. 516

503. Epicalyx present. 504

503. Epicalyx absent. 511

504. Petals absent; stamens 1-5. 505

504. Petals present; stamens 5-15. AGRIMONIA AGRIMINOIDES (578)

505. Flowers few, in axillary clusters. ALCHEMILLA ARVENSIS (585)

505. Flowers many, in loose heads or cymes. 506

506. Leaves silky beneath; lobes extending more than half-way and often almost to the base. 507

506. Leaves not silky, with shallow lobes to much less than half-way. 508

507. Leaves divided to the base; flowers 3 mm. diam. A. ALPINA (579)

507. Leaves divided only a little more than half-way down; flowers 4 mm. diam. A. CONJUNCTA (580)

+508. Stem and petioles with spreading hairs. 509

+508. Stem and petioles with appressed hairs or subglabrous. 510

+509. Plant densely hairy, prostrate; leaf lobes rounded, basal sinus closed. A. MINOR (581)

+509. Plant hairy all over but not densely so, including urceoles; leaf lobes rounded, basal sinus open; plant ascending. A. VESTITA (582)

+510. Hairs on stem appressed; leaves glabrous above, somewhat hairy below; urceoles glabrous. A. XANTHOCHLORA (583)

+510. Plant almost glabrous; leaves glabrous except for a few hairs on the margin; urceoles glabrous. A. GLABRA (584)

[503] 511 Flowers in long racemes; petals present. 512

511. Flowers in rounded heads; petals absent. 513

512. Leaves not glandular beneath; fruit obconical, deeply grooved. AGRIMONIA EUPATORIA (576)

512. Leaves glandular beneath; fruit campanulate, without grooves at the base. A. ODORATA (577)

513. Head of fruits with long spines. ACÆNA ANSERINIFOLIA (589)

513. Heads of fruits unarmed. 514

514. Heads purplish; flowers hermaphrodite with 4 stamens; stigma simple. POTERIUM OFFICINALE (586)

514. Heads green; flowers monœcious or polygamous; stamens many; stigma feathery. 515

515. Fruiting calyx with narrow, entire wings and fine reticulations between, 2 mm. long. P. SANGUISORBA (587)

515. Fruiting calyx with broad, wavy wings, strongly toothed ridges and denticulate pits on the face, 8 mm. long. P. POLYGAMUM (588)

[502] 516. Small, usually weak, spreading shrubs with prickles on the stem; calyx tube becoming succulent, enclosing several hairy, seed-like carpels irregularly placed. *Roses* 517

516. Trees or large shrubs, sometimes with thorns but not stem prickles; calyx deciduous; ovary single, becoming succulent in fruit. 527

516. Trees or shrubs, sometimes with thorns but not stem prickles; calyx tube succulent, enclosing 1-5 cells with hard nuts arranged round a central axis. 532

517. Stems prickly and bristly; prickles straight; leaflets small, 3-5 pairs; flowers always solitary without bracts; fruit black. ROSA PIMPINELLIFOLIA (591)

517. Stems not bristly; prickles many, usually curved; leaflets rather large, 2-3 pairs; flowers 2 or more, subtended by bracts. 518

518. Styles united in a column, protruding from the calyx; stem very trailing. R. ARVENSIS (590)

518. Styles united in a column at flowering but free in fruit; stem arching; flowers tinged with pink; disc of fruit obvious. R. STYLOSA (592)

518. Styles always free; stem upright or arching, not very trailing; flowers rarely pure white; disc flat. 519

+519. Leaves without scented glands. 520

+519. Leaves covered below with resinous or sweetly scented glands. 523

+520. Sepals reflexed or spreading after flower, falling before the fruit turns colour; upper stipules not much larger than lower; stigmas in a convex head. 521

+520. Sepals spreading or erect after flower; persistent till fruit ripens; upper stipules much enlarged; stigmas in a flat head. 522

+521 Sepals short, often with pinnate pinnæ; leaves pubescent on veins below. R. OBTUSIFOLIA (597)

+521. Sepals medium to long, usually almost entire; leaves pubescent. R. DUMETORUM (594)

+521. Sepals medium to long, usually almost entire; leaves glabrous. R. CANINA (593)

+522. Leaves glaucous or green, glabrous. R. GLAUCA (595)

+522. Leaves usually green, hairy beneath. R. CORIIFOLIA (596)

+523. Glands usually resinous and confined to the nerves; prickles straight; leaves rarely without hairs. 524

+523. Glands usually sweet-scented, covering all the under surface of the leaf; prickles curved. 525

+524. Sepals persistent, erect; fruit aciculate; styles woolly; sepals slightly pinnate. R. TOMENTOSA (598)

+524. Sepals usually spreading, falling after fruit ripens; styles hispid; sepals markedly pinnate. R. VILLOSA (599)

+525. Leaves rounded at base; pedicels glandular, hispid. 526

+525. Leaves cuneate at base; pedicels glabrous. R. AGRESTIS (600)

+526. Stem erect; prickles usually unequal; sepals persistent till the fruit ripens, erect or spreading. R. RUBIGINOSA (601)

+526. Stem arching; prickles usually equal; sepals falling early, usually reflexed. R. MICRANTHA (602)

Prunus

[516] 527. Flowers in a raceme. PRUNUS PADUS (609)

527. Flowers solitary or in clusters or umbels. 528

528. Flowers 1-3, growing from axillary buds; bracts none or very few. 529

528. Flowers in few-flowered umbels with bud scales at the base. 531

529. Young twigs green, glabrous, glossy; fruit large, on a long pedicel, yellow or red. P. CERASIFERA (606)

529. Young twigs dark in colour, glabrous or pubescent, dull; fruit on a short pedicel, black or greenish. 530

+530. Flowers 10-15 mm., usually appearing before the leaves; branches very spiny; leaves glabrous; fruit round; stone smooth. P. SPINOSA (603)

+530. Flowers 15-25 mm., usually appearing with the leaves; branches moderately spiny; leaves pubescent underneath; pedicels pubescent; fruit round; stone rugose. P. INSITITIA (605)

+530. Flowers 15-25 mm., appearing with the leaves; branches not spiny; leaves with few scattered hairs; fruit oval; stone rough. P. DOMESTICA (604)

531. Calyx tube constricted at top; sepals soon reflexed; petals fragile; usually tall trees. P. AVIUM (607)

531. Calyx tube not constricted at top; sepals only ultimately reflexed; petals rather thick; usually a small bush. P. CERASUS (608)

[516] 532. Flowers in dense corymbs. 533

532. Flowers solitary, in umbels or lax corymbs. 542

533. Thorny; carpel wall woody in fruit; leaves with few, large lobes. 534

533. Unarmed; carpel wall cartilaginous in fruit; leaves pinnate or toothed. 535

534. Styles mostly 2; leaves broadly and not deeply lobed. CRATÆGUS OXYACANTHOIDES (613)

534. Style 1; leaves deeply and acutely lobed. C. MONOGYNA (614)

535. Leaves pinnate, all pinnæ about equal. SORBUS AUCUPARIA (615)

535. Leaves with up to three pairs of free leaflets at base; upper part only lobed. S. PSEUDOFENNICA (616)

535. Leaves simple, ovate, more or less toothed or lobed. 536

536. Leaves green on both sides, deeply lobed, with squarish lobes to half-way or more. S. TORMINALIS (625)

536. Leaves white on underside; lobes, if present, short. 537

+537. Leaves grey-tomentose beneath, with triangular lobes, doubly serrate; teeth acuminate; fruit brown. S. DEVONIENSIS (624)

+537. Leaves grey-tomentose beneath, with rounded lobes, simply or irregularly serrate; teeth acute. 538

+537. Leaves white beneath, toothed and scarcely lobed. 540

+538. Lobes of the leaves extending nearly half-way to the midrib. S. ARRANENSIS (618)

+538. Lobes of the leaves extending less than half-way to the midrib. 539

+539. Fruit under 8 mm.; flowers 6-8 mm., tomentum whitish. S. MINIMA (619)

+539. Fruit over 10 mm.; flowers 10-12 mm., tomentum white. S. ANGLICA (620)

+539. Fruit over 8-10 mm., ovoid; flowers 8-10 mm., tomentum yellowish. S. INTERMEDIA (617)

+540. Leaves ovate, with rounded base, symmetrical. S. ARIA (621)

+540. Leaves obovate, with little-toothed lower part not symmetrical. 541

+541 Leaves with a rather cuneate top; teeth straight. S. PORRIGENTIFORMIS (622)

+541. Leaves with a rather rounded top; teeth incurved. S. RUPICOLA (623)

542. Flower single, 40-50 mm. diam. PYRUS GERMANICA (629)

542. Flowers less than 30 mm. diam. 543

542. Flowers less than 10 mm. diam., almost solitary. 545

543. Styles united below; fruit round, with depressed base in the region of the pedicel; flowers suffused with pink. P. MALUS (628)

543. Styles free to base; fruit conical with tapering base; flowers usually pure white. 544

544. Flowers 20-25 mm. diam.; fruit 20-40 mm. long; inflorescence rachis short; leaves lanceolate. P. COMMUNIS (626)

544. Flowers 18-20 mm. diam.; fruit 12-18 mm. long; inflorescence rachis elongated; leaves ovate. P. CORDATA (627)

545. Leaves thin, broadly ovate, tomentose beneath; flowers 4 mm.; petals pink. COTONEASTER INTEGERRIMUS (610)

545. Leaves evergreen, thick, glabrous; flowers 10 mm.; petals white, spreading. C. MICROPHYLLUS (611)

545. Leaves ovate, thin, hairy, sub-deciduous; flowers 4 mm. diam.; petals pink, erect, often incurved. C. SIMONSII (612)

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[463] 546. Carpels 4-5, free. *Crassulaceæ* 547

546. Carpels united into a single ovary. 558

Crassulaceæ

547. Petals united. COTYLEDON UMBILICUS (642)
547. Petals free. 548

548. Stamens as many as petals (usually 4); dwarf plants with inconspicuous flowers. 549
548. Stamens twice as many as petals, usually 10; flowers conconspicuous. 550

549. Plant of dry places; leaves minute, crowded; petals usually 3. TILLÆA MUSCOSA (640)
549. Water plant; leaves subulate, distant; petals usually 4. T. AQUATICA (641)

550. Leaves broad, flat, usually toothed. 551
550. Leaves terete or, if flat, linear, entire. 552

551. Flowers yellow, dicœcious; growing from a thick stock. SEDUM ROSEA (630)
551. Flowers red, growing from a slender stock. S. TELEPHIUM (631)

552. Leaves opposite, glandular, pubescent; flowers white. S. DASYPHYLLUM (632)
552. Leaves alternate, glandular, pubescent; flowers pink. S. VILLOSUM (636)
552. Leaves alternate, glabrous; flowers white or yellow. 553

553. Petals white. 554
553. Petals yellow. 555

554. Leaves cylindrical, 8-15 mm. long; cyme many flowered. S. ALBUM (634)
554. Leaves ovoid or rounded, about 5 mm. long; cymes few flowered. S. ANGLICUM (633)

555. Leaves ovoid, imbricate. S. ACRE (635)
555. Leaves cylindrical, 8-20 mm. long. 556

556. Sterile shoots equally leafy to apex. S. REFLEXUM (639)
556. Sterile shoots with the leaves massed near the apex. 557

557. Barren shoots flat-topped; inflorescence roundish. S. FORSTERANUM (637)
557. Barren shoots conical; inflorescence flat-topped. S. RUPESTRE (638)

[546] 558. Leaves tubular; stigma large, peltate. SARRACENIA PURPUREA (669)

558. Leaves flat, with glandular hairs. *Droseraceæ* 559
558. Leaves flat, glabrous or hairy, but not glandular. 560

559. Leaves rounded, spreading over the ground; scape straight, arising from the centre of the rosette. DROSERA ROTUNDIFOLIA (670)
559. Leaves obovate to linear-lanceolate, erect; scape straight, arising from the centre of the rosette. D. ANGLICA (671)
559. Leaves obovate, usually erect; scape curved or decumbent at base, arising laterally below the rosette. D. INTERMEDIA (672)

560. Ovary superior. 561
560. Ovary inferior. 581

561. Herbs. 562
561. Shrubs or trees. 385

562. Style and stigma 1; stamens 4 or 8. *Lythraceæ* 579
562. Styles and stigmas 2; stamens 10. *Saxifragaceæ* 563
562. Stigmas 4, sessile; stamens 5, alternating with fan-like staminodes. PARNASSIA PALUSTRIS (663)

Saxifragaceæ

563. Petals present, usually conspicuous. 564
563. Petals absent. 578

564. Leaves opposite; flowers purple. SAXIFRAGA OPPOSITIFOLIA (660)
564. Leaves alternate; flowers yellow. 565
564. Leaves alternate or radical; flowers white or pink. 566

565. Calyx spreading; stem with several flowers. S. AIZOIDES (654)
565. Calyx reflexed; flowers solitary, large. S. HIRCULUS (645)

566. Calyx free from the ovary, reflexed after flowering. 567
566. Calyx adherent to the ovary for some distance, erect or spreading. 571

567. Leaves subsessile with few teeth; peduncles few-flowered. S. STELLARIS (644)
567. Leaves stalked with many shallow teeth; peduncles many-flowered. 568

568. Leaves cordate at base ± hairy. 569
568. Leaves cuneate at base, glabrous. 570

+569. Leaves with irregular pointed teeth, 40-50 mm. wide; petioles rounded. S. HIRSUTA (648)

+569. Leaves with regular blunt teeth, 30-40 mm. wide; petioles flattened. S. GEUM (649)

570. Teeth of leaves obtuse; petioles densely ciliate. S. UMBROSA (646)

570. Teeth of leaves acute; petioles hairy only at base. S. SPATHULARIS (647)

571. Stem simple or branched, without barren shoots at the base; leaves simple or with wide lobes and broad segments. 572

571. Stem much branched at base with numerous barren shoots forming tufts; leaves linear or divided, with linear segments. 575

572. Flowering stem naked; flower in a terminal head. S. NIVALIS (643)

572. Flowering stem more or less leafy; flowers not crowded. 573

573. Plant robust; 6-18 in. high, leaves reniform, crenately lobed; flowers 8-10 mm. S. GRANULATA (650)

573. Plants small; 1-6 in. high, leaves with 3 cuneate lobes, trifid; flowers 3-4 mm. S. TRIDACTYLITES (651)

573. Plants slender, perennial; leaves palmately lobed; high alpines; flowers 5-10 mm. 574

574. Plants decumbent, not producing bulbils; petals 5 mm. or less, not much longer than calyx. S. RIVULARIS (652)

574. Plants erect with red bulbils in the bracts; petals 8 mm. or more, twice as long as calyx. S. CERNUA (653)

575. Sterile shoots erect, without axillary buds; leaf lobes oblong, subobtuse to shortly mucronate. 575

575. Sterile shoots trailing, with or without axillary buds; leaf lobes ± linear, acute or aristate. 577

576. Densely tufted almost glabrous plants with no far-creeping, barren shoots; horns of capsule descending; leaf lobes very blunt, petals dirty white. S. CÆSPITOSA (656)

576. Loosely tufted densely glandular plants with a few shortly-creeping, barren shoots; horns of capsule ascending; leaf lobes subacute; petals pure white. S. HARTII (657)

576 Loosely tufted glabrous or hairy plants with short, barren shoots ending in definite rosettes, but without axillary buds; horns of capsule ascending; leaf lobes obtuse; petals white. S. ROSACEA (655)

577. Leaves on the long, barren shoots almost all simple; petals rather narrow, very little contiguous, usually suffused with green or pink. S. HYPNOIDES (659)

+577. All except the uppermost leaves of the long barren shoots trifid; petals pure white, broad, flat. S. PLATYPETALA (658)

[563] 578. Leaves opposite, root leaves cuneate.
CHRYSOSPLENIUM OPPOSITIFOLIUM (661)

578. Upper leaves alternate, root leaves cordate.
C. ALTERNIFOLIUM (662)

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[562] 579. Ovary at the base of the tubular calyx; petals conspicuous. 580

579. Ovary half exserted in a campanulate calyx; petals minute or absent. PEPLIS PORTULA (673)

580. Leaves opposite or whorled; flowers large, in showy racemes. LYTHRUM SALICARIA (674)

580. Leaves alternate, narrow; flowers small, ± solitary in the axils of the leaves. L. HYSSOPIFOLIA (675)

[560] 581. Shrubs or trees. 582

581. Herbaceous plants. 588

582. Petals 4, white; stamens 4. CORNUS SANGUINEA (785)

582. Petals 5, greenish; stamens 5 or absent. 583

583. Evergreen climber; berry with 2-5 seeds; flowers in umbels.
HEDERA HELIX (706)

583. Deciduous, erect shrubs; berries with many seeds; flowers in racemes or almost solitary and axillary. *Ribes* 584

584. Thorny shrub with 1-3 flowers in the axils of a leaf.
RIBES UVA-CRISPA (668)

584. Unarmed shrub with flowers in racemes. 585

585. Flowers diœcious; bracts exceeding the pedicels.
R. ALPINUM (667)

585. Flowers hermaphrodite; bracts less than half as long as pedicels. 586

586. Leaves and ovary with sessile glands, strongly scented; fruit black. R. NIGRUM (666)

586. Leaves without glands, scentless; fruit red or rarely white. 587

587. Mature leaves almost glabrous with a narrow, basal sinus; flowering racemes pendulous; stamens with a broad connective. R. SYLVESTRE (664)

587. Leaves hairy on both sides and with a wide, basal sinus; flowering racemes spreading; stamens with a narrow connective.
R. SPICATUM (665)

[581] 588. Climbing terrestrial plants with palmate leaves. BRYONIA DIOICA (776)

588. Aquatic plants with much-divided leaves. 589

588. Terrestrial plants or water plants with entire leaves. 592

589. Ovary two-celled; flowers white; petals 5, obvious, bifid. *Umbelliferæ* 610

589. Ovary four-celled; flowers reddish; petals inconspicuous. 590

590. Leaves usually 5 in a whorl; turions present; flowers whorled in the axils of pectinate bracts. MYRIOPHYLLUM VERTICILLATUM (700)

590. Leaves usually 4 in a whorl; turions absent; flowers spicate, the bracts shorter than the flowers and inconspicuous. 591

591. Inflorescence in opposite or whorled clusters of 3-4 flowers; buds erect. M. SPICATUM (701)

591. Inflorescence in alternate clusters of about 3 flowers, nodding when young; buds nodding. M. ALTERNIFLORUM (702)

[588] 592. Petals absent; sepals 4; style single. LUDWIGIA PALUSTRIS (679)

592. Petals 4 or 2; style single. 593

592. Petals 5; styles 2. 609

593. Flowers in a head surrounded by 4 large bracts; fruit a berry. CORNUS SUECICA (786)

593. Flowers in racemes; fruit dry, not bristly, opening by 4 valves. 594

593. Flowers in racemes; fruit dry, with hooked bristles, shed with its peduncle. 608

594. Petals pink, in the form of a cross; seeds with hairs. 595

594. Petals yellow, overlapping; stamens 8, seeds without hairs. 607

595. Flowers somewhat irregular, in long, terminal, leafless racemes. EPILOBIUM ANGUSTIFOLIUM (680)

595. Flowers regular, axillary, or in short racemes that are leafy at the base. 596

596. Stem prostrate, creeping peduncles, single-flowered; capsules on erect stalks. E. NERTERIOIDES (693)

596. Stem erect or decumbent, many-flowered; capsules on spreading stalks. 597

597. Stigma 4-lobed. 598

597. Stigma undivided, club-like. 601

598. Stem over 2 ft. (60 cm.); flowers 15-25 mm.; leaves clasping the hairy stem. E. HIRSUTUM (681)

598. Stem under a foot (30 cm.) high; flowers under 10 mm.; leaves, at least the lower ones, shortly stalked. 599

599. Stem softly hairy; leaves often alternate, lanceolate, the middle ones sessile. E. PARVIFLORUM (682)

599. Stem almost glabrous; leaves mostly opposite. 600

600. Leaves all opposite, toothed to base; flowers 9-10 mm. diam., suberect. E. MONTANUM (683)

600. Uppermost leaves alternate, remainder opposite, toothed except at the base, flowers 6-8 mm. diam., recurved in bud. E. LANCEOLATUM (684)

601. Stout plants over 9 in. (20 cm.) high. 602

601. Alpine plants under 6 in. (15 cm.) high. 606

602. Stems with two or four raised lines. 603

602. Stem without any ridges or lines. E. PALUSTRE (690)

603. Leaves stalked. 604

603. Almost all leaves sessile. 609

604. Plant eglandular; leaves broadly lanceolate, gradually narrowed into a rather long stalk; seeds with a truncate apex; flowers 6-5-8 mm. E. ROSEUM (685)

604. Plant glandular; leaves lanceolate, suddenly narrowed into a short stalk; seeds with a beaked apex; flowers 5-6 mm. E. ADENOCAULON (686)

605. Stolons autumnal, producing dense, sessile rosettes; flowers 10-12 mm. diam.; leaves ovate. E. LAMYI (688)

605. Stolons autumnal, producing dense, subsessile rosettes; leaves strap-shaped, acutely toothed. E. ADNATUM (687)

605. Stolons æstival, long, without rosette; flowers 7-9 mm. diam.; leaves ovate. E. OBSCURUM (689)

606. Leaves about 10-15 mm. long, elliptical; flowers 4-5 mm. diam. E. ANAGALLIDIFOLIUM (691)

606. Leaves about 15-40 mm. long, ovate; flowers 8-10 mm. diam. E. ALSINEFOLIUM (692)

607. Flowers 25-40 mm. diam.; stem pubescent but without red, bulbous hairs; capsule tapering upwards or cylindrical; leaves ovate. ŒNOTHERA BIENNIS (694)

607. Flowers 40-60 mm. diam.; stem with hairs with red, bulbous bases; capsule tapering upwards; leaves ovate. Œ. ERYTHROSEPALA (695)

607. Flowers 35-40 mm. diam.; stem thinly pubescent and glandular but without red, bulbous hairs; capsule clavate, enlarged upwards; leaves linear-lanceolate. Œ. STRICTA (696)

[593] 608. Plant 12-24 in. (20-60 cm.), branched; flower stalks glandular, pubescent; ovary 1-celled; stigma bifid. CIRCÆA LUTETIANA (697)

608. Plant 9-22 in. (25-40 cm.), usually branched; flower stalks and sepals somewhat glandular, hairy; ovary unequally 2-celled; stigma somewhat lobed. C. INTERMEDIA (698)

608. Plant 1-6 in. (8-15 cm.), little-branched; flower stalks and sepals glabrous; ovary 2-celled; stigma entire. C. ALPINA (699)

[592] 609. Sepals rather large; stamens 10; fruit a many-seeded capsule. *Saxifragaceæ* 563

609. Sepals small or absent; stamens 5; fruit of two one-seeded carpels separating whole when ripe. *Umbelliferæ* 610

Umbelliferæ

[387] 610. Leaves spiny; flowers in a close, ovate head. 611

610. Leaves not spiny. 612

611. Radical leaves rounded, the lobes toothed; receptacle scales three-lobed. ERYNGIUM MARITIMUM (716)

611. Radical leaves pinnately divided, the lobes pinnatifid and toothed; receptacle scales entire. E. CAMPESTRE (717)

612. Leaves rounded, peltate and crenate; inflorescence a simple, interrupted head. HYDROCOTYLE VULGARIS (713)

612. Leaves simple, palmately divided. 613

612. Leaves quite entire, grass-like or ovate. 614

612. Leaves compound, variously divided. 617

613. Flowers in simple, rounded heads without bracts; fruit with hooked bristles. SANICULA EUROPÆA (714)

613. Flowers in convex heads surrounded by wide bracts; fruit ribbed and smooth. ASTRANTIA MAJOR (715)

614. Leaves broad and perfoliate; bracts of inflorescence ovate. BUPLEURUM ROTUNDIFOLIUM (733)

614. Leaves narrow and grass-like. 615

615. Rays of umbel long, conspicuous. B. FALCATUM (735)

615. Rays of umbel very short or inconspicuous. 616

616. Bracts lanceolate, longer than flowers; heads terminal. B. BALDENSE (736)

616. Bracts very small; heads lateral as well as terminal. B. TENUISSIMUM (734)

617. Leaves and stem thick and succulent; lobes cylindrical; flowers green. CRITHMUM MARITIMUM (756)

617. Leaves thin, green, never fleshy. 618

618. Fruits without bristles, though occasionally hairy or not developed. 619

618. Fruits with hooked bristles. 666

619. Leaves with whorls of capillate segments. CARUM VERTICILLATUM (742)

619. Leaves simply pinnate. 620

619. Leaves bi- or tri-pinnate or bi- or tri-ternate, or, if capillate, not with segments in whorls. 635

620. Umbels mostly lateral and sessile. 621

620. Umbels mostly terminal, on long stalks. 625

621. Submerged water plant with lower leaves capillate and umbels 1-3 rayed. APIUM INUNDATUM (737)

621. Usually emergent aquatic or terrestrial plants without capillate leaves. 622

622. General involucre of several bracts. SIUM ERECTUM (755)

622. General involucre of 0-2 bracts. 623

623. Lower leaves with stalked segments; bracteoles none. A. GRAVEOLENS (738)

623. Lower leaves with sessile segments; bracteoles several. 624

624. Flowering stems rooting only at base; bracts usually none; fruit longer than broad. A. NODIFLORUM (739)

624. Flowering stems rooting at most nodes; bracts usually present; fruit broader than long. A. REPENS (740)

625. Fruit, not or somewhat, compressed. 626

625. Fruit flattened. 632

626. Bracteoles present. 627

626. Bracteoles absent. 629

627. Segments of lower leaves linear; petioles hollow. ŒNANTHE FISTULOSA (758)

627. Segments of at least the lower leaves lanceolate to ovate. 628

628. Bracts subulate; stem solid. CARUM SEGETUM (745)
628. Bracts lanceolate; stem hollow. SIUM LATIFOLIUM (754)

629. Rays of umbels less than 3; fruit small. SISON AMOMUM (747)
629. Rays of umbels 5 or more; fruit medium. 630

630. Bracteoles present; fruit globular. CORIANDRUM SATIVUM (729)
630. Bracteoles absent; fruit ovoid. 631

631. Segments of lower leaves nearly orbicular or much divided. PIMPINELLA SAXIFRAGA (751)
631. Segments of lower leaves ovate or lanceolate. P. MAJOR (752)

632. Flowers yellow. PASTINACA SATIVA (776)
632. Flowers white or pink. 633

633. Fruit with a thick border; leaf lobes narrow, hispid; calyx teeth conspicuous. TORDYLIUM MAXIMUM (779)
633. Fruit within a thin border; leaf lobes ovate to lanceolate; softly hairy; calyx teeth very small. 634

634. Plant about a foot high; umbels about 5-15 mm. diam. HERACLEUM SPHONDYLIUM (777)
634. Plant very large, often over 4 ft. high at flowering time. H. MANTEGAZZIANUM (778)

[619] 635. Leaves with capillate segments. 636
635. Leaves with linear to ovate segments. 637

636. Flowers yellow; plants quite glabrous. FŒNICULUM VULGARE (766)
636. Flowers white or greenish. MEUM ATHAMANTICUM (768)

637. Stem smooth and spotted; fruit rounded with wavy, vertical ribs. CONIUM MACULATUM (732)
637. Stem, if spotted, also hairy; otherwise ribbed or hairy or both. 638

638. Fruit narrow, almost linear. 639
638. Fruit ovoid, rounded or compressed, but not linear; or not developed. 643

639. Fruit more than 15 mm. long. 640
639. Fruit less than 10 mm. long. 641

640. Fruit slightly ribbed at base with a long, smooth beak; plant almost scentless; leaflets cuneate. SCANDIX PECTEN-VENERIS (723)

640. Fruit thick with prominent angles or ribs; plant aromatic; leaflets cuneate. MYRRHIS ODORATA (724)

641. Umbels on long lateral peduncles; leaflets cuneate; fruit glabrous with long beak. ANTHRISCUS CEREFOLIUM (722)

641. Umbels on short lateral peduncles; leaflets almost linear; fruit hispid. A. CAUCALIS (720)

641. Umbels on long peduncles, mostly terminal; leaflets cuneate; fruits long, glabrous. 642

642. Stem hairy and usually spotted; fruit without a beak, 4-6 mm. long. CHÆROPHYLLUM TEMULENTUM (718)

642. Stems glabrous; leaf segments broadly triangular; fruit without beak, ± truncate, yellow-brown, about 12 mm. long. C. AUREUM (719)

642. Stem downy below, becoming subglabrous above; fruit tapering to an acute apex, glabrous, about 5 mm. long; leaf segments broadly cuneate. ANTHRISCUS SYLVESTRIS (721)

643. Fruit compressed; each carpel lenticular and usually winged. 644

643. Fruit, not or little compressed, or not developed. 648

644. Leaflets narrow, cuneate or linear. 645

644. Leaflets broad, ovate. 646

645. Leaves several times ternate; flowers yellow. PEUCEDANUM OFFICINALE (773)

645. Leaves bi- or tri-pinnate; flowers white. P. PALUSTRE (774)

646. Carpels each with an independent separate wing. P. OSTRUTHIUM (775)

646. Carpels with a common wing to both that does not separate till the fruit ripens. 647

647. Stems usually purple; flowers white or suffused with pink; odour not marked. ANGELICA SYLVESTRIS (771)

647. Stems usually green; flowers greenish; odour strong. A. ARCHANGELICA (772)

648. Fruit ovoid, much longer than broad, or not developed. 649

648. Plant hermaphrodite; fruit rounded, about as broad as long. 659

648. Plant diœcious; fruit rounded. 665

649. Radical leaves biternate; upper digitate; lobes long-lanceolate, finely serrate. FALCARIA VULGARIS (749)

649. Radical leaves bi- or tri-pinnate or ternate; segments ovoid or cuneate, stalked. 650

650. Carpels with prominent calyx teeth. 651
650. Carpels with the calyx teeth small, or none. 656

651. Segments of upper leaves few, cuneate or linear. 652
651. Segments of upper leaves many, broadly cuneate or oblong. 654

652. Divisions of stem leaves shorter than the hollow petioles; rays of umbels very few. ŒNANTHE FISTULOSA (758)

652. Divisions of stem leaves longer than linear petiole; rays of umbels several. 653

653. Lowest leaves bi-pinnate with ovate, deeply dentate segments; fruit with an enlarged, corky base, cylindrical and not narrowed at top; bracteoles subulate. Œ. PIMPINELLOIDES (759)
653. Lowest leaves bi-pinnate with linear segments; fruit with a corky base, almost cylindrical but rounded at top; bracteoles ovate, acuminate. Œ. SILAIFOLIA (760)
653. Lowest leaves bi-pinnate with oblanceolate segments; fruit not corky below, rounded and contracted above; bracteoles lanceolate. Œ. LACHENALI (761)

654. Umbels terminal and large; leaflets long, ovate. Œ. CROCATA (762)
654. Umbels lateral and opposite the leaflets; leaflets rather short, narrow, lanceolate (water plants). 655

655. Segments of submerged leaves if present, capillary; fruit twice as long as style; a plant in still water. Œ. AQUATICA (763)
655. Segments of submerged leaves cuneate; fruit more than three times as long as style; a plant in running water. Œ. FLUVIATILIS (764)

656. Leaflets cuneate or lanceolate; root not tuberous. 657
656. Leaflets linear; root a single tuber. 658

657. Flowers yellowish-green; leaves tri-pinnate with ovoid, lobed segments. CARUM PETROSELINUM (744)
657. Flowers white; leaves bi-pinnate with many distinct cuneate, segments. C. CARVI (743)

658. Styles closely reflexed in fruit; ribs of fruit prominent. C. BULBOCASTANUM (746)
658. Styles erect; ribs of fruit scarcely visible. CONOPODIUM MAJUS (750)

[648] 659. Teeth of calyx very prominent. CICUTA VIROSA (748)
659. Teeth of calyx minute or absent. 660

660. Leaves broadly orbicular or ovate. 661
660. Leaves much divided; ultimate segments narrow. 663

661. Flowers yellow. SMYRNIUM OLUSATRUM (730)
661. Flowers white. 662

662. Involucre absent; ribs of fruit not prominent. ÆGOPODIUM PODAGRARIA (753)
662. Involucre present; fruit with prominent ribs. LIGUSTICUM SCOTICUM (770)
662. Involucre present; fruit of two, smooth, rounded carpels. PHYSOSPERMUM CORNUBIENSE (731)

663. Bracteoles very long, pendulous. ÆTHUSA CYNAPIUM (765)
663. Bracteoles short or none. 664

664. Flowers white; ribs of fruit very prominent. SELINUM CARVIFOLIA (769)
664. Flowers yellowish-green; ribs of fruit prominent. SILAUM SILAUS (767)
664. Flowers white; ribs of fruit not prominent. 665

665. Stem short with stiff, spreading branches and with remains of old leaves at base; leaflets linear, subulate; plant dioecious. TRINIA GLAUCA (741)
665. Stem tall with many erect branches; fruits downy. SESELI LIBANOTIS (757)

[618] 666. Involucre absent or bracts small, simple. 667
666. Involucre consisting of pinnate bracts. 670

667. Umbels opposite the leaves and sessile; or peduncles shorter than rays. CAUCALIS NODOSA (728)
667. Umbels terminal on long peduncles. 668

668. Calyx teeth prominent. C. PLATYCARPOS (725)
668. Calyx teeth minute. 669

669. Stem branched from base; general involucre of a single bract or wanting. C. ARVENSIS (727)
669. Stem almost simple at base, branched above; general involucre of several bracts. C. ANTHRISCUS (726)

670. Fruiting umbel concave; bracts linear; spines of fruit hooked. DAUCUS CAROTA (780)
670. Fruiting umbel flat; bracts with narrowly lanceolate lobes; spines of fruit mostly straight. D. GUMMIFER (781)

GROUP D. MONOCHLAMYDEÆ

671. Calyx or perianth conspicuous and coloured, though sometimes green, i.e. petaloid. 672
671. Calyx or perianth sepaloid and small. 720

672. Stamens indefinite, usually numerous. 673
672. Stamens 10 or less. 674

673. Stamens inserted on the receptacle; ovaries numerous. *Ranunculaceæ* 65
673. Stamens inserted on the calyx; ovaries few or single. *Rosaceæ* 464

674. Shrubs, small woody plants or trees. 675
674. Herbaceous plants. 677

675. Petals 3; stamens 3; low, heath-like plants with small leaves. *Empetraceæ* (Vol. II) 842
675. Petals 4; stamens 4; small bushes with flat leaves. *Thymelaceæ* 676

676. Perianth pink; shrub deciduous. DAPHNE MEZEREUM (676)
676. Perianth green; shrub evergreen. D. LAUREOLA (677)

677. Perianth campanulate or tubular with a swollen base; leaves ± orbicular and cordate. *Aristolochiaceæ* 678
677. Perianth rotate, stellate, or tubular. 679

678. Corolla purple campanulate with 3 lobes. ASARUM EUROPÆUM (783)
678. Corolla yellow tubular with a unilateral, entire lobe. ARISTOLOCHIA CLEMATITIS (784)

679. Ovary inferior. 680
679. Ovary superior. 686

680. Perianth lobes or petals 4; leaves in whorls. *Rubiaceæ* (Vol. II) 1116
680. Perianth lobes or petals 5; leaves not in whorls. 681

681. Flowers in umbels, usually compound. *Umbelliferæ* 610
681. Flowers in dense heads, surrounded by a common involucre of bracts. 682
681. Flowers in loose to rather dense cymes, without a true involucre. 684

682. Stamens united by the anthers; fruit indehiscent, 1-seeded. *Compositæ* (Vol. II) 1169

682. Stamens united by the anthers; fruit dehiscent, many-seeded. JASIONE MONTANA (Vol. II) (1185)

682. Stamens free. 683

683. Fruit one-seeded; leaves opposite. *Dipsacaceæ* (Vol. II) 1161

683. Fruit many-seeded; leaves alternate. *Campanulaceæ* (Vol. II) 1134

684. Flowers few, in loose cymes; leaves linear, alternate. THESIUM HUMIFUSUM (711)

684. Flowers many, in a rather dense cyme or umbel or loose head. 685

685. Stamens 5; perianth segments free. *Umbelliferæ* 610

685. Stamens 1-3; perianth segments united. *Valerianaceæ* (Vol. II) 1155

686. Perianth segments 5; stigma capitate; stipules absent. GLAUX MARITIMA (Vol. II) (941)

686. Perianth segments 5; stigma 2-3; stipules sheathing. *Polygonaceæ* 687

Polygonaceæ

687. Minute alpine annual under 3 in. with 3-lobed perianth. KŒNIGIA ISLANDICA (787)

687. Medium to large plants with a coloured petaloid perianth of equal lobes, not greatly enlarged in fruit. 688

687. Medium to large plants with a greenish or reddish sepaloid perianth of 4 or 6 unequal lobes, the inner usually enlarging in fruit. 703

688. Flowers in short, branched, cymose panicles; leaves cordate, sagittate. FAGOPYRUM ESCULENTUM (805)

688. Flowers in spicate inflorescence or in axillary clusters. 689

689. Weak, decumbent or prostrate plants; flowers in axillary clusters, rarely forming a continuous spike. 690

689. Small, erect or decumbent plants with flowers in dense or lax spikes. 693

689. Climbing plants with flowers in loose cymes. 701

689. Very large branched plants with flowers in loose cymes. 702

690. Nutlet entirely enclosed or slightly longer than persistent perianth. 691

690. Nutlet distinctly longer than the persistent perianth. 692

691. Nut smooth or punctate; stamens usually 8; lower leaves double the size of the upper ones. POLYGONUM AVICULARE (789)

691. Nut punctate or striate; stamens usually 5; leaves all about the same size. P. ÆQUALE (788)

692. Plant greenish, leaf margins almost flat; stipules with a few simple veins. P. RAII (790)

692. Plant very glaucous, leaf margins revolute; stipules with numerous branched veins. P. MARITIMUM (791)

693. Inflorescence single on a usually unbranched stem. 694

693. Inflorescence several, borne on a branched stem. 696

694. Leaves oblong, linear; spike slender with bulbils at base. P. VIVIPARUM (792)

694. Leaves ovate to lanceolate; spike dense, without bulbils. 695

695. Meadow plant; leaves broadly ovate with winged petiole; styles 3. P. BISTORTA (793)

695. Water or marsh plants; leaves narrowly ovate; petiole not winged; styles 2. P. AMPHIBIUM (794)

696. Inflorescence stout, ± erect. 697

696. Inflorescence slender, sometimes interrupted. 699

697. Pedicels and sepals glandular. 698

697. Pedicels and sepals without glands. P. PERSICARIA (795)

698. Fruit 2-3 mm. long; upper stipules only shortly fringed; flowers greenish-white; spike 12 mm. wide. P. LAPATHIFOLIUM (796)

698. Fruit 2 mm. or less; all stipules fringed; flowers pink; spike 6 mm. wide. P. NODOSUM (797)

699. Spikes drooping or nodding; perianth glandular. P. HYDROPIPER (798)

699. Spikes erect or somewhat nodding; perianth without glands. 700

700. Spikes somewhat nodding; leaves broadly lanceolate, 25 mm. wide; fruit 3-4 mm. P. MITE (799)

700. Spikes erect; small; leaves narrowly lanceolate, 5-8 mm. wide, fruit 2·0-2·5 mm. P. MINUS (800)

701. Pedicels in fruit 1-2 mm.; nut dull. P. CONVOLVULUS (801)

701. Pedicels in fruit up to 8 mm.; nut shining. P. DUMETORUM (802)

702. Leaves ovate truncate at base. P. CUSPIDATUM (803)

702. Leaves lanceolate cuneate at base. P. POLYSTACHYUM (804)

[687] 703. Leaves reniform; fruiting perianth of 4 segments, the 2 inner enlarged. OXYRIA DIGYNA (806)

703. Leaves not reniform; fruiting perianth of 6 segments, the 3 inner greatly enlarged. 704

703. Leaves not reniform; fruiting perianth of 6 segments, the inner only a little enlarged. 707

704. Leaves, at least some, hastate; flowers diœcious. 705

704. Leaves never hastate; flowers hermaphrodite. 708

705. Leaves about as long as broad, glaucous; upper petioled. RUMEX SCUTATUS (810)

705. Leaves longer than broad, green; upper sessile, clasping. 706

706. Inner segments of fruit enlarged and orbicular. R. ACETOSA (809)

706. Inner segments of fruit not enlarged. 707

707. Stem decumbent at base; leaves linear, a few with narrow basal lobes; margins inrolled; fruiting perianth 2 mm.; fruit 1·0 × 0·7 mm. R. TENUIFOLIUS (808)

707. Stem erect, leaves broadly linear to lanceolate, mostly with basal lobes; fruiting perianth 2·5 mm.; fruit 1·5 × 0·8 mm. R. ACETOSELLA (807)

708. Inner perianth segments entire except for a few teeth. 709

708. Inner perianth segments with distinct teeth. 717

709. Perianth segments without tubercles. 710

709. At least one segment tubercled. 712

710. Pedicels of fruit with an almost imperceptible joint, very slender; fruiting perianth segments ovate. R. AQUATICUS (813)

710. Pedicels with a distinct joint. 711

711. Leaves about as long as broad, ± cordate; fruiting perianth segments truncate. R. ALPINUS (812)

711. Leaves longer than broad, ovate; perianth segments reniform. R. LONGIFOLIUS (814)

712. Rhizome far-creeping; inflorescence little-branched. R. FRUTESCENS (824)

712. Plant without a far-creeping rhizome; inflorescence much-branched. 713

713. Perianth segments broadly ovate; panicle crowded and strict in fruit. 714

713. Perianth segments ovate, longer than broad. 715

714. Leaves broadly ovate, entire. R. ORIENTALIS (815)

714. Leaves narrowly lanceolate, undulate. R. CRISPUS (816)

715. Large marsh plant; perianth segments triangular, acute; leaves ovate, acute. R. HYDROLAPATHUM (811)

715. Small, slender plants; segments narrowly ovate, subobtuse. 716

716. Only one perianth lobe usually with a globular tubercle; panicle branches ascending; flower 2·5-3·0 mm. long. R. SANGUINEUS (819)

716. All three perianth lobes usually with ovoid tubercles; panicle branches horizontal to ascending; flower 2·0-2·5 mm. long. R. CONGLOMERATUS (820)

716. All three perianth lobes with prominent ovoid tubercles; panicle branches erect; flower 3-4 mm. long. R. RUPESTRIS (821)

717. Leaves broadly ovate with cordate base; panicle branches erect or ascending. R. OBTUSIFOLIUS (817)

717. Leaves narrowly lanceolate with cuneate base; panicle branches ± horizontal. 718

718. Lower leaves ± constricted in the middle; panicle leafless; flowers few in each whorl. R. PULCHER (818)

718. Leaves not constricted; panicle leafy; flowers many in each whorl. 719

719. Inner perianth segment lanceolate, with 2-3 teeth, shorter than length of the lobe. R. PALUSTRIS (822)

719. Inner perianth segment rhomboidal, with 2 teeth, longer than the length of the lobe. R. MARITIMUS (823)

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[671] 720. Herbaceous plants. 721

720. Shrubs or trees or woody plants. 793

721. Plants living submerged in water except for flowering stems. 722

721. Terrestrial or emergent marsh plants. 726

722. Leaves much divided. 723

722. Leaves simple, spathulate. 725

723. Leaves pinnately divided. *Myriophyllum* 590

723. Leaves dichotomously divided. *Ceratophyllaceæ* 724

724. Leaves twice forked; ripe fruit with two bristles at base. CERATOPHYLLUM SUBMERSUM (126)

724. Leaves thrice forked; ripe fruit without bristles at base. C. DEMERSUM (127)

725. Perianth segments 4; ovary inferior. LUDWIGIA PALUSTRIS (679)

725. Perianth segments 6; ovary superior. PEPLIS PORTULA (673)

726. Plants monœcious or diœcious. 727
726. Plants hermaphrodite. 736

727. Plants climbing by twisting stems. 728
727. Erect herbaceous plants. 729

728. Stem scabrid, male flowers in panicles; female in cymes with large bracts. HUMULUS LUPULUS (845)
728. Stem glabrous, male flowers in racemes; fruit a cluster of red berries. TAMUS COMMUNIS (Vol. II) (1508)

729. Perianth greatly enlarged in fruit. 730
729. Perianth not greatly changed in fruit. 731

730. Fruit with two enlarged bracteoles at base; leaves exstipulate. *Atriplex* 784
730. Fruit with two or three enlarged perianth lobes; stipules ochreate. *Polygonaceæ* 687

731. Leaves opposite. 732
731. Leaves alternate. *Polygonaceæ* 687

732. Fruit a one-seeded nut; stamens 4-5. *Urticaceæ* 733
732. Fruit with two one-seeded carpels; stamens 8-15. *Mercurialis* 735

Urticaceæ

733. Plants with stinging hairs; leaves dentate. *Urtica* 734
733. Plants without stinging hairs; leaves entire, alternate. PARIETARIA DIFFUSA (842)

734. Annual and light green; plant monœcious; lower leaves shorter than petiole; root fibrous. URTICA URENS (843)
734. Perennial and dark green; plant diœcious; lower leaves longer than petiole; rhizome stout. U. DIOICA (844)

735. Dark green, un-branched, perennial plant with creeping rhizome. MERCURIALIS PERENNIS (825)
735. Light green, branched annual with fibrous root. M. ANNUA (826)

[726] 736. Plant with a jointed, succulent stem and no normal leaves. *Salicornia* 787
736. Plant with flat or subulate leaves. 737

737. Stamens 12 or more; or an indefinite number. 738

737. Stamens 7-10. 754
737. Stamens 6 or less. 757

738. Capsule on a long pedicel; herbs with milky juice. *Euphorbia* 739
738. Ovaries sessile; milky sap absent. 752

739. Prostrate plant with opposite, stipulate leaves at time of flowering. EUPHORBIA PEPLIS (827)
739. Erect plants with exstipulate leaves opposite or in 4 series. E. LATHYRUS (828)
739. Erect, small or rather small plants, with alternate, exstipulate leaves. 740

740. Glands of the involucre rounded on the inner edges. 741
740. Glands of the involucre crescent-shaped with 2 points. 745

741. Perennial; leaves entire. 742
741. Annual; leaves serrate on edges. 743

742. Partial bracts yellowish with subcordate base; leaves pilose. E. HYBERNA (829)
742. Partial bracts greenish with truncate base; leaves subglabrous. E. DULCIS (830)

743. Leaves and bracts very obtuse; capsule smooth. E. HELIOSCOPIA (833)
743. Leaves and bracts acute; capsule warted. 744

744. Capsule almost globose; warts hemispherical; lower bracts similar to upper ones. E. PLATYPHYLLOS (831)
744. Capsule trigonous; warts cylindrical; lower bracts similar to upper leaves. E. STRICTA (832)

745. Glabrous plants; bracts free. 746
745. Hairy-stemmed plants; bracts mostly connate. E. AMYGDALOIDES (841)

746. Annuals with a single stem and few leaves. 747
746. Perennials with numerous stems from a tufted rootstock; leaves many. 748

747. Leaves obovate, stalked, green. E. PEPLUS (834)
747. Leaves linear, sessile, glaucous. E. EXIGUA (835)

748. Umbels of 5 or rarely 6 rays; plant without creeping rhizome; coastal plants. 749
748. Umbels of 8 or more rays; plants with creeping rhizome; inland plants. 750

749. Leaves rather thin, scattered; seeds pitted. E. PORTLANDICA (836)
749. Leaves crowded, thick and leathery; seeds smooth. E. PARALIAS (837)

750. Leaves narrow, less than 2 mm. wide. E. CYPARISSIAS (834)
750. Leaves broad, more than 4 mm. wide. 751

751. Horns of involucre longer than the breadth of the lobe, alternating with a long, bifid lobe; leaves strap-like. E. URALENSIS (838)
751. Horns of involucre short, alternating with a short, bifid lobe; leaves oblanceolate. E. ESULA (839)

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[738] 752. Leaves compound. 753
752. Leaves simple. 754

753. Flowers in loose panicles or racemes; stamens hypogynous; leaves biternate. *Ranunculaceæ* 65
753. Flowers in heads; stamens perigynous or epigynous; leaves pinnate. *Rosaceæ* 464
753. Flowers in heads; leaves biternate, one radical and another cauline. ADOXA MOSCHATELLINA (Vol. II) (1173)

754. Leaves orbicular, crenate; ovary many-seeded, inferior. *Chrysosplenium* 578
754. Leaves linear, lanceolate or ovate, entire. 755

755. Leaves large, alternate, with a tubular (ochreate) stipule; fruit a one-seeded nutlet. *Polygonaceæ* 687
755. Leaves small, opposite, with flat, scarious stipules; fruit one-seeded. *Illecebraceæ* 266
755. Leaves small to medium, opposite; fruit a many-seeded capsule. 756
755. Leaves small, entire, opposite, subulate, linear or ovate. 757

756. Styles 3-5. *Caryophyllaceæ* 276
756. Style single. PEPLIS PORTULA (673)

757. Ovary inferior. 758
757. Ovary superior or partly inferior. 761

758. Flowers with an outer epicalyx in addition to calyx. *Alchemilla* 505
758. Epicalyx absent. 759

759. Leaves opposite. 760
759. Leaves alternate. THESIUM HUMIFUSUM (711)

760. Fruit one-seeded, surrounded by a woody calyx. *Scleranthus* 267
760. Fruit several-seeded, soft. LUDWIGIA PALUSTRIS (679)

761. Capsule many-seeded. 754
761. Fruit one-seeded. 762
761. Fruit with two divisions, each with one or more seeds. *Cruciferæ* 168

762. Leaves opposite; plant with stinging hairs. *Urtica* 733
762. Leaves alternate; plant without stinging hairs. 763

763. Perianth with 2 or 3 outer lobes and the same number of inner which are often enlarged in fruit; stipules ochreate. *Polygonaceæ* 687
763. Perianth with 5 equal lobes. 764

764. Style 1; stigma feathery. PARIETARIA DIFFUSA (842)
764. Styles 3; stigmas simple. 765

765. Perianth lobes scarious; flowers surrounded by acuminate bracts. AMARANTHUS RETROFLEXUS (369)
765. Perianth lobes sepaloid; flowers without subulate bracts. *Chenopodiaceæ* 766

Chenopodiaceæ

766. Leaves narrow, subulate, semi-cylindrical. 767
766. Leaves lanceolate to ovate, broad, flat. 769

767. Tip of leaf with a prickle; fruiting perianth winged. SALSOLA KALI (385)
767. Leaf succulent, tip blunt; perianth not altered in fruit. 768

768. Low-branched annuals up to 12 in. high; styles 2. SUÆDA MARITIMA (383)
768. A small bush up to 36 in. high; styles 3. S. FRUTICOSA (384)

769. Hermaphrodite plants; perianth of all flowers five-cleft and regular in fruit. 770
769. Unisexual plants; perianth of male flowers five-cleft and regular; of female flowers flat with two enlarged segments. 784

770. Perianth enlarged and becoming woody in fruit. BETA MARITIMA (382)
770. Perianth scarcely enlarged in fruit and remaining herbaceous. 771

771. Perennial with a thick, fleshy root and broadly triangular, dark green leaves. CHENOPODIUM BONUS-HENRICUS (370)
771. Annuals with green or grey leaves, usually ovate or lanceolate. 772

772. Leaves all quite entire, except for an occasional basal tooth. 773
772. Leaves toothed or lobed. 774

773. Plant with a fishy odour; leaves mealy; stem green. C. VULVARIA (372)
773. Plant odourless; leaves green, glabrous, sometimes reddish. C. POLYSPERMUM (371)

774. Leaves obtusely toothed or sinuate; leaves mealy white. 775
774. Leaves broad, irregularly and coarsely toothed, usually green or reddish. 781

775. Lower leaves broadly cordate or truncate at base; inflorescence a loose, terminal panicle. C. HYBRIDUM (378)
775. Lower leaves narrowly ovate with a cuneate base; inflorescence little-branched. 776

776. Perianth not entirely covering the seed. C. URBICUM (377)
776. Perianth completely covering the seed. 777

777. Leaves toothed but not distinctly lobed. 778
777. Some of the lower leaves distinctly three-lobed; leaves with one principal lobe on each side. C. FICIFOLIUM (375)

778. Plant usually procumbent; leaves all sinuate, green above, white beneath. C. GLAUCUM (381)
778. Plant usually erect; leaves narrow and entire, whitish on both sides, sometimes only slightly so. 779

779. Axillary spikes forked into spreading cymes; leaves broadly ovate, deeply toothed. C. MURALE (376)
779. Axillary spikes erect, simple and little-branched. 780

780. Leaves longer than broad, with few teeth. C. ALBUM (373)
780. Leaves as broad as, or longer than, broad, with many teeth nearly as broad as long. C. OPULIFOLIUM (374)

781. All flowers with a five-lobed perianth; seeds black, horizontal; inflorescence usually strict. C. URBICUM (377)
781. Some flowers with a three- or four-lobed perianth, lower ones five-lobed; seeds brown, vertical; inflorescence usually spreading 782

782. Leaves hastate, triangular, with few teeth; side branches of inflorescence more than half as long as main axis. C. BOTRYODES (380)

782. Leaves ovate, much-toothed; side branches less than half as long as main axis. C. RUBRUM (379)

783. Segments of fruiting perianth separate almost to the base; leaves usually toothed. 784

783. Segments of fruiting perianth united more than half-way up; leaves mealy, almost entire. 786

784. All leaves linear-lanceolate, hardly mealy. ATRIPLEX LITTORALIS (386)

784. All leaves rhomboidal, coarsely toothed and very mealy; upper almost sessile. A. LACINIATA (390)

784. Leaves ovate or hastate and toothed, hardly mealy. 785

785. Lowest leaves with two lobes directed upwards; upper leaves ovate, acute; bracteoles in fruit cuneate at base; inflorescence branches long, leafless. A. PATULA (387)

785. Lowest leaves with two lobes directed outwards; upper leaves hastate, acute; bracteoles in fruit truncate at base; inflorescence branches long, leafless. A. HASTATA (388)

785. Lowest leaves ovate, triangular; upper triangular with a basal lobe directed outwards; bracteoles in fruit cuneate and strongly warted at base; inflorescence branches short, leafy. A. GLABRIUSCULA (389)

786. Perennial plant with shrubby base; fruiting perianth sessile. A. PORTULACOIDES (391)

786. Small annual plant; fruiting perianth distinctly stalked. A. PEDUNCULATA (392)

[736] 787. Plants perennial with long-creeping underground stems. SALICORNIA PERENNIS (399)

787. Plants annual with simple root. 788

+788. Plant normally erect. 789

+788. Plant prostrate or procumbent. S. PROSTRATA (398)

+789. Cymes one-flowered; plants disarticulating at maturity. S. DISARTICULATA (397)

+789. Cymes three-flowered; plants not disarticulating. 790

+790. Branches obtuse with more than 5 segments. 791

+790. Branches acute with 3-7 segments. 792

+791. Branches with 15-30 segments spreading; central flower just separating the outer ones. S. DOLICHOSTACHYA (394)

+791. Branches with 5-15 segments erect or ascending; central flower not separating the outer one. S. EUROPÆA (395)

+792. Much-branched plant with short, acute segments; stamens 2. S. RAMOSISSIMA (396)

+792. Simple or little-branched plants with blunt terminal segments; stamens 1. S. GRACILLIMA (393)

[720] 793. Leaves compound, pinnate. FRAXINUS EXCELSIOR (Vol. II) (942)

793. Leaves simple. 794

794. Plant with woody, dichotomous stems, parasitic on trees. VISCUM ALBUM (710)

794. Plant with branched stems climbing by adhesive rootlets. HEDERA HELIX (712)

794. Erect or spreading undershrubs, shrubs or trees. 795

795. Leaves linear or subulate, thick, evergreen. 796

795. Leaves ovate, thick, evergreen; stigmas 3. BUXUS SEMPERVIRENS (450)

795. Leaves ovate or lanceolate, thin, deciduous. 797

796. Maritime plant; leaves round, fleshy; flowers distant. SUÆDA FRUTICOSA (384)

796. Moorland plants; leaves channelled; flowers in a terminal cluster. *Empetrum* (Vol. II) 842

797. Leaves mostly alternate; perianth membranous, inconspicuous. *Ulmus* 798

797. Leaves mostly opposite; perianth yellow, obvious. *Rhamnus* 386

Ulmaceæ

798. Leaves large, ovate, scabrous and hairy underneath. ULMUS GLABRA (846)

798. Leaves medium, narrowly to broadly ovate, glabrous or hairy but not scabrous. 799

799. Leaves 50-100 mm. long; base very asymmetric, glabrous, acuminate. 800

799. Leaves suborbicular, ovate, with markedly asymmetric base. 801

800. Twigs glabrous above and a few tufts of hairs beneath. U. CORITANA (849)

800. Young twigs pubescent; leaves glabrescent above and pubescent beneath. U. PROCERA (847)

801. Leaves ovate-lanceolate; base only slightly asymmetric. 802
801. Leaves lanceolate, acuminate; base very asymmetric. U. CARPINIFOLIA (850)

802. Young shoots ± glabrous; leaves glabrescent above. U. PLOTII (851)
802. Young shoots pubescent. 803

803. Leaves glabrous except for axillary tufts beneath; base subequal; twigs glabrous, fine. U. ANGUSTIFOLIA (848)
803. Leaves glabrescent and scabrid above, glabrous below except for axillary tufts; base slightly asymmetric; twigs slender, long, pendulous, glabrous. U. PLOTII (851)

GROUP D. ACHLAMYDEÆ

804. Herbaceous plants. 805
804. Trees or shrubs. 812

805. Plants usually submerged in water. 806
805. Terrestrial plants. 811

806. Leaves linear, whorled. HIPPURIS VULGARIS (703)
806. Leaves spathulate or linear, opposite. 807

Callitriche

807. Leaves all linear, ligulate and ± translucent. 808
807. At least the upper leaves spathulate and not translucent. 809

808. Stem reddish-green; fruit 1 × 1 mm. with narrow keel. CALLITRICHE TRUNCATA (709)
808. Stem green; fruit 2 × 2 mm. with wide wing. C. HERMAPHRODITICA (708)

809. A few linear-lanceolate lower leaves present; remainder ovate, spathulate; upper forming a distinct rosette; styles very long. C. PLATYCARPA (705)
809. Numerous lower lingulate leaves present; only uppermost spathulate and not forming a rosette. C. INTERMEDIA (707)
809. No linear leaves present. 810

810. Fruit with blunt, rounded edges and persistent style; leaves ovate, spathulate, five-veined. C. OBTUSANGULA (706)
810. Fruit with a well-marked wing; styles persistent; leaves ovate, spathulate, three-veined. C. STAGNALIS (704)

811. Inflorescence of tightly packed, unisexual flowers covered by a leafy structure, the spathe. *Araceæ* (Vol. II) 1461

811. Inflorescence not in a spathe. 812

812. Plants monœcious; fruit dry, hard, without hairs. 813

812. Plants dicœcious; fruit dry, seed with soft hairs. 820

812. Plants dicœcious, unarmed; leaves green, strongly scented; fruit fleshy, green. MYRICA GALE (853)

812. Plants dicœcious, thorny; leaves grey; fruit a juicy berry, orange. HIPPOPHÆ RHAMNOIDES (678)

[804] 813. Nuts small, in compact catkins; male catkins cylindrical, pendulous. 814

813. Nut large, solitary, or in loose clusters, wholly or partly enclosed in an involucral bract; male catkins cylindrical, pendulous. 817

813. Nuts large, solitary or in loose clusters, wholly or partly enclosed in an involucral bract; male catkins interrupted or globose, not cylindrical. 818

814. Female catkins cylindrical, disarticulating at maturity. *Betula* 815

814. Female catkins ovoid, woody and not disarticulating when old. ALNUS GLUTINOSA (857)

815. Dwarf shrub with small, orbicular leaves; catkins under 10 mm. long; seeds narrowly winged. BETULA NANA (856)

815. Erect shrubs or tall trees with ovate-rhomboid leaves; ripe catkins over 20 mm. long. 816

+816. Leaves acuminate, sharply and often doubly serrate, glabrous; twigs glandular, rarely with few hairs. B. PENDULA (854)

+816. Leaves acute, simply serrate, hairy on the underside; twigs hairy. B. PUBESCENS (855)

817. Female catkins cylindrical, loose; nut in a trifid scale. CARPINUS BETULUS (858)

817. Female catkins minute and bud-like; nut large, in a fimbriate, involucral cup. CORYLUS AVELLANA (859)

818. Male catkin globular, pendulous; fruit covered with hooked, woody bristles completely enclosing the nuts. FAGUS SYLVATICA (860)

818. Male catkin erect, with interrupted clusters of flowers; fruit covered with straight spines completely enclosing the nut. CASTANEA VULGARIS (861)

818. Male catkins pendulous, with interrupted clusters of scaleless flowers; nut in a woody campanulate bract which does not cover it. *Quercus* 819

819. Leaves auricled, glabrous, with very short petioles; fruits stalked. QUERCUS ROBUR (862)

819. Leaves cuneate with stellate hairs and distinct peduncles; fruits sessile. Q. PETRÆA (863)

Salicaceæ

[812] 820. Catkin scales fimbriate; stamens 8-30. *Populus* 821

820. Catkin scales entire; stamens 1-5. *Salix* 824

821. Leaves green on both sides. 826

821. Leaves white on the underside. POPULUS CANESCENS (864)

822. Leaves orbicular; catkin scales with long hairs. P. TREMULA (865)

822. Leaves deltoid or triangular; catkin scales glabrous. 827

823. Tree with large rugose bosses; leaves without glands at junction with the petiole, truncate at base. P. NIGRA (866)

823. Tree without bosses; leaves often with glands at junction with petiole, cuneate at base. P. CANADENSIS (868)

824. Catkins on long stalks; stamens about 5; leaves shining, glabrous, usually scented. SALIX PENTANDRA (869)

824. Catkins on long stalks; stamens 3-2; leaves dull, glabrous or hairy, scentless. 825

824. Male catkins sessile; female sessile or subsessile; stamens 1 or 2; leaves dull, glabrous or hairy, scentless. 827

825. Trees or large shrubs; catkins lateral; leaves narrow, lanceolate; bracts concolorous. 826

825. Low, spreading, suberect or prostrate shrubs; catkins usually lateral; leaves lanceolate to ovate; bracts discoloured. 830

825. Dwarf, almost herbaceous or woody, spreading alpine shrubs with terminal catkins; bracts concolorous. 832

+826. Stamens 2; ovary subsessile, glabrous; leaves narrow, glabrescent or hairy above, silky below. S. ALBA (869)

+826. Stamens 2; ovary pedicellate, glabrous; leaves narrow, green above, glaucous below. S. FRAGILIS (870)

+826. Stamens 3; ovary glabrous; leaves narrow, glabrous and green on both sides. S. TRIANDRA (871)

827. Male catkins sessile; female on long pedicels; ovary pedicellate, glabrous; leaves thin, green. 828

827. Both male and female catkins stalked; ovary sessile, pubescent; leaves glossy above. 829

+828. Ovary usually glabrous; buds pubescent; leaves pubescent below, blackening when dry. S. NIGRICANS (877)

+828. Ovary usually pubescent; buds and twigs glabrous; leaves pubescent only when young, not blackening when dry. S. PHYLICIFOLIA (878)

+829. Catkins lateral; ovary sessile, tomentose; leaves shining and glabrous above, pubescent and paler beneath. S. ARBUSCULA (882)

+829. Catkins some terminal, some lateral; ovary subsessile, tomentose; leaves shining, green and glabrous on both sides. S. MYRSINITES (883)

830. Stamens 2, united by the filaments; anther usually purple; leaves opposite, bluish, blackening when dried, entire; ovaries sessile; stigmas sessile. S. PURPUREA (872)

830. Stamens 2, free; anther usually yellow; leaves alternate, green, hairy or glabrous. 831

+831. Leaves white and silky below, usually very narrow; a large shrub or small tree; ovary with long styles. S. VIMINALIS (873)

+831. Leaves white and silky below, usually narrowly ovate; styles short; a small creeping and rooting or suberect shrub. S. REPENS (879)

+831. Leaves glabrous, downy or cottony. 832

832. Leaves wrinkled and usually with a crisp, cottony down below; capsules pedicellate. 835

832. Leaves not wrinkled but covered with a thick white or yellow down; alpine or highland plants. 834

832. Leaves wrinkled or not, usually glabrous or somewhat downy, but not ashen grey. 833

+833. Twigs without striations under the bark, glabrescent; catkins stout; leaf blades crenate and sub-entire, broadly ovate to ovate, persistently softly pubescent below. S. CAPREA (874)

+833. Twigs with striations under the bark, persistently pubescent; catkins rather slender; leaf blades obovate, narrowed to the base, serrate or crenate above the middle, pubescent, usually becoming harsh beneath. S. ATROCINEREA (875)

+833. Twigs with striations under the bark, soon glabrous; catkins slender; leaf blades rugose, crenate, undulate or serrate, broadly ovate, persistently pubescent beneath. S. AURITA (876)

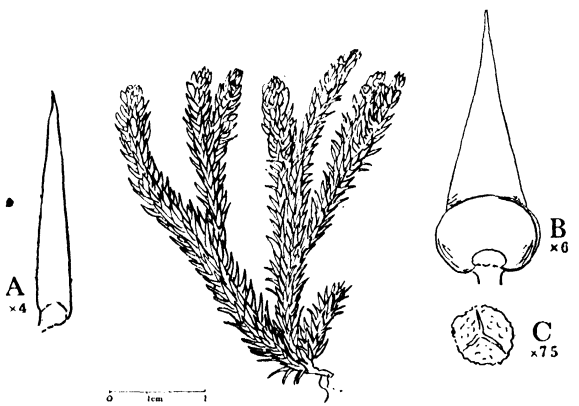
834. Leaves broadly ovate, covered with yellowish down; catkins silky yellow; capsules large. S. LANATA (881)

834. Leaves narrowly ovate, covered with a white down; catkins white, silky; capsules medium. S. LAPPONUM (880)

835. Plant a small bush up to 24 in. (60 cm.) high; leaves suborbicular, coriaceous, reticulate; catkins on long stalks.
S. RETICULATA (885)

835. Plant creeping with woody stems, 1-3 in. (3-17 cm.) high; leaves ovate, rather thin; catkins on very short stalks.
S. HERBACEA (884)

Illustrations and Descriptions

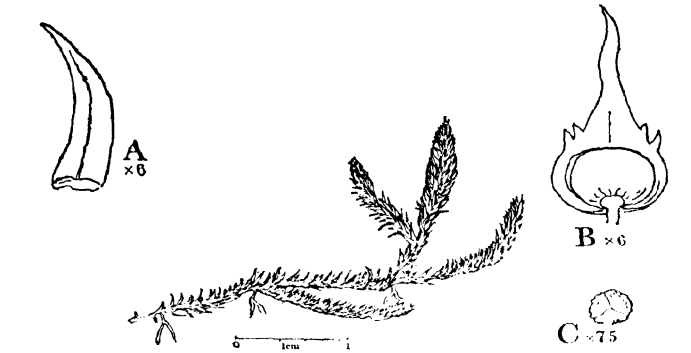


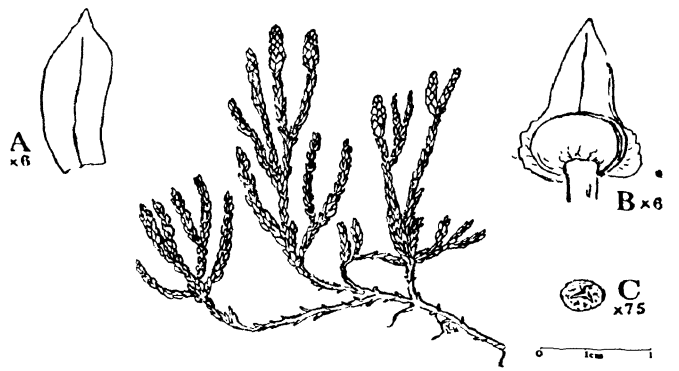
LYCOPODIUM L. Low-growing herbs with branched stems and closely arranged, usually imbricate small leaves. Sporangium one-celled, borne at the base of a leaf-like sporophyll which may or may not be similar to the leaves.

1. LYCOPODIUM SELAGO L. The FIR CLUBMOSS is a rather stout perennial with numerous stems 1-6 in. (3-15 cm.) high, growing erect from a decumbent base. It grows on elevated heaths, downs and mountain grassland commonly in highland Britain, but absent in the lowland districts. Leaves 4-8 mm. long, suberect, linear-lanceolate acute, entire or finely serrate. Spore-bearing cones absent, but sporophylls similar to the leaves growing on the leafy stem. Mid June—late Sept.

(Grasmere, Westmorland.)

A. leaf. B. sporophyll. C. spore.


A
×6
B ×6
C ×75
0 1cm 1


A
×6
B ×6
C
×75
0 1cm 1

A
×6
B ×6
C ×75
0 1cm 1

2. LYCOPODIUM INUNDATUM L. The MARSH CLUBMOSS is a small perennial with a few suberect branches 1-3 in. (2-8 cm.) high, growing from a shortly-creeping and rooting, little-branched stem 4-8 in. (10-20 cm.) long. It grows in lowland acid bogs here and there, mostly in S. England, but also rarely in Scotland, Wales and Ireland. All stems leafy; leaves 4-6 mm. long, curved towards the upper surface of the prostrate stems, linear, subulate, entire. Spore-bearing cones 10-30 mm. long, ellipsoid, sessile at the apex of an ascending stem, solitary. Sporophyll linear, spathulate or lanceolate, acuminate, toothed at base with a leafy margin. Early July—early Sept. (Beaulieu, Hampshire.)

A. leaf. B. sporophyll. C. spore.

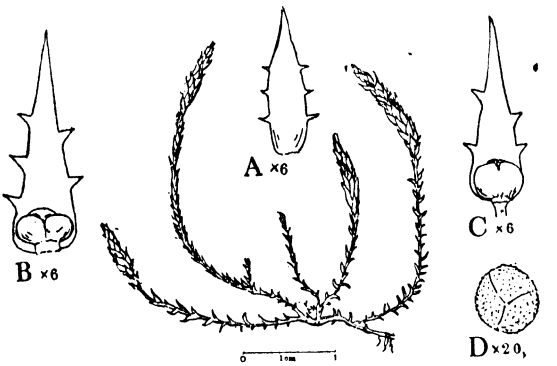
3. LYCOPODIUM ALPINUM L. The ALPINE CLUBMOSS is a rather stout perennial with much-branched, erect stems 2-4 in. (5-10 cm.) high, ascending from a far-creeping, prostrate main stem 4-20 in. (10-50 cm.) long. It grows rather commonly in mountain grassland in the highland part of Britain and rarely at a low elevation in central England. Creeping stems with very few leaves, other branches leafy. Leaves 3 mm. long, dense and appressed to the stem, lanceolate, acute, entire. Spore-bearing cones 10-20 mm. long, narrowly ovate-linear, sessile, solitary or several together at the apex of some of the ascending branches. Sporophyll spathulate-triangular, acute, with a narrow, scarious, scarcely denticulate margin. Early June—late Aug. (Grasmere, Westmorland.)

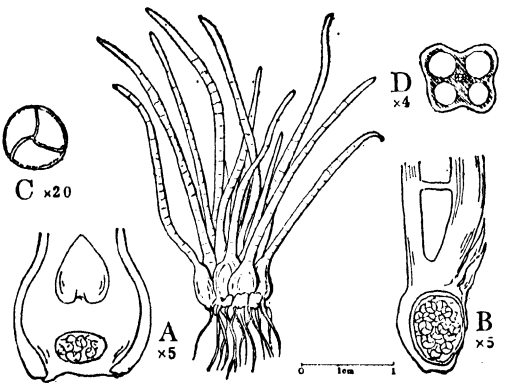
A. leaf. B. sporophyll. C. spore.

4. LYCOPODIUM ANNOTINUM L. This INTERRUPTED CLUBMOSS is a small perennial with several ascending branches 4-6 in. (10-15 cm.) high, growing erect from a far-creeping, prostrate stem. It grows here and there on mountain moors in the English and Scottish Highlands, but never commonly. Ascending stems much-branched, more leafy than prostrate ones; leaves 5-6 mm. long, spreading, lanceolate, acuminate, margin with a few teeth in the upper part. Spore-bearing cones 15-30 mm. long, solitary, ovoid, sessile, placed at the apex of the ascending stems. Sporophyll broadly ovate, acuminate, with a broad, scarious margin. Mid June—mid Aug. (Clova, Forfar.)

A. leaf. B. sporophyll. C. spore.

A
×6
B
×6
C
75
0
1cm
1


A ×6
B ×6
C ×6
D ×20,
0
1cm
1


C ×20
A
×5
D
×4
B
×5
0
1cm
1

5. LYCOPODIUM CLAVATUM L. The STAGSHORN or COMMON CLUBMOSS is a rather small perennial with short, erect or ascending branches 4-6 in. (10-15 cm.) high, growing from a far-creeping, branched, prostrate stem 12-30 in. (30-75 cm.) long. It grows commonly on heaths and mountain pastures throughout highland Britain, but is very rare in the lowlands. Fertile stems with small scales, the remaining stems leafy; leaves incurved, 4-6 mm. long, dense, linear, mucronate, ending in a long, filiform point, denticulate. Spore-bearing cones 30 mm. long, cylindrical, on the ends of long, erect peduncles, usually 2-4 together. Sporophyll triangular-lanceolate, mucronate, serrate, narrower than the sporangium, margin scarious, denticulate.

Mid June—late Sept. (Crianlarich, Perthshire.)

A. leaf. B. sporophyll. C. spore.

SELAGINELLA Beauv. Low-growing herbs with branched stems and closely arranged small leaves with ligule at base. Sporangia of two kinds, borne at the base of a leaf-like sporophyll and the sporophylls arranged in terminal cones.

6. SELAGINELLA SELAGINOIDES (L.) Link. The LESSER CLUBMOSS is a slender perennial with barren and fertile stems 1-3 in. (3-8 cm.) high, growing from a shortly-creeping, branched, prostrate stem 3-6 in. (8-15 cm.) long. It grows rather frequently in damp, grassy places in Highland Britain and sometimes in the slacks of sand dunes. Leaves 2-4 mm. long, spreading or somewhat appressed, linear-lanceolate, acuminate, dentate, the teeth ending in fine hairs. Spore-bearing cones 10-15 mm. long, slender, narrowly ovoid, acute; megasporangia at base of cone; microsporangia few, near the apex; megaspores 0·2 mm., smooth. Early June—late Aug. (Upper Teesdale, Durham.)

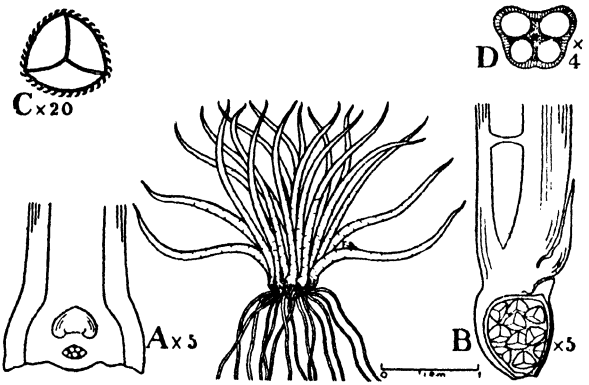
A. leaf. B. megasporophyll. C. microsporophyll. D. megaspore.

ISOETES L. Small flowerless land or water plants with numerous, terete, quill-like leaves, in the enlarged base of which are embedded the sporangia. Spores of two kinds; the larger megaspores produced in the outer leaves and the smaller microspores by the central ones.

7. ISOETES LACUSTRIS L. The COMMON QUILLWORT is a small plant with numerous stiff leaves 3-7 in. (7-18 cm.) long, growing from a short, rounded stem base. It occurs submerged in lakes and pools with stony or gravelly beds in mountainous districts of Wales, N. Britain and Ireland where it is rather common. Leaves stiffly erect, dark green; sporangia only half covered by leaf sheath; ligule rather large, cordate. Megaspores yellowish, 0·2 mm. diam., covered with short, blunt tubercles or almost smooth. Early June—late July.

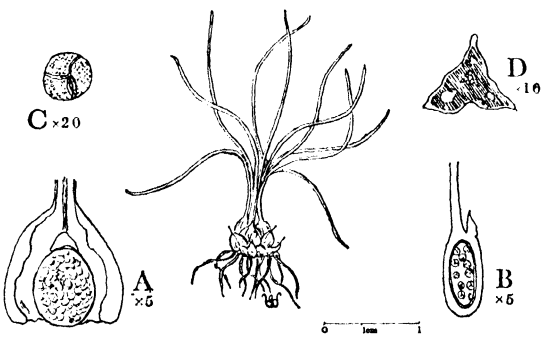
(N. Uist, Scotland.)

A. sporangium, front view. B. sporangium l.s. C. megaspore. D. leaf t.s.



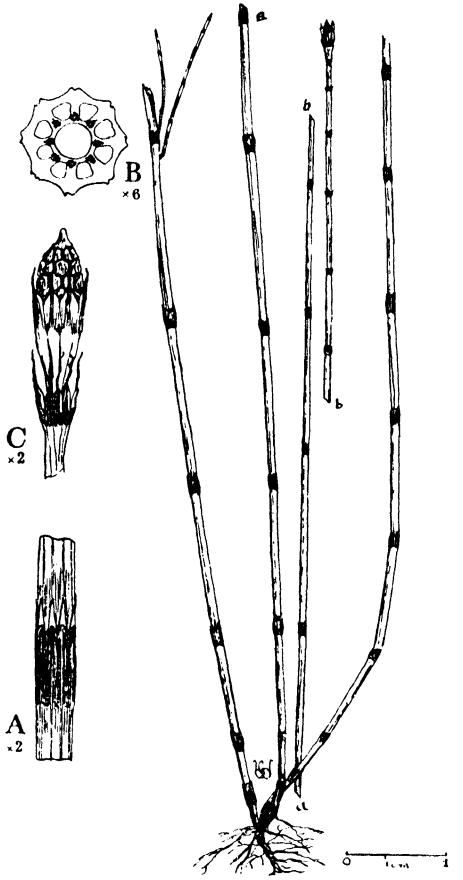
8. ISOETES ECHINOSPORA Durien. This PALE GREEN QUILLWORT is a small plant with numerous rather flaccid, spreading leaves, 2-5 in. (5-12 cm.) long, growing from a short, rounded stem base. It grows submerged in pools and lakes with a peaty bed, here and there, but rarely in S.W. England, Wales, Scotland and W. Ireland. Leaves spreading, rather light green; sporangia nearly covered by leaf sheath; ligule very small, cordate. Megaspores whitish, 0·5 mm. diam., covered with long, hooked tubercles. Early May—late July. (Llyn Idwyl, Caernarvon.)

A. sporangium, front view. B. sporangium, l.s. C. megaspore. D. leaf t.s.



9. ISOETES HYSTRIX Bory. This SAND QUILLWORT is a small plant with numerous slender, somewhat recurved leaves 2-6 in. (5-15 cm.) long, growing from a short, flattened stem base. It occurs in damp, sandy places, only in the Lizard district of W. Cornwall. Leaves slender, spreading and somewhat irregularly recurved, rather dark green, flattened on one side, appearing from October to April. Stem base covered with the old persistent 2-3 pointed leaf bases. Sporangia wholly covered by the leaf sheath, ligule small, rounded. Megaspores yellow-white, 0·5 mm., netted. Late Feb.—early April. (Lizard, Cornwall.)

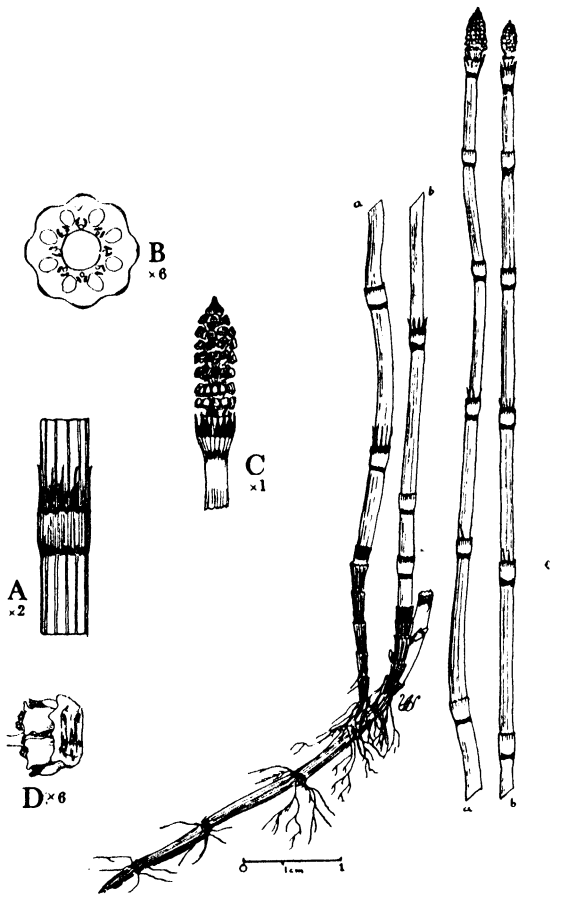
A. sporangium, front view. B. sporangium l.s. C. megaspore. D. leaf t.s.



EQUISETUM L. Flowerless perennials with jointed stems, and at each node, a whorl of ± adpressed, minute leaves, united in a ring and resembling teeth. Sporophylls developed in an imbricated, usually ovoid, head, each sporophyll peltate, bearing 5-7 sporangia on the under surface. Spores with 4, spirally coiled processes known as elaters.

10. EQUISETUM HYEMALE L. The ROUGH HORSETAIL or DUTCH RUSH is a tall, rather slender, little-branched plant with simple stems 12-30 in. (30-75 cm.) high. It occurs here and there in Wales and S. England and is nowhere common. Stem rough, faintly marked with 15-20 striæ; in cross-section, showing 8-12 rounded ribs and a similar number of lacunæ or holes. Leaf sheath 5-7 mm. long, not inflated, white, with black rings round the top and base, teeth small, acute. Spore-bearing spikes 10-15 mm. long, apiculate, borne at the apex of most of the stems. Late May—early Aug. (nr. Cardiff.)

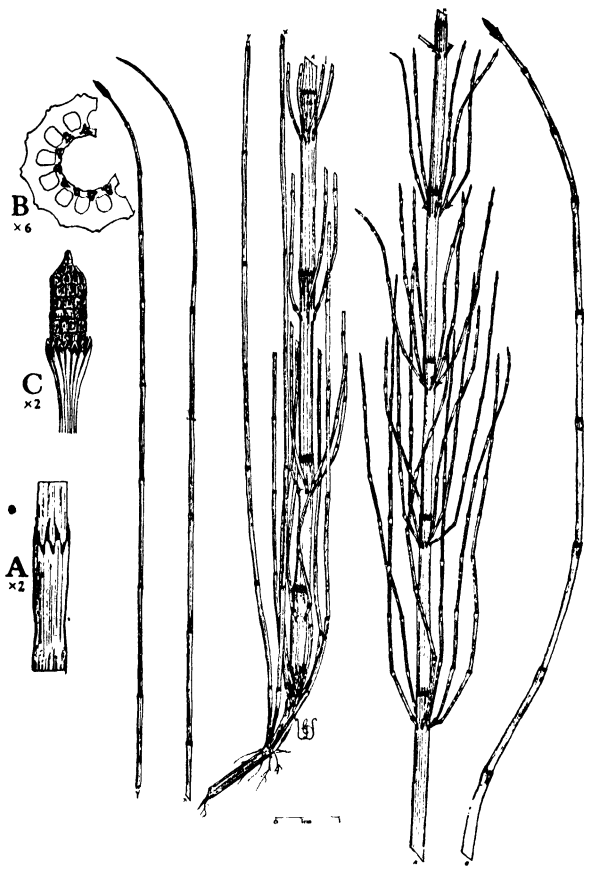
A. leaf sheath. B. stem t.s. C. spore-bearing spike.



11. EQUISETUM TRACHYODON A.Br. This MACKAY'S HORSE-TAIL is a tall, slender plant with little-branched stems 12-36 in. (30-90 cm.) high, which occurs by the River Dee in Scotland and in several places on shady river banks in W. and S. Ireland, but is always rare. Stem very rough with occasional branches in the lower part but not in whorls; in cross section, showing 8-12 distinct and rather blunt ridges, a central hollow of medium size and moderately large lacunæ. Leaf sheath 2-4 mm. long, not inflated, becoming black when old, teeth black, 4-ribbed, subulate. Spore-bearing spikes only at the apex of a few of the stems, 5 mm. long, apiculate. Early June—mid July.

(Co. Clare, Ireland.)

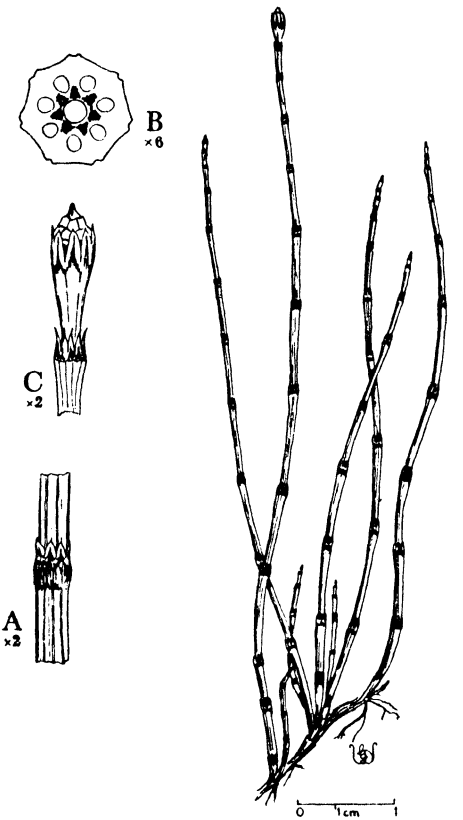
A. leaf sheath. B. stem t.s. C. spore-bearing spike. D. sporophyll.



12. EQUISETUM RAMOSISSIMUM Desf. This MUCH-BRANCHED HORSETAIL is a very tall, stout plant with much-branched erect stems 18-30 in. (45-75 cm.) high, which has been recently found on a river bank in Lincolnshire. Stem rough with numerous branches in the lower half, grooved; in cross-section, showing 8-20 distinct grooves and rather blunt ribs and a similar number of rather small lacunæ. Leaf sheath 8 mm. long, not inflated, brownish with a black band at the base, teeth black with a hair-like apex. Spore-bearing spikes 6-12 mm. long, with an acuminate apex. Late May—mid July.

(Boston, Lincolnshire.)

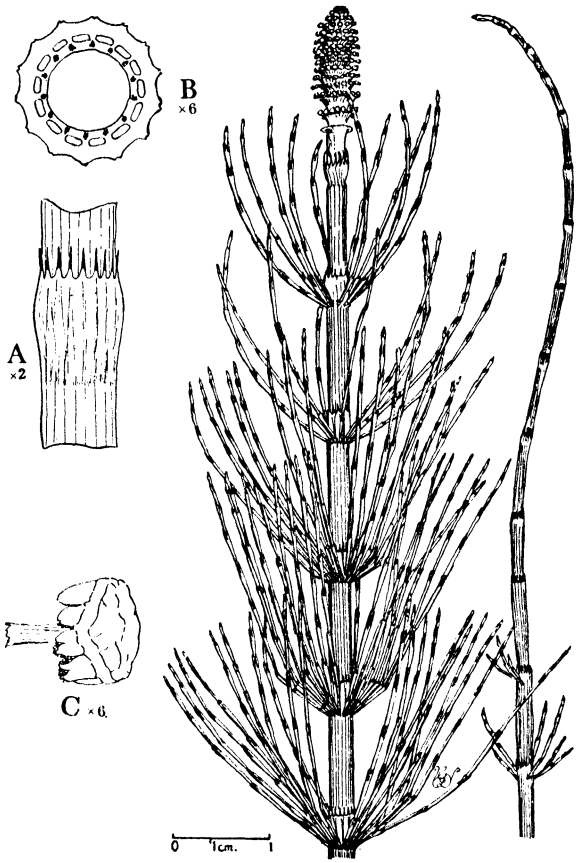
A. leaf sheath. B. stem t.s. C. spore-bearing spike.



13. EQUISETUM VARIEGATUM Schleich. The VARIEGATED HORSETAIL is a slender plant with many simple, decumbent or suberect stems 6-20 in. (15-50 cm.) high, growing from a slender rhizome. It occurs, but rarely, here and there, in wet mountain grassland, on river banks and dunes, and chiefly in N. and W. Britain and Ireland. Stem rather rough, without axillary whorls of branches; in cross-section showing 4-10 bifid ridges, moderate-sized lacunæ and a central hollow of medium size. Leaf sheaths 2-4 mm. long, rather loose, usually green with a black band round the top, teeth 4-10, whitish, 4-ribbed, subulate at first but obtuse later. Spore-bearing spikes only at the apex of very few branches, 5-7 mm. long, apiculate.

Early July—mid Aug. (Upper Teesdale, Durham.)

A. leaf sheath. B. stem t.s. C. spore-bearing spike.

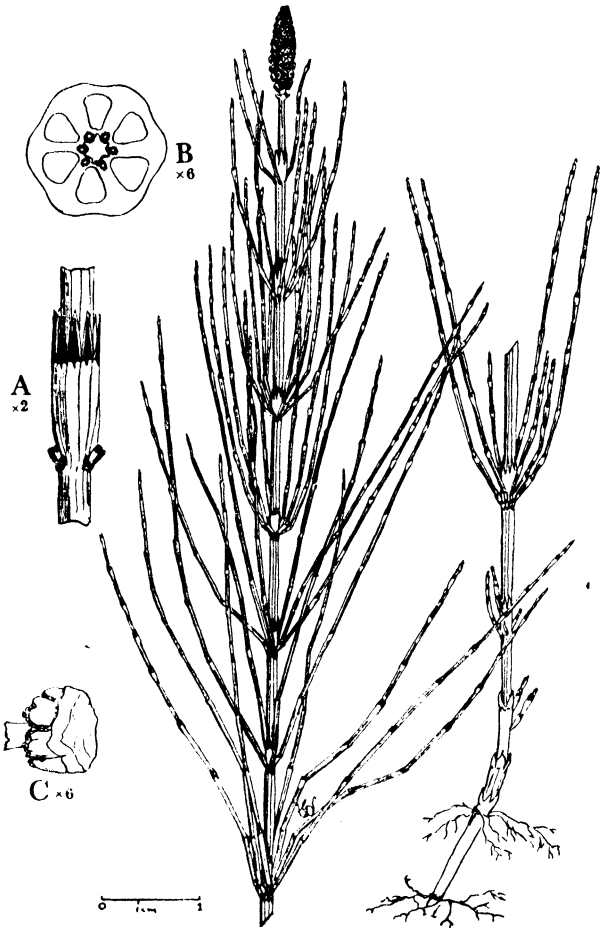


14. EQUISETUM FLUVIATILE L. (*E. limosum* L.). The WATER HORSETAIL is a tall, stout plant with erect, branched stems, 9-40 in. (22-100 cm.) high, which occurs at the muddy edges of pools and ditches abundantly throughout the British Isles. Stem almost smooth, with whorls of simple secondary branches in the lower part, which develop greatly after the sporophyll has opened; in cross-section showing an entire margin without ribs, numerous tangentally elongate lacunæ and a large central hollow. Leaf sheath 5-10 mm. long, rather tight, usually black, teeth numerous, black, not ribbed, subulate, small. Spore-bearing spikes at the apex of many of the green, branched stems, 10-20 mm. long, ovoid, obtuse.

Late May—mid Aug. (Maplestead, Essex.)

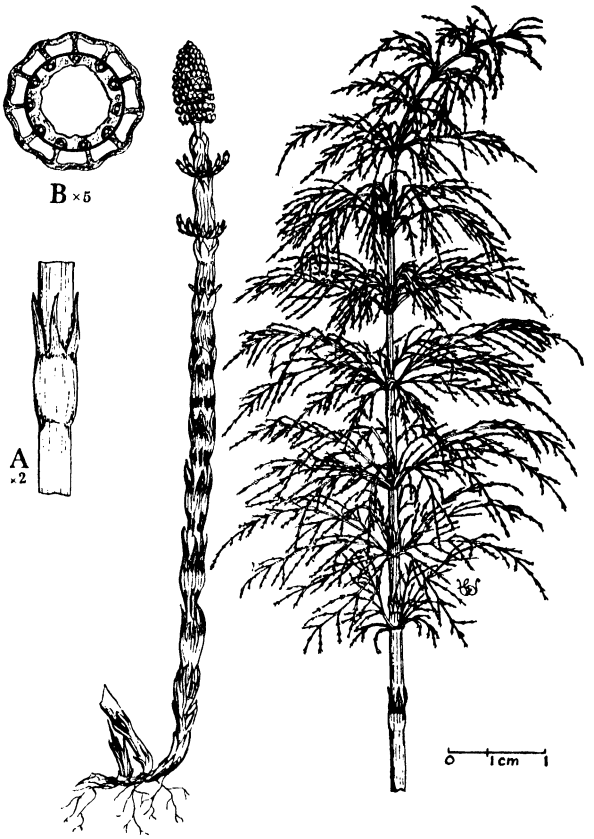
A. leaf sheath. B. stem t.s. C. sporophyll.

(*E. littorale* Kuhl. is considered to be a hybrid between the above and *E. arvense*. It is similar in appearance to the above, but has more deeply-grooved stems, looser leaf sheaths and often abortive sporophylls.)



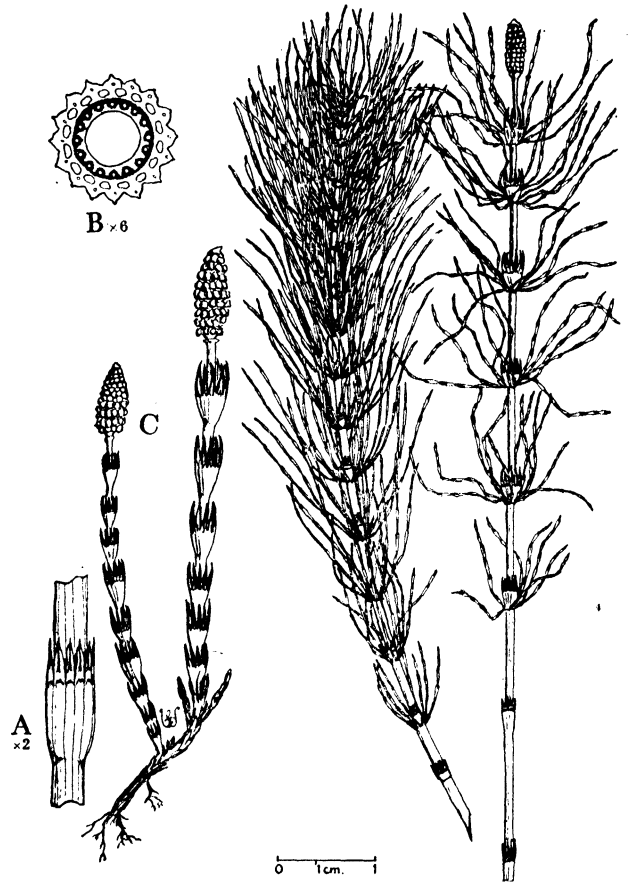
15. EQUISETUM PALUSTRE L. The MARSH HORSETAIL is a tall, rather stout plant with erect, branched stems 9-30 in. (22-75 cm.) high. It occurs in marshes, wet places and damp woods, abundantly throughout the British Isles. Stem almost smooth, usually with whorls of long, simple, secondary branches; in cross-section showing 4-8 distinct, rounded ridges, a narrow central space and radially ovate lacunæ, alternate with the ribs. Leaf sheath 5-10 mm. long, somewhat inflated or loose, usually green, teeth 4-8, blackish, one-nerved, triangular-subulate. Spore-bearing spikes at the apex of many of the green, branched stems, 10-30 mm. long, narrowly ovoid, obtuse.

Late May—late July. (Tunstall, Suffolk.)
A. leaf sheath. B. stem t.s. C. sporophyll.



16. EQUISETUM SYLVATICUM L. The WOOD HORSETAIL is a rather tall and slender plant with erect, twice-branched stems 9-20 in. (23-50 cm.) high. It occurs in damp, shady places on acid soils, mostly in N. Britain and rarely in the drier parts. Stem of two kinds, fertile and sterile; the fertile at first brown, but becoming green and branched after sporulation; all smooth with dense whorls of very fine, drooping, secondary branches which are again branched; in cross-section showing 8-12 blunt ribs, an inner ring of tissue and outside, 8-12 tangentially elongate lacunæ, alternate with the ribs, and a rather large central space. Leaf sheath 12-20 mm. long, inflated, particularly on the fertile stems, greenish below, brown above; teeth brownish, 4-8 mm. long, rather broad, acute to acuminate. Fruiting spike 15-25 mm. long, narrowly ovoid, blunt.

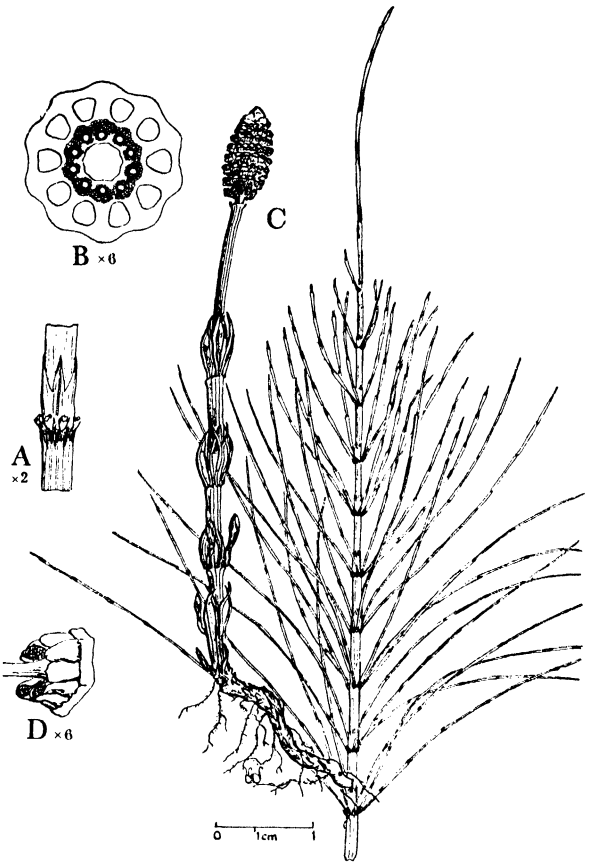
Mid April—late May. (Rudyard, Staffordshire.)
A. leaf sheath. B. stem t.s.



17. EQUISETUM PRATENSE Ehrh. This MEADOW HORSETAIL is a rather small, slender plant with erect, branched stem 3-12 in. (8-30 cm.) high. It occurs in damp, grassy meadows and streamsides, though uncommonly on the eastern side of Scotland and N. England and N. Ireland. Stems of two kinds, fertile and sterile, the former at first brown, but becoming green and branched at and after sporulation; all rather deeply grooved and with dense whorls of fine, simple, secondary branches; in cross-section showing 16 triangular, acute ribs, numerous small lacunæ elongated tangentially and a central hollow about half the width of the stem. Leaf sheath 3-10 mm. long, inflated, particularly on the fertile stems, teeth as many as ribs, brown with a blackish nerve, acute to subulate, narrow. Spore-bearing spike 15-25 mm. long, ovoid, blunt or acute.

Mid April—late May. (Upper Teesdale, Durham.)

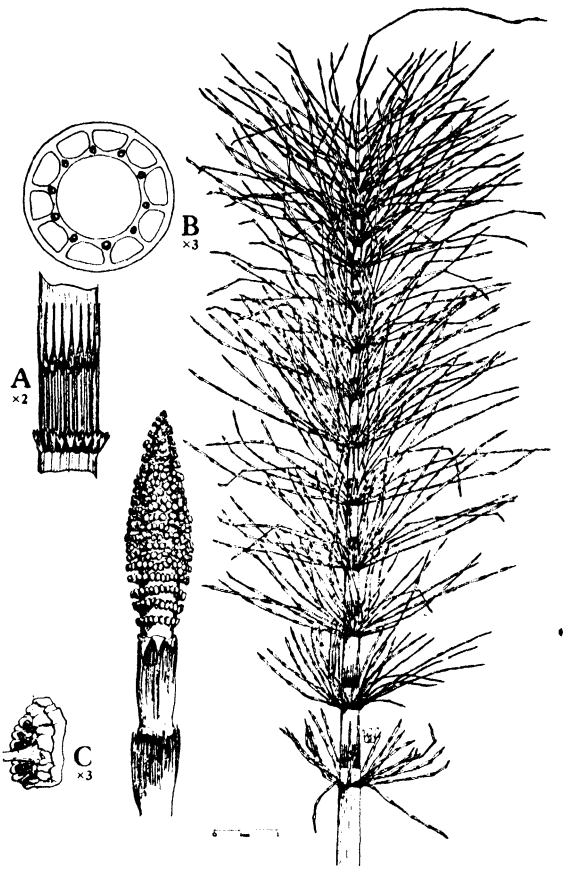
A. leaf sheath. B. stem t.s. C. spore-bearing stems.



18. EQUISETUM ARVENSE L. The FIELD HORSETAIL is a rather small, coarse plant with simple, brown, fruiting stem 1-6 in. (3-15 cm.) high and erect, sterile, branched stem, 3-12 in. (8-30 cm.) high. It grows abundantly in fields and waste places throughout the British Isles. Stems of two kinds, fertile and sterile; the former appearing first, simple and brown, and dying after sporulation; the latter appearing some time later, green, hardly rough, deeply ribbed, with whorls of rather coarse, spreading, usually simple branches; in cross-section showing 6-18 triangular, rather acute ribs, radially elongated, lacunæ between the ribs and a rather wide central hollow. Leaf sheath 3-8 mm. long, inflated and brown on the fertile stem, green and rather tight on the barren; teeth lanceolate, acuminate, rather darker than the sheath. Spore-bearing spike 15-35 mm. long, broadly ovoid, blunt.

Late March—mid April. (Althorne, Essex.)

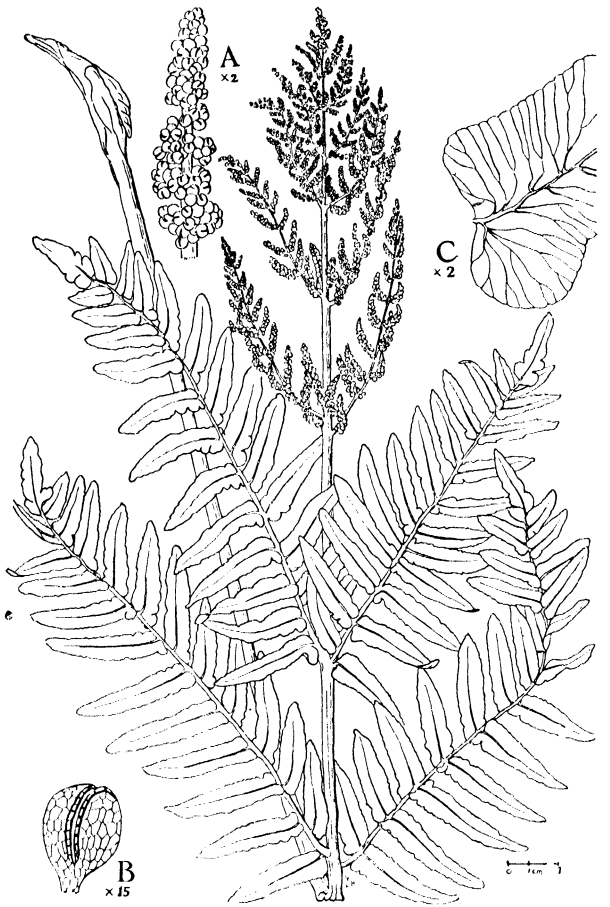
A. leaf sheath of barren stem. B. stem t.s. C. spore-bearing stems. D. sporophyll.



19. EQUISETUM TELMATEIA Ehrh. (*E. maximum* auct.). The GREAT HORSETAIL is a large, robust plant with simple, brown, fruiting stem 3-12 in. (8-30 cm.) high, and erect, branched barren stems 24-60 in. (60-150 cm.) high. It grows, at times abundantly, in wet, shady banks and ditches throughout the lowland parts of the British Isles, but more rarely in Scotland, and absent from the north-east. Stems of two kinds, fertile and sterile; the former appearing first, simple and brown, dying after sporulation; the latter appearing later, stout, green, smooth, striate, with whorls of numerous, fine, regular, spreading branches; in cross-section showing an almost entire, circular outline, numerous small lacunæ and a central space much larger than the outer tissue. Leaf sheath 10-20 mm. long, loose and brown on the fertile stems, green and blackish above; green and tight on the barren stems with many long, subulate, blackish, 2-ribbed teeth, especially on the side branches. Fruiting spike 70-150 mm. long, ovoid, conical, acute.

Early April—early May. (Danbury, Essex.)

A. leaf sheath of barren stem. B. stem t.s. C. sporophyll.

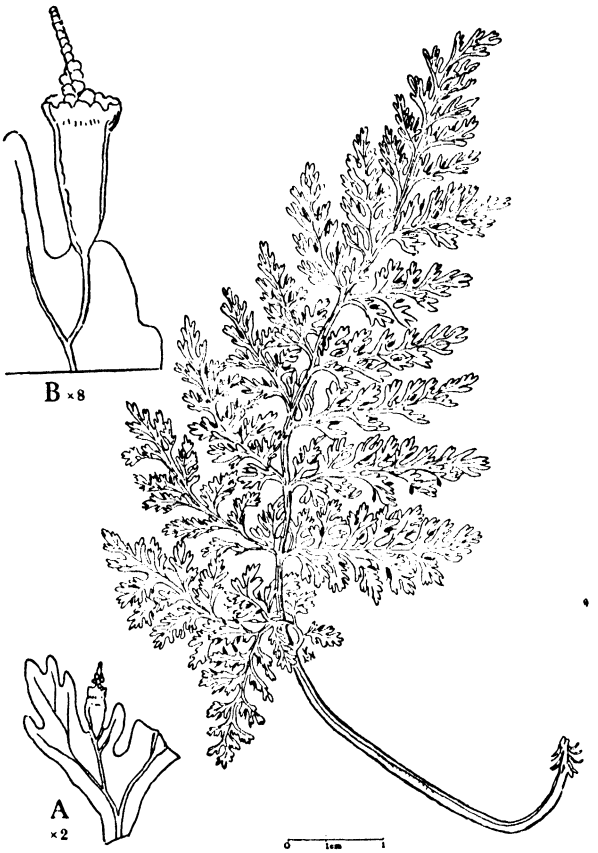


OSMUNDA L. Stout plants with bipinnate fronds; sporangia on the margins of reduced pinnules growing at the top, or in the middle portion of the central fronds.

20. OSMUNDA REGALIS L. The ROYAL FERN grows on wet heaths, bogs and fens, throughout the British Isles, but it is becoming very rare owing to drainage and other land development. Fronds rather light green, firm, very stout, 20-60 in. (50-150 cm.) high, growing from a short, very thick, erect rhizome, lanceolate in outline, bipinnate; pinnules oblong-lanceolate, somewhat irregular, very finely serrate; rachis naked, narrowly winged. Spore-bearing portion on the upper part of the central fronds which have only 2-3 pairs of sterile pinnules; sporangia very numerous, naked.

Mid June—mid Sept. (New Forest, Hampshire.)

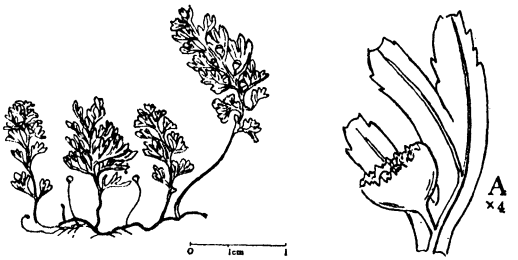
A. fertile pinnule. B. sporangium. C. base of barren pinnule.



TRICHOMANES L. Rather small, slender plants, with divided, translucent fronds which are all alike. Sori borne on axis at the margin of a frond, indusium a cup-like structure, shorter than the axis.

21. TRICHOMANES SPECIOSUM Willd (*T. radicans* auct.). The KILLARNEY FERN occurs very rarely on wet rocks in damp, shady places in parts of W. Ireland and in one locality in Wales. Fronds several, translucent, dark green, 4-8 in. (10-20 cm.) high, growing singly from a long, rather stout, creeping and rooting rhizome, lanceolate in outline, tripinnate; pinnæ pinnate or bipinnate, with lobes on both sides, segments entire, veins not reaching the apex; rachis glabrous except for a few scales at base, channelled. Sori on both sides of the segments, projecting beyond the conical indusium.

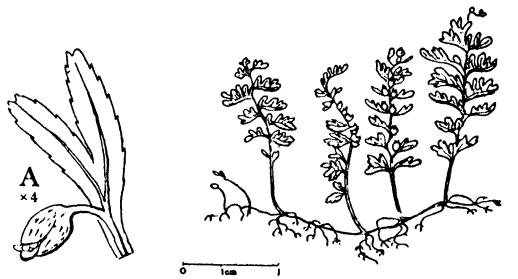
Mid June—late Sept. (Co. Galway, Ireland.)
A. part of pinnule. B. sorus.



HYMENOPHYLLUM Sm. Small, slender plants, with divided, translucent fronds which are all alike. Sori borne within a cup-like structure formed of the 2 valves of the indusium.

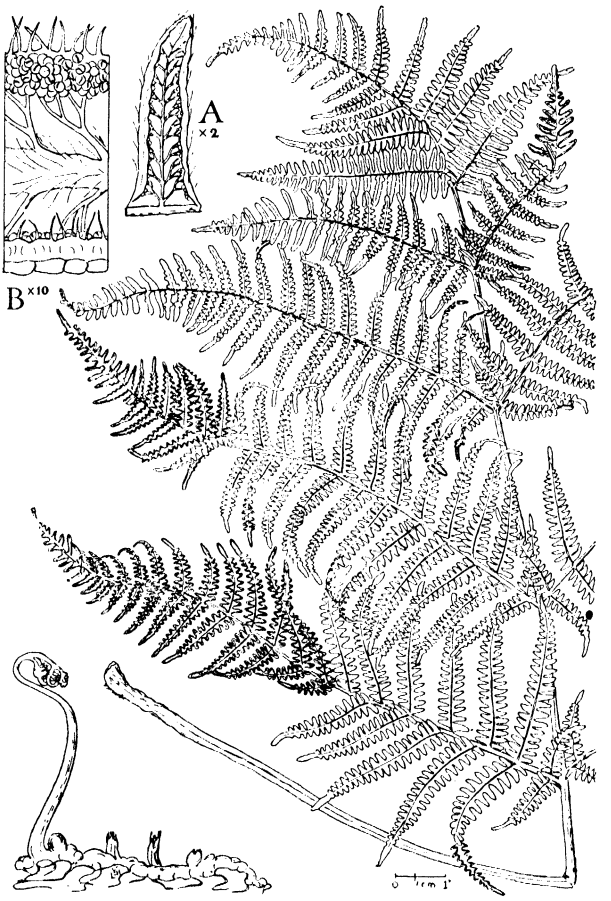
22. HYMENOPHYLLUM TUNBRIDGENSE (L.) Sm. This TUNBRIDGE FILMY FERN grows among moss on wet and usually non-calcareous rocks, tree trunks and similar shady places with a moist atmosphere. It is widespread and sometimes common in the wetter parts of the British Isles and rare elsewhere. Fronds dark green, several, 1-3 in. (2-8 cm.) high, growing singly from a far-creeping, slender rhizome, lanceolate in outline, flat, bipinnate; pinnæ pinnatifid, the wing-like segments translucent, sharply serrate, veins not reaching the apex; rachis glabrous, winged. Sori borne on the upper segments of the pinnæ near the rachis; indusium cup-like, the apex truncate and toothed.

Early June—mid Sept. (nr. Plymouth, Devon.)
A. part of frond and sorus.



23. HYMENOPHYLLUM WILSONI Hook. This RECURVED FILMY FERN grows among moss on wet, shaded rocks and tree trunks in a moist atmosphere. It is widespread, and often common in the wetter parts of N. Britain and Ireland and occasionally elsewhere. Fronds dark green, several, 1-5 in. (2-12 cm.) high, growing singly from a far-creeping rhizome, narrowly lanceolate in outline, with the pinnæ recurved, bipinnate; pinnæ pinnatifid, comb-like as the segments are ± unilateral, segments sharply serrate, veins reaching the apex; rachis glabrous, winged. Sori borne on the upper segments of the pinnæ, slightly projecting; indusium bottle-like, the apex oblique and entire.

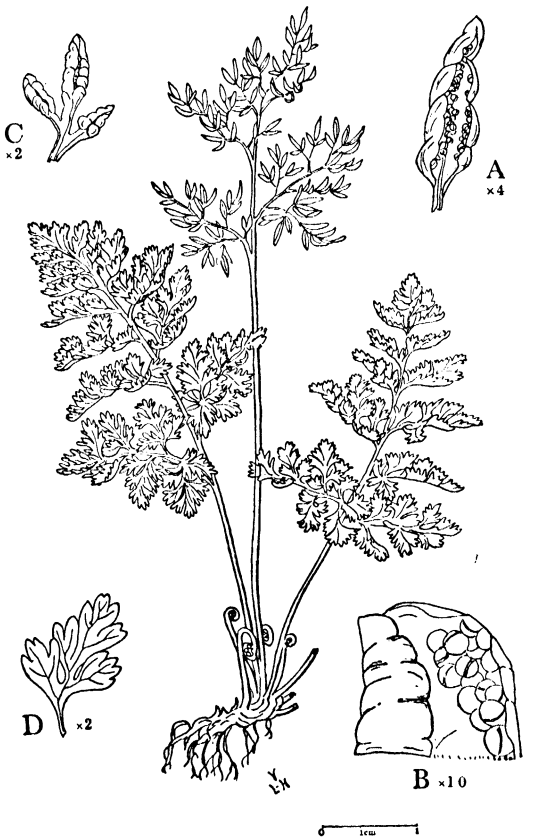
Early June—mid Sept. (Cressbrook Dale, Derbyshire.)
A. part of frond and sorus.



PTERIDIUM Scop. Stout plants with tripinnate fronds, fertile ones somewhat different from sterile; sori confluent under the inrolled lower margins of the fronds; indusium inconspicuous.

24. PTERIDIUM (Pteris) AQUILINUM (L.) Kuhn. The BRACKEN FERN is a very abundant plant on heaths, moors, woods and in poor pasture on non-calcareous soils throughout the British Isles. Fronds stout, firm, green, 20-60 in. (50-150 cm.) high, deltoid in outline, growing singly from a far-creeping, hard, hairy, but not scaly, rhizome, tripinnate, at least on lower part; pinnules oblong, entire; rachis naked, bare portion longer than leafy part. Sori continuous along the whole or most of the margin of a pinnule, often only on the upper pinnules of a frond, other fronds without sori; indusium linear, narrow, entire.

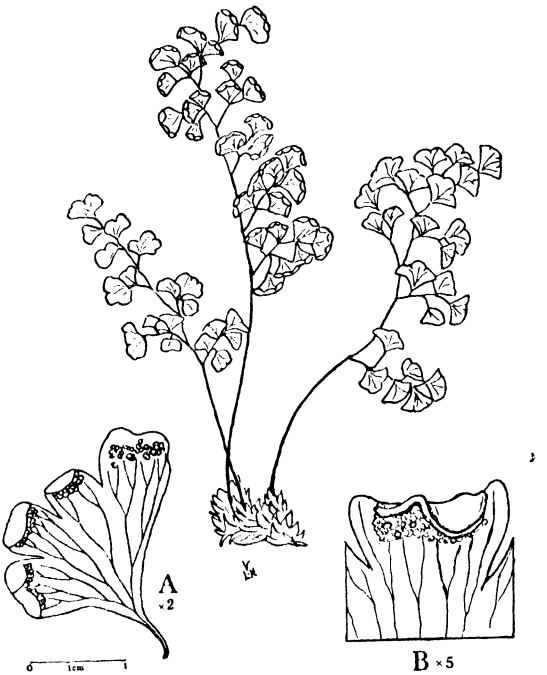
Late June—late Sept. (New Forest, Hampshire.)
A. pinnule. B. sori.



CRYPTOGRAMMA R.Br. Rather slender plants with the fertile and sterile fronds different in outline. Sori subtended at the tip of the nerves and protected by the inrolled leaf margin.

25. CRYPTOGRAMMA CRISPA (L.) R.Br. ex Hook. The PARSLEY FERN grows on screes and on walls on acid soils in Scotland, N. and W. England and Wales, and is abundant in some places. Fronds rather light green, bi- or tripinnate, ovate in outline, many growing from a short, creeping, scaly rhizome, the barren ones 6-8 in. (15-20 cm.) long, spreading; the fertile ones in the centre, rather taller and erect; pinnules of the barren fronds sessile, cuneate, obtuse, toothed; of the fertile fronds stalked, almost linear, with recurved, sinuate margin; rachis smooth, green and brown. Sori oblong, forming a continuous band along most of the margin.

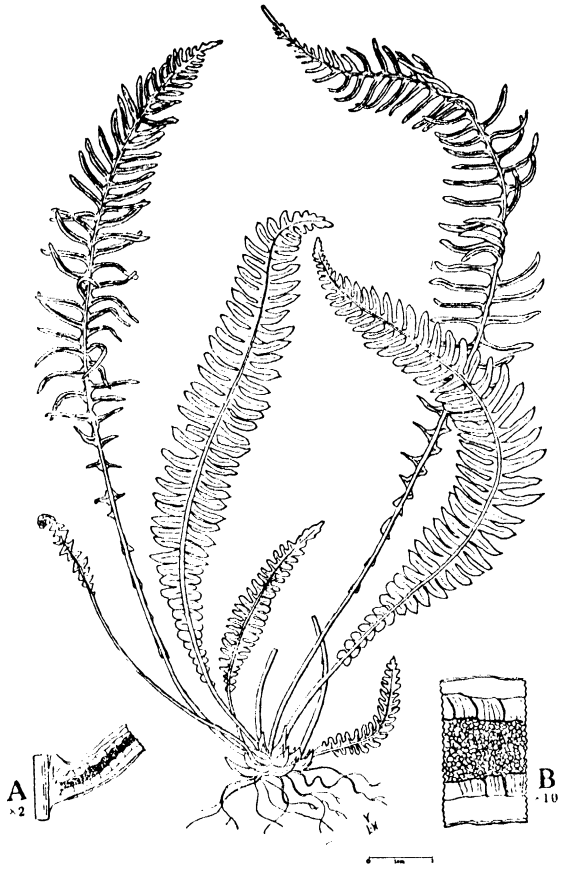
Mid June—late Aug. (Langdale, Westmorland.)
A. fertile pinnule, under surface. B. sorus. C. fertile pinna.
D. barren pinna.



ADIANTUM L. Slender plants with all fronds alike and pinnules fan-shaped. Sori borne near the ends of the veins at the leaf margin; indusium formed from the edge of the pinnule.

26. ADIANTUM CAPILLUS-VENERIS L. The MAIDEN-HAIR FERN is found rarely, in the crevices of basic rocks, walls and sea cliffs chiefly in the western and south-western portions of England, Wales, and Ireland. Fronds 3-8 in. (8-20 cm.) tall, ovate in outline, bipinnate, erect, growing from a short, creeping, black, scaly rhizome; rachis naked, black; pinnules on long, slender stalks, ovate or fan-shaped, divided into wedge-like, obtuse lobes, with numerous forked veins, but no midrib. Sori at edge of lobes, conspicuous.

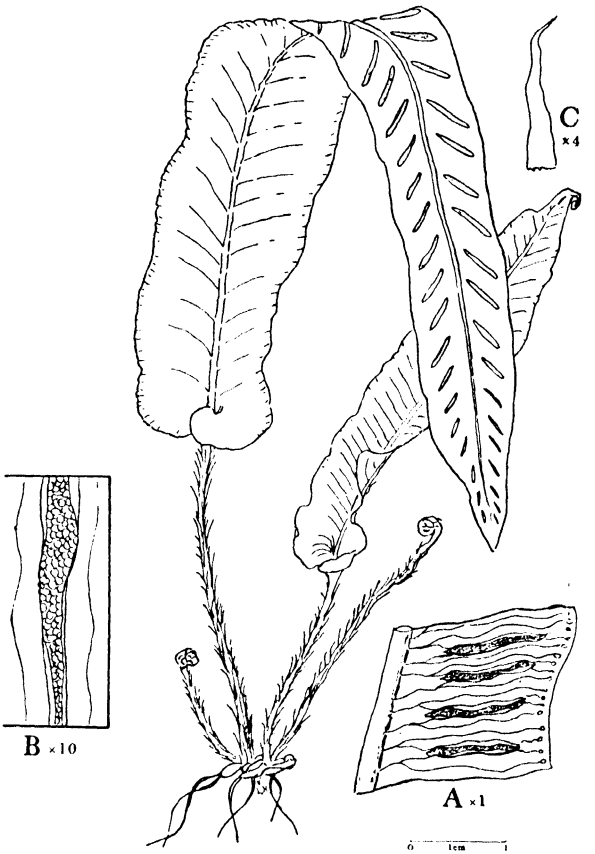
Mid June—mid Aug. (The Burren, Co. Clare.)
A. pinnule. B. sorus.



BLECHNUM L. Rather stout plants with fertile and sterile fronds different. Sori linear, one on each side of the midrib; indusium attached along the outer edge of the sorus.

27. BLECHNUM SPICANT (L.) Roth. The HARD FERN grows commonly in woods, hedges, moors and on mountains on acid soils throughout highland Britain and rather rarely in the lowland parts. Fronds 8-20 in. (20-50 cm.) high, pinnatifid, linear-lanceolate in outline, many growing from a stout, scaly rhizome; the barren ones with broad lobes and spreading; the fertile ones in the centre, with linear lobes, rather taller and erect; rachis smooth, black. Sori in a continuous line for the whole length of the pinna, on each side of the midrib; indusium flap-like.

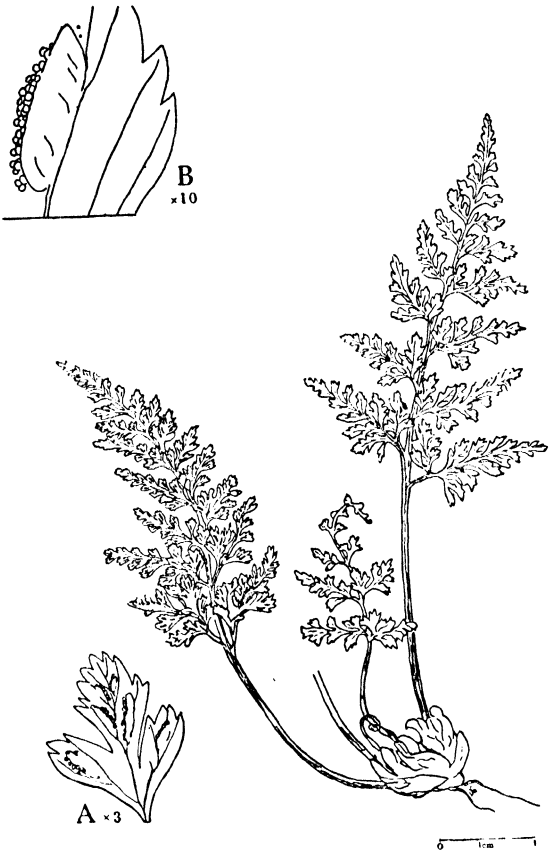
Early July—early Sept. (Grasmere, Westmorland.)
A. portion of frond. B. sori.



PHYLLITIS Hill. Rather stout plants with almost undivided fronds, all alike. Sori linear, subtended directly on a vein, paired; indusium attached along the outer side of the sorus.

28. PHYLLITIS SCOLOPENDRIUM (L.) Newman. The HART'S TONGUE grows commonly in hedgebanks, woods, and on rocks, in the wetter part of the British Isles and very rarely in the drier area. Fronds 6-18 in. (15-45 cm.) long, entire, lanceolate, erect, growing from a short, scaly rhizome; rachis covered with brown, filiform scales. Sori linear, in confluent pairs, each subtended by a branch of a more or less parallel vein.

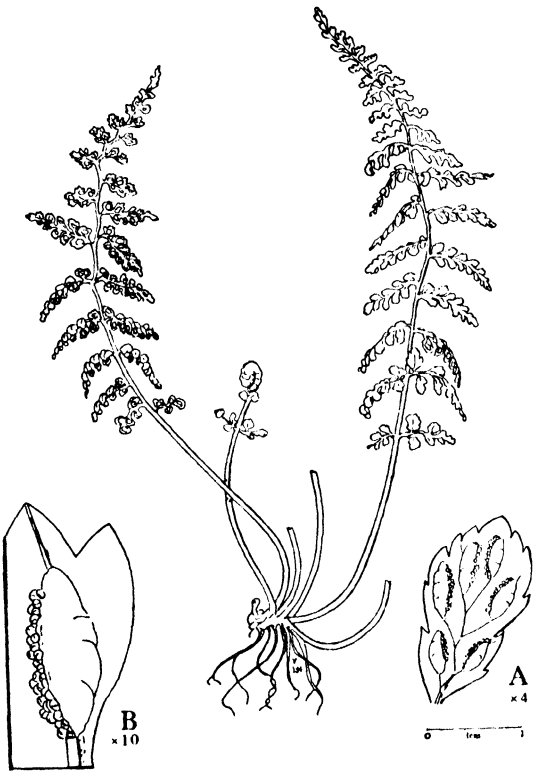
Mid June—late Aug. (New Forest, Hampshire.)
A. portion of frond. B. portion of sorus. C. rachis scale.



ASPLENIUM L. Small, slender to rather stout plants with divided fronds, veins free at top; sori elongate, taking the shape of the pinnæ; indusium attached along one edge.

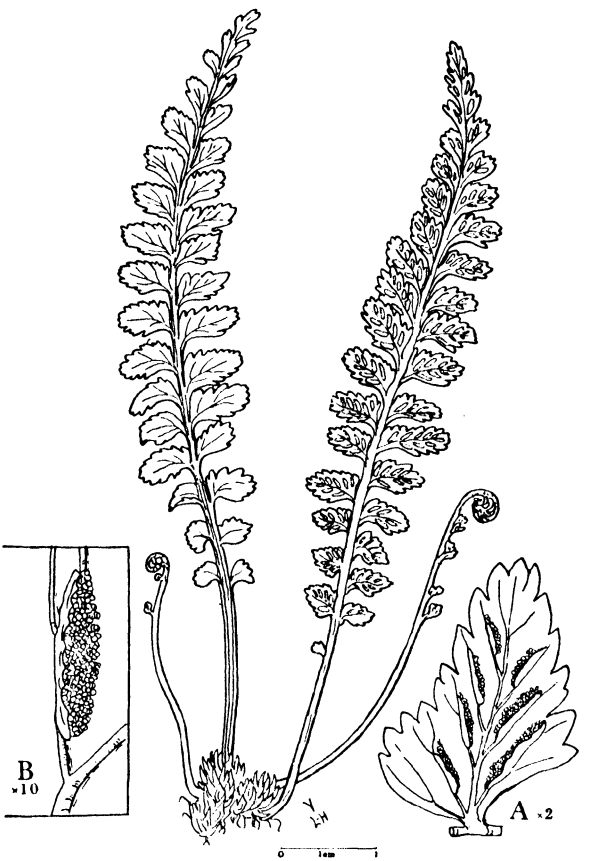
29. ASPLENIUM ADIANTUM-NIGRUM L. The BLACK SPLEENWORT grows on walls, rocks and in damp hedgerows, commonly in the wetter regions of the British Isles and rarely in the eastern district. Fronds several, dark green, 4-15 in. (10-38 cm.) high, tufted and growing from a short, scaly, creeping rhizome, bi- or tripinnatifid, ovate-triangular in outline; pinnules rhomboid, with narrow, acute teeth decreasing in size rapidly along the pinna; rachis black, naked. Sorus 1-2 mm. long, linear, covering the greater part of the lateral vein; indusium whitish, sinuate or entire.

Mid June—early Oct. (Maldon, Essex.)
A. pinnule. B. sorus.



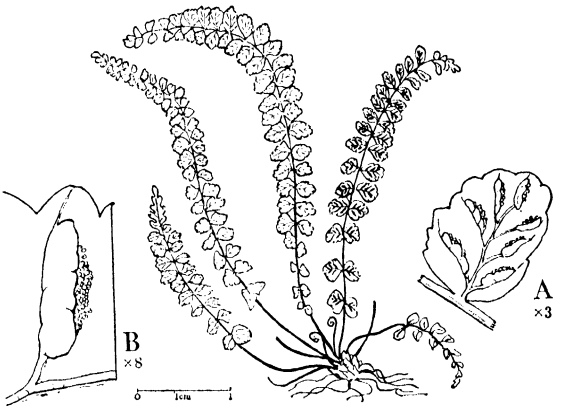
30. ASPLENIUM OBOVATUM Viv. (*A. lanceolatum* Huds.) This SMALL SPLEENWORT is found, though rarely, on rocks, walls and hedge-banks usually near the sea, here and there in S. and W. Britain and S. Ireland. Fronds few, green, 3-10 in. (8-25 cm.) high, tufted and growing from a brown, scaly rhizome, narrowly lanceolate in outline, bipinnate; pinnæ about 15-20 on each side; pinnules narrowly ovate, acutely toothed, tapering and symmetric at base; rachis blackish, with scales at base and a few in the upper part. Sori 3 mm. long, narrowly ovate, placed in the upper part of the lateral vein; indusium whitish, entire.

Mid June—early Sept. (Barmouth, Merioneth.)
A. pinnule. B. sorus.



31. ASPLENIUM MARINUM L. The SEASIDE SPLEENWORT grows, though rarely, in crevices of sea cliffs mostly along the coast of western Britain and Ireland and the eastern sea coast southwards to N. Yorkshire. Fronds green, firm, 3-9 in. (8-23 cm.) high, loosely tufted and growing from a short, scaly, horizontal rhizome, narrowly lanceolate in outline, pinnate; pinnæ ovate, toothed, asymmetric at base; rachis brown with green wings, naked. Sori 5 mm. long, elongate, in the middle of and covering the greater part of the lateral vein; indusium brownish, entire.

Early July—late Sept. (Barmouth, Merioneth.)
A. pinna. B. single sorus.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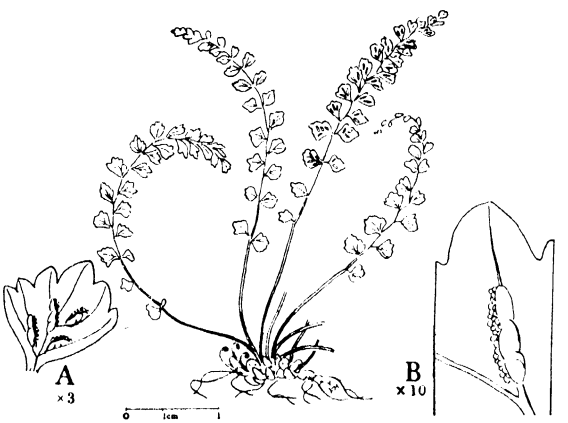
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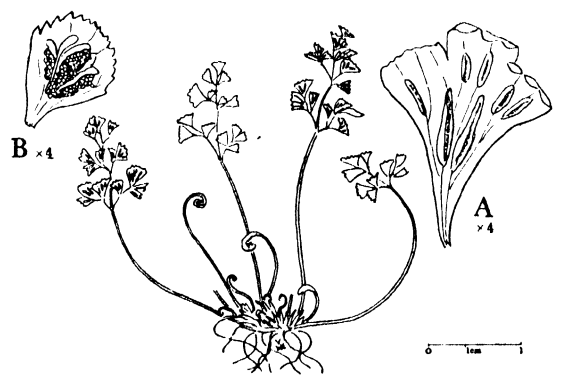
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32. ASPLENIUM TRICHOMANES L. The COMMON SPLEENWORT grows on rocks and walls commonly throughout Britain. Fronds firm, green, numerous, 1-6 in. (2-15 cm.) high, tufted, many growing from a short, ± erect, somewhat scaly rhizome, linear in outline, pinnate; pinnæ 30-40 on each side, oblong-obtuse, truncate or cuneate at the base; rachis black, glabrous, narrowly winged. Sori 3 mm. long, narrowly ovate, in the middle of the lateral vein; indusium whitish, entire.

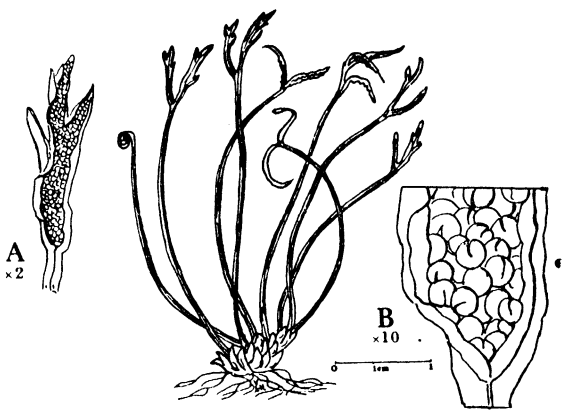
Late May—late Sept. (Muker, Yorkshire.)
A. pinna. B. sorus.

33. ASPLENIUM VIRIDE Huds. The GREEN SPLEENWORT grows in the clefts of walls and basic rocks in highland Britain, though not commonly. Fronds many, 1-6 in. (2-15 cm.) high, tufted, many growing from a short, ± erect, somewhat scaly rhizome, linear in outline, pinnate; pinnæ 30-40 on each side, orbicular, truncate or cuneate at base; rachis green, except at the base, glabrous, unwinged. Sori 5 mm. long, narrowly ovate on the lower part of the lateral vein; indusium whitish, entire.

Early June—mid Sept. (Muker, Yorkshire.)
A. pinna. B. sorus.

34. ASPLENIUM RUTA-MURARIA L. The WALL SPLEENWORT grows commonly in the clefts of walls and basic rocks throughout the British Isles. Fronds several, 1-4 in. (2-10 cm.) high, tufted, growing from a short, creeping, scaly rhizome, ovate in outline, bipinnate; pinnæ 2-5 on each side; pinnules triangular, stalked, toothed in the upper part; rachis narrowly winged. Sori 5 mm. long, linear, on the lower part of the lateral vein, joined when old; indusium whitish, crenulate.

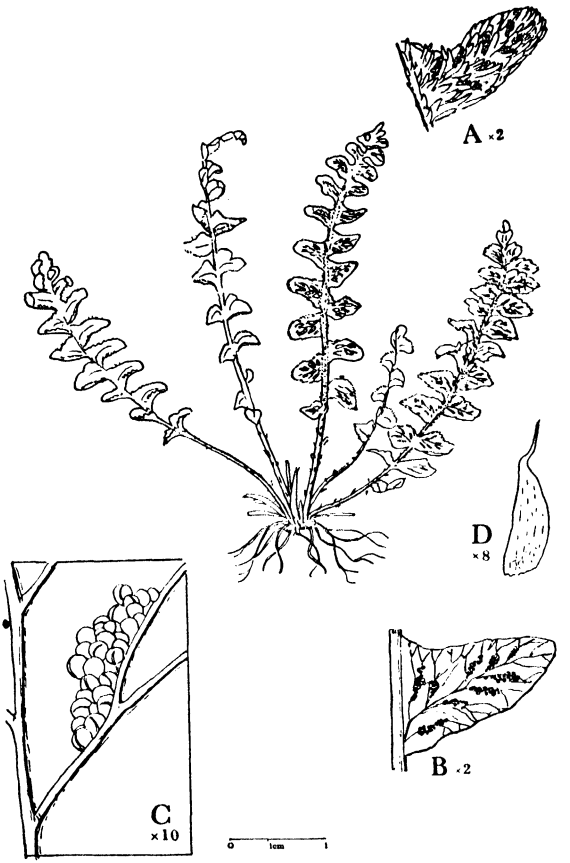
Mid June—early Oct. (Fort William, Inverness.)
A. pinna. B. sorus.



35. ASPLENIUM SEPTENTRIONALE (L.) Hoffm. The FORKED SPLEENWORT grows very rarely in crevices of rocks in some parts of W. Britain, S. Scotland and Co. Down. Fronds firm, dark green, rather few, 1-4 in. (2-10 cm.) high, growing from a short, creeping, rather scaly rhizome, linear-lanceolate in outline, divided dichotomously; pinnæ few, linear, sub-acute, entire or sharply toothed at apex, ascending; rachis glabrous. Sori 15 mm. long, linear, almost the length of the subtending lateral vein; indusium whitish, entire.

Mid July—late Sept. (Dolgelley, Merioneth.)
A. pinna. B. sorus.

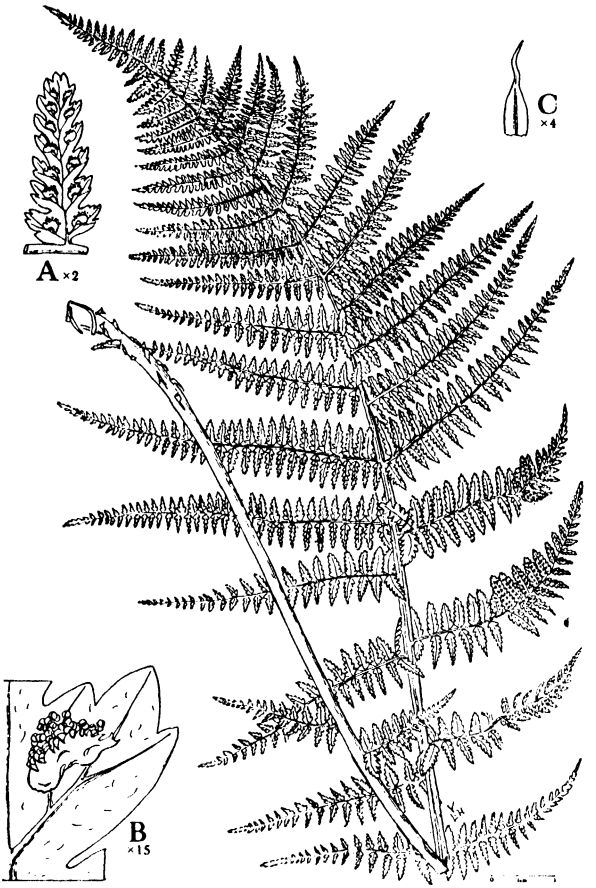
(*A. germanicum* auct. = *A. x breynii* Retz, is a hybrid between this and *A. trichomanes*.)



CETERACH Gars. Small, rather stout plants with divided fronds and veins joined at top; sori elongate; indusium absent or rudimentary, but pinnæ densely covered below with overlapping, chaffy scales.

36. CETERACH OFFICINARUM DC. The RUSTY-BACK FERN grows on walls and in the crevices of limestone rocks and is rather common in the wetter regions of the British Isles and rare or absent in the eastern part. Fronds 2-8 in. (5-20 cm.) long, dark green above, pale green and brown beneath, coriaceous, densely tufted, growing from a short, ± erect, scaly rhizome, simply pinnate; pinnæ slightly toothed, ovate and apparently truncate, as one side is parallel to, and at times confluent with, the rachis; underside covered with numerous chaffy scales; rachis scaly, bare portion very short. Sori naked, elongate, hidden by the scales; indusium absent.

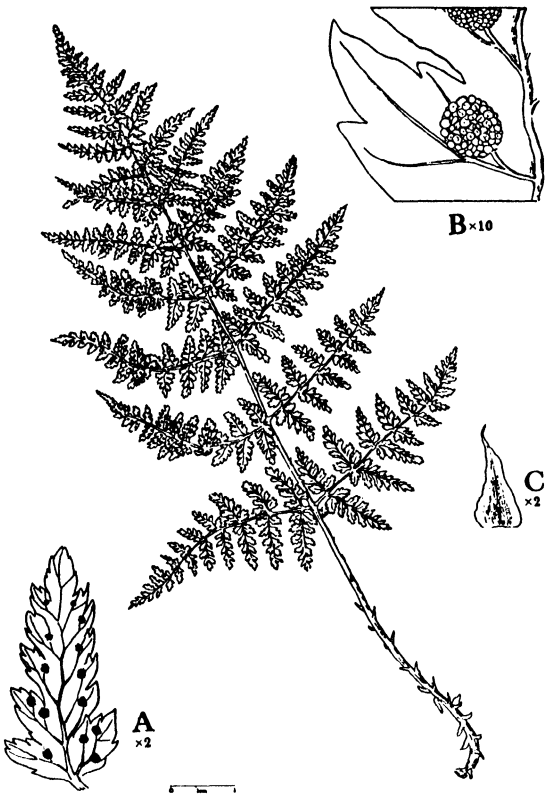
Late June—mid Sept. (Grasmere, Westmorland.)
A. pinna, lower surface. B. sori with scales removed. C. sorus. D. rachis scale.



ATHYRIUM Roth. Stout plants with large fronds all alike and a thick rhizome. Sori many on each pinnule; indusium usually half-ovate, attached along part of one side, but at times absent or caducous.

37. ATHYRIUM FILIX-FEMINA (L.) Roth. The LADY-FERN grows in damp woods and hedgebanks on non-calcareous soils abundantly in N. and W. Britain, but more rarely in the eastern part. Fronds several, light green, thin, 20-30 in. (50-75 cm.) long, growing in a crown from a short, stout, scaly rhizome, ovate-lanceolate in outline, acute, bipinnate; pinnæ 20-30 pairs; pinnules often over 40 to the pinna, narrowly lanceolate, acutely toothed, sessile, truncate at narrowed base; rachis naked except for a few, rather long scales at base. Sori 0·4 mm., one on each lobe of the pinnule, nearer the midrib than the margin, borne by the lowest secondary nerve; indusium toothed.

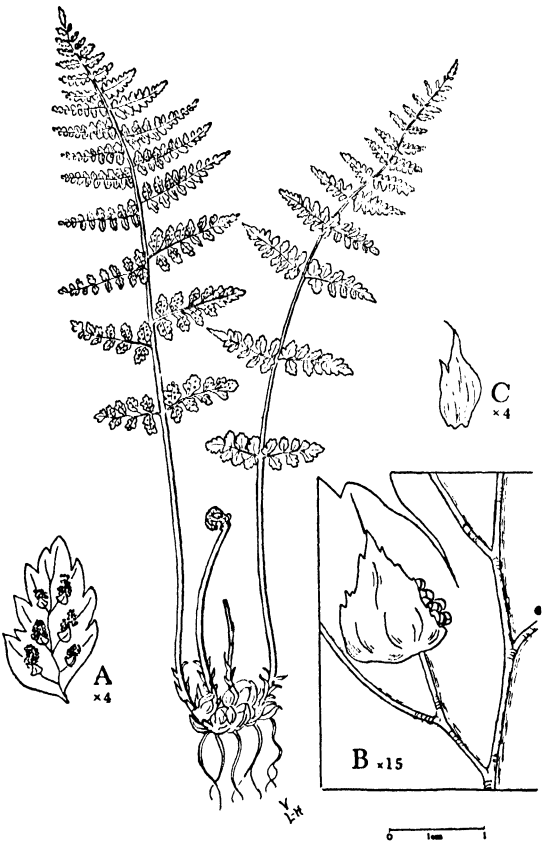
Late June—late Aug. (Grasmere, Westmorland.)
A. pinnule. B. sorus. C. rachis scale.



38. ATHYRIUM ALPESTRE (Hoppe) Rylands. The ALPINE LADY-FERN grows on screes and rocks on acid soils at high elevations in the Scottish Highlands. Fronds several, light green, thin and flaccid, 15-24 in. (38-60 cm.) long, growing in a crown from a short, scaly rhizome, lanceolate-acute in outline, bipinnate; pinnæ 20-30 pairs; pinnules about 30 to the pinna, broadly lanceolate, toothed, sessile, truncate at narrowed base; rachis naked except for a few short scales at the base. Sori 0·3 mm. diam., one on each lobe of the pinnule nearer the margin than the midrib; indusium hardly developed, absent in mature plants.

Early July—late Aug. (Clova, Perthshire.)

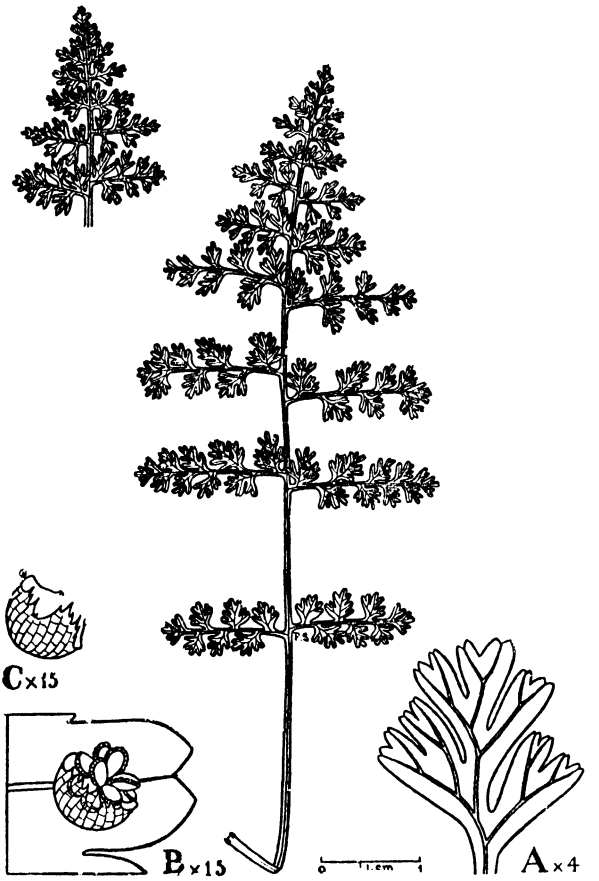
A. pinnule. B. sorus. C. rachis scale.



CYSTOPTERIS Bernh. Slender plants with divided fronds all alike and a slender rhizome. Sori many on each pinnule; indusium attached to the base of the sorus, flap-like.

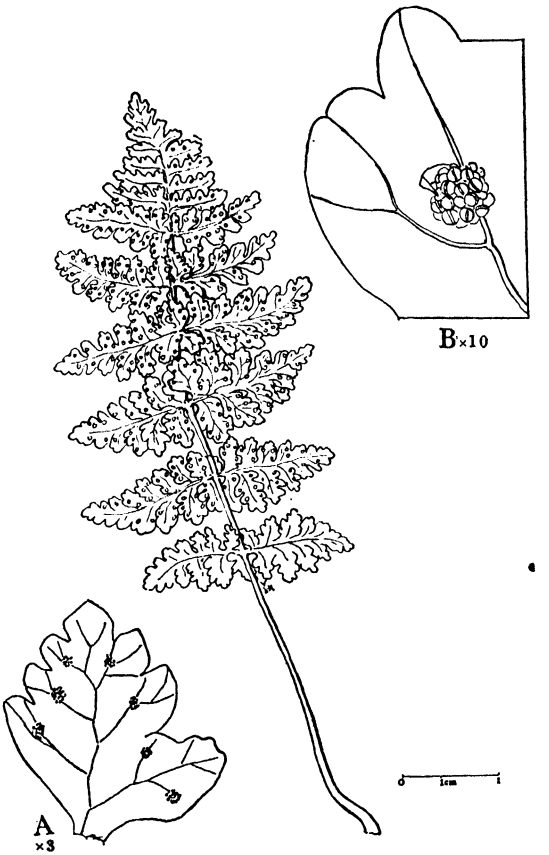
39. CYSTOPTERIS FRAGILIS (L.) Bernh. The COMMON BLADDER FERN grows in walls and rocky woods on basic soils commonly in highland Britain and rarely in the eastern and southern portions. Fronds few, rather dark green, 2-12 in. (5-30 cm.) long, very variable, tufted and growing from a short, rather slender, scaly rhizome, usually lanceolate in outline, bi- or tripinnate; pinnæ thin and flaccid; pinnules about 12-20 to the pinna, ovate, subsessile, acutely toothed, tapering to the base, veins not reaching the acute apices; rachis green to black, smooth, naked except for a few scales at the base; sori one on each lobe of the pinnule, central; indusium triangular, slightly toothed.

Early June—mid Sept. (Muker, Yorkshire.)
A. pinnule and sori. B. single sorus. C. rachis scale.



40. CYSTOPTERIS REGIA (L.) Desv. This ROYAL BLADDER FERN is a very rare plant and occurs on mountain cliffs only in Upper Teesdale. Fronds few, slender, dark green, 6-9 in. (15-23 cm.) high, growing from a short, decumbent, rather slender rhizome, lanceolate in outline, bipinnate; pinnæ thin and flaccid; pinnules about 10 to the pinna, broadly ovate, subsessile, rather bluntly and deeply toothed, tapering but subtruncate at the base, veins reaching the emarginate apices; rachis green with leafy part twice as long as bare portion, naked except for a few scales at the base. Sori one on each lobe of the pinnule, central; indusium rounded, toothed.

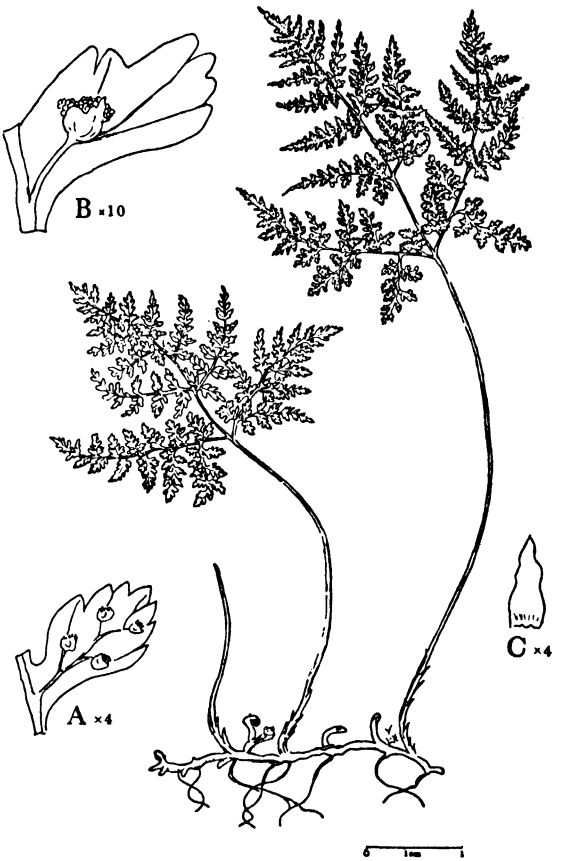
Early June—mid Sept. (Upper Teesdale, Durham.)
A. pinnule. B. sorus. C. indusium.



41. CYSTOPTERIS DICKIEANA Sim. This DICKIE'S BLADDER FERN is found only in caves by the seashore in Kincardineshire and is very rare. Fronds few, translucent, green, 3-6 in. (8-15 cm.) high, growing from a short, rather slender, scaly rhizome, lanceolate-triangular in outline, usually bipinnate; pinnæ 6-10 pairs, middle ones usually overlapping; pinnules 9-15 to the pinna, broadly lanceolate, subobtuse with rounded teeth, tapering to the base, subsessile, nerves often reaching the sinus between two lobes; rachis green to black, smooth, naked except for a few scales at the base. Sori one on each lobe of the pinna, nearer the apex than the base; indusium triangular, slightly toothed, spores rugose.

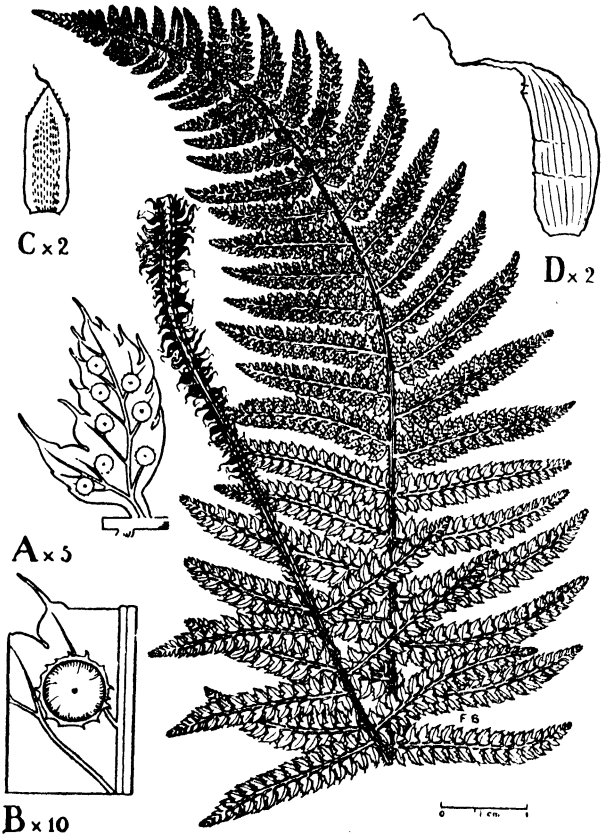
Late June—late Aug. (Kincardineshire.)

A. pinnule and sori. B. single sorus.



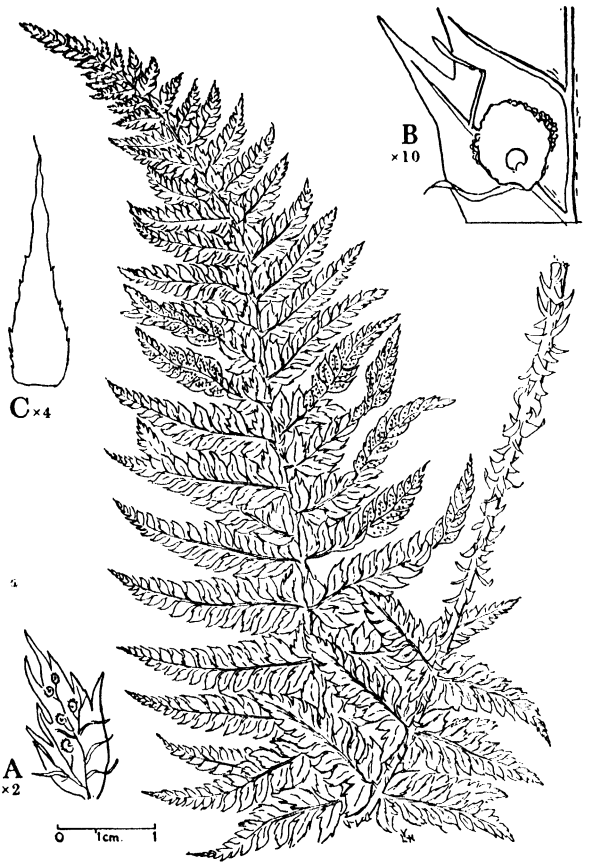
42. CYSTOPTERIS MONTANA (Lam.) Desv. The MOUNTAIN BLADDER-FERN occurs rarely among damp, usually basic rocks, on some mountains in N. England and the Scottish Highlands. Fronds subsolitary, translucent, green, 3-6 in. (8-15 cm.) high, growing from a long, creeping, black, slender rhizome, triangular in outline, partly tripinnate; lower pinnæ bipinnate; pinnules 12-15 to the pinna, broadly lanceolate, acute, with rounded teeth or lobes, subsessile, rather bluntly and deeply toothed, tapering and subtruncate at the base, nerves reaching the emarginate apices; rachis green, naked except for a few scales at the base. Sori one on each lobe of the pinnule, central; indusium ovate, subacute, irregularly toothed.

Early July—mid Aug. (Ben Laiough, Perthshire.)
A. pinnule and sori. B. single sorus. C. rachis scale.



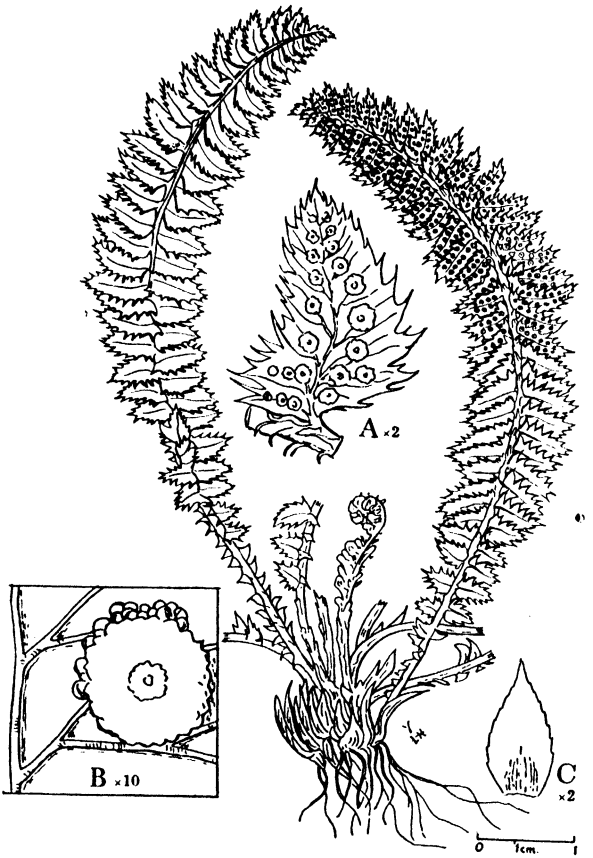
POLYSTICHUM Roth. Stout or rather stout plants with fertile and sterile fronds alike. Fronds usually coriaceous, pinnules with acuminate teeth. Sori large, indusium peltate, orbicular.

43. POLYSTICHUM SETIFERUM (Forsk.) Woynar (*P. angulare* (Kit.) Presl.). This SOFT SHIELD FERN grows, quite commonly, in woods and hedgerows throughout the British Isles northwards to Perthshire, especially in S.W. England and Ireland. Fronds green, 12-40 in. (30-100 cm.) long, several growing from a stout, ascending, scaly rhizome, narrowly lanceolate in outline, rather soft in texture, bipinnate; pinnæ 20-35 pairs, lowest only a little shorter than central ones; pinnules about 15 on each side, lanceolate-acute, with suddenly acuminate teeth, base somewhat cuneate or abruptly narrowed; rachis covered with lanceolate to ovate, concolorous scales. Sori orbicular, in two rows on each pinnule, subtending vein not prolonged beyond the sorus; indusium orbicular, jagged. Late June—mid Aug. (Beaminster, Dorset.)
A. pinnule. B. sorus. C., D rachis scales.



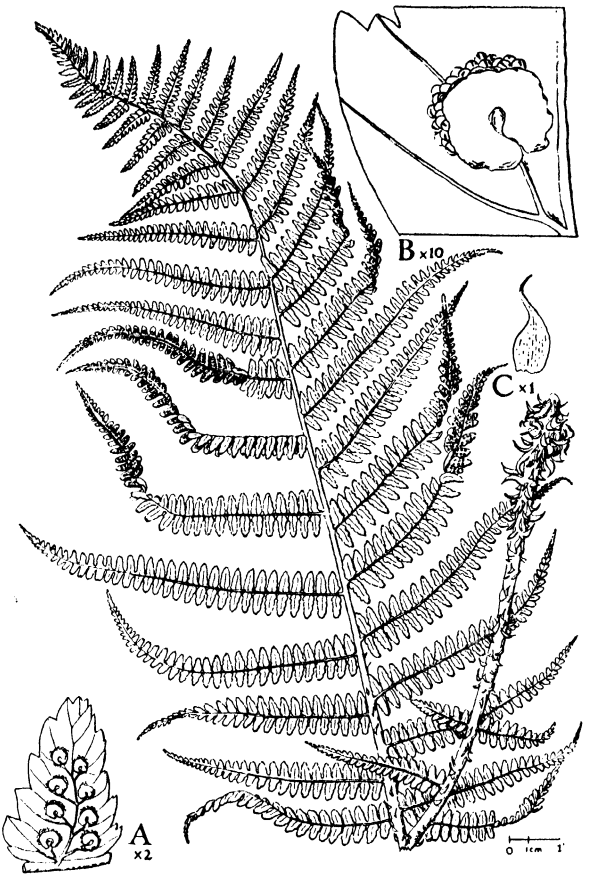
44. POLYSTICHUM ACULEATUM (L.) Roth. (*P. lobatum* (Huds.) Woynar). The HARD SHIELD FERN grows in woods and in hedges throughout the British Isles, commonly in the wetter parts and rarely in the drier. Fronds dark green, 12-30 in. (30-75 cm.) long, several growing from a stout, ascending rhizome, linear-lanceolate in outline, somewhat coriaceous and rigid, bipinnate or almost pinnate; pinnæ 20-40 pairs, lowest usually much shorter than central ones; pinnules about 15 on each side, lanceolate, acute, with sharp teeth narrowed gradually to a point, base truncate, sessile; rachis covered with ovate bi-coloured brown scales. Sori orbicular, usually two rows on each pinnule, subtending vein prolonged beyond the sorus; indusium orbicular, entire.

Late June—mid Aug. (Great Henny, Suffolk.)
A. pinnule. B. sorus. C. rachis scale.



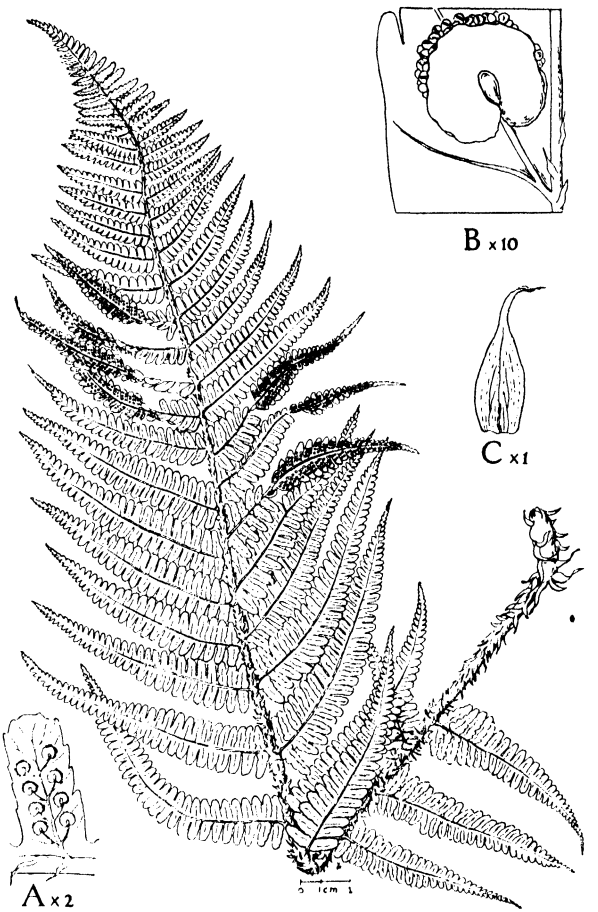
45. POLYSTICHUM LONCHITIS (L.) Roth. The HOLLY FERN grows in the clefts of basic rocks on mountains in the highland portion of Britain, but uncommonly. Fronds stiff and dark green, 6-15 in. (15-38 cm.) long, tufted, several growing from a stout, scaly, ascending rhizome, linear-lanceolate in outline, coriaceous, pinnate; pinnæ 20-40 on each side, ovate-acute, with numerous sharp, acuminate, aristate teeth, base truncate with short pedicel; rachis leafy to the base, covered with numerous brown, concolorous scales. Sori 1·7-2·0 mm., two rows on each pinna, near the midrib; indusium orbicular, toothed.

Mid July—late Aug. (Ben Lawers, Perthshire.)
A. pinna. B. sorus. C. rachis scale.

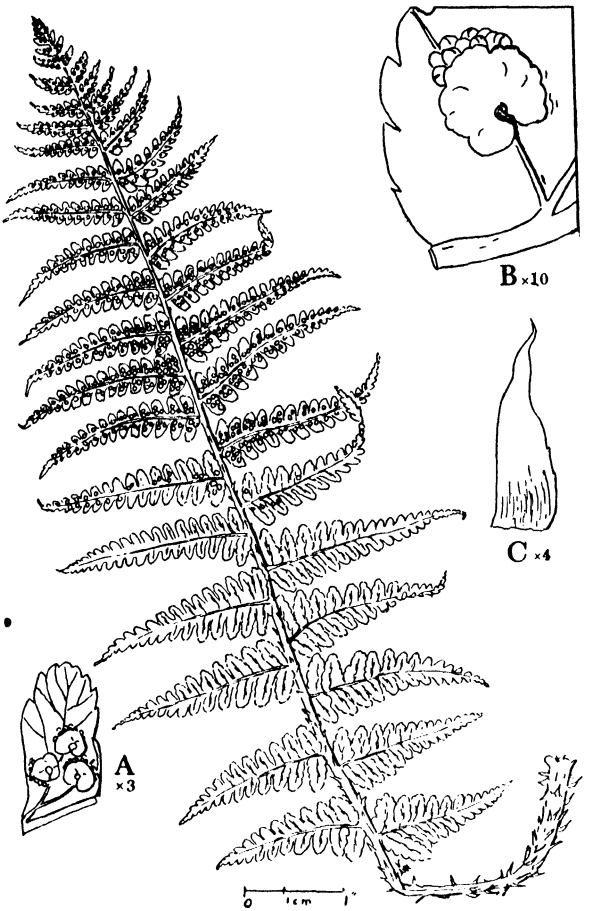


DRYOPTERIS Adans. (*Lastrea* Presl.). Stout or rather stout plants with sterile and fertile fronds alike, but not coriaceous; pinnules with blunt teeth. Sori large; indusium reniform, joined in the emarginate portion.

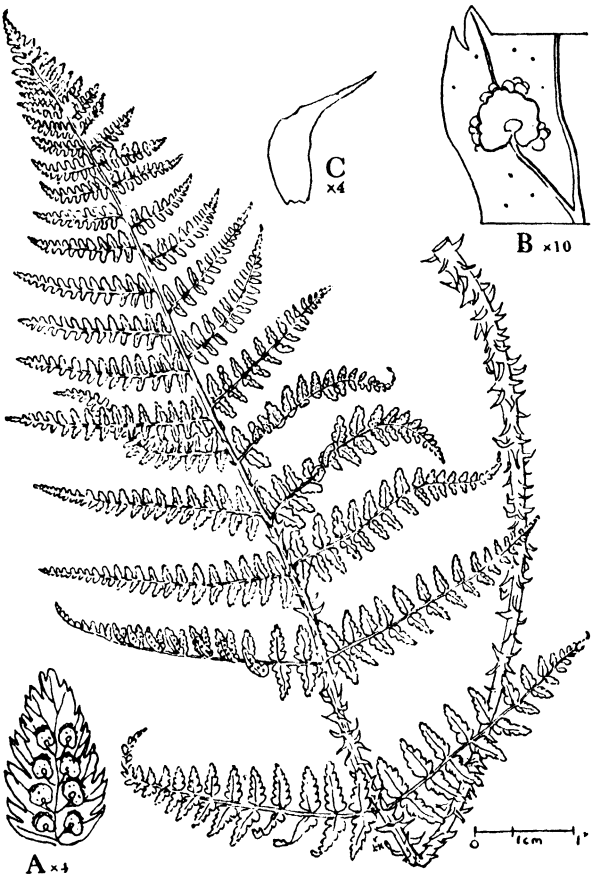
46. DRYOPTERIS FILIX-MAS (L.) Schott. This COMMON MALE FERN grows abundantly in woods and on hedgebanks throughout the British Isles. Fronds stout, firm and green, 24-30 in. (60-75 cm.) long, growing in one or two crowns from a stout, ascending, scaly rhizome, broadly lanceolate in outline, pinnate, with pinnæ deeply pinnatifid, pinnæ 20-30 pairs, not darkened above the junction with the rachis, lower rather shorter than central ones, lobes or pinnules 16-20 pairs, oblong-obtuse, ± equally and acutely toothed all round, eglandular; rachis with the bare portion ¼-½ length of leafy part, rather thinly covered with pale brown, acute, concolorous scales. Sori 3 mm. diam., in a central row down each side of the pinnule, subtended by a short branch of the secondary nerve; indusium entire, reniform, eglandular scarcely covering the sporangia. Mid July—mid Sept. (New Forest, Hampshire.)



47. DRYOPTERIS BORRERI Newm. This SCALY MALE FERN grows abundantly in woods and on mountain screes, usually on non-basic soils throughout the British Isles. Fronds stout, firm and yellowish-green, 24-30 in. (60-75 cm.) long, growing in one or two crowns from a stout, ascending, scaly rhizome, broadly lanceolate in outline, pinnate, with pinnæ rather deeply pinnatifid; pinnæ 20-30 pairs, often darkened above the junction with the rachis, lower rather shorter than the central ones; lobes or pinnules 16-20 pairs, oblong-obtuse with a few teeth at apex only, eglandular; rachis with the bare portion quarter to half-length of leafy part, densely covered with brown, concolorous scales. Sori large, 3 mm. diam., in a central row down each side of the pinnule, subtended by a short branch of the secondary nerve; indusium entire, reniform, somewhat glandular at times, covering the sporangia at least when young. Mid July—mid Sept. (Plymouth, Devon.)
A. pinnule. B. sorus. C. scale of rachis.

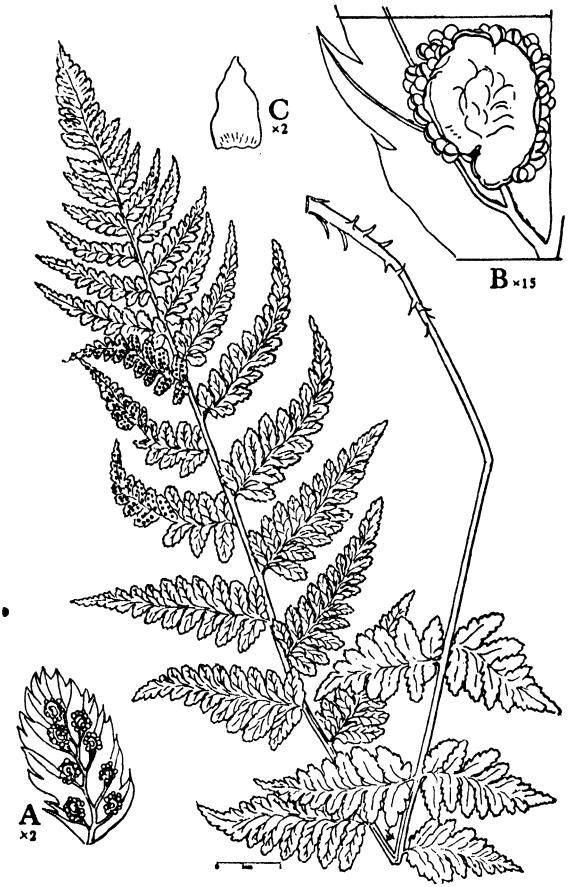


48. DRYOPTERIS ABBREVIATA (DC) Newman. This MOUNTAIN MALE FERN grows rather infrequently in mountain screes throughout the British Isles. Fronds firm and green 9-20 in. (22-50 cm.) long, rather slender, forming several crowns at the end of the erect, scaly rhizome, lanceolate in outline, pinnate, with pinnæ deeply pinnatifid; pinnæ 20-30 pairs, lower rather shorter than central ones, not darkened at the junction with the rachis; lobes or pinnules 15-20 pairs on each pinna, apical portion subentire, remainder oblong-obtuse, crenate with broad, obtuse teeth, glandular below; rachis with the bare portion a ¼-½ as long as leafy part, clothed, somewhat densely, with brown, concolorous scales. Sori 1·5-2·0 mm., rather large, 2-4 or at times only one, on each side of the midrib, subtended by a short branch of a secondary vein; indusium reniform, glandular on the margin, scarcely covering the sporangia. Mid July—mid Sept. (Kentmere, Westmorland.)
A. pinnule. B. sorus. C. scale of rachis.



49. DRYOPTERIS VILLARSII (Bell.) Woynar (*D. rigida* (Hoffm.) Underw.). This STIFF MOUNTAIN FERN grows, somewhat rarely, in the crevices of limestone cliffs and rocks in N. Wales and N. England. Fronds rather stiff and dark green, 7-15 in. (17-38 cm.) high, several growing from a decumbent or ascending stout, scaly rhizome, narrowly lanceolate in outline, bipinnate; pinnæ 8-20 pairs; pinnules 8-15 pairs to the pinna, narrowly lanceolate, with a subsessile, cuneate, asymmetric base, somewhat glandular, acutely and irregularly toothed; rachis with bare portion much shorter than leafy part, clothed with long, narrow, acuminate, concolorous scales. Sori 0·7-1·0 mm. diam., numerous, in a row close to the midrib, subtended by the lowest branch of the secondary nerve; indusium entire, reniform, glandular, covering the sporangia.

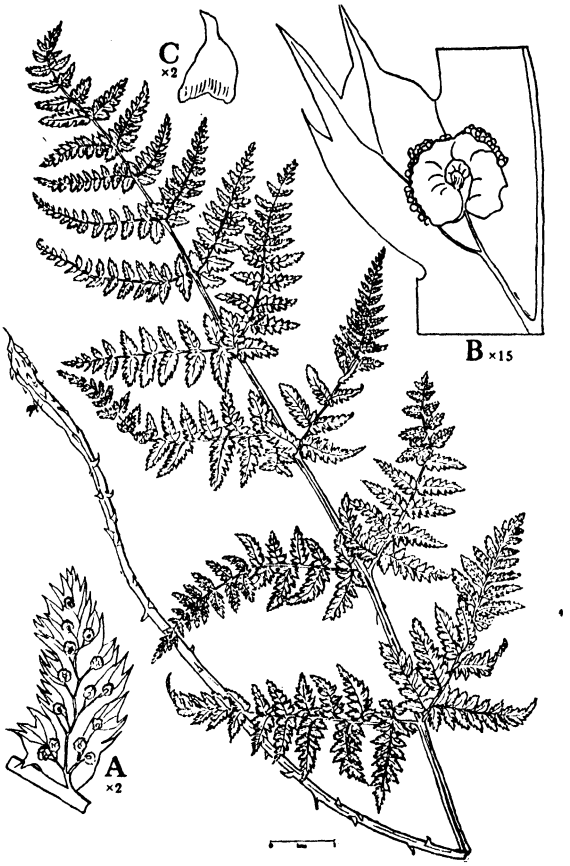
Mid July—early Sept. (Raven Scar, Lancashire.)
A. pinnule. B. sorus. C. rachis scale.



50. DRYOPTERIS CRISTATA (L.) A. Gray. The CRESTED MARSH BUCKLER-FERN grows rarely in bogs and marshy woods in the lowland parts of S., central and E. England, and is decreasing rapidly owing to drainage. Fronds rather stout, dark green, 15-36 in. (38-90 cm.) high, a few growing from a stout, decumbent, scaly rhizome, narrowly lanceolate in outline, bi- to tripinnate; pinnæ 10-20 pairs, lowest somewhat ovoid, upper lanceolate; pinnules or lobes 5-12 pairs in the middle pinna, broadly oblong, overlapping, sessile, with a wide, truncate base, eglandular, serrate, teeth acute; rachis with the bare portion much shorter than the leafy part, naked except for a few narrow, lanceolate, concolorous scales at the base. Sori 1·5-2·0 mm. diam., numerous, in a row down each side of the midrib and subtended by the lowest nerve of each secondary vein; indusium reniform, entire or wavy, eglandular.

Mid July—mid Sept. (Ipswich, Suffolk.)

A. pinnule. B. sorus. C. rachis scale.

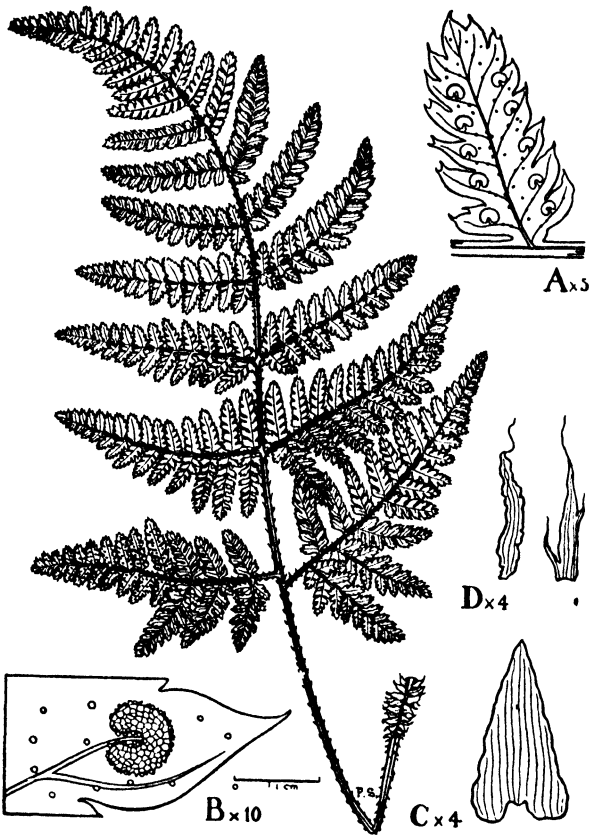


51. DRYOPTERIS LANCEOLATOCRISTATA (Hoffm.) Alston (*D. spinulosa* Watt.). This SMALL BUCKLER-FERN grows commonly in damp woods on heaths and marshes throughout the wetter portions of the British Isles and rarely elsewhere. Fronds rather slender, light green, 15-30 in. (38-75 cm.) high, growing from a stout, decumbent, scaly rhizome, lanceolate in outline, bi- to tripinnate; pinnæ 8-20 pairs; pinnules 10-15 to the pinna, lanceolate, those on the lowest pinna, pinnate, sessile, with an asymmetric, truncate, eglandular base, teeth acuminate; rachis with the bare portion rather shorter than the leafy part, covered with narrow, lanceolate, concolorous scales. Sori 0·8-1·0 mm. diam., one or sometimes 2 on each central lobe of the pinnule, subtended by the lowest branch of the secondary nerve; indusium reniform, entire or wavy, eglandular.

Mid July—mid Sept. (Hatchmere, Cheshire.)
A. pinnule. B. sorus. C. rachis scale.

52. DRYOPTERIS DILATATA (Hoffm.) A. Gray. This GREATER BUCKLER-FERN grows commonly in woods, damp hedgerows and rock ledges throughout the British Isles. Fronds stout, firm and dark green, 12-60 in. (30-150 cm.) high; several growing as a crown from a stout, erect or decumbent, scaly rhizome, broadly lanceolate to ovate in outline, bi- to tripinnate; pinnæ 12-20 pairs; pinnules 15-24 to the pinna, those on the lowest pinnæ pinnate, on the middle and upper, broadly lanceolate, sub-sessile, with an asymmetric, truncate to cuneate base, eglandular, serrate, teeth incurved, mucronate; rachis with the leafy portion much longer than the bare part, clothed with lanceolate, acute, bicoloured scales, darker in the centre. Sori 1 mm. diam. in a row down each side of and rather near the midrib, subtended by the lowest branch of the secondary nerve; indusium entire, sometimes fringed with a few glands. Mid July—mid Sept. (Adel, Leeds.)

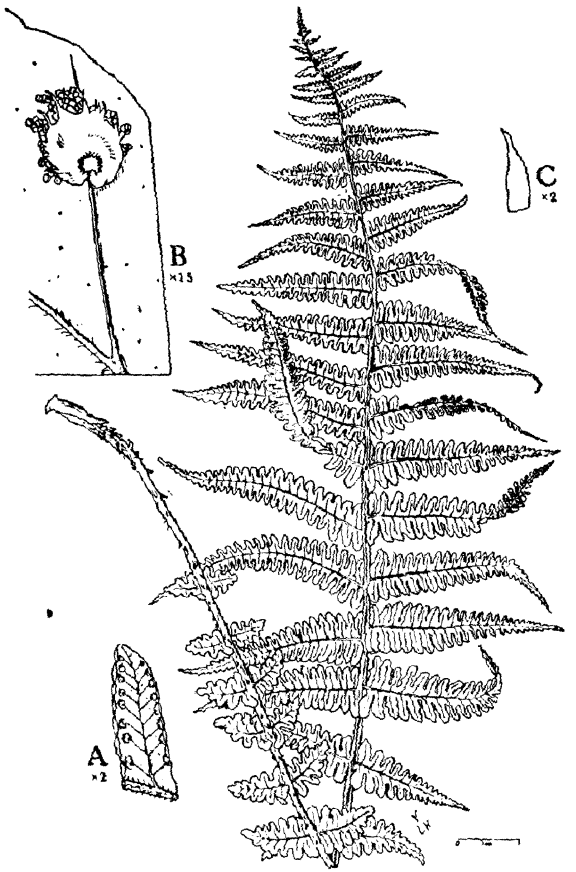
A. pinnule. B. sorus. C, D. rachis scales.



53. DRYOPTERIS ÆMULA (Ait.) O. Kuntz. The HAY-SCENTED BUCKLER-FERN grows in woods, hedgebanks and among shaded rocks, uncommonly, in the wetter counties of the British Isles. Fronds rather stout, firm and light green, 6-20 in. (15-50 cm.) high, growing as a crown from a short, erect, stout, scaly rhizome, lanceolate to ovate in outline bi- to tripinnate; pinnæ 10-20 pairs, lowest longest; pinnules or lobes 5-10 to the pinna, those on the lowest pinnæ pinnate; on the upper oblong-lanceolate, subsessile, with a subsymmetric cuneate base, glandular, serrate, teeth rather irregular, acute to acuminate; rachis with the leafy portion much longer than the bare part, clothed with triangular to subulate, concolorous scales. Sori in a row down each side of the midrib but rather near the margin, subtended by a short branch of the secondary vein; indusium irregularly toothed, fringed, with sessile glands.

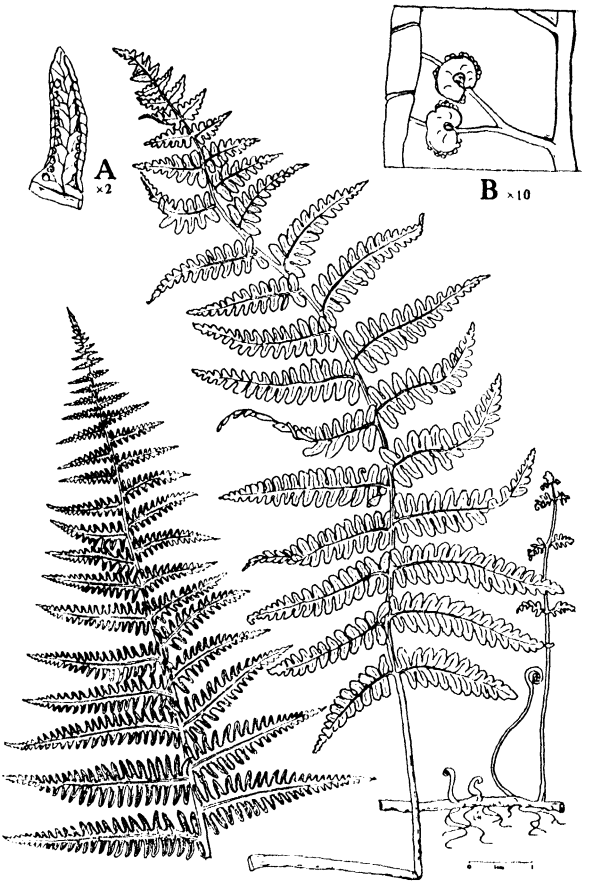
Mid July—mid Sept. (Scarborough, Yorkshire.)

A. pinnule. B. sorus. C, D. rachis scales.



54. DRYOPTERIS (THELYPTERIS) OREOPTERIS (Ehrh.) Maxon. The MOUNTAIN FERN grows in woods, mountain pastures, on streamsides and on rocks, in most of the highland and wetter parts of the British Isles, but it is rare in the eastern portion. Fronds rather stout, firm and light green, scented, 12-20 in. (30-50 cm.) high, growing in a crown from a stout, ascending, scaly rhizome, lanceolate in outline, pinnate with pinnæ pinnatifid; pinnæ 15-30 pairs, lower ones short, lobes 16-20 pairs, oblong-obtuse, crenate, glandular, margins often recurved; rachis with the bare portion very short, thinly covered with brown, lanceolate scales. Sori small, 1·5 mm. diam., in a row near the margin of the pinnule, subtended by the secondary nerves; indusium irregularly toothed.

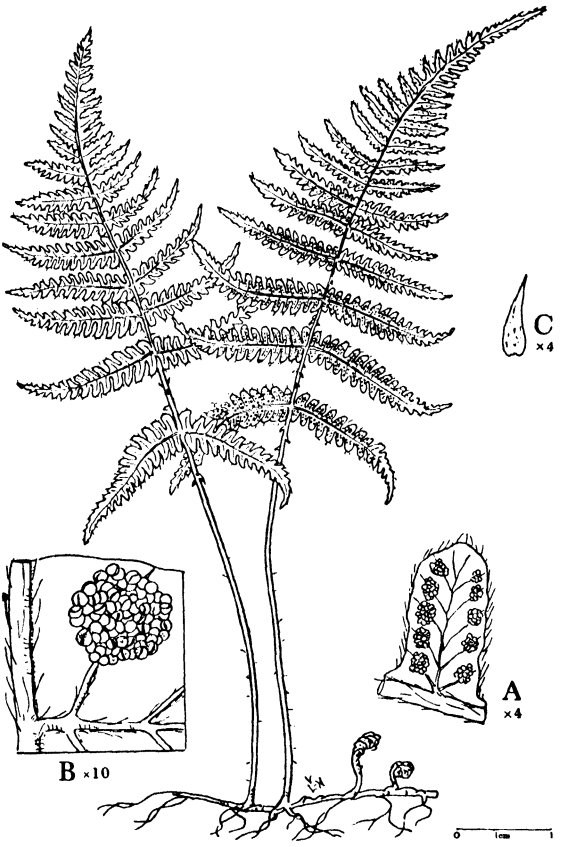
Early July—late Aug. (Grasmere, Westmorland.)
A. lobe of pinna. B. sorus. C. rachis scale.



55. DRYOPTERIS THELYPTERIS (L.) A. Gray=TH. PALUSTRIS Schott. The MARSH FERN grows in fens and marshes and is spread over most parts of England and Wales, the northern part of Ireland and Perth and Forfar. Fronds rather dark and soft, green, subsolitary, 6-48 in. (15-120 cm.) long, growing from a long, slender, almost naked rhizome, oval-lanceolate in outline, bipinnate; pinnæ 12-20 pairs; pinnules 10-15 on longest pinnæ, oblong, attached on a long truncate base, entire, margins of fertile pinnules recurved; rachis with bare portion rather shorter than leafy part, dark green, naked. Sori small, 1·5 mm. diam., numerous, in a submarginal row on each pinnule, subtended by one or two of the lower branches of the secondary nerve; indusium irregularly toothed.

Mid July—early Sept. (Stow Beedon, Norfolk.)

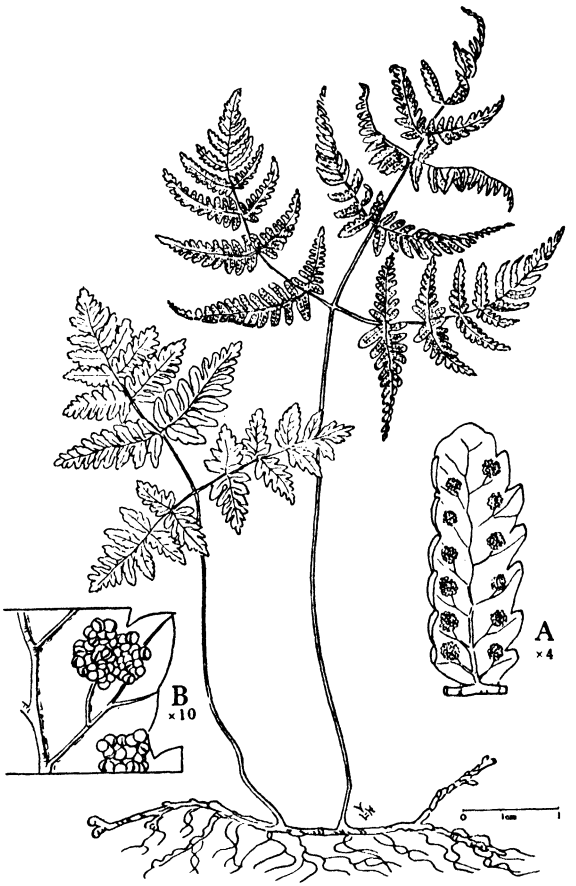
A. pinnule. B. sorus.



PHEGOPTERIS Fée. Slender plants with much-divided fronds, all alike, and a slender rhizome. Sori many on each pinnule, veins of pinnules reaching the margin; indusium absent.

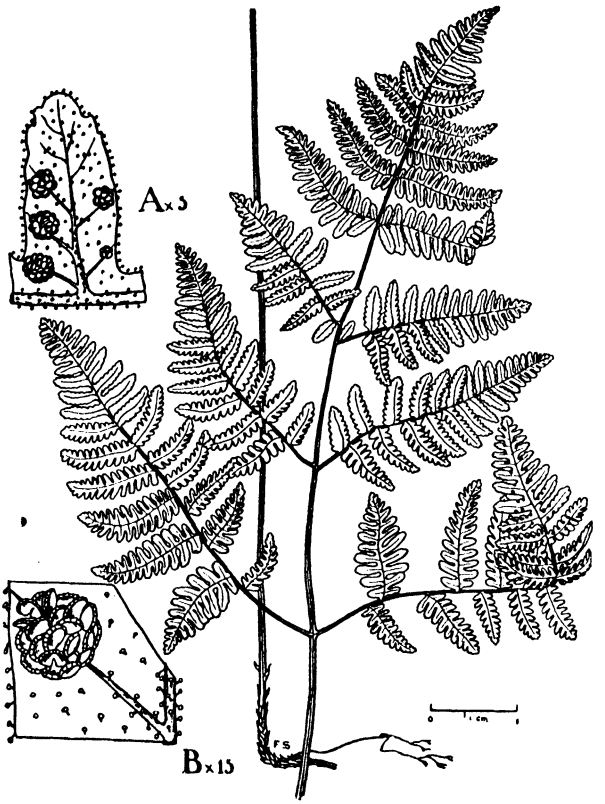
56. PHEGOPTERIS POLYPODIOIDES Fée = THELYPTERIS PHEGOPTERIS (L.) Sloss. The BEECH FERN grows in damp woods and on rocks in non-calcareous districts; it is common in the north and west, but very rare in the south and east. Fronds rather flaccid, light green, 4-8 in. (10-20 cm.) long, growing singly from a slender, creeping rhizome, triangular in outline, pinnate; lobes or pinnæ 15-20, divided almost to base, hairy, margin wavy; rachis green, bare portion about equalling the upper leafy part. Sori numerous, 0·8 mm. diam., subtended by each secondary vein, submarginal.

Mid June—mid Aug. (Grasmere, Westmorland.)
A. lobe or pinnule. B. sorus. C. rachis scale.



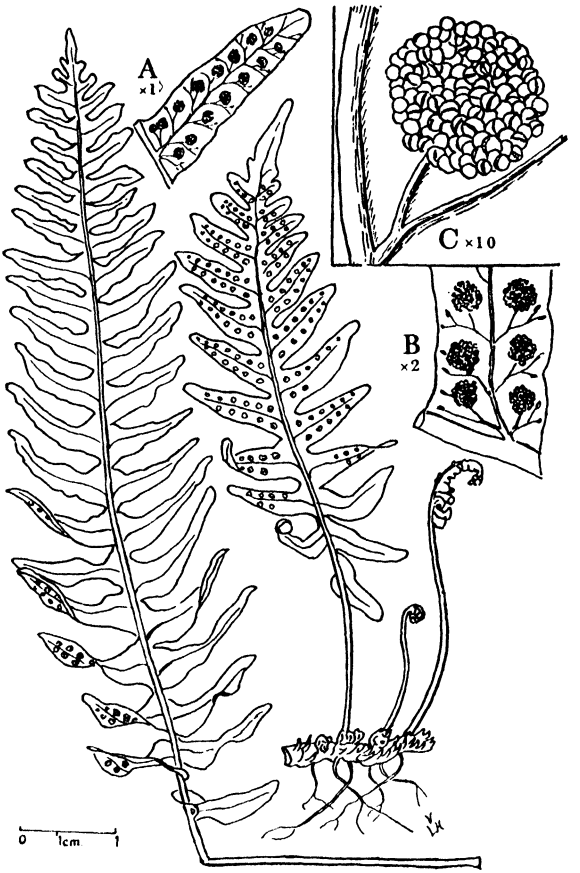
57. PHEGOPTERIS (THELYPTERIS) DRYOPTERIS (L.) Fée. The OAK FERN grows in damp woods and among rocks, in non-calcareous districts, commonly in the north and west, but rarely in the south and east. Fronds rather thin, flaccid, green, 4-15 in. (10-40 cm.) long, growing singly from a slender, creeping rhizome, deltoid in outline; length of lowest basal lobes exceeding the height, bipinnately divided and lowest lobes themselves bipinnate; pinnules or lobes divided almost to base, oblong, toothed, glabrous; rachis green, glabrous, bare portion much longer than the leafy part. Sori numerous, 0·8 mm. diam., subtended by a branch of the secondary vein, submarginal.

Early July—early Sept. (Grasmere, Westmorland.)
A. pinnule. B. sorus.



58. PHEGOPTERIS (THELYPTERIS) ROBERTIANA (Hoffm.) Braun. The LIMESTONE POLYPODY grows on limestone screes and rocks, but not commonly, in the calcareous districts of England, Perthshire and a few places in Ireland. Fronds rather firm, dark green, 4-15 in. (10-40 cm.) long, few, growing singly from a slender, creeping rhizome, triangular-deltoid in outline, the length greater than the width of the base, bipinnately divided, the lowest pinnæ with deeply-divided lobes; lobes or pinnules oblong, almost entire, glabrous; rachis without scales, green, glandular, bare portion about equal to the leafy part. Sori 0·8 mm. diam., numerous, subtended by a branch of the secondary veins, submarginal.

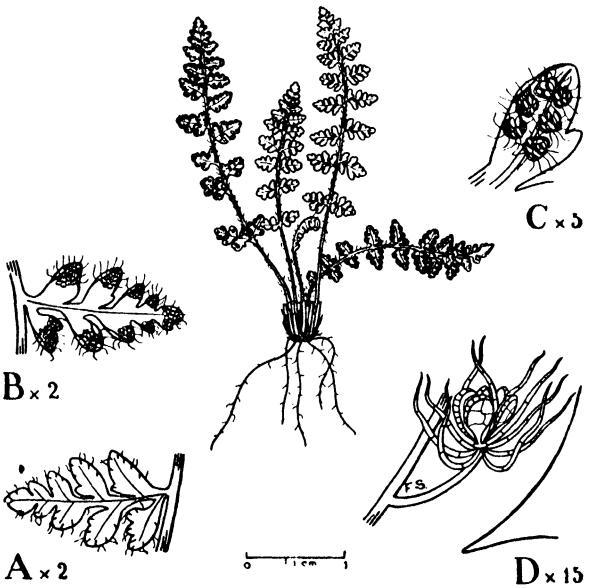
Early July—early Sept. (Killin, Perthshire.)
A. pinnule. B. sorus.



POLYPODIUM L. Rather stout plants with firm, divided fronds all alike, and a stout, scaly rhizome. Sori many on each pinna, veins of pinnules joined near the margin; indusium absent.

59. POLYPODIUM VULGARE L. The COMMON POLYPODY grows in woods, hedges and in clefts of rocks, walls and trees throughout the British Isles, commonly in the north and west, but rarely in the drier eastern and southern districts. Fronds rather thick, green, 6-12 in. (15-30 cm.) long, growing singly, but rather close together, from a creeping, rather slender, scaly rhizome, linear-lanceolate in outline, pinnatisect; lobes oblong, entire, wavy; rachis naked, jointed to rhizome, leafy part as long as or much longer than the bare portion. Sori 2 mm. diam., numerous, subtended by the upper branch of the secondary vein, equidistant from margin and midrib.

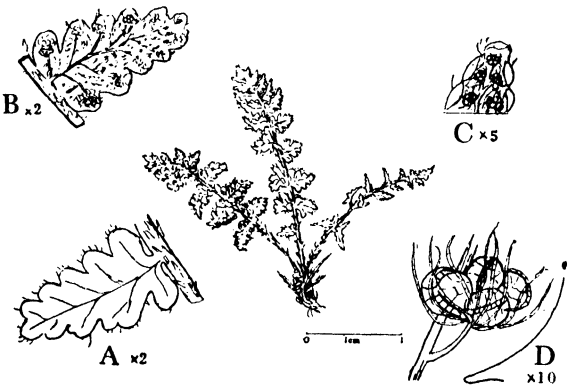
Early June—late Sept. (New Forest, Hampshire.)
A. pinnule. B. sori. C. single sorus.



WOODSIA R.Br. Small plants with pinnate fronds, all alike, and a short, stout, scaly rhizome. Sori orbicular, many on each pinna, indusium at the base of the sorus, fimbriate.

60. WOODSIA ILVENSIS (L.) R.Br. This ALPINE WOODSIA occurs very rarely on mountain rocks and cliffs on a few of the mountains in Wales, N. England and central Scotland. Fronds green, firm, tufted, 2-5 in. (5-13 cm.) long, growing from a short, ± erect, sparsely scaly rhizome, narrowly lanceolate in outline, bipinnate or pinnate; pinnæ 7-15 on each side, oblong, pinnatifid, segments obtuse, crenate, truncate at narrow base, underside covered with subulate, broad scales; rachis scaly, lower bare portion shorter than the leafy part. Sori 0·3 mm. diam., several on the upper part of each lobe of the pinnæ near the margin, subtended by a lateral vein; indusium with long, jointed bristles twice as long as spores.

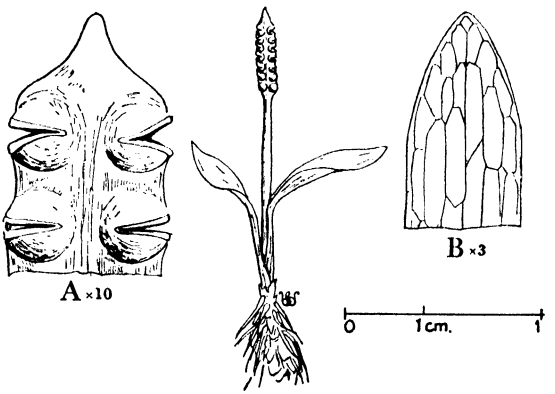
Mid July—mid Aug. (Perthshire.)
A. pinna, upper surface. B. lower surface. C. single pinnule. D. sorus.



61. WOODSIA ALPINA (Bolton) S. F. Gray. This NORTHERN WOODSIA occurs very rarely on mountain cliffs and rocks in a few places in Scotland and N. Wales. Fronds green, firm, tufted, 2-5 in. (5-13 cm.) long, growing from a short, erect, sparsely scaly rhizome, narrowly linear-oblong to lanceolate in outline, bipinnate; pinnæ 5-10 on each side, ovate, triangular, pinnatifid, segments subobtuse, almost entire, with a cuneiform to narrow base, underside naked or with a few short scales; rachis with very few scales, lower bare portion much shorter than the leafy part. Sori 1·0-1·5 mm. diam., several on the upper part of each lobe of the pinnæ near the margin; indusium with long, jointed bristles twice as long as spores.

Mid July—mid Aug. (Glen Cova, Forfar.)

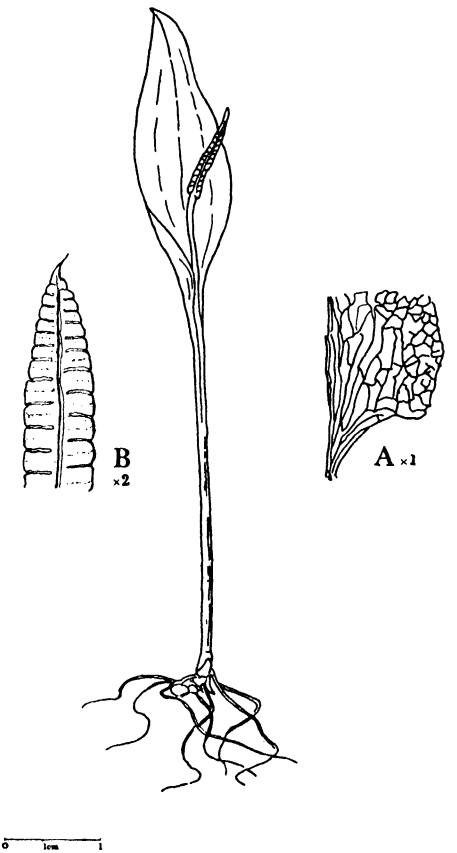
A. pinna, upper surface. B. lower surface. C. single pinnule. D. sorus.



OPHIOGLOSSUM L. Small plants with 1-3 undivided, sterile fronds and a single, simple, fertile frond. Sporangia arranged in two rows on a simple spike, depressed, opening by transverse slits.

62. OPHIOGLOSSUM LUSITANICUM L. This SMALL ADDER'S TONGUE occurs only on cliffs, and then very rarely, in the Scilly Isles. Plant 1-4 in. (3-10 cm.) high, growing from an erect, short, thick, underground rhizome. Sterile fronds 2-3, rarely single, lanceolate, entire, acute, tapered at base; fertile frond overtopping the sterile one, 7-15 mm. long, spike-like, acute; sporangia 5-8 each side, spore smooth.

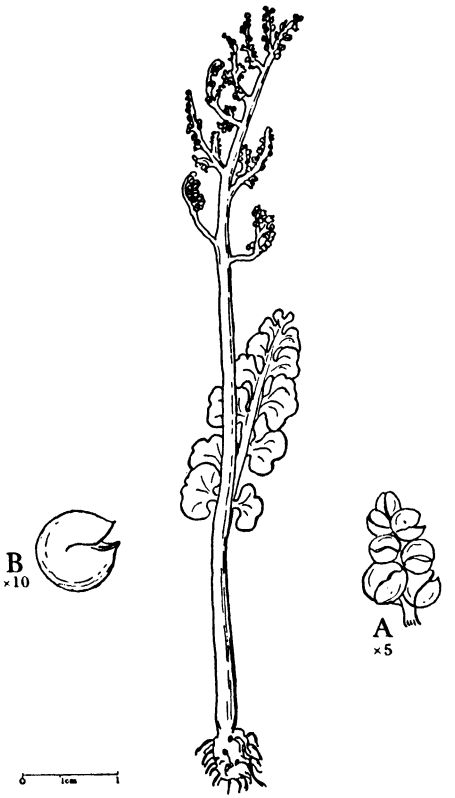
Late Dec.—early Feb. (Scilly Isles.)
A. part of sporophyll. B. sporangia. C. spore.



63. OPHIOGLOSSUM VULGATUM L. The COMMON ADDER'S TONGUE grows rather frequently in damp meadows, fen, scrub and dune slacks throughout the British Isles, though rare in Scotland. Plant 1-6 in. (3-15 cm.) high, growing from an erect, short, underground rhizome. Sterile frond, usually single (rarely more), ovate, entire, obtuse or subacute, net-veined; fertile frond shorter than sterile, spike-like, acuminate; sporangia 16-40 each side.

Mid May—late July. (N. Uist, Scotland.)
A. part of sporophyll. B. sporangia.

(Var. *polyphyllum* A. Br. is smaller and has 2-3 sterile fronds. It occurs rarely in sandy grassland near the sea.)

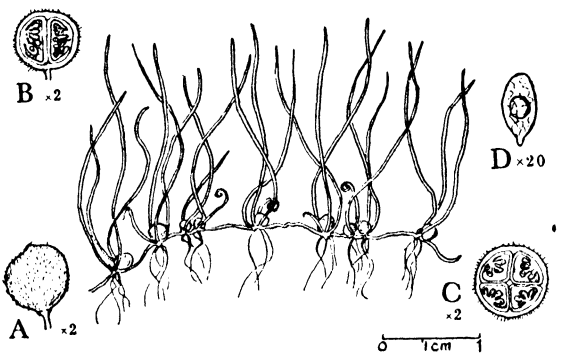


BOTRYCHIUM Sw. Slender plants with a single, or sometimes two, pinnately-lobed, sterile leaves or fronds and a single, compoundly-pinnate, fertile frond. Sporangia sessile, paniculate, opening by transverse slits.

64. BOTRYCHIUM LUNARIA (L.) Sw. The MOONWORT grows in dry grassland and on rocks rather infrequently throughout the British Isles. Plant 2-9 in. (5-23 cm.) high, growing from a short, suberect rhizome. Sterile frond usually single, pinnate; pinnæ about 4-7 pairs, fan-like, entire or crenate; fertile panicle exceeding sterile frond, branched 1-3 times.

Mid May—mid Aug. (Lakenheath, Suffolk.)

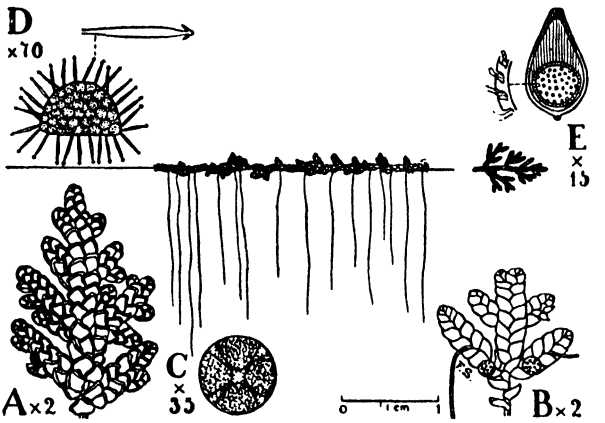
A. part of sporophyll. B. sporangium.



PILULARIA L. Aquatic, perennial herbs with linear leaves, circinate in bud. Sporangia borne in a hard, globose, sporocarp, with 2 or 4 compartments, solitary.

65. PILULARIA GLOBULIFERA L. The PILLWORT is a small plant with numerous filiform leaves 2-4 in. (5-10 cm.) long, growing erect from a slender, far-creeping rhizome. It grows usually completely submerged at the edges of acid lakes and pools here and there throughout the British Isles. Leaves numerous, green, terete, subulate or filiform, glabrous. Sporocarps 3 mm. diam., globular, hairy, growing on short stalks direct from the rhizome, containing 4 sori.

Early July—mid Oct. (Hatchett Pond, Hampshire.)
A. sporocarp. B. sporocarp l.s. C. sporocarp t.s. D. sorus.

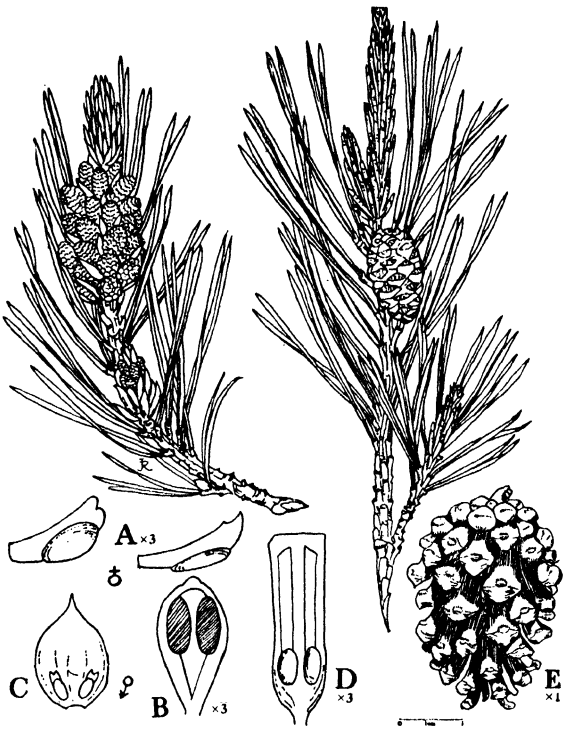


AZOLLA Lam. Floating aquatic herbs with small imbricate leaves. Sporangia of two kinds; the megasporangia with a single spore; the microsporangia with 64 spores; these being grouped when ripe in a mucilaginous mass, the *massula*.

66. AZOLLA FILICULOIDES Lam. The AZOLLA is a small floating, reddish plant about an inch wide which occurs on the surfaces of ditches and pools, there forming dense masses. It is an American plant which has become naturalized here and there in central and southern England. Leaves two-lobed, lower lobe thin and submerged, upper ovate, obtuse, with a broad margin, blue-green and later red, covered with unicellular hairs. Massula with non-septate, hooked glochidia. Lower part of megasporangial wall with deep, circular pits.

Mid Aug.—late Sept. (Worcester.)

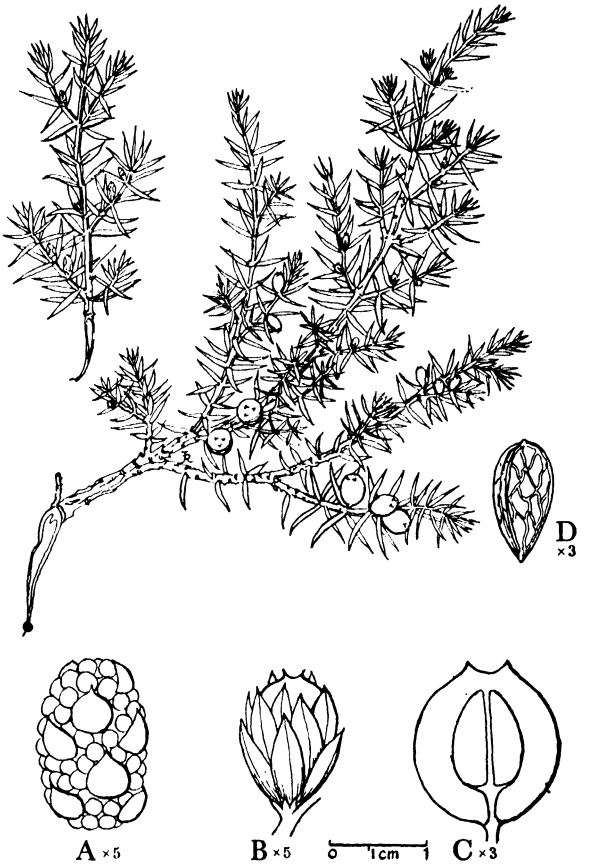
A. portion of plant. B. plant with sporangia. C. microsporangium. D. massula. E. megasporangium, l.s.



PINUS L. Large, evergreen, normally monœcious trees with needle-like leaves borne on dwarf one-year shoots. Male cones in clusters on dwarf shoots at the ends of the branches; female flowers in cones on the long shoots, taking 2-3 years to ripen; seed winged.

67. PINUS SYLVESTRIS L. The COMMON SCOT'S PINE is a medium to large tree, up to 80 ft. (27 m.) high, with regular branching and an open canopy. It is native in N. Scotland, but otherwise it has been so extensively planted that though common and widespread it is impossible to say where it is indigenous. Leaves glaucous 50-100 mm. long semi-circular in cross-section, linear, stiff, two to each short shoot. Male flowers in a subterminal cluster of small ovate cones, pollen winged; female inflorescence red, ovoid. Cones 30-70 mm. long, ovoid-conic, scales oblong, the exposed portion flat; seed 3·5 mm. long with wing 9-15 mm. long.

Mid May—mid June. (Alness, Easter Ross, Scotland.)
A. male cone. B. female flower. C. seed.

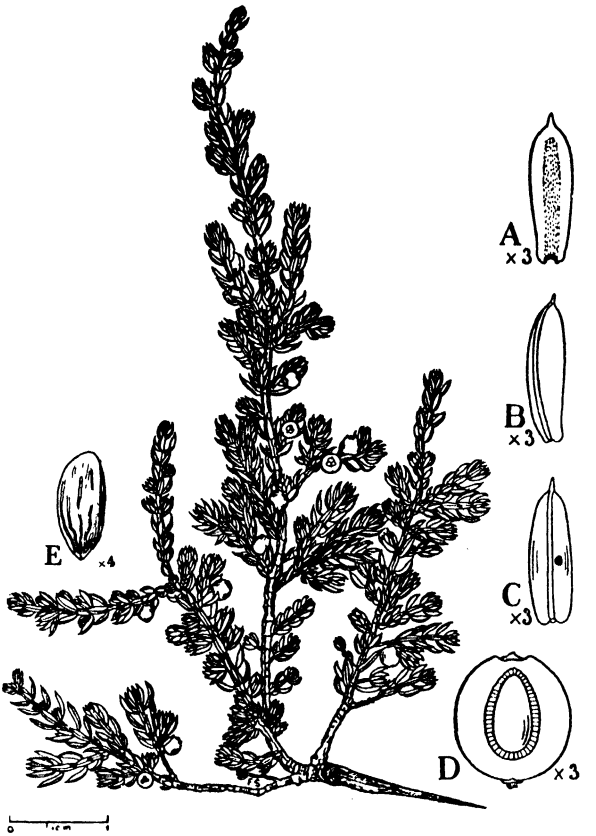


JUNIPERUS L. Trees or shrubs with needle-like leaves in whorls of three, spreading, or scale-like and appressed. Fruit a fleshy berry formed of 3-8 fleshy, coalescent scales.

68. JUNIPERUS COMMUNIS L. The COMMON JUNIPER is a shrub or small tree up to 30 ft. (10 m.) high, with spreading branches, evergreen leaves and monœcious flowers. It grows, often abundantly, on chalk downs, heaths and moors throughout the British Isles, but is rare or absent in many regions. Leaves about 10-15 × 1·5 mm. linear, with a spiny apex, spreading at right angles to the stem, concave, with a white central band above. Male flowers in cones about 8 mm. long, with 5-6 whorls of scales; female flowers in cones about 2 mm. wide, solitary in the axils of the leaves. Berries 6 mm., ovoid, with 3 terminal teeth, blue-black, pruinose, 1-6 seeded. Seed 5 × 3 mm., ovoid, compressed, netted, brown.

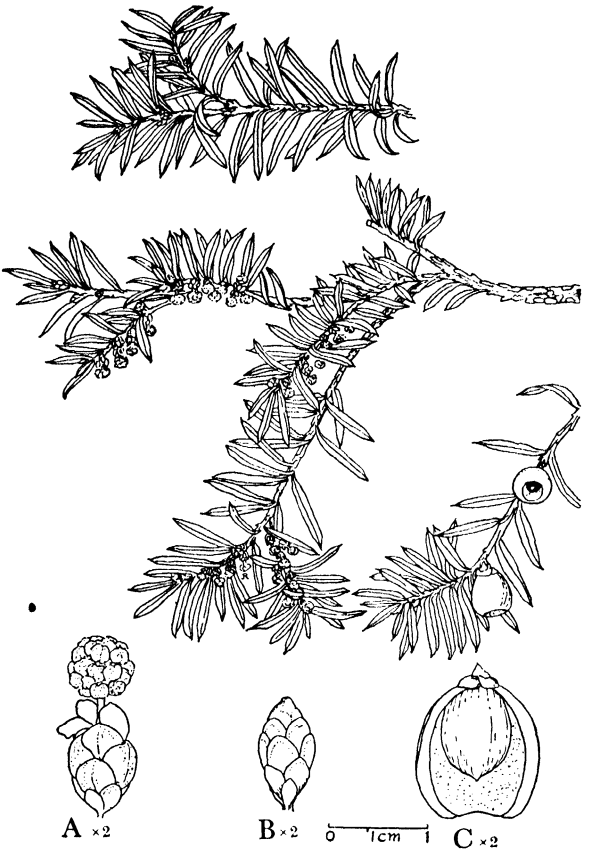
Mid May—late July. (Salisbury, Wiltshire.)

A. male cone. B. female cone. C. berry l.s. D. seed.



69. JUNIPERUS NANA Willd (*J. siberica* Burgsd.). This DWARF JUNIPER is a small shrub with decumbent or prostrate, spreading branches, 12-30 in. (30-70 cm.) long. It grows rarely on mountain moors and rocks in the highlands of the British Isles. Leaves about 4-10 × 1·5 mm., linear, suddenly narrowed into a short point with an apiculate but hardly spiny apex, often nearly appressed or ascending at an angle of 45 degrees to the stem, concave, with a white central band above. Male flowers about 2 mm. wide, solitary in the axils of the leaves. Berries 5·2 × 5 mm., narrowly ovoid with 3 terminal teeth, blue-black, pruinose, 1-6 seeded. Seed 4·0 × 3·5 mm., ovoid, compressed, with vertical ridges.

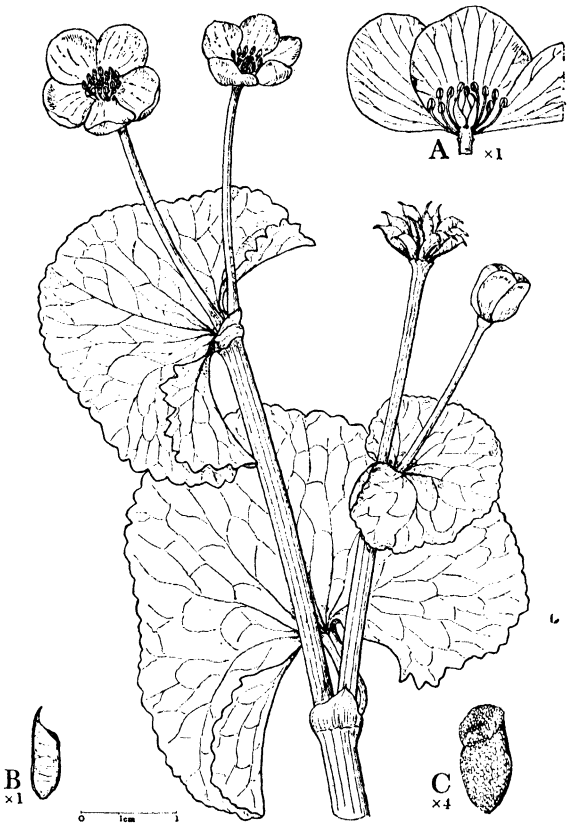
Mid May—late July. (Co. Kerry, Ireland.)
A, B, C. leaf. D. berry l.s. E. seed.



TAXUS L. Large evergreen, normally dicœcious trees with small leaves in 2 ranks; male cones capitate, stalked, stamens numerous, peltate. Ovule naked, solitary, surrounded by a fleshy aril.

70. TAXUS BACCATA L. The COMMON YEW is a large evergreen tree up to 60 ft. (20 m.) high, with a rounded outline. It grows rather commonly in the chalk and limestone districts of south and central England, though extensively planted elsewhere. Leaves 15-25 mm. long, in two lateral series, linear, apiculate, subsessile, flat. Male flowers axillary, in a rounded head, 5 mm. diam., with numerous ovate scales at the base; female flowers ovoid; 2 mm. diam., surrounded by ovate scales and not emerging. Fruit 9 × 7 mm., surrounded by a red, fleshy aril with a wide opening at the apex; seed 5-6 mm., ovoid, smooth, brown.

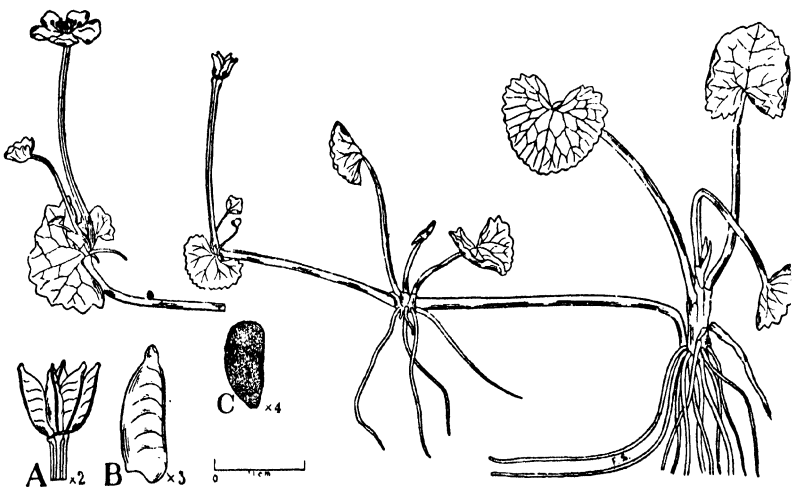
Mid March—late April. (Stanway, Gloucester.)
A. male flower. B. female flower. C. seed (aril in l.s.).



CALTHA L. Herbaceous perennials with yellow flowers and simple leaves. Sepals about 5; corolla absent; stamens numerous; fruit a head of several many-seeded follicles.

71. CALTHA PALUSTRIS L. The MARSH-MARIGOLD, KINGCUP or MAYBLOB is a stout, glabrous-glaucous perennial with numerous branched flowering stems growing 6-18 in. (15-45 cm.) high from a thick rootstock. It is abundant and widely distributed in wet places and marshes throughout the British Isles. Leaves all cordate to reniform, crenate, radical leaves many, long-stalked, stem leaves becoming sessile upwards; stipules large, triangular. Flowers 30-35 mm. diam.; sepals ovate, usually contiguous, many-veined, deep yellow; carpels with a short beak, spreading. Seed 3·5 × 2·0 mm., elongated, constricted above, netted, brown. The plant is very variable in size of flowers, carpel and growth.

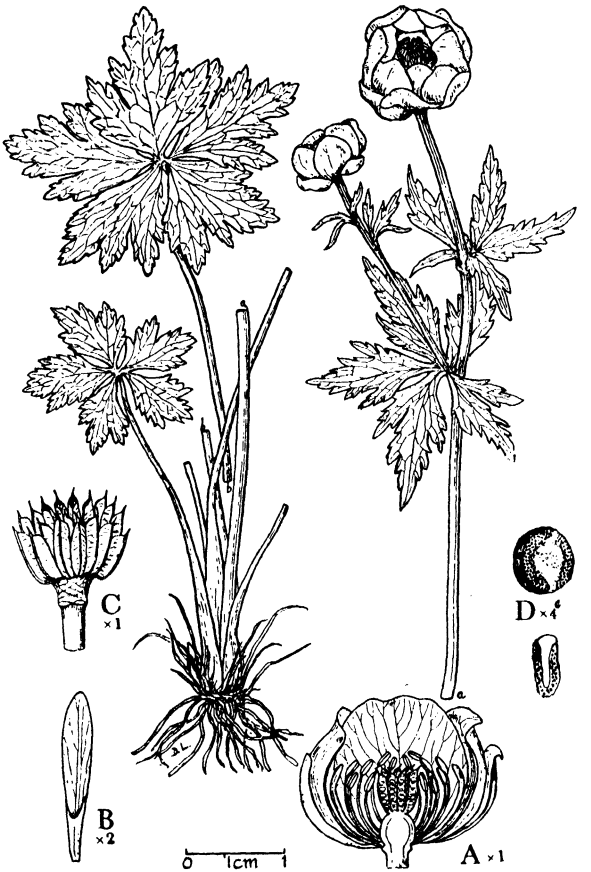
Mid March—mid May. (Alton, Hampshire.)
A. flower partial l.s. B. follicle. C. seed.



72. CALTHA RADICANS Forster. This CREEPING MARSH-MARIGOLD is a small, slender plant with prostrate, glabrous stems 1-6 in. (3-15 cm.) long, creeping and rooting at the nodes. It is a rare plant of bogs in Northern Britain, particularly in highland regions. Leaves all similar, rhomboid-triangular, serrate-crenate. Flowers 15-25 mm. diam., solitary; sepals lanceolate-elliptical, not contiguous, deep yellow; carpels erect, beak very short. Seed 3·0 × 1·5 mm., elongate, constricted above, netted, brown.

Early June—late July. (Loch na Ghar, Aberdeen.)
A. head of follicles. B. follicle. C. seed.

(This plant is sometimes considered only a variety of *C. palustris*.)

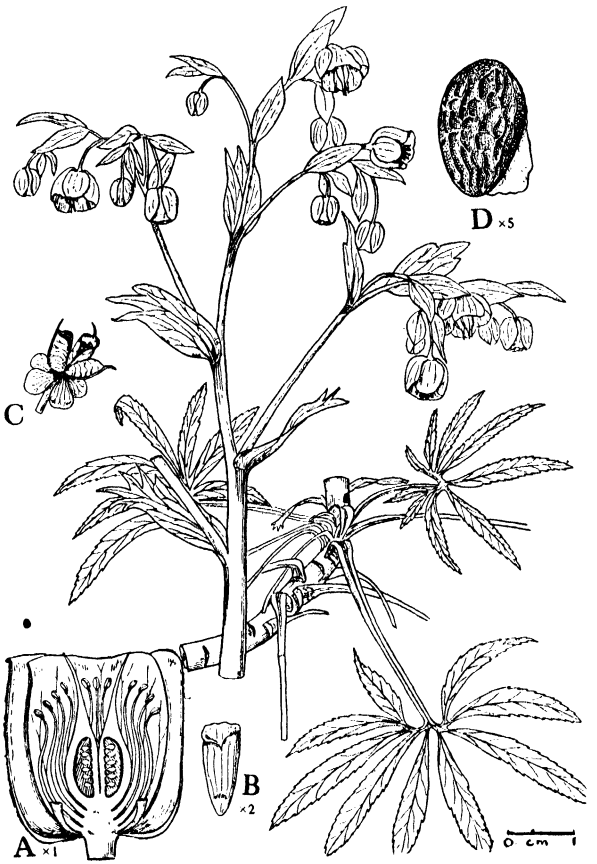


TROLLIUS L. Perennial herbs with palmately divided leaves and yellow flowers, sepals 5 or more, petaloid; petals many, small, linear, tubular, clawed. Carpels many, sessile; fruit of many-seeded follicles.

73. TROLLIUS EUROPÆUS L. The GLOBEFLOWER is a stout, glabrous perennial with numerous, slightly branched, flowering stems, 9-24 in. (23-60 cm.) high, growing from a fibrous rootstock. It is found, sometimes abundantly, in damp upland pastures and woods in N. England and Scotland, rarely in Wales. Leaves all palmatisect, serrate, upper sessile. Flowers 25-30 mm. diam.; sepals large, concave, pale yellow; petals yellow, narrow, half-tubular, hidden by the sepals; follicles 7-9 mm. long, in a dense head, with a subulate beak. Seed 2·2 × 0·9 mm., compressed, wedge-like, finely pitted, black, shining.

Mid May—late June. (Upper Teesdale, Durham.)

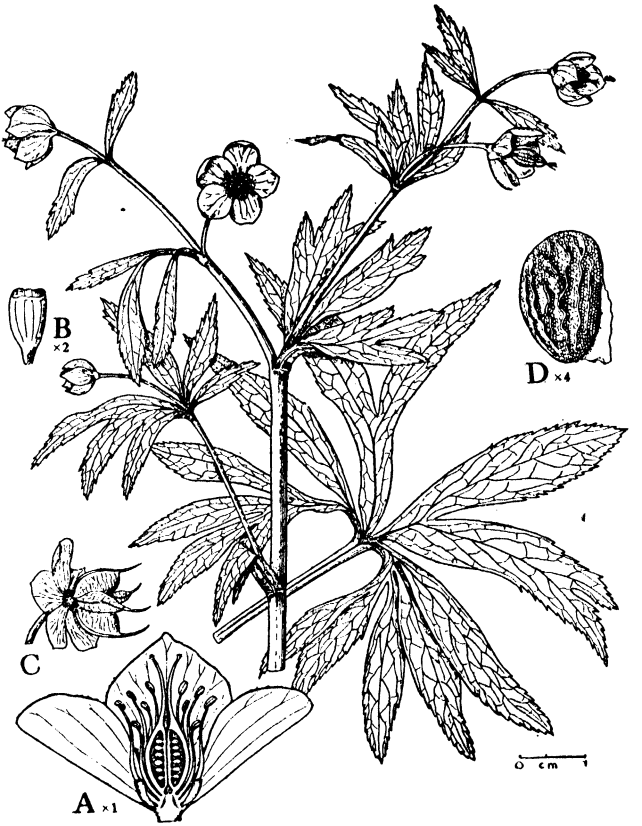
A. flower l.s B. petal-nectary. C. head of follicles. D. seed (lateral and ventral views).



HELLEBORUS L. Stout perennials with palmate leaves; sepals 5, petaloid; petals many, tubular; carpels 3-10, sessile; fruit of many-seeded follicles.

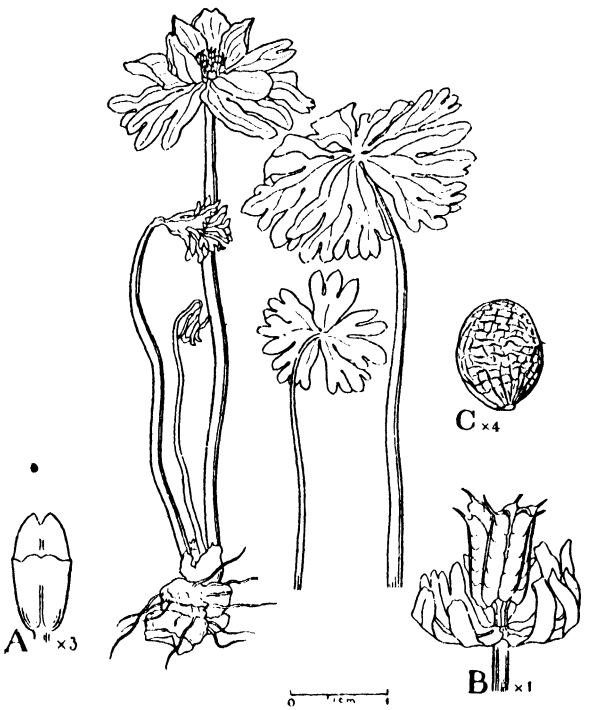
74. HELLEBORUS FŒTIDUS L. The STINKING HELLEBORE or SETTERWORT is a stout perennial with semi-woody, unbranched, decumbent stems 12-20 in. (30-50 cm.) high, growing from a stout, black, ascending rhizome. It occurs rarely in thickets in calcareous districts of England, and is sometimes planted. Leaves mostly on the upper part of the perennial stem, digitate, lobes narrow, lanceolate, finely toothed. Flowers 20-25 mm. diam., in a dense, branched cyme, cup-shaped; sepals ovate, green edged with purple, erect in flower, spreading in fruit; petals 5 mm. long, a third as long as stamens, tubular, with undulate edge; carpels 3-5, large, swollen, with a short filiform beak; seeds 4·5 × 3·0 mm. ovoid, with raised, wavy anastomozing ridges, dark brown, appendage obvious, white. Late Feb.—early May. (Kent.)

A. flower l.s. B. petal-nectary. C. fruit. D. seed.



75. HELLEBORUS VIRIDIS L. The GREEN HELLLEBORE or BEAR'S FOOT is a stout perennial with many leafy, branched, annual herbaceous stems 12-30 in. (30-75 cm.) high, growing erect from a short, stout, blackish rhizome. It grows in calcareous shady places in England and is at times common. Leaves green, shining, digitate; lobes broadly lanceolate, toothed. Flowers 35-40 mm. diam. in a loose cyme, rotate; sepals large, ovate, green, spreading in flower and fruit; petals 5 mm. long, half as long as stamens, tubular, bifid; carpels 4-7, large, swollen, with a filiform lateral beak; seeds 4·5 × 3·0 mm., ovoid with raised wavy ridges and netted between, dark brown, appendage obvious.

Mid March—early May. (Thorpe, Derbyshire.)
A. flower l.s. B. petal nectary. C. fruit. D. seed.



ERANTHIS Salisb. Small perennials with stalked, palmate, radical leaves and involucre of 3 leaves just below the flower; sepals 5-8; petals many, tubular; carpels 3-8, stalked; fruit of many-seeded follicles.

76. ERANTHIS HYEMALIS (L.) Salisb. The WINTER ACONITE is a very early spring-flowering plant with erect stem 3-6 in. high growing from a small, rounded tuber. It is naturalized in woods in various places in lowland Britain. Radical leaves orbicular, deeply divided, appearing after the flowers, usually single. Flowers 20-25 mm. diam., surrounded by an involucre of three, divided stem leaves; sepals yellow; petals tuberous, apex bifid; carpels 4-8, linear, subulate; seeds 4 × 3 mm., ovoid, wrinkled, black.

Mid Feb.—early April. (Bourne Bridge, Cambridge.)
A. petal-nectary. B. head of follicles. C. seed.

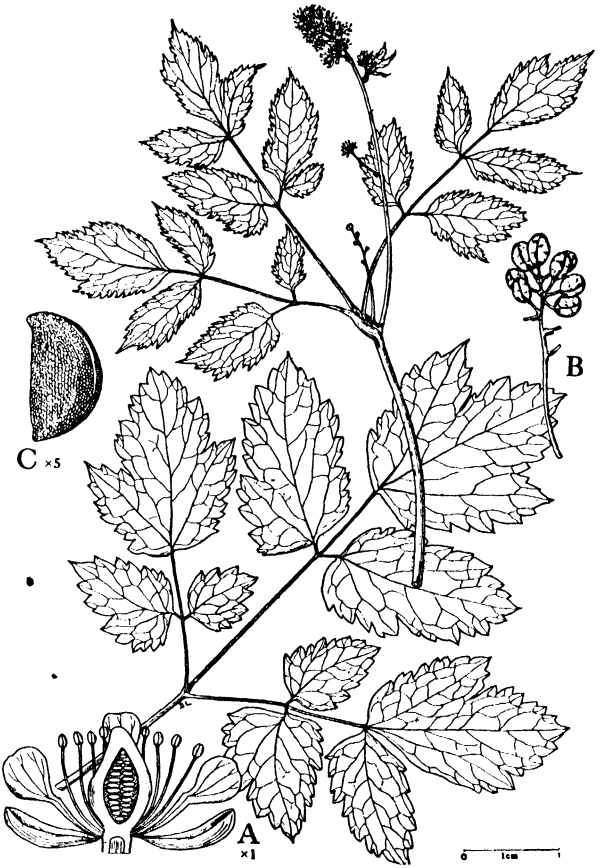
ACONITUM L. Stout perennials with irregular flowers; sepals 5, petaloid, upper hood-like, others flat; 2 upper petals tubular on long stalks and concealed in hood, others minute. Carpels 3-5, sessile; fruit of many-seeded follicles.

77. ACONITUM ANGLICUM Stapf. This ENGLISH MONKSHOOD is a stout perennial with straight, erect, unbranched, glabrous, leafy stems 24-60 in. (60-150 cm.), growing erect from a tuberous rootstock. It is found rarely as a wild plant on river banks in W. England and Wales. Leaves stalked, palmatisect, with narrow, acute segments. Flowers 30 mm. long, 15-20 mm. diam.; sepals and petals blue; hood ovate with acute tip, hairy; tubular petal often 1; carpels 3, short, cylindrical, style subulate, erect. Seed 6 × 3 mm., 3-winged, ellipsoid, black.

Mid May—late June. (nr. Cardiff.)

A. helmet l.s. with tubular stamens and pistil. B. follicle. C. seed.

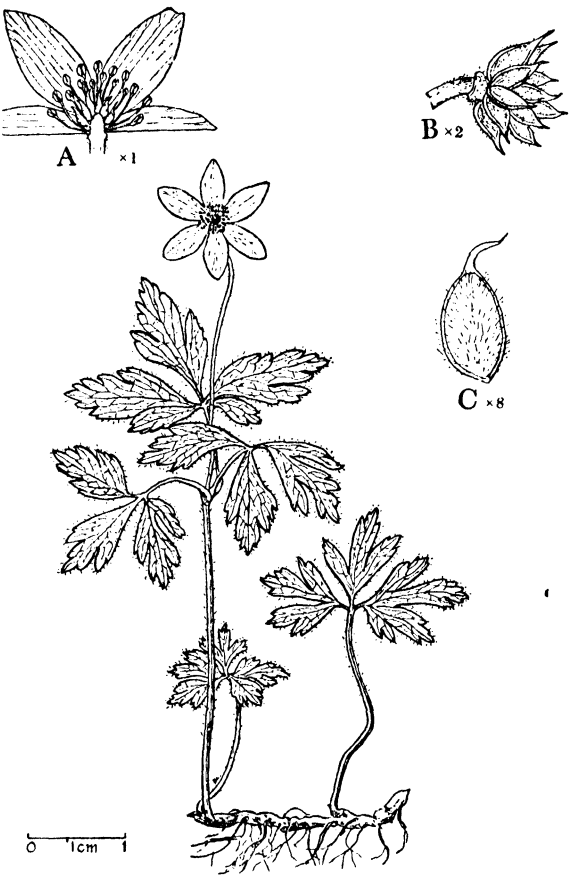
(*Delphinium ajacis* L. was formerly naturalized in Cambridgeshire. Horticultural strains of this species occur as rare casuals.)



ACTÆA L. Perennial herbs with biternate or bipinnate leaves; sepals 4, petaloid; petals 4, small, flat; carpel 1; fruit a many-seeded berry.

78. ACTÆA SPICATA L. The BANEBERRY or HERB CHRISTOPHER is a bushy perennial with large, divided, radical leaves and a leafy, erect, flowering stem 12-30 in. (30-75 cm.) high, growing from a tuberous stock. It is a rare plant of limestone thickets and rocks in N. England and W. Ireland. Leaves triternate, on long stalks, acutely toothed. Flowers 8-10 mm., in irregular, axillary racemes; sepals petaloid, white; petals small, spathulate, linear, white. Fruit a cluster of black ovoid berries, 8-10 mm. diam.; seed 3 × 2 mm., semi-ovoid, flattened, netted, brown.

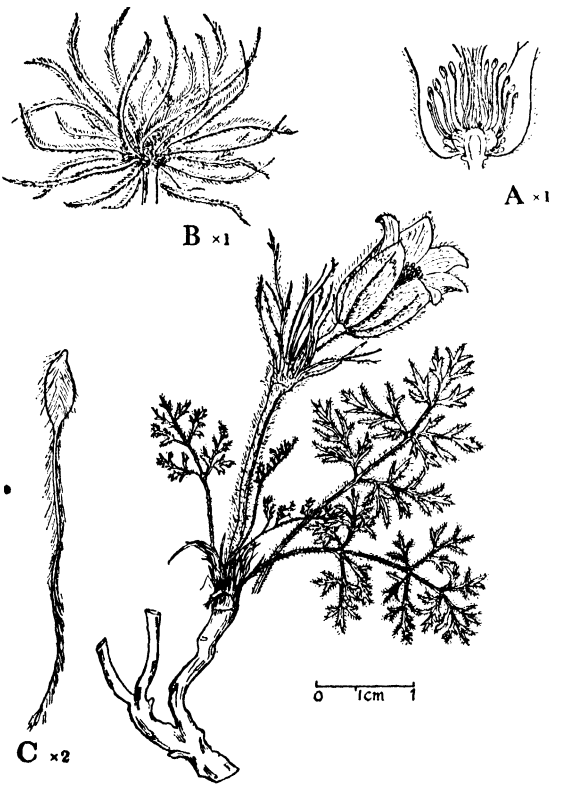
Early May—early June. (Buckden, Yorkshire.)
A. flower l.s. B. berries. C. seed.



ANEMONE L. Small perennial herbs with underground rhizomes. Flowering scape with a whorl of 3 leaves some distance below the flower. Corolla absent; stamens numerous; fruit a rounded head of mucronate or awned achenes.

79. ANEMONE NEMOROSA L. The WOOD ANEMONE is a small, slightly hairy perennial with flowering scapes 4-9 in. (10-23 cm.) high, growing from a slender, horizontal rootstock. It is a common plant of woods and damp meadows throughout the British Isles. Leaves biternate, segments cuneiform; bracts similar. Flowers 25-35 mm. diam., solitary; sepals white, pink or purple, glabrous, spreading. Achenes 4 × 2 mm., ellipsoid, compressed, silky, with a long, curved beak.

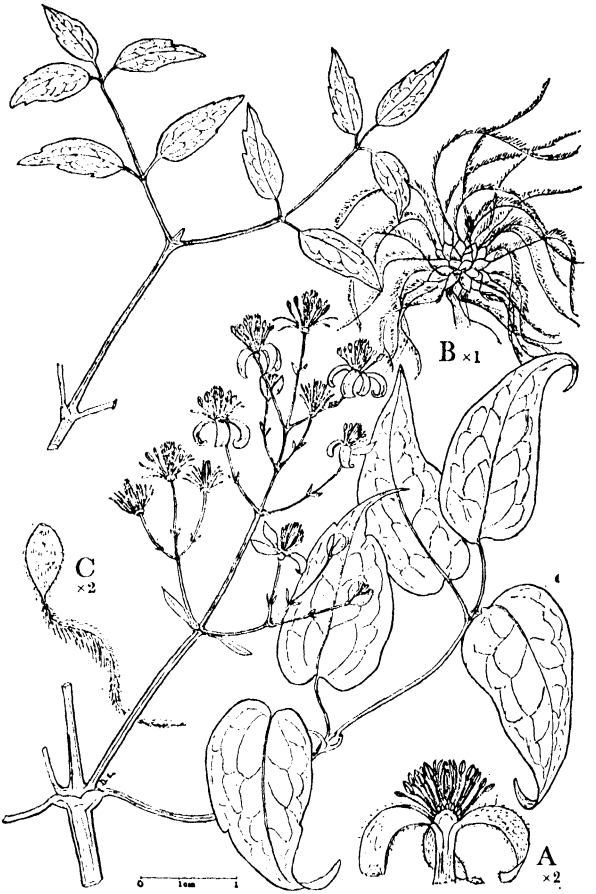
Mid April—late May. (Denton, E. Kent.)
A. flower l.s. B. head of achenes. C. single achene.



80. ANEMONE PULSATILLA L.=P. VULGARIS Mill. The PASQUE FLOWER is a small, silky perennial with flowering scapes 4-8 in. (10-20 cm.) high, growing from a thick vertical rootstock. It is a rare plant of calcareous grassland in England northwards to Yorkshire. Leaves bipinnate, segments linear, cuneate, hairy; bracts with long linear segments. Flowers 30-35 mm. diam., solitary; sepals violet-purple, externally silky, spreading in bright sunlight. Achenes 5 × 2 mm., numerous, fusiform, hairy, with a long, silky awn.

Early—late May. (Snowshill, Gloucester.)
A. flower l.s. B. head of achenes. C. single achene.

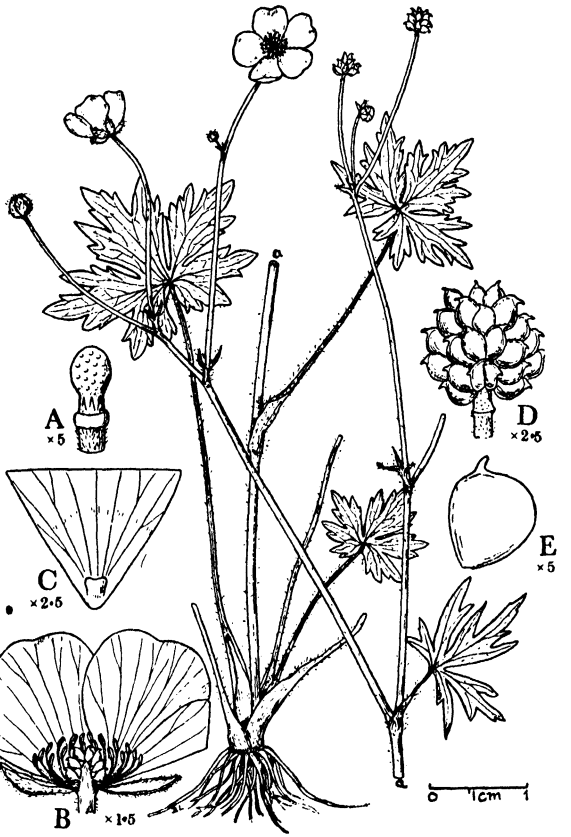
(*Anemone apennina* L. with blue 10-15 petalled flowers and A. *ranunculoides* L. with yellow 5 sepalled flowers are sometimes found as garden escapes or deliberately planted in woods.)



CLEMATIS L. Climbing shrubs with showy flowers. Sepals usually 4; corolla absent; stamens numerous; fruit a globular head of awned achenes.

81. CLEMATIS VITALBA L. The TRAVELLER'S JOY or OLD MAN'S BEARD is a climbing shrub which is common in scrubland and hedges on basic soils in England northwards to Yorkshire. Leaves pinnate, leaflets lanceolate, acute, toothed or entire. Flowers 12-15 mm. diam., in short, axillary panicles; sepals cream-coloured, hairy on the outside, recurved in flower. Achenes 5·0 × 2·5 mm., ovoid, with long, hairy awns, flattened and hairy.

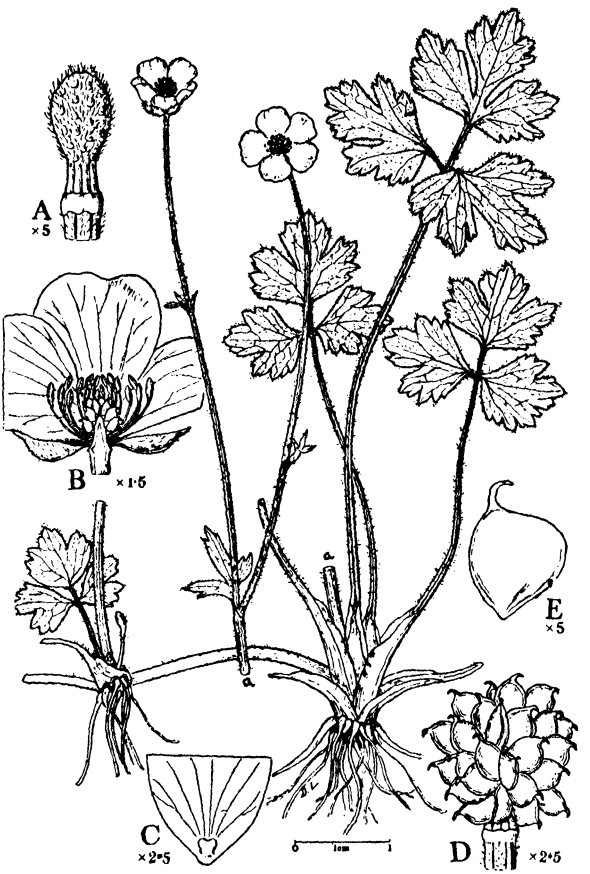
Mid Aug.—mid Sept. (Litchfield, Hampshire.)
A. flower l.s. B. head of achenes. C. single achene.



RANUNCULUS L. Annual or perennial herbs with yellow or white flowers. Sepals 5 (3 in *R. ficaria*); petals usually 5 with a nectary pore at base; stamens few to numerous; fruit a rounded head of awnless but pointed achenes.

82. RANUNCULUS ACRIS L. The UPRIGHT MEADOW BUTTERCUP is a stout perennial with somewhat hairy leaves and a branched, hairy, terete flowering stem, 6-30 in. (15-75 cm.) high, growing from a bunch of fibrous roots. It is abundant in almost all grassland throughout the British Isles. All leaves palmatisect, the lobes progressively narrowing on the stem leaves. Flowers 20-30 mm. diam.; sepals elliptical, hairy, spreading; petals yellow, 2-3 times as long as sepals; nectary covered with a rectangular scale. Achenes 2·5 × 2·2 mm., medium, oval, smooth, glabrous, with a short, acute, subterminal beak; receptacle cylindrical.

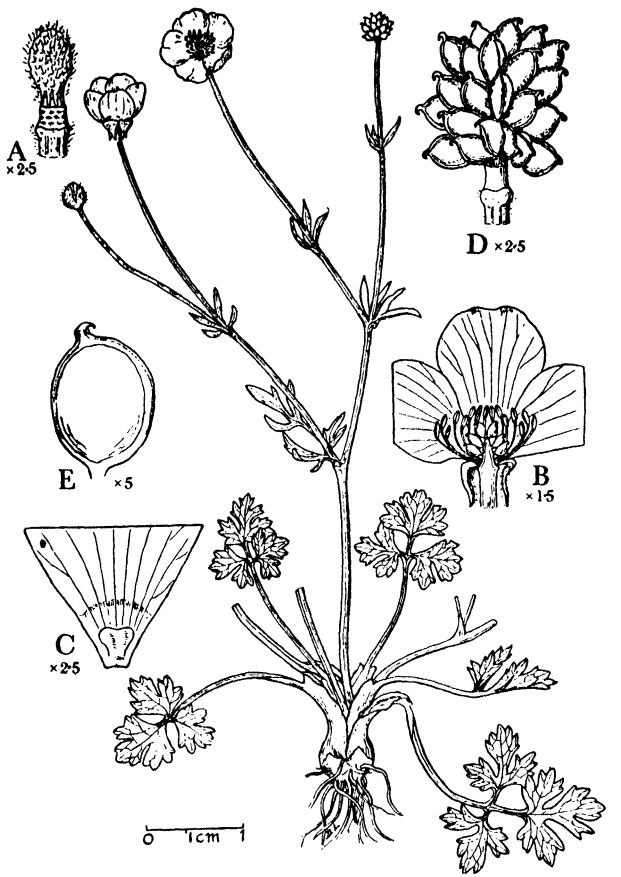
Early May—early June, and early to mid Aug. (Denton, E. Kent.)
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene.



83. RANUNCULUS REPENS L. The CREEPING BUTTERCUP is a rather stout perennial with hairy leaves, sparsely branched, furrowed flowering stems, 2-9 in. (5-23 cm.) high, growing from the nodes of a creeping and rooting, prostrate runner. It is a very abundant plant in the British Isles, in meadows, hedgerows, waste places, fields and river banks. Leaves with 3 segments which are trifid and deeply cut. Flowers 12-35 mm. diam.; sepals elliptical, hairy, spreading; petals yellow, 2-3 times as long as sepals; nectary covered with a cordate scale. Achenes 3·0 × 2·5 mm., oval, glabrous, smooth, with a longish, acute, subterminal beak; receptacle globular, hairy.

Mid May—mid Aug. (Denton, E. Kent.)

A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene.



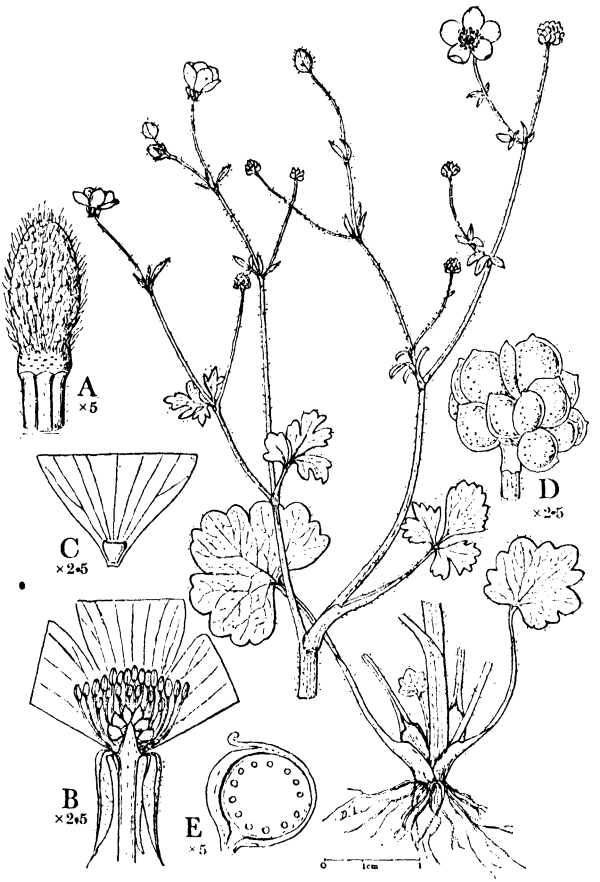
84. RANUNCULUS BULBOSUS L. The BULBOUS MEADOW BUTTERCUP is a rather stout perennial with a branched, hairy, furrowed stem 6-18 in. (15-45 mm.) long, growing from a swollen, spherical base. It is abundant in almost any meadow in the British Isles. Most leaves with 3 segments which are trifid and toothed; uppermost leaves with simple segments. Flowers 12-25 mm. diam.; sepals lanceolate, hairy, reflexed; petals yellow, 2-3 times as long as sepals; nectary covered with a cordate scale. Achenes 3·5 × 2·7 mm., ovoid, glabrous, smooth, with a short, curved, subterminal beak; receptacle ovoid, hairy.

Early May—mid June. (Denton, E. Kent.)

A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene.

85. RANUNCULUS ARVENSIS L. The CORN CROWFOOT is a rather stout annual with much-branched, glabrous stem 6-18 in. (30-45 cm.) long, growing erect from a fibrous root. It is a common weed in cornfields on clay soils throughout England, but chiefly in the south. Lowest leaves little divided, others once or twice ternate, with linear-lanceolate segments. Flowers 10-15 mm. diam.; sepals lanceolate, hairy, spreading; petals pale yellow, not much longer than sepals; nectary covered by a truncate scale. Achenes large, 10·0 × 4·5 mm., semi-circular, covered with long spines and with a long, acute beak; receptacle small, ovoid, hairy.

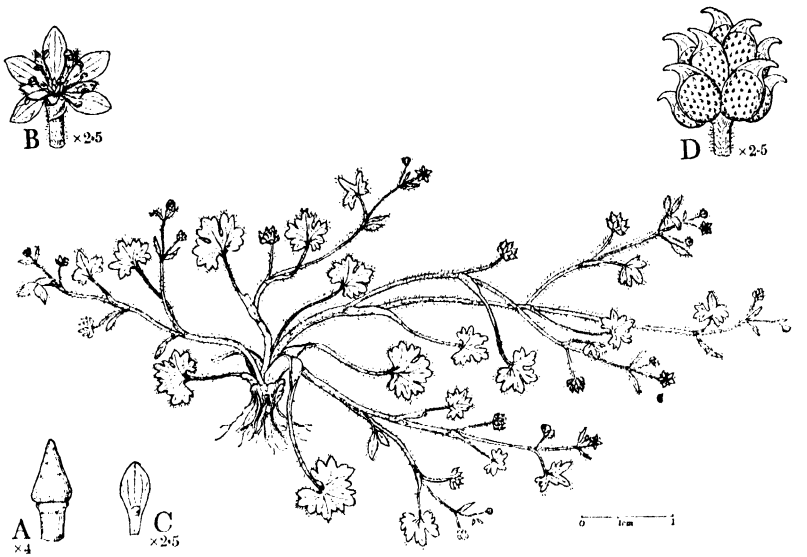
Mid May—early Sept. (Girton, Cambridge.)
A. receptacle. B. flower l.s. C. petal and nectary. D. achene.



86. RANUNCULUS SARDOUS Cr. The PALE HAIRY CROWFOOT is a rather slender annual with several, much branched, usually rather hairy, erect, furrowed stems 4-18 in. (10-45 cm.) high, growing from a fibrous root. It is an uncommon plant of bare places and cornfields, mostly on heavy soil, in England and S. Scotland. Lower leaves rounded, little divided; upper leaves with 3 segments which are trifid, with shallow teeth. Flowers 10-25 mm. diam.; sepals elliptical, hairy, reflexed; petals pale yellow, twice as long as sepals; nectary covered with a truncate scale. Achenes 2·8 × 3·0 mm., orbicular, compressed, margined or keeled and with a row of tubercles near the margin, glabrous, with a recurved, horizontal beak; receptacle elongate, hairy.

Mid June—late Sept. (nr. Whitstable, Kent.)

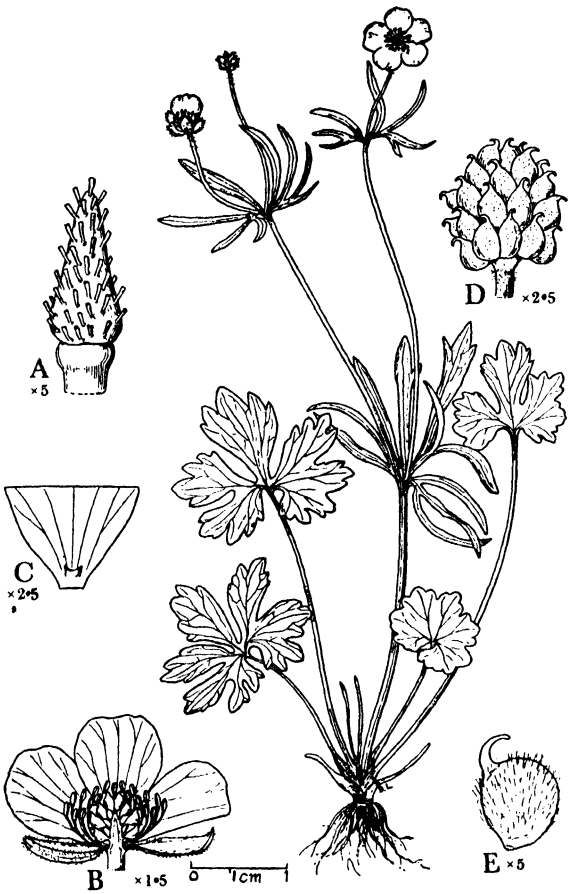
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene.



87. RANUNCULUS PARVIFLORUS L. The SMALL-FLOWERED BUTTERCUP is a small perennial with numerous hairy, prostrate, branched stems 2-8 in. (5-20 cm.) long, growing from a fibrous root-stock. It is found rarely in sandy cornfields, on dry banks and woodland rides in England and Ireland. Stem decumbent, spreading, rising about 4 in. from the ground, hairy. Leaves palmatifid, hairy, with shallow, acute teeth, yellow-green. Flowers 5-8 mm., axillary, solitary; sepals ovate, hairy, first spreading, later reflexed; petals pale yellow, hardly exceeding sepals; nectary covered with a small oblong scale. Achenes 4·0 × 2·5 mm., large for so small a flower, round with a large recurved beak, covered with small acuminate, hooked tubercles; receptacle conical, glabrous.

Mid May—late June. (Gotham, Nottingham.)

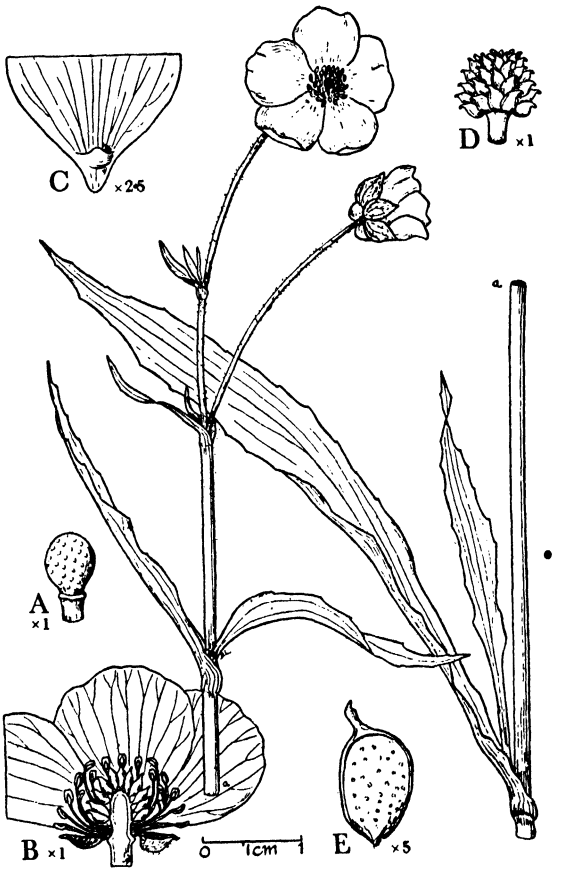
A. receptacle. B. flower. C. petal with nectary. D. head of achenes.



88. RANUNCULUS AURICOMUS L. The GOLDILOCKS is a rather slender, nearly glabrous perennial with a somewhat branched stem 6-12 in. (15-30 cm.) high, growing erect from fibrous roots. It is a common and variable plant of hedges, banks, shady places and pastures throughout the lowland parts of the British Isles. Root leaves reniform, divided into 3-5 broad segments, divisions of others progressively narrower and upper leaves sessile with 3-5 linear segments. Flowers 12-22 mm. diam. in loose cymes; sepals ovate, hairy, spreading; petals often abortive, yellow, twice as long as sepals; nectary cup-like, without a scale. Achenes 1·2 × 1·0 mm., large, rounded, hairy, smooth, with a long, acute marginal beak; receptacle conical, covered with stalks of the carpels.

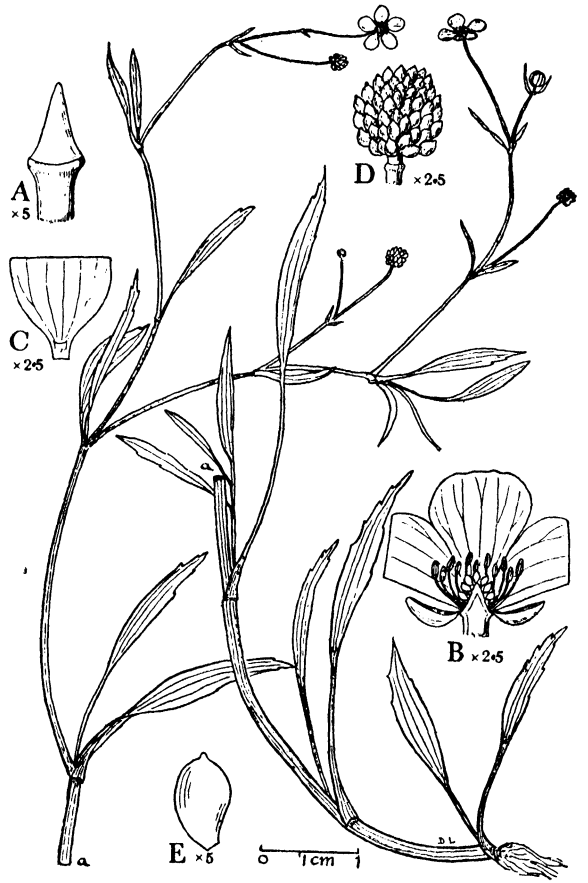
Mid April—late May. (Attenborough, Nottingham.)

A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene.



89. RANUNCULUS LINGUA L. The GREATER SPEARWORT is a stout perennial with erect, glabrous stems 20-40 in. (50-100 cm.) high, growing from a decumbent, rooting base. It is a rather rare plant, though common at times, in marshes and wet places on basic soils throughout England and Wales. Leaves lanceolate, serrate; upper amplexicaul. Flowers 30-40 mm. diam., almost solitary; sepals spreading, ovate, slightly hairy; petals yellow, 2-3 times as long as sepals; nectary with a lobed front margin. Achenes 3·5 × 2·0 mm., large, rounded, glabrous, finely tubercled, margined, with a subterminal, flattened, triangular beak; receptacle ovoid.

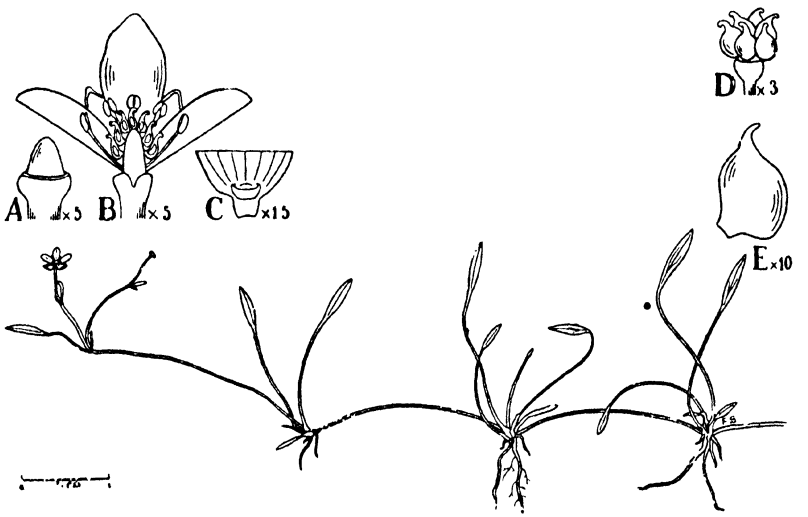
Early June—mid Aug. (Dungeness, Kent.)
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene.



90. RANUNCULUS FLAMMULA L. The LESSER SPEARWORT is a rather slender, variable perennial with straggling, erect, glabrous stems 4-15 in. (10-38 cm.) long, growing from a decumbent rooting base. It is abundant and widely distributed in marshes and wet places throughout the British Isles. Lower leaves ovate to elliptical-lanceolate, toothed, stalked; upper linear-lanceolate. Flowers 12-17 mm., in lax cymes; sepals spreading, glabrous; petals yellow, 2-3 times as long as sepals; nectary without a scale. Achenes 2·0 × 1·5 mm., small, ovoid, smooth, glabrous, with subterminal capitate stigma; receptacle conical, glabrous.

Mid June—late Sept. (Calverton, Nottingham.)

A. receptacle. B. flower t.s. C. nectary. D. head of achenes. E. achene.

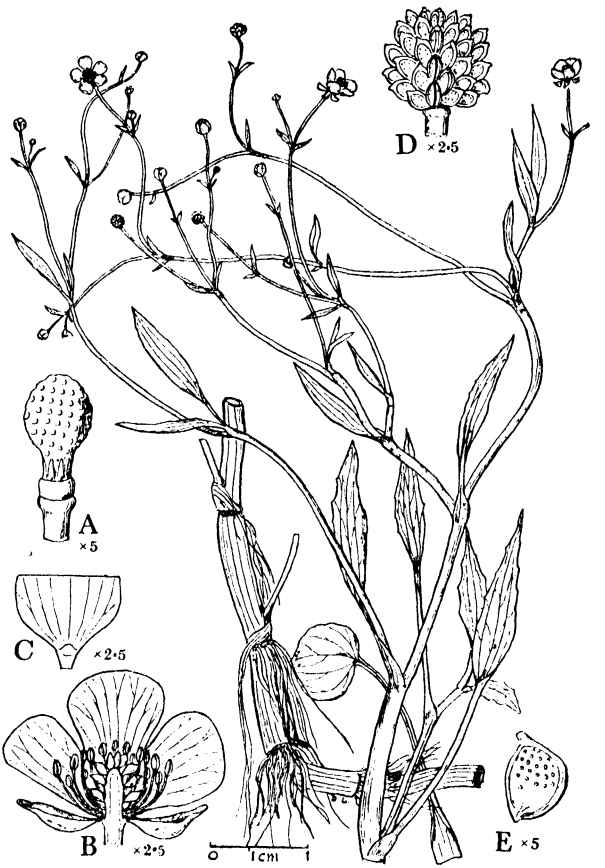


91. RANUNCULUS REPTANS L. This CREEPING SPEARWORT is a slender plant with arched, glabrous stem 6-15 in. (15-38 cm.) long, creeping and rooting at every node. It is a very rare plant of lake shores in Scotland and N. England. Leaves linear-lanceolate, entire, with long petioles. Flowers 8-10 mm. diam., usually solitary; sepals spreading; petals yellow, about twice as long as sepals; nectary cup-like. Achenes 1·5 × 1·0 mm., small, ovoid, smooth, glabrous, with an obtuse, recurved subterminal beak; receptacle conical, smooth.

Early July—mid Aug. (Loch Leven, Kinross.)

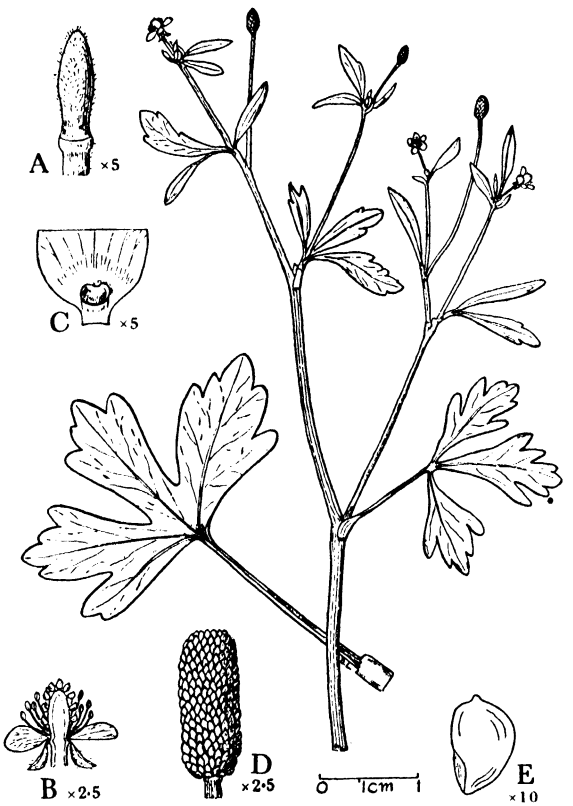
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene.

(This is stated to hybridize extensively with *R. flammula* L.)



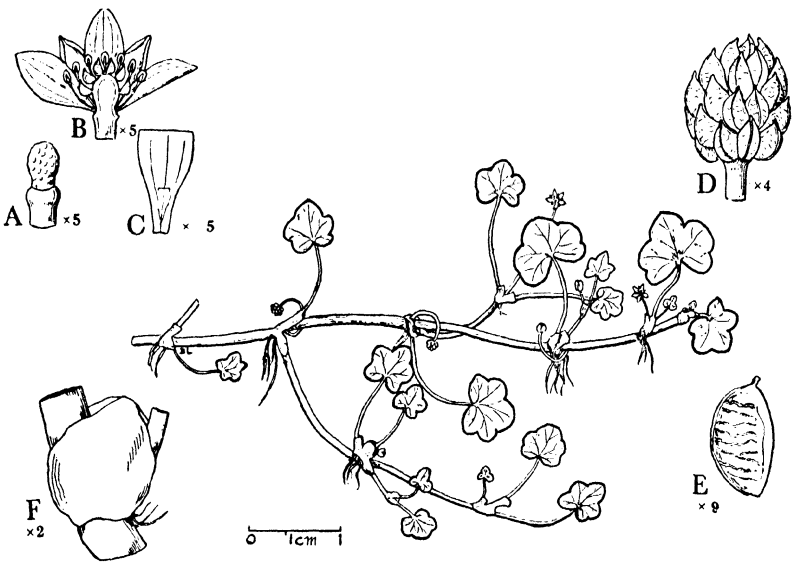
92. RANUNCULUS OPHIOGLOSSIFOLIUS Vill. The SERPENT'S TONGUE SPEARWORT is a stout, erect, glabrous perennial with a much-branched stem, 12-30 in. (30-75 cm.) high, growing from a decumbent, rooting base. It is a very rare plant, now found only in a marsh in Gloucestershire. Lower leaves simple, stalked, ovate; upper oblong, acute, remotely toothed, sessile, amplexicaul. Flowers 10-12 mm. diam. in lax cymes; sepals spreading, glabrous; petals yellow, twice as long as sepals; nectary without a scale. Achenes small, obliquely ovoid, margined, with a small point and covered with small tubercles; receptacle clavate, rough.

Mid June—mid Aug. (nr. Cheltenham, Gloucestershire.)
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene.



93. RANUNCULUS SCELERATUS L. The CELERY-LEAVED CROWFOOT is a much-branched, stout, erect, glabrous annual 4-24 in. (10-60 cm.) tall, which is widely spread and rather common in wet places around ponds and dykes, especially basic waters, throughout lowland Britain. Lower leaves stalked with 3-5 rounded segments; upper sessile, trifid. Flowers 4-6 mm. diam., in loose cymes; sepals small, boat-like, reflexed; petals pale yellow, little longer than sepals; nectary without a scale. Achenes 1·2 × 0·8 mm., numerous, ovoid, glabrous, smooth, hardly beaked, in an oblong or cylindrical head, soon exceeding the petals; receptacle clavate, hairy.

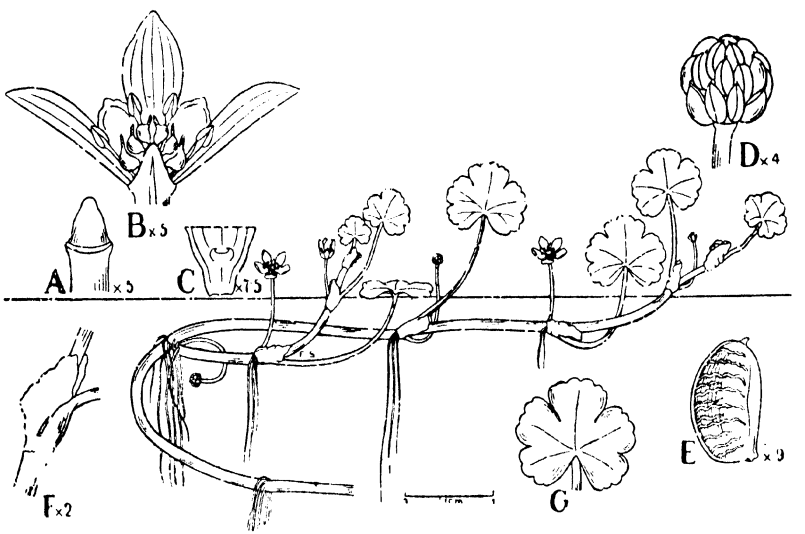
Early June—mid July. (Stapleford, Nottinghamshire.)
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene.



94. RANUNCULUS HEDERACEUS L. The IVY-LEAVED CROWFOOT is a small plant with prostrate stems 2-9 in. (5-23 mm.) long, creeping and rooting in the mud or growing in the water. It is common in wet, muddy places around pools and streams throughout the British Isles. Floating leaves small, reniform, usually three-lobed; submerged leaves absent. Flowers 3-8 mm. diam.; sepals pale-green, acute; petals white, hardly exceeding sepals, three-veined; receptacle glabrous; peduncles rather stout, shorter than the leaves. Achenes 1·5 × 1·0 mm., glabrous, ovoid, transversely wrinkled, beak short, straight.

Late May—late Sept. (Sturston, Derbyshire.)

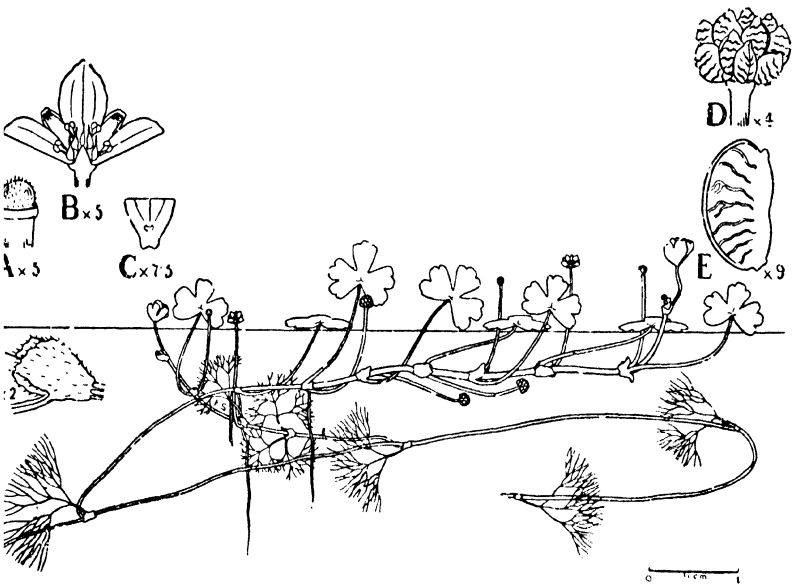
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene. F. stipule.



95. RANUNCULUS LENORMANDI F. W. Schultz. This ROUND-LEAVED MUD CROWFOOT is a rather common, robust plant with stems 2-12 in. (5-30 cm.) long, which occurs in shallow pools, bogs and on mud; it is scattered thinly throughout the British Isles. Floating leaves rather large, orbicular-reniform, slightly divided into 5 rounded lobes; submerged leaves absent. Flowers 8-12 mm. diam.; petals white, considerably exceeding sepals, usually five-veined; receptacle glabrous; peduncles stout, shorter than or equalling the leaves. Achenes 2 × 1 mm., glabrous, ovoid, transversely wrinkled, with a small, curved, lateral beak.

Mid May—late July. (Brockenhurst, Hampshire.)

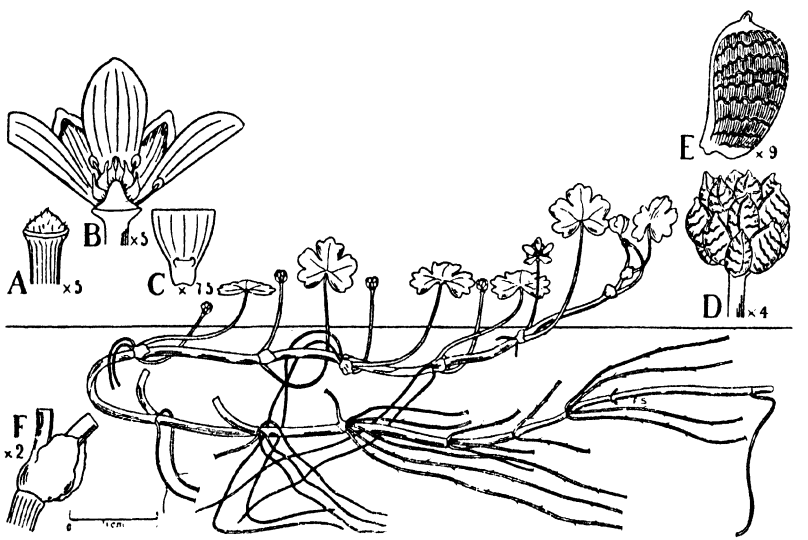
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene. F. stipule. G. older leaf.



96. RANUNCULUS TRIPARTITUS DC. This TRIFID MUD CROWFOOT is a rare, slender plant of muddy ponds of S.W. England and S. Ireland. Floating leaves reniform, deeply and widely lobed; submerged leaves very slender, segments extremely fine, divergent. Flowers 4-7 mm. diam., petals white, exceeding the sepals, 3-veined; receptacle hairy; peduncles slender, about equalling the leaves. Achenes 2·0 × 1·0 mm., glabrous, transversely wrinkled with a nearly straight ventral side and lateral beak.

Mid May—early July. (Wadebridge, Cornwall.)

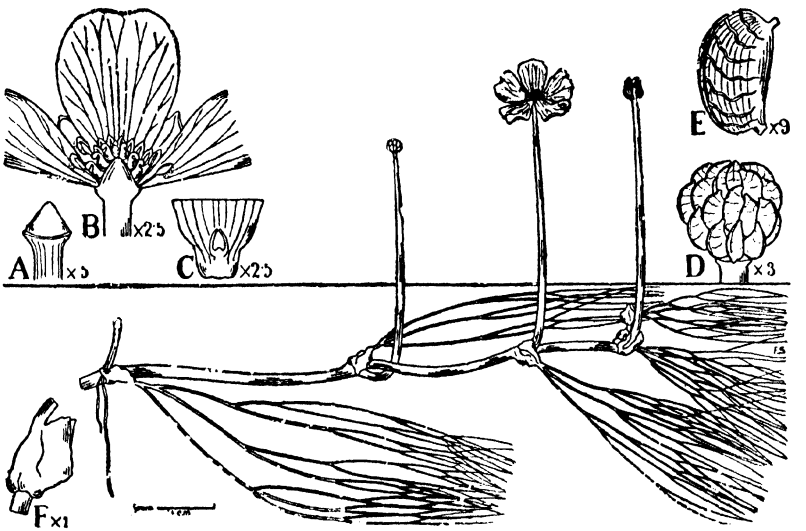
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene. F. stipule.



97. RANUNCULUS LUTARIUS Bouvet. This LARGE-FLOWERED MUD CROWFOOT is a rare, rather robust plant of muddy ponds in S. England. Floating leaves reniform, deeply and narrowly lobed; submerged leaves usually absent. Flowers 7-10 mm. diam.; petals white or pink-white, exceeding the sepals, usually five-veined; receptacle hairy; peduncles rather stout, much shorter than the leaves. Achenes 2·0 × 1·2 mm., glabrous, ovoid, transversely wrinkled with a prominent terminal or lateral beak.

Mid May—early July. (Holmesley, Hampshire.)

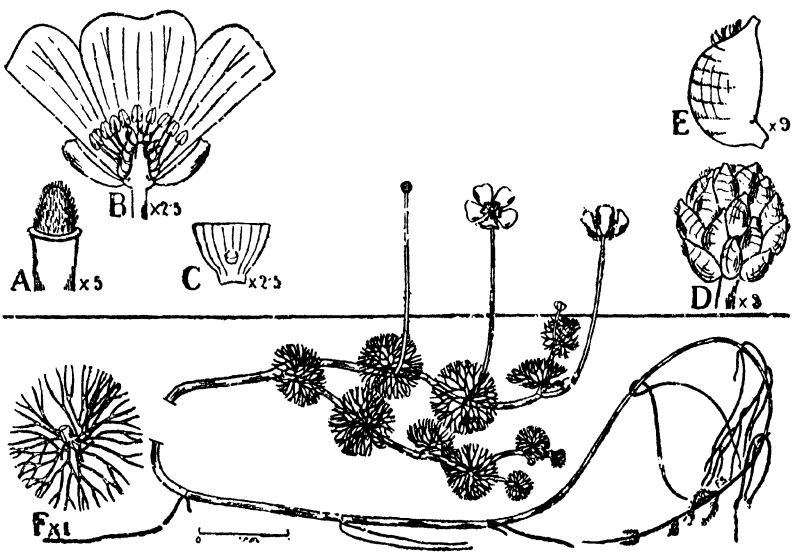
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene. F. stipule.



98. RANUNCULUS FLUITANS Lam. This RIVER WATER-BUTTERCUP is a robust plant with stems often 10 ft. (3 m.) long. It is common in the lower parts of quickly flowing streams in central and E. England, but rare in other parts. Floating leaves absent; submerged leaves with few very long thick segments. Flowers (10) 15-25 (30) mm. diam.; petals white with yellow claw; receptacle glabrous; fruiting peduncles about as long as leaves. Stamens few; achenes 2 × 1 mm., glabrous, ovoid, beak lateral, directed upwards.

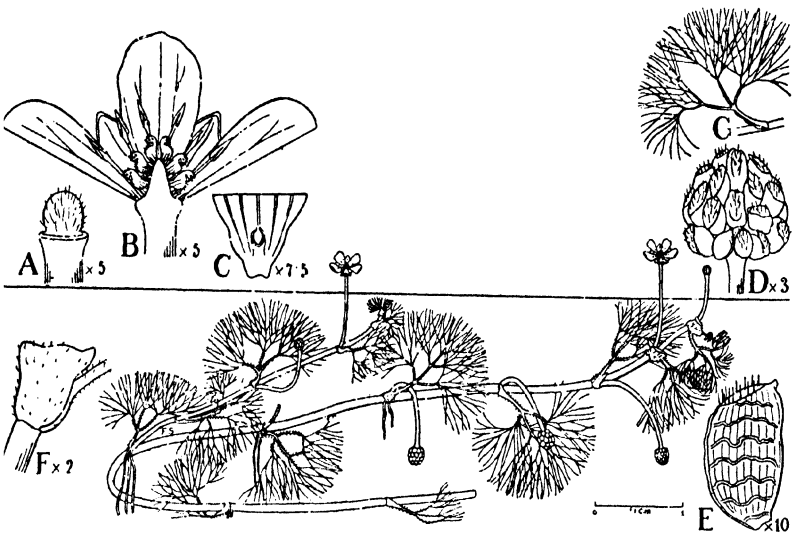
Late May—late July. (Sunningdale, Berkshire.)

A. receptacle. B. flower l.s. C. nectary. D. head of achene. E. achene. F. stipule.



99. RANUNCULUS CIRCINATUS Sibth. RIGID-LEAVED WATER CROWFOOT is a rather slender plant with stems up to 30 in. (75 cm.) long. It is common in canals and still water in the lowland parts of the British Isles. Floating leaves absent; submerged leaves with few short, rather thick, rigid segments which spread permanently in a flat, circular plane. Flowers 10-18 mm. diam.; petals white with yellow claw; receptacle hairy; peduncles much longer than the leaves. Stamens many; achenes 2 × 1 mm., somewhat hairy, ovoid; beak long, directed upwards. Mid June—mid Aug. (River Lea, Hertfordshire.)

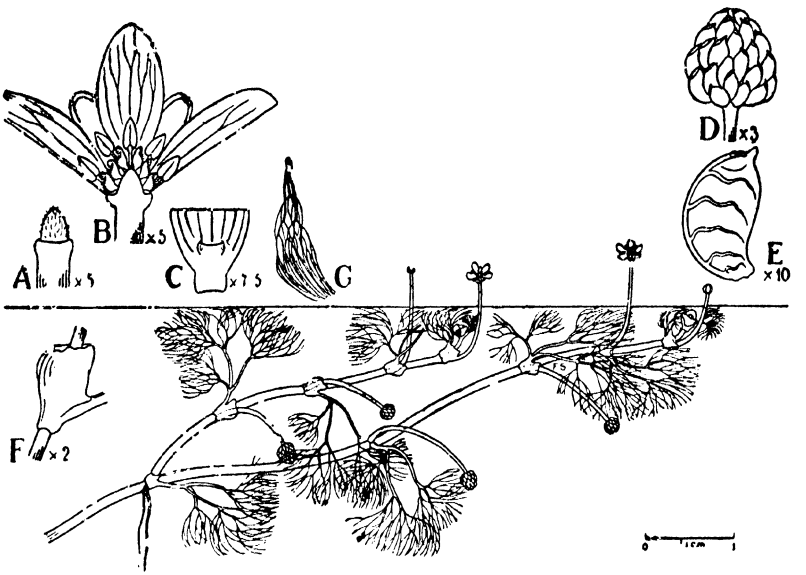
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene.



100. RANUNCULUS TRICHOPHYLLUS Chaix. This HAIR-LEAVED WATER CROWFOOT or WATER FENNEL is a small bushy plant with stems 12-24 in. (30-60 cm.) long which is common in ponds and dykes throughout the British Isles. Floating leaves absent; submerged leaves usually dark green with many short, rigid segments, subcircular or brush-like in outline. Flowers (6) 8-10 (15) mm. diam.; petals white with yellow claw; receptacle hairy; peduncles shorter than leaves. Stamens few; achenes 2·0 × 1·2 mm., crowded, obovoid, compressed, apex bristly, the small beak directed forwards.

Mid May—late June. (Thorpe, Surrey.)

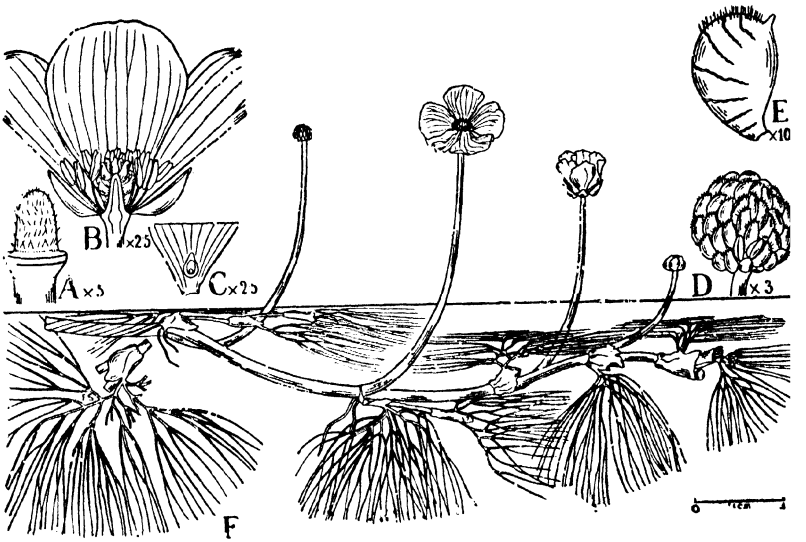
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene. F. stipule. G. leaf out of water.



101. RANUNCULUS DROUETII F. W. Schultz. This SMALL-FLOWERED WATER CROWFOOT is a small slender plant with stems 12-20 in. (30-50 cm.) long, which is common in the dykes of E. England and rare in ditches elsewhere. Floating leaves absent; submerged leaves usually light green with many short, collapsing segments, tassel-like in outline. Flowers (4) 6-8 (10) mm. diam.; petals white; receptacle hairy; peduncles shorter than leaves. Stamens few; achenes 1·8 × 1·0 mm., not crowded, ovoid, hardly compressed, almost or quite glabrous, the small beak directed forwards.

Mid May—early July. (Tottenham, Middlesex.)

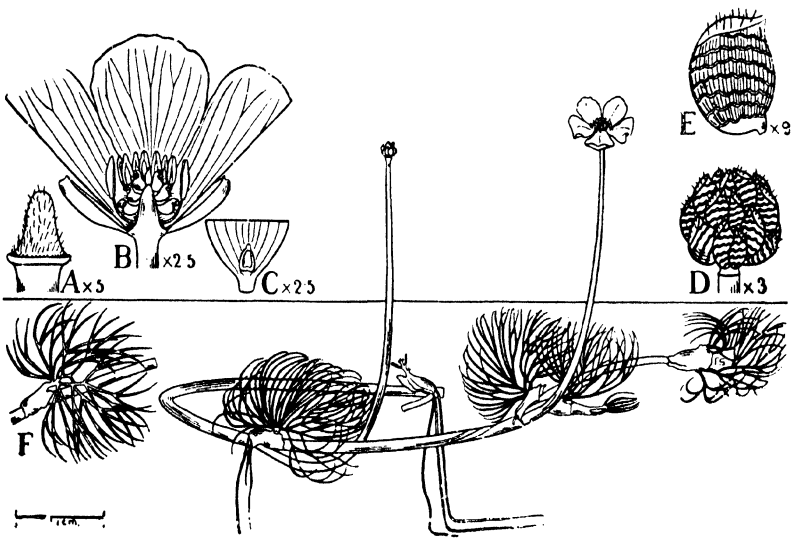
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene. F. stipule. G. leaf out of water.



102. RANUNCULUS CALCAREUS Butcher. This CHALK-STREAM WATER BUTTERCUP is a robust to rather slender, bushy plant with stem 2-6 ft. (60-180 cm.) long, which is dominant in the upper reaches of chalk streams throughout England and S. Scotland but rarely grows in still water. Floating leaves absent; submerged leaves usually dark-green with many rather short, collapsing segments, tassel-like in outline. Flowers (15) 20-30 (35) mm. diam.; petals white with yellow claw, overlapping; receptacle hairy; peduncles longer than leaves. Stamens many; achenes 2·0 × 1·1 mm., rather crowded, apex bristly, obovoid, the small beak directed forwards.

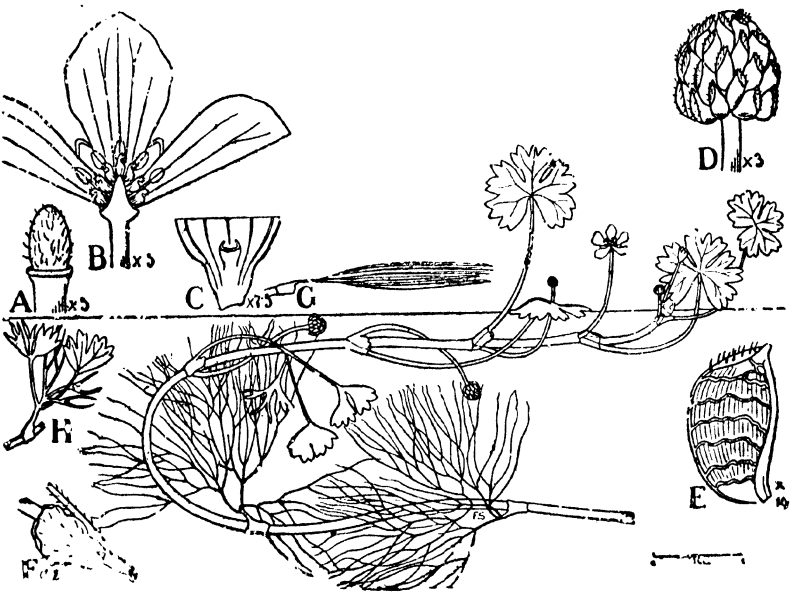
Mid April—late June. (R. Lea, Hertfordshire.)

A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene.



103. RANUNCULUS SPHÆROSPERMUS Boiss and Blanche. This BUSHY-LEAVED WATER BUTTERCUP is a robust, bushy plant with stem 2-6 ft. (60-180 cm.) long, which is found here and there in calcareous streams and canals in England. Floating leaves absent; submerged leaves usually dark green with many very short, rigid segments, tufted or globular in outline. Flowers 20-30 mm. diam.; petals white with a yellow claw, overlapping; receptacle hairy; peduncles longer than leaves. Stamens many; achenes 1·4 × 1·3 mm., almost spherical, not crowded, apex bristly, the small beak directed outwards.

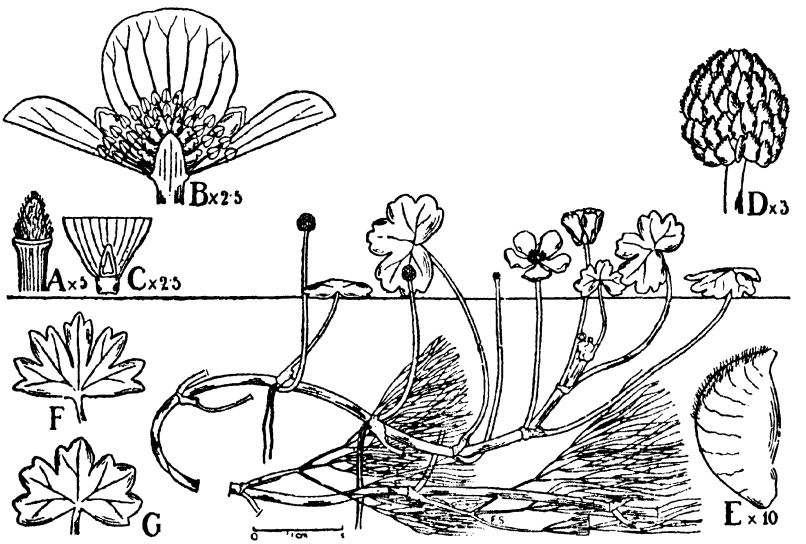
Early-late June and early-mid Sept. (Greywell, Hampshire.)
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene. F. lower leaf with stipule.



104. RANUNCULUS AQUATILIS L. (*R. heterophyllus* Weber). This COMMON WATER CROWFOOT is a slender to rather robust plant with stem 12-36 in. (30-90 cm.) long, which is common in ponds and ditches throughout the British Isles. Floating leaves present in mid-season (absent in var. *submersus* Bab.), peltate to orbicular in outline, teeth acute, margins almost straight and sinus narrow; submerged leaves with many long, slender, collapsing segments, tassel-like in outline (if rigid, the plant is var. *radians* [Revel]). Flowers 12-15 mm. diam.; petals white, with yellow base; receptacle hairy; peduncles all ± equal, shorter than leaves. Stamens few; achenes 2·0 × 1·5 mm., crowded, hairy, obovoid, the small beak directed forwards.

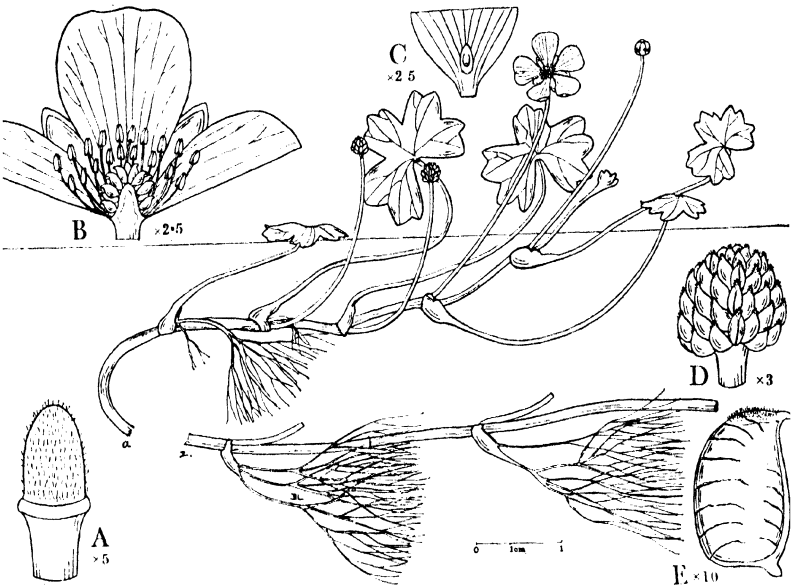
Late April—mid July. (Waterperry, Oxford.)

A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene. F. stipule. G. leaf out of water. H. transitional leaf.



105. RANUNCULUS PELTATUS Schrank. This POND WATER CROWFOOT is a robust to slender plant with stem 12-36 in. (30-90 cm.) long. It occurs in ponds, ditches, lakes and rivers throughout the British Isles. Floating leaves always present except in winter, reniform to peltate in outline, much or little divided; sides of lobes usually convex, sinus wide; submerged leaves with long, slender, rather rigid segments. Flowers 15-25 mm. diam.; petals white with yellow base, contiguous; receptacle hairy; peduncles very unequal, as long as or longer than submerged leaves and about equalling floating leaves. Stamens few; achenes 1·8 × 1·0 mm., rather crowded, apex hairy, ventral margin curved, the small beak directed upward.

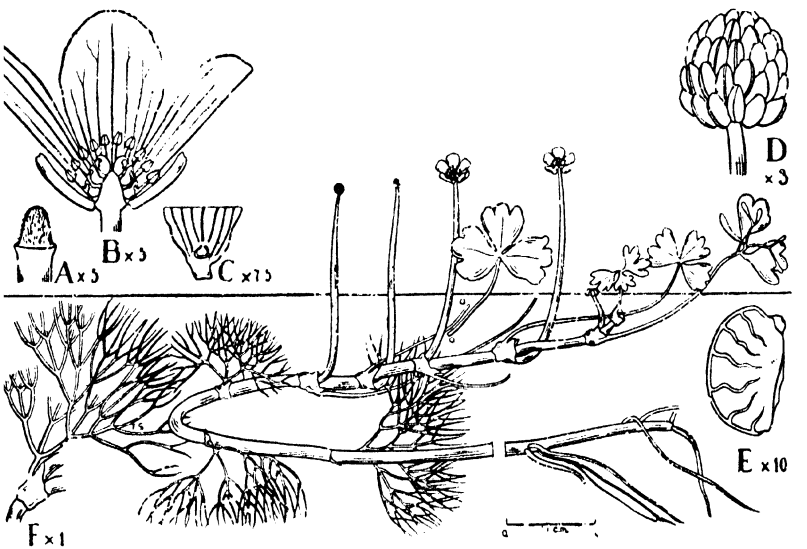
Mid April—early July. (Hadley Common, Middlesex.)
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene. F. and G. floating leaves.



106. RANUNCULUS PSEUDOFLUITANS (Syme) Baker and Foggitt. This FLOATING WATER CROWFOOT is a very robust to rather slender, bushy plant with stem 2-8 ft. (60-240 cm.) long, which is common in the rivers of Ireland and W. Britain. Floating leaves present at least in mid-season, peltate to reniform in outline, with broad segments and few teeth; submerged leaves usually dark green with many, rather short, collapsing segments, tassel-like in outline. Flowers (15) 20-30 (35) mm. diam.; petals white with yellow claw; receptacle hairy; peduncles longer than submerged, but equalling the floating leaves. Stamens many; achenes 2·0 × 1·5 mm. roundly ovoid, hairy, with the small beak almost horizontal.

Early June—early Aug. (Afon Ceirw, Cærnarvonshire.)

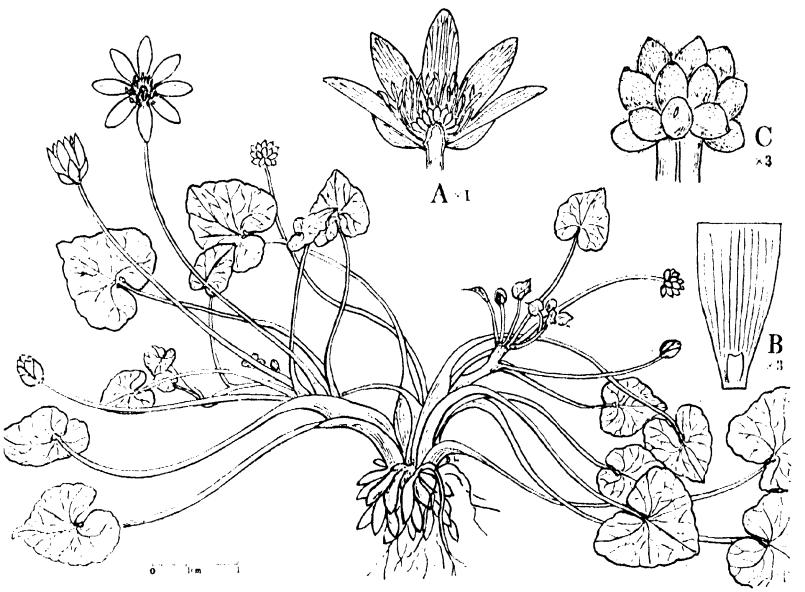
A. receptacle. B. flower l.s. C. nectary. D. head of achenes. E. achene.



107. RANUNCULUS BAUDOTII Godron. This MARINE WATER CROWFOOT is a robust plant with a stout stem up to 24 in. (60 cm.) long, common in ditches near the sea in water of salinity up to 1·2%, but occasionally inland, and spread all over the British Isles. Floating leaves usually present (absent in f. *marinus* Fries), ternate in outline, deeply divided into three wedge-like, toothed segments; submerged leaves with rather numerous rigid segments, pin-cushion-like in outline. Flowers 10-12 mm. diam.; petals white with yellow base; receptacle hairy; peduncles very long, sub-equal and tapering abruptly, exceeding the leaves, curved in fruit. Stamens rather few; achenes 1·8 × 1·0 mm., not crowded, half-ovoid, almost or quite glabrous, beak blunt, lateral.

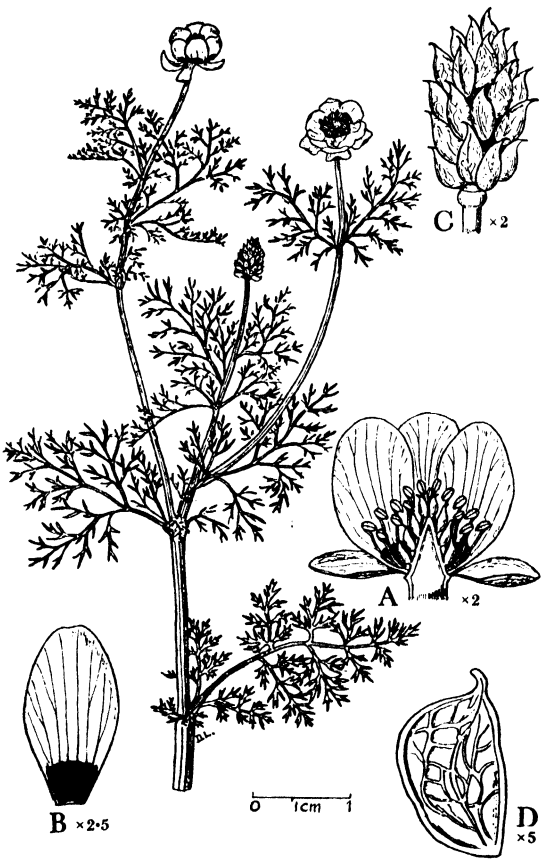
Early June—late July. (Sandwich, Kent.)

A. receptacle. B. section of flower. C. nectary. D. head of achenes. E. achene.



108. RANUNCULUS FICARIA L. The LESSER CELANDINE is a rather succulent, green perennial, with annual, weakly decumbent stems 3-8 in. (8-20 cm.) long, growing from a mass of elongated, tuberous roots. It is a very common plant in shady places throughout the British Isles. Leaves cordate, entire or cuneate, glabrous, shining. Flowers 20-45 mm. diam.; sepals only 3, ovate, spreading; petals 5-15 lanceolate, yellow, twice as long as sepals; nectary covered with an undulate scale. Achenes 2·0 × 1·5 mm., small, ovoid or truncate, with few hairs and sessile stigma; receptacle small, conical.

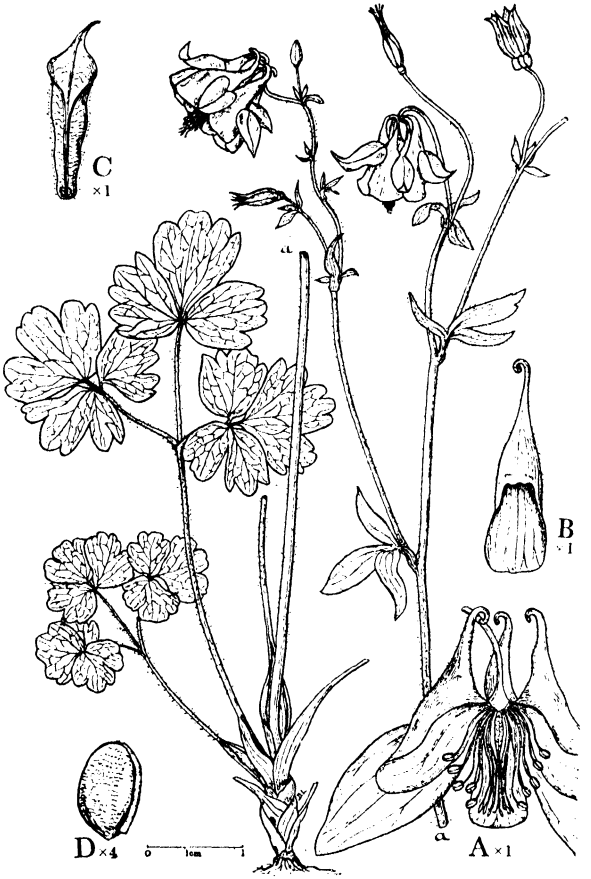
Mid March—mid May. (Denton, E. Kent.)
A. flower l.s. B. nectary. C. head of achenes.



ADONIS L. Erect, branched annuals with showy flowers. Sepals 5; petals 5 or more, without nectary pore at base; stamens numerous; fruit a rounded head of awnless but pointed achenes.

109. ADONIS ANNUA L. The PHEASANT'S EYE is an erect annual with branched stems, 6-12 in. (15-30 cm.) high, which is found, often as a casual, in chalky cornfields in S. England. Leaves tripinnately divided into linear segments. Flowers 15 mm. diam., terminal; sepals boat-shaped, green; petals sub-erect, dark red, with a black spot at base; receptacle conical; achenes 4·5 × 3·0 mm., many, in a cylindrical head, beaked, wrinkled.

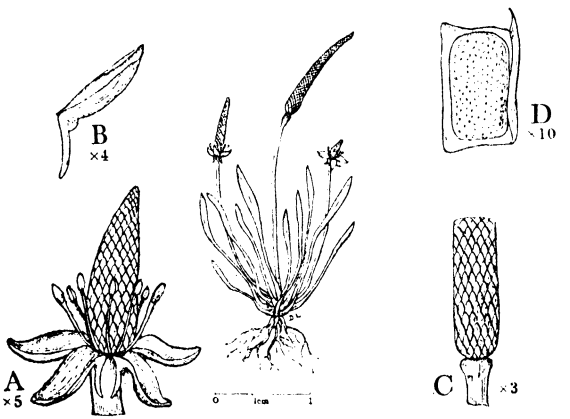
Mid June—mid July. (Alresford, Hampshire.)
A. flower l.s. B. petal. C. head of achenes. D. achene.



AQUILEGIA L. Perennial herbs with ternately divided leaves. Flowers showy, regular; sepals 5, petaloid; petals 5, funnel-shaped, spurred. Carpels 5, sessile; fruit of many-seeded follicles.

110. AQUILEGIA VULGARIS L. The COLUMBINE is a rather stout perennial with branched, flowering stems 18-24 in. (45-60 cm.) tall, growing erect from a perennial stock. It is a widely spread, though rather rare plant of woods, thickets and heaths in England. Leaves on long stalks, biternate, with cuneate, toothed segments. Flowers 30-35 mm. diam., in long-stalked cymes; sepals and petals blue, white or pink; petals tubular with a long, hooked spur; limb as long as stamens; follicles 5, boat-shaped; style subulate, recurved; seed 3 × 2 mm., ovoid, winged on one side, shining, black.

Mid May—early July. (Deepdale, Derbyshire.)
A. flower l.s. B. petal. C. follicle. D. seed.



MYOSURUS L. Dwarf annuals with small flowers. Sepals 5, green; petals 5; fruit an elongate head of rhomboidal achenes.

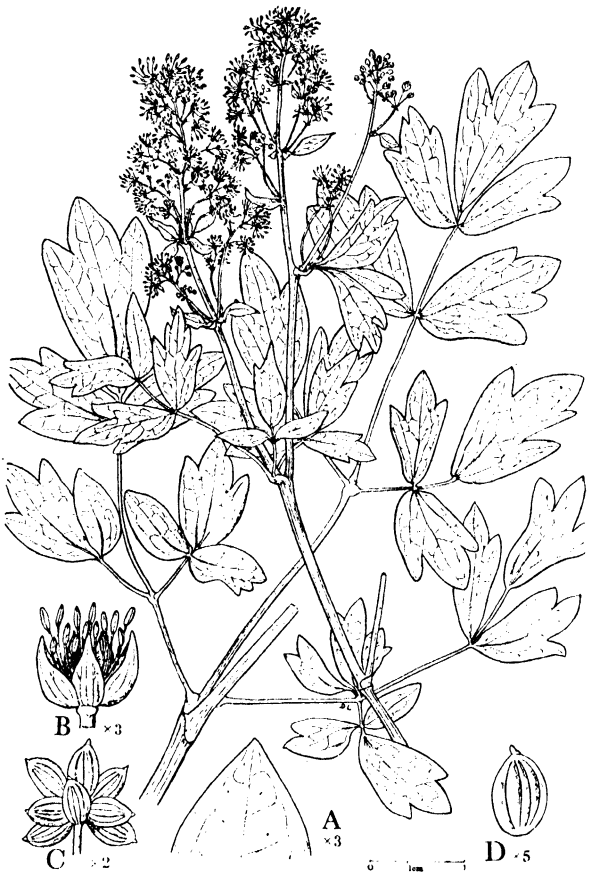
111. MYOSURUS MINIMUS L. The MOUSE-TAIL is a dwarf annual with linear-lanceolate, radical leaves and numerous simple flowering scapes 1-4 in. (2-10 cm.) high. It occurs rarely in bare, damp places and cornfields in lowland England. Flowers 5-10 mm. diam., solitary; sepals reflexed; petals greenish-yellow, with a basal claw bent at right angles. Achenes 1·5 × 1·0 mm., closely packed on a linear, elongated receptacle.

Mid April—late May. (Fiskerton, Nottinghamshire.)
A. flower. B. petal. C. portion of fruit. D. single achene.

THALICTRUM L. Erect perennial herbs with small flowers. Sepals 4; corolla absent; stamens numerous; fruit a rounded head of a few pointed or rounded achenes.

112. THALICTRUM ALPINUM L. The ALPINE MEADOW-RUE is a dwarf perennial with a single stem 1-6 in. (3-15 cm.) high, growing erect from a simple root-stock. It is found in wet places above 2,000 ft. in highland Britain. Leaflets rounded, toothed, as broad as long. Flowers 2·5-3·0 mm. diam., in a simple raceme, nodding; sepals greenish, elliptical. Achenes 4 × 2 mm., ovoid, longitudinally ribbed.

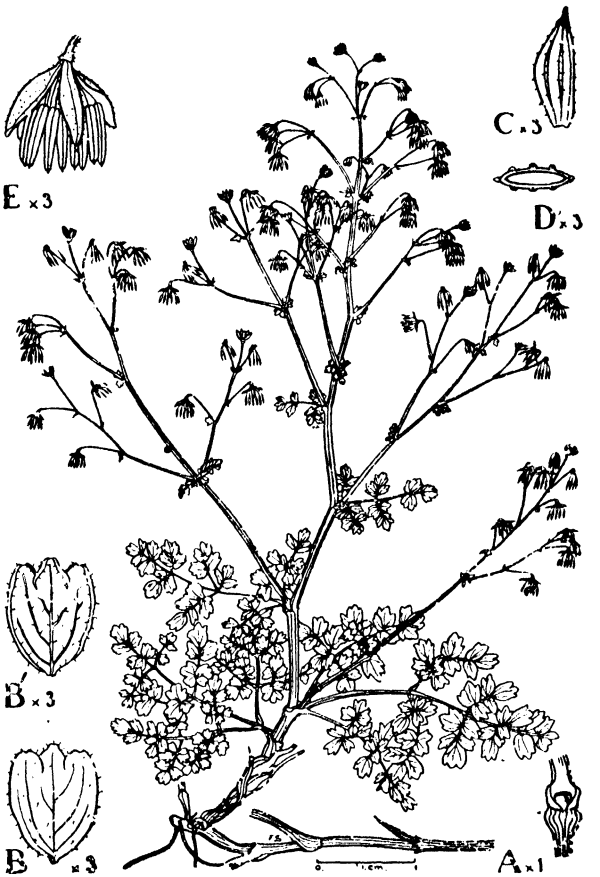
Mid July—late Aug. (Ben Lawers, Perthshire.)
A. flower. B. achene.



113. THALICTRUM FLAVUM L. The GREATER MEADOW-RUE is a stout perennial with ribbed stems 24-60 in. (60-150 cm.) high, growing erect from a cæspitose stock. It is an uncommon plant of moist places in lowland Britain. Leaves bi- or tripinnate, leaflets always longer than broad with 2-7 acute teeth. Flowers 4-5 mm. diam., erect, in compact panicles; sepals yellow-green, lanceolate, acute. Achenes 3-4 mm., almost spherical, vertically ribbed.

Early—late July. (Attenborough, Nottinghamshire.)

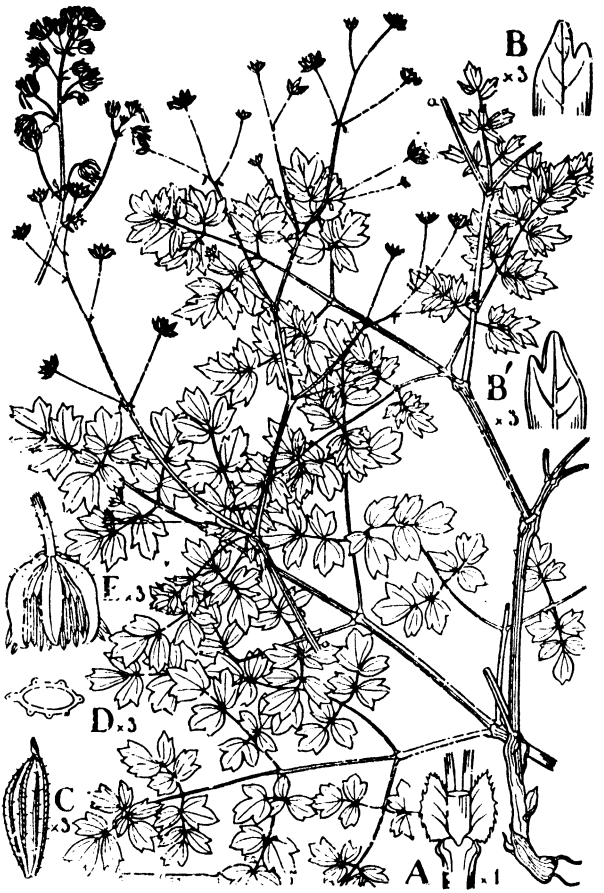
A. leaf tip. B. flower. C. head of achenes. D. single achene.



THALICTRUM MINUS L. The LESSER MEADOW-RUE is generally distributed, though not common, on calcareous soils, rocks and in damp places. It is very variable, and the following eight plants appear to be specifically distinct.

114. THALICTRUM ARENARIUM Butcher. This SANDHILL MEADOW-RUE is usually a rather small plant, branched from near the base and growing from a far creeping rootstock. It is found on sand-hills by the sea, northwards from Norfolk and Cumberland. Stem 4-9 in. (10-23 cm.) high. Leaflets small, longer than broad, base truncate, covered with many-stalked glands; stipules narrow. Flowers 4-5 mm., drooping; sepals yellow-green, narrow, glandular. Achenes about 5 × 2 mm. long, narrowly oval, one side nearly straight, ribbed and compressed, glandular. Mid July—mid Aug. (Barry Sands, Fifeshire.)

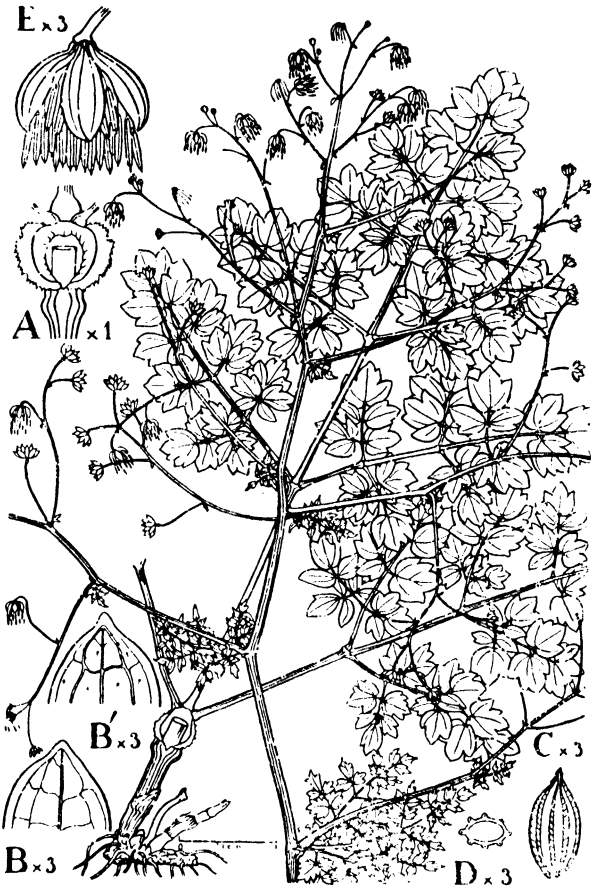
A. stipules. B. leaf, upper, and B′ lower surface. C. achene. D. achene t.s. E. flower.



115. THALICTRUM MONTANUM Wallroth. The MOUNTAIN MEADOW-RUE is a small to somewhat robust plant, 6-18 in. (15-45 cm.) high, occurring rather commonly on calcareous rocks on mountains and sometimes on rocks on the coast. Stem base very shortly creeping, sending out a bud near apex, and perhaps more in the first inch. Branches of panicle starting above the middle, panicle longer than broad. Leaflets very variable, usually small and longer than broad, mostly with a cuneate base, glabrous or, in var. *glandulosum*, glandular; stipules broad, spreading, fringed. Flowers 4-5 mm., drooping; sepals green, narrow, glandular. Achenes about 5 × 2 mm., long, narrow, ventral side rather curved, compressed, glandular.

Late June—early Aug. (Gordale Scar, Yorkshire.)

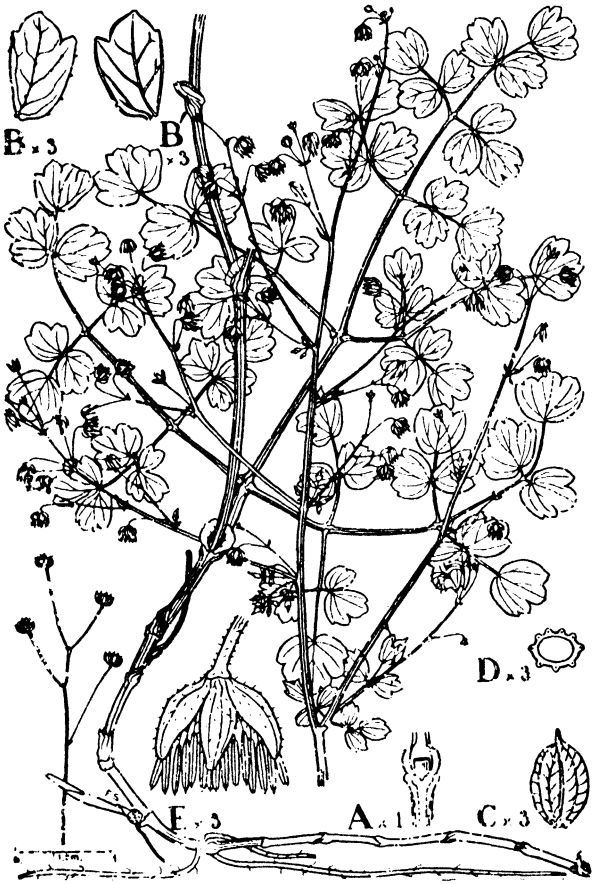
A. stipule. B. leaflet, upper, and B′ lower surface. C. achene. D. achene t.s. E. flower.



116. THALICTRUM COLLINUM Wallroth. This LOWLAND MEADOW-RUE is a rather robust plant 6-18 in. (15-45 cm.) high, which occurs on chalk banks and limestone cliffs, chiefly in W. England. Stem base very shortly creeping, sending out one or more buds near apex. Branches of panicle starting above the middle, panicle longer than broad. Leaflets variable, of moderate size, longer than broad, mostly with cordate or truncate base, usually glabrous save for a few stalked glands; stipules narrow, spreading, fringed. Flowers 5-6 mm. diam., drooping; sepals green, oval-lanceolate, glabrous. Achenes about 5 × 3 mm., exactly oval and very little compressed.

Late June—late July. (Cheddar, Somerset.)

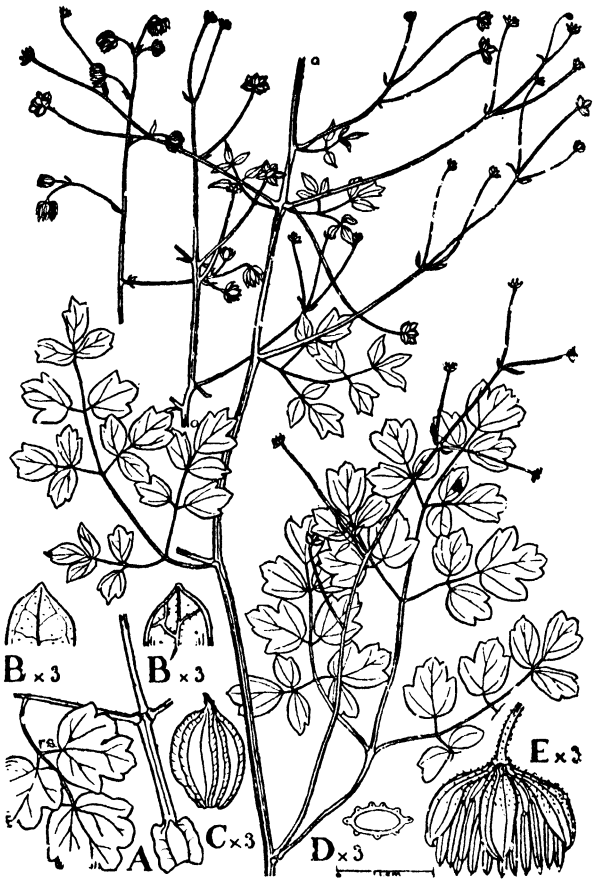
A. stipule. B. leaflet, upper, and B′ lower surface. C. achene. D. achene t.s. E. flower.



117. THALICTRUM BABINGTONII Butcher. This BABINGTON'S MEADOW-RUE is a rather robust plant 6-20 in. (15-50 cm.) high, which occurs on banks, heaths and chalk hills in East Anglia, and occasionally elsewhere. Stem base far-creeping, sending out a bud at the apex, and others further back; branches of panicle starting above the middle, panicle about as long as, or longer than, broad. Leaflets variable, of medium size, nearly as broad as long, mostly with a cordate base and glabrous save for a very few sessile glands; stipules broad, spreading, nearly entire. Flowers 5-6 mm. diam., drooping; sepals greenish-yellow, oval-lanceolate, glandular. Achenes 4 × 3 mm., small, roundly ovoid, not compressed.

Late June—mid Aug. (Babraham, Cambridge.)

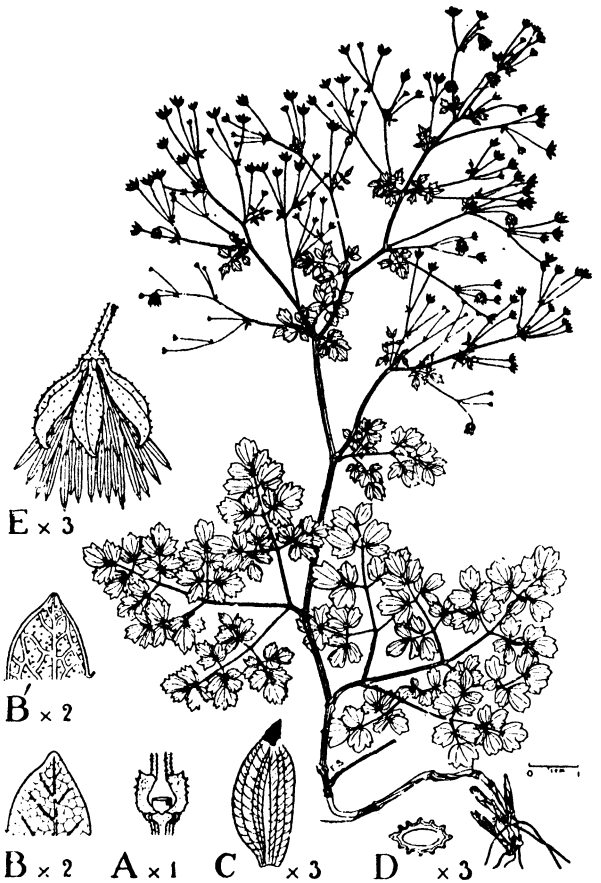
A. stipule. B. leaflet, upper, and B′ lower surface. C. achene. D. achene t.s. E. flower.



118. THALICTRUM CAPILLARE Reichb. This CREEPING MEADOW-RUE is a rather robust plant 9-20 in. (23-50 cm.) high, which grows on river shingle in Perthshire and perhaps elsewhere. Stem base far creeping, sending up shoots at intervals; branches of panicle arising about the middle, long-spreading, making the panicle almost broader than long. Leaflets large, nearly as broad as long, mostly with cordate base, covered with tiny sessile glands; stipules broad, entire, horizontal. Flowers 6-7 mm. diam., porrect, soon erect; sepals yellow-green, oval-lanceolate, glandular. Achenes 5 × 4 mm., rather large, roundly ovate, not compressed, and when young, with a much broader spreading stigma than in any other British species.

Mid June—late July. (Fortingal, Perthshire.)

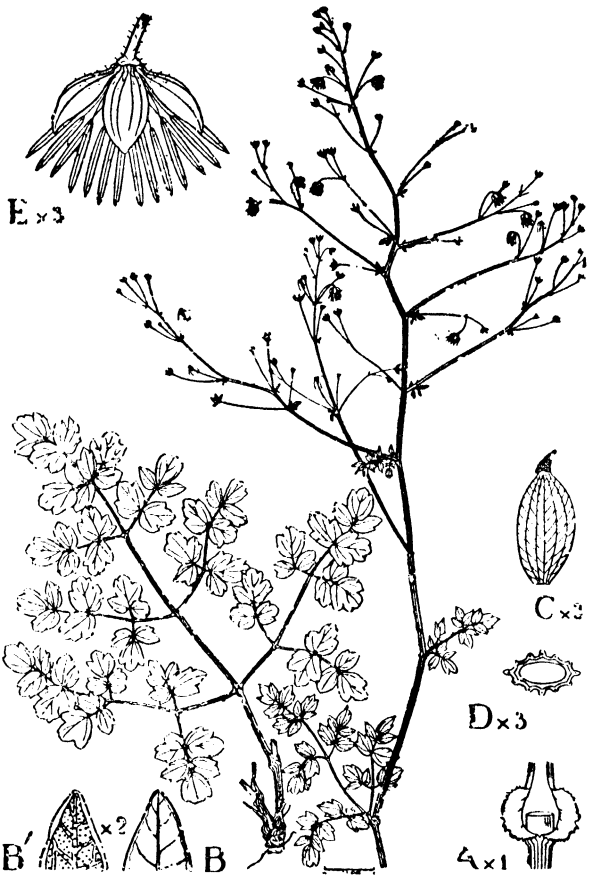
A. portion of lower leaf and stipule. B. leaflet, upper, and B′ lower surface. C. achene. D. achene t.s. E. flower.



119. THALICTRUM MAJUS Crantz. This LARGER MEADOW-RUE is a robust plant 12-30 in. (30-75 cm.) high, which grows in rocky places in N. Britain, occasionally elsewhere. Stem base cæspitose; branches of panicle starting about the middle, numerous, ascending. Panicle about as long as broad. Leaflets variable, large, but longer than broad, mostly with acute teeth and cuneate or truncate base, somewhat glandular below, glands usually stalked; stipules narrow, rather recurved, slightly toothed. Flowers 5-6 mm. diam., drooping in bud, later erect; sepals yellow-green, narrow, ovate, glandular. Achenes 6 × 3 mm., large, very numerous, oval-lanceolate, compressed.

Late June—late July. (N. Queensferry, Fife.)

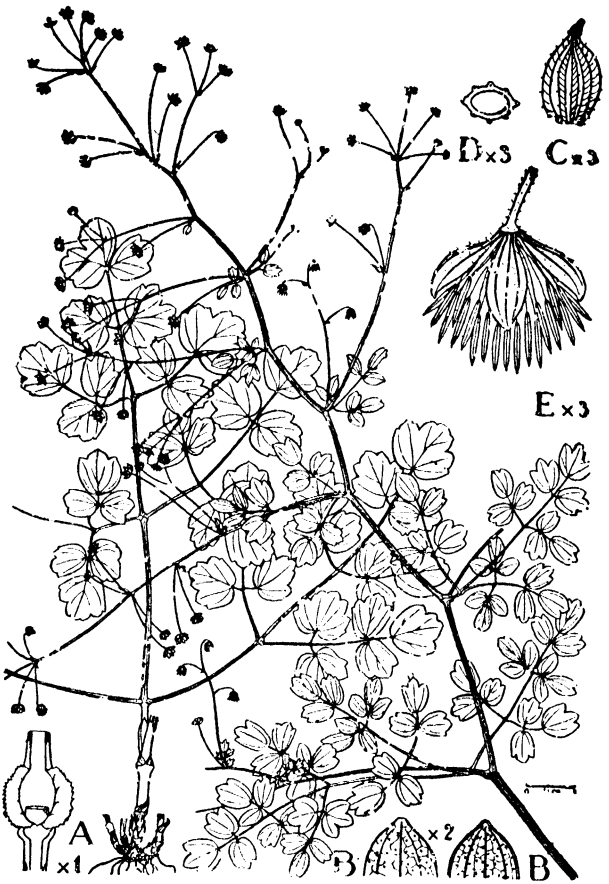
A. stipule. B. leaflet, upper, and B′ lower surface. C. achene. D. achene t.s. E. flower.



120. THALICTRUM UMBROSUM Butcher. This LARGE-LEAVED MEADOW-RUE is a robust plant 24-48 in. (60-120 cm.) high, which is found on lake shores and in damp, shady places in N. England and Scotland. Stem base cæspitose; branches of panicle starting above the middle, not very numerous, spreading; panicle longer than broad, somewhat deltoid. Leaflets variable, usually large, as broad as, or broader than long, mostly with obtuse teeth and cordate or truncate base, glabrous or with sessile glands below; stipules rather narrow, spreading, fringed. Flowers 6-7 mm. diam., drooping in bud, soon becoming erect; sepals greenish-yellow, broadly ovate, with few glands. Achenes 5 × 3 mm., few (2-8), medium, almost exactly oval, somewhat compressed.

Late June—late July. (Loch Rannoch, Perthshire.)

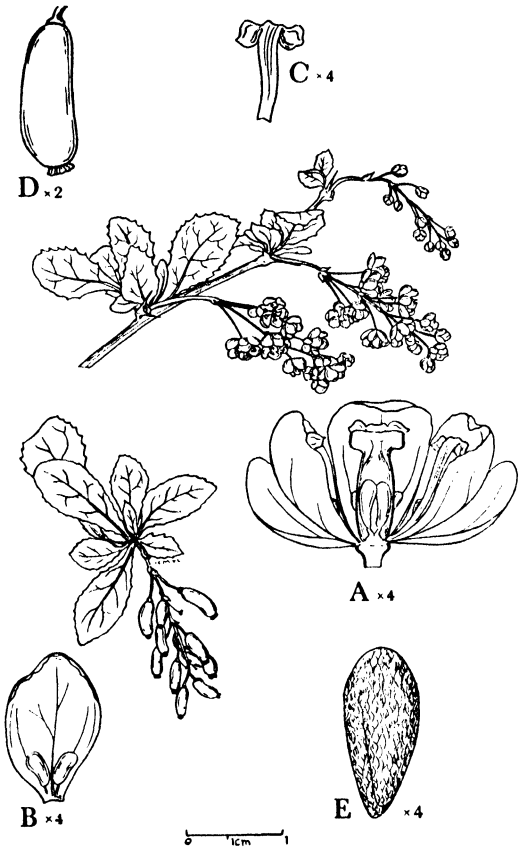
A. stipules. B. leaflet, upper, and B′ lower surface. C. achene. D. achene t.s. E. flower.



121. THALICTRUM EXPANSUM Jord. This GLANDULAR MEADOW-RUE is a robust plant, 24-60 in. (60-150 cm.) high, which is found rarely in shady, rocky places in Wales. Stem base cæspitose; branches of panicle starting about the middle, numerous, horizontal, many springing from one axil; panicle as broad as long. Leaflets variable, large, nearly as broad as long, mostly with obtuse teeth, cordate or truncate based, clothed with numerous, small, stalked glands; stipules rather narrow, spreading, fringed. Flowers 7 mm. diam., drooping in bud, later erect; sepals pale yellow-green, narrow, ovate, glandular. Achenes 4 × 3 mm., numerous, small, roundly ovoid, not compressed.

Late June—late July. (Erwood, Brecon.)

A. stipules. B. leaflet, upper, and B′ lower surface. C. achene. D. achene t.s. E. flower.

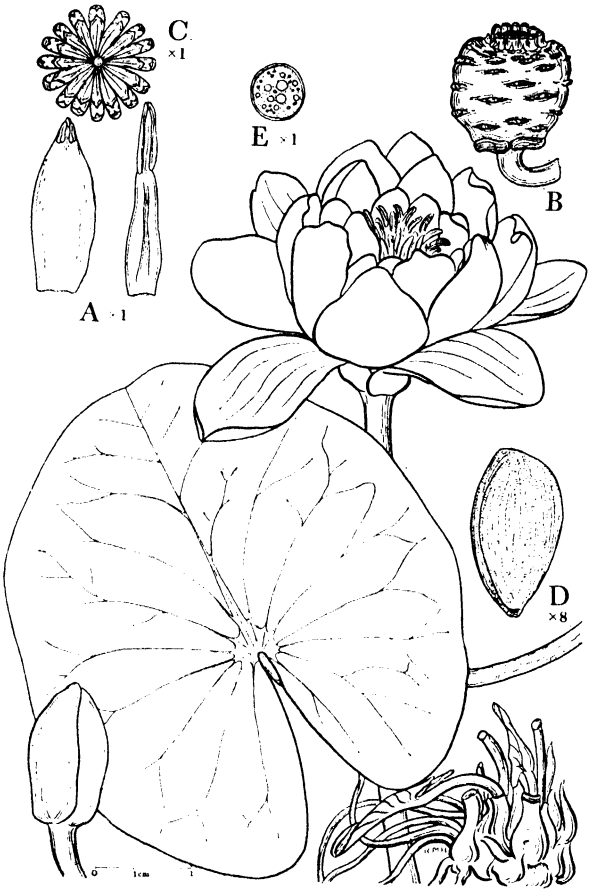


BERBERIS L. Prickly shrubs with regular flowers; sepals 8-6; petals and stamens 6; carpel single; fruit a several-seeded berry.

122. BERBERIS VULGARIS L. The COMMON BARBERRY is a prickly, deciduous shrub which is scattered over England, Wales and Ireland, in lowland hedges and thickets, though often planted. Leaves obovate, serrate, deciduous. Flowers 10 mm. diam., in pendulous racemes, scented; sepals 6, deciduous; petals 6, yellow, each with 2 glands at base; stamens 6, opening by valves. Fruit 2-5 seeded, red, ellipsoid, curved; seed 4-5 × 2 mm., large, oblong, pointed, netted, brown. Mid May—mid June. (Ashbourne, Derbyshire.)

A. flower l.s B. petal. C. stamen. D. berry. E. seed.

(*Mahonia aquifolium* (Pursh) Nutt., with evergreen, prickly compound leaves, is commonly planted in shrubberies and *Epimedium alpinum* L., with biternate, cordate leaves, has been found rarely among ruins.)

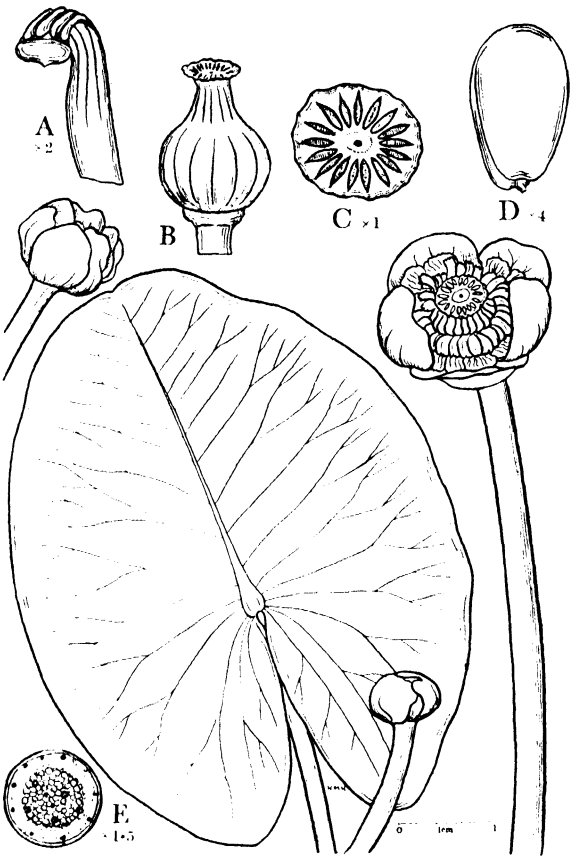


NYMPHÆA L. Water plants with simple, exstipulate leaves; flowers solitary; sepals greenish on outside, rather smaller than the numerous coloured or white petals; stamens numerous; ovary many-celled, many-seeded.

123. NYMPHÆA ALBA L. The WHITE WATER LILY is a rather uncommon plant of still water throughout the British Isles, but it is often planted. Leaves broadly ovate-cordate, with a rather broad basal sinus; submerged leaves thin, folded; floating ones coriaceous, growing from a rather thick, basal, knotted rhizome. Flowers 80-100 mm. diam.; sepals 4-5, green on outside, white inside; petals numerous, in many series, spreading outwards, white, longer than the sepals; stigma star-like, with projecting lobes; fruit almost spherical; seed 3·0 × 1·5 mm., ovoid, finely striate, black.

Late June—late July. (Middleton, Warwickshire.)

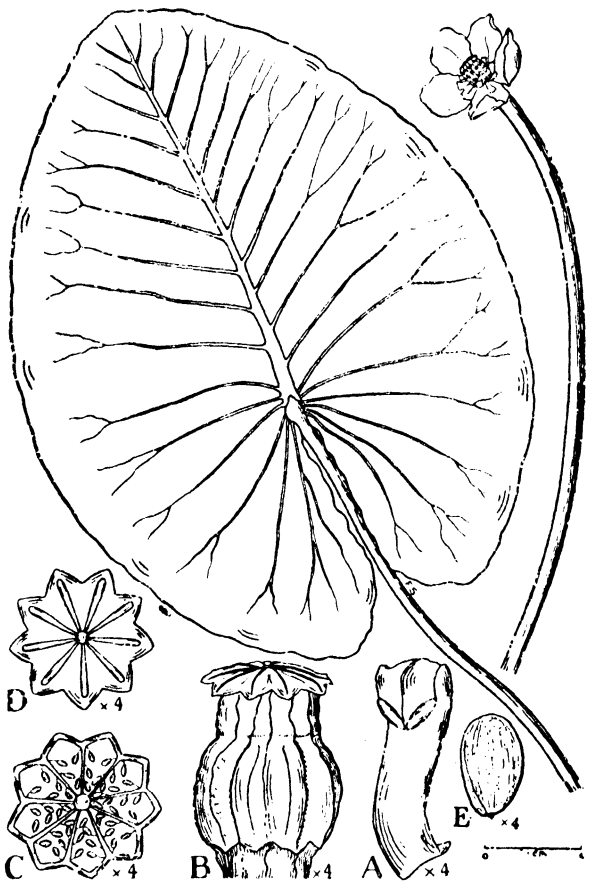
A. stamens. B. capsule. C. stigma. D. seed. E. stem t.s.



NUPHAR Sm. Water plants with simple, exstipulate leaves; flowers solitary; sepals 5-6, yellow, concealing smaller, numerous petals; stamens numerous; ovary many-celled, many-seeded.

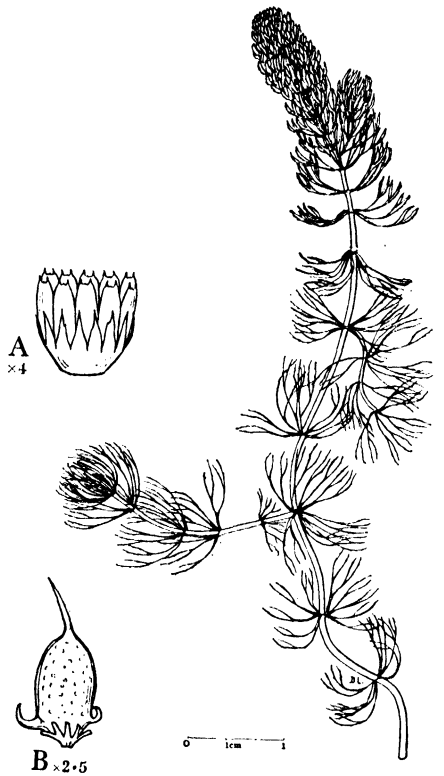
124. NUPHAR LUTEA (L) Sm. The YELLOW WATER LILY is a stout perennial which is common in pools, canals and shallow, slow-flowing rivers throughout the British Isles. Leaves ovate-cordate, with narrow basal sinus; submerged leaves wrinkled; floating ones coriaceous, growing from a thick, knotted rhizome. Flowers 40-50 mm. diam., subspherical; sepals yellow, incurved, hiding the very much smaller petals; stigma entire with over 20 short rays; fruit bottle-like, tapering gradually to a broad neck; speed 5 × 3 mm., ovoid, shining, pale-yellow.

Mid June—mid Aug. (Osmaston by Ashbourne, Derbyshire.)
A. stamen. B. capsule. C. stigma. D. seed. E. stem t.s.



125. NUPHAR PUMILA (Timm) DC. This LESSER YELLOW WATER-LILY is a rather slender water-plant rarely found in pools in Shropshire and in some Scottish lakes. Flowers 15-20 mm. diam., cup-shaped; sepals yellow, narrow, not overlapping, but hiding the much smaller petals; stigma with acute lobes and about ten rays; fruit broadly ovoid, narrowed suddenly into a small, short neck; seed 3 × 2 mm., ovoid, finely striate, grey.

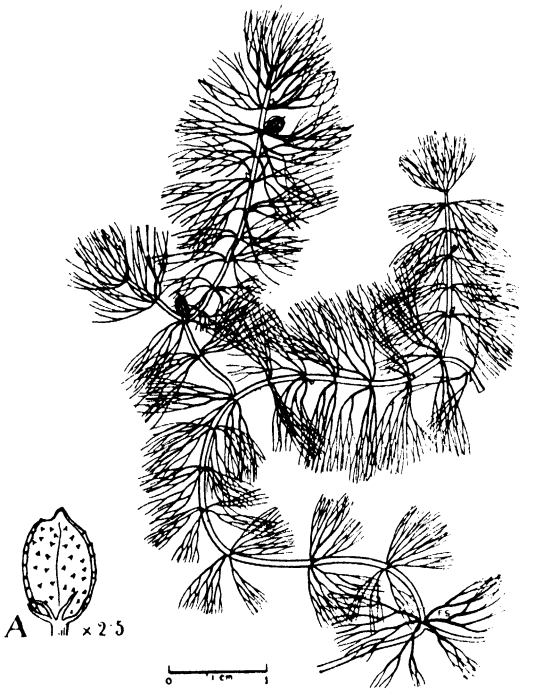
Late June—late July. (Blakemere, Shropshire.)
A. stamen. B. pistil. C. ovary t.s. D. stigma. E. seed.



CERATOPHYLLUM L. Submerged, aquatic plants with capillate, divided leaves and inconspicuous, monœcious flowers, solitary and sessile in the whorls of the leaves; perianth absent; stamens 10-20; ovary sessile, one-celled; fruit a one-seeded nut.

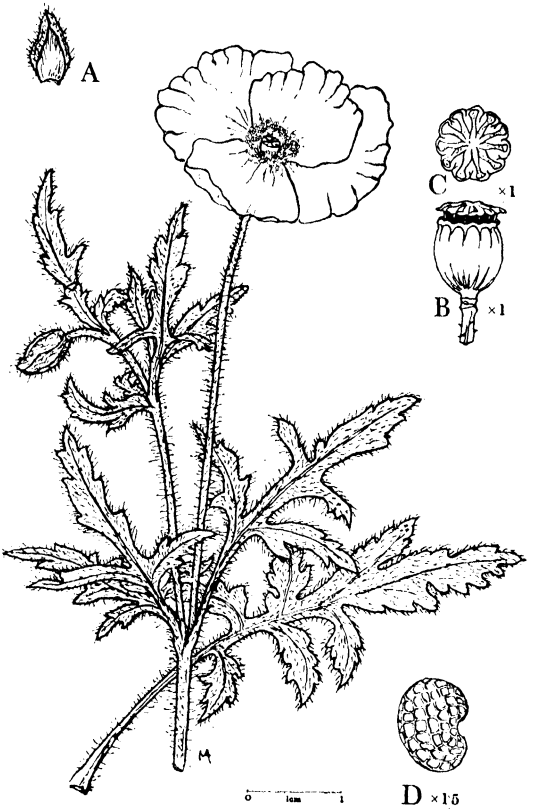
126. CERATOPHYLLUM DEMERSUM L. The COMMON HORNWORT is a stiff, rootless, submerged water plant with numerous, finely divided leaves on a little-branched stem 8-30 in. (20-75 cm.) long, which grows, sometimes abundantly, in ponds, ditches and slow streams in most parts of lowland England. Leaves very densely crowded at the top of the stem, forming a cylindrical mass 10-20 mm. long, once or twice forked, apex acute, margin denticulate. Fruit 4·0 × 3·5 mm., ovoid, warty, about as long as persistent style, with two spines at the base.

Mid July—late Sept. (Northwich, Cheshire.)
A. male flower. B. nut.



127. CERATOPHYLLUM SUBMERSUM L. The UNARMED HORNWORT is a rather stiff, rootless, submerged water plant with numerous finely divided leaves on a little-branched stem 8-24 in. (20-60 cm.) long. It grows, sometimes abundantly, in lowland ditches and ponds, usually near the sea in the eastern and south-eastern counties of England. Leaves only loosely crowded in the upper part of the plant and forming a rather interrupted mass 10-20 mm. long, rather light green, thrice forked, apex subobtuse, margin denticulate. Fruit 4·0 × 3·5 mm., ovoid, warty, longer than the persistent style, without the spines at the base.

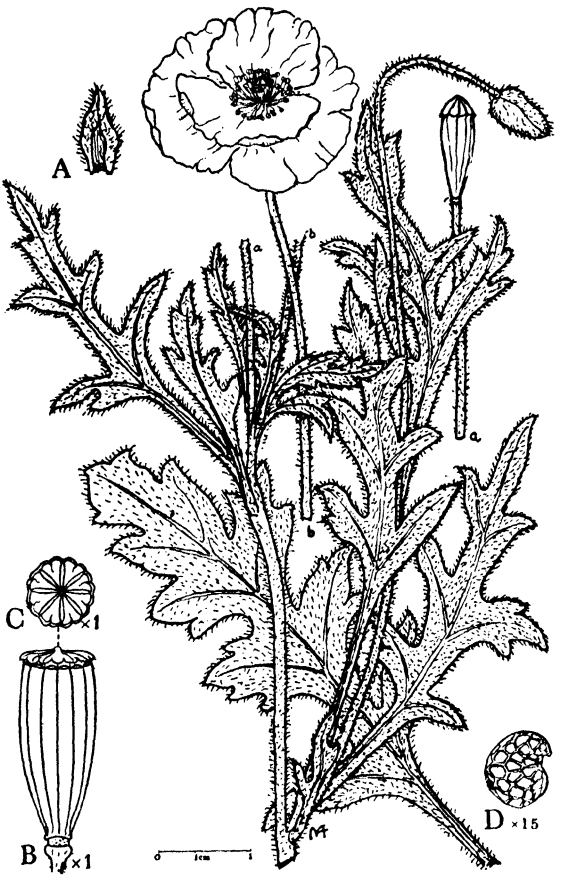
Mid July—late Sept. (nr. Bristol, Somerset.)
A. fruit.



PAPAVER L. Small annual, or perhaps perennial plants with large, showy flowers. Sepals 2, deciduous; petals 4, crumpled in bud; stamens numerous; capsule rounded, with a sessile stigma.

128. PAPAVER RHŒAS L. The COMMON RED POPPY is a much-branched, coarsely hairy, very variable annual 6-18 in. (15-45 cm.) high. It is an abundant cornfield weed throughout the British Isles. Leaves hairy, pinnatisect; length, width and amount of lobing very variable but usually closely dentate. Flowers 60-80 mm. diam.; petals red, overlapping. Capsule 7 × 6 mm., rounded, short, glabrous; stigma 8-20 rayed, edges rounded; seed 0·8 × 0·5 mm., reniform, coarsely honeycombed, dark brown.

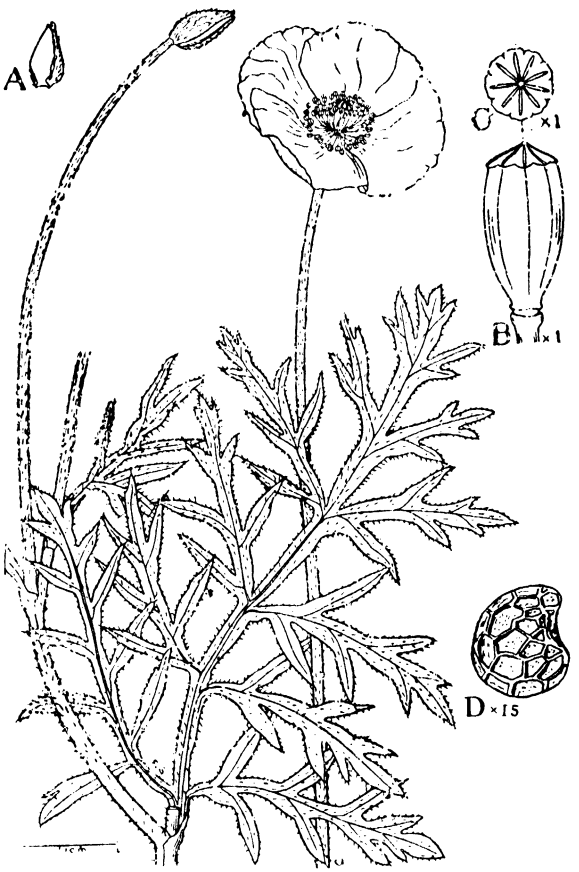
Late May—mid Sept. (Winscombe, Somerset.)
A. sepal. B. capsule. C. stigma. D. seed.



129. PAPAVER DUBIUM L. The PALE RED POPPY is a much-branched, hairy, variable annual 9-24 in. (23-60 cm.) high, with white sap. It is an abundant weed of cornfields and waste places throughout the British Isles. Leaves hairy, pinnate; segments rather broad, toothed. Flowers 60-90 mm. diam.; petals pale red, overlapping. Capsule 25 × 10 mm., semi-ovoid, glabrous; stigma disc 6-10 rayed, entire; seed 0·7 × 0·5 mm., reniform, coarsely honeycombed, black.

Early June—late Sept. (Winscombe, Somerset.)

A. sepal. B. capsule. C. stigma. D. seed.



130. PAPAVER LECOQII Lammotte. The YELLOW-SAP POPPY is a much-branched, hairy, rather robust annual 9-25 in. (23-60 cm.) high, usually with yellow sap. It is a rather uncommon weed of cultivated ground in England. Leaves hairy, bipinnate, segments rather narrow, entire. Flowers 60-90 mm. diam.; petals pale red, overlapping. Capsule 22 × 10 mm., semi-ovoid, glabrous; stigma disc 6-10 rayed, crenate; seed 1·0 × 0·8 mm., reniform, coarsely honeycombed, dark brown.

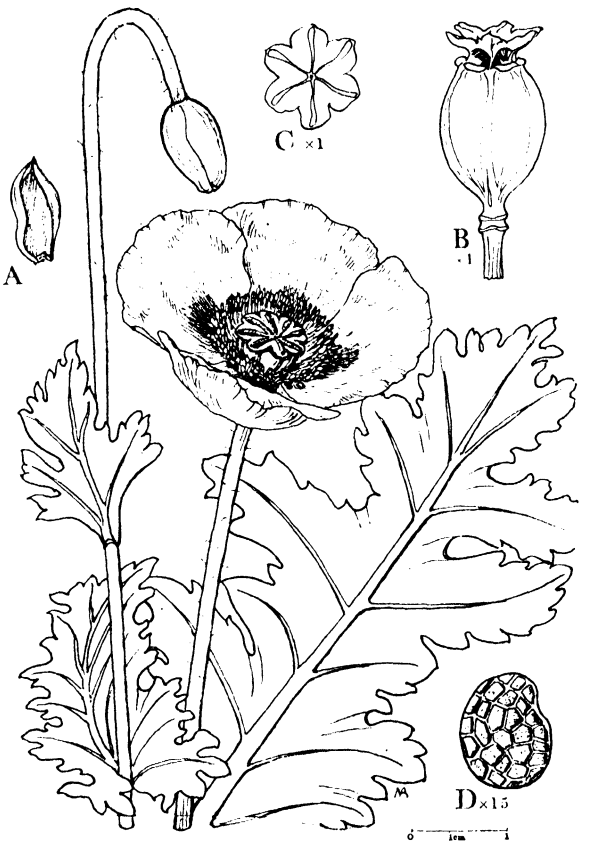
Mid July—late Sept. (Bolton Abbey, Yorkshire.)
A. sepal. B. capsule. C. stigma D. seed.

131 PAPAVER HYBRIDUM L. This ROUND PRICKLY-HEADED POPPY is a slender, little-branched, hairy, erect annual 6-12 in. (15-30 cm.) high. It occurs rarely in chalky cornfields in E. and S. England. Leaves hairy, irregularly bipinnate; segments rather narrow, not overlapping. Flowers 20-30 mm. diam.; petals rather small, orbicular, dark red with black base. Capsule 6 × 6 mm., round, bristly; stigma disc 4-8 rayed, small, crenate; seed 0·7 × 0·5 mm., reniform, coarsely honeycombed, dark brown.

Mid June—late July. (Alresford, Hampshire.)
A. sepal. B. capsule. C. stigma. D. seed.

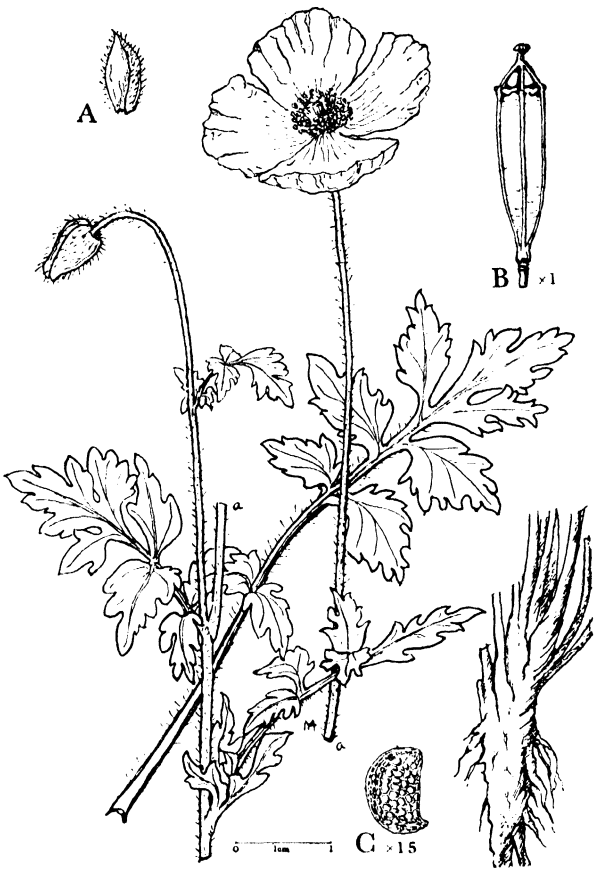
132. PAPAVER ARGEMONE L. This PRICKLY LONG-HEADED POPPY is a rather slender, hairy, almost simple or bushy annual 6-12 in. (15-30 cm.) high, with white sap. It is an uncommon plant of light, cultivated and waste ground throughout lowland Britain. Leaves hairy, pinnate, segments narrow, acutely toothed. Flower 20-30 mm.; petals narrow, ovoid, pale red with black base. Capsule 12 × 7 mm., elongated, bristly; stigma disc 4-8 rayed, entire; seed 0·7 × 0·4 mm., semi-elliptical, with small and regular honeycomb, brown.

Early June—mid Sept. (Whittington, Staffordshire.)
A. sepal. B. capsule. C. stigma. D. seed.



133. PAPAVER SOMNIFERUM L. The OPIUM POPPY is a glaucous, erect, little-branched annual 12-30 in. (30-75 cm.) high, which is a frequent casual or denizen in fields and waste places throughout the British Isles. Leaves glabrous, pinnatifid with wavy margins, stem-leaves clasping. Flowers 80-100 mm. diam.; sepals almost glabrous; petals violet, pink or red. Capsule rounded, short, glabrous; stigma disc with projecting lobes; seed 1·0 × 0·6 mm., reniform, coarsely honeycombed, grey.

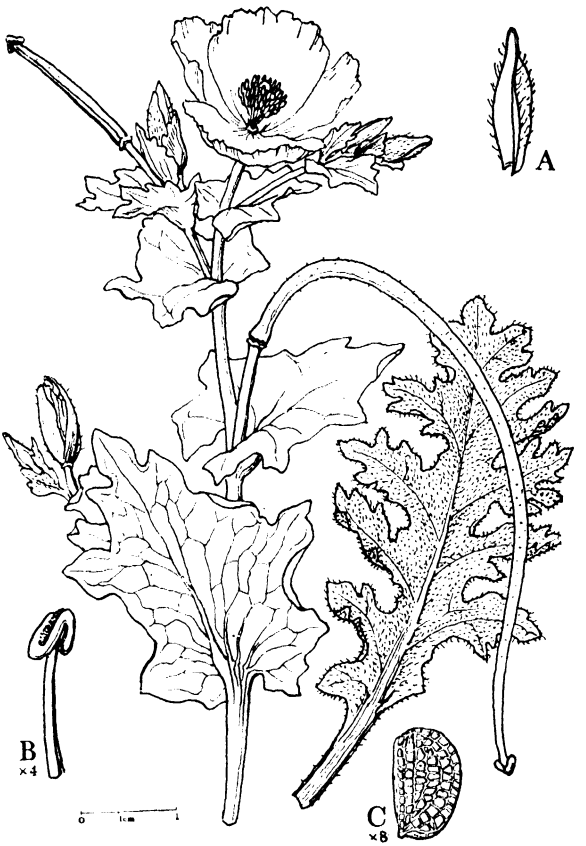
Early June—late Sept. (Sawley, Derbyshire.)
A. sepal. B. stigma. C. capsule. D. seed.



MECONOPSIS L. Small perennial plants with showy yellow flowers; sepals 2, deciduous; petals 4; stamens numerous; capsule ellipsoid, opening by 5 valves between the stigmas; styles and stigma present.

134. MECONOPSIS CAMBRICA (L.) Vig. The WELSH POPPY is a rather slender, somewhat hairy perennial with several little-branched, flowering stems 9-18 in. (23-45 cm.) high, growing from a tapering root-stock. It occurs uncommonly in shady places in W. Britain and as a casual elsewhere. Leaves with a few hairs, pinnatisect, segments oval, toothed. Flowers 30-40 mm. diam.; petals deep yellow, broad. Capsule semi-elliptical with 5 longitudinal ribs, glabrous; seed 0·7 × 0·5 mm., semi-elliptical with small and regular honeycomb, black.

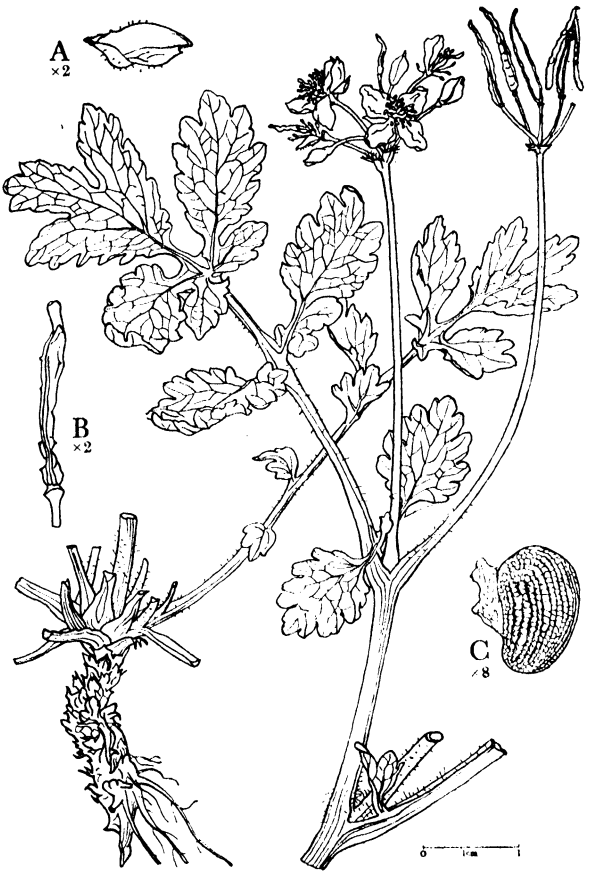
Mid June—late July. (Barnard Castle, Durham.)
A. sepal. B. capsule. C. seed.



GLAUCIUM Mill. Small annual or biennial plants with yellow flowers; sepals 2; petals 4; stamens many; capsule long, linear, opening by 2 valves; seeds without appendage.

135. GLAUCIUM FLAVUM Crantz. The YELLOW HORNED POPPY is a stout, succulent, glaucous, bristly biennial with a few somewhat branched flowering stems 12-20 in. (30-50 cm.) high, growing from a rosette of pinnatifid radical leaves. It is common on sea shingle and sandhills throughout the British Isles. Leaves pinnatifid; upper leaves clasping, ovate, sinuate, all glaucous and bristly with thick hairs. Flowers 40-90 mm. diam.; petals ovate, contiguous, deep yellow. Capsule very long, linear; stigma bifid; seed 1·2 × 0·5 mm., semi-elliptical, with regular honeycomb, black.

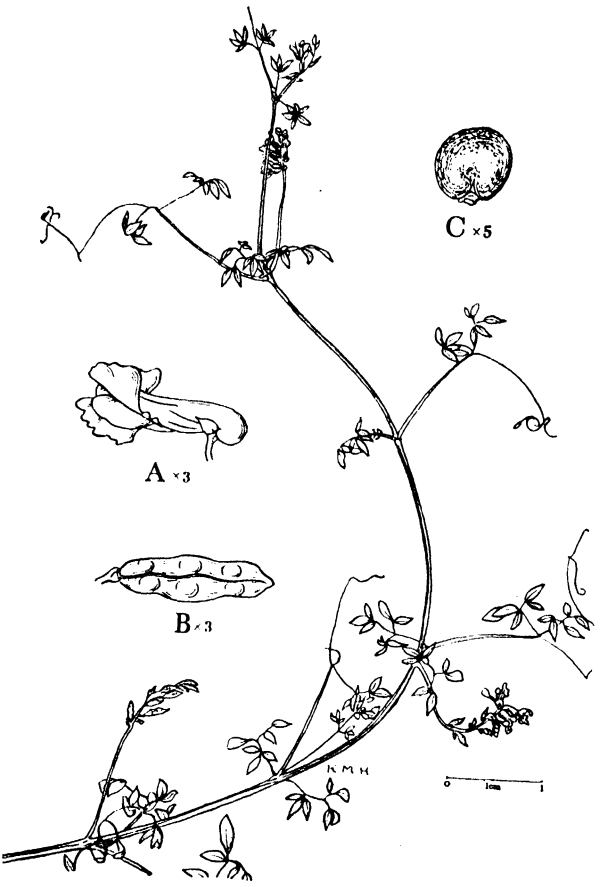
Mid June—mid Aug. (Deganwy, Caernarvonshire.)
A. sepal. B. stigma. C. seed.



CHELIDONIUM L. Small perennials with yellow flowers and yellow sap; sepals 2; petals 4; stamens many; capsule linear, short; valves 2; seeds with a spongy appendage.

136. CHELIDONIUM MAJUS L. The GREATER CELANDINE is a glabrous-glaucous perennial with many little-branched flowering stems 9-15 in. (23-38 cm.) high, growing from a tapering rootstock. It is a common plant in hedges and waste places near dwellings throughout lowland Britain. Leaves pinnate; segments ovate-lanceolate, with rounded teeth, yellow-green. Flowers 20-30 mm. diam. in umbels; petals golden yellow, ovate, narrow. Capsule linear, short; stigma bifid; seed 2·0 × 1·2 mm., ovoid, longitudinally striate and honeycombed, black with white appendage.

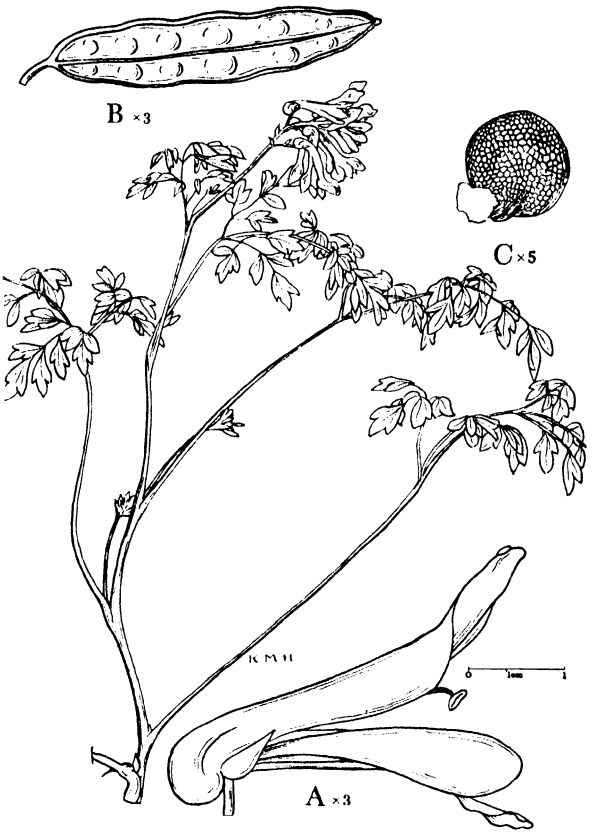
Late May—late July. (Calverton, Nottingham.)
A. sepal. B. fruit. C. seed.



CORYDALIS DC. Herbaceous plants with much divided leaves and irregular flowers. Fruit a many-seeded, narrow pod; opening by 2 valves; seeds with an appendage.

137. CORYDALIS CLAVICULATA (L.) DC. The CLIMBING CORYDALIS is a slender annual with stems 6-30 in. (15-75 cm.) long, climbing by means of tendrils. It is an uncommon plant of stony bushy places on acid soils throughout the British Isles. Leaves usually biternate, the peduncle ending in tendrils; segments lanceolate, acute. Flowers 6-8 mm. long, in a close raceme on a long stem; sepals half the width of corolla tube, ovate, acute; petals cream-white to yellow, spur short; pod 6-8 mm. long, 4-8 seeded; seed 3·7 mm., spherical, netted, shining, black.

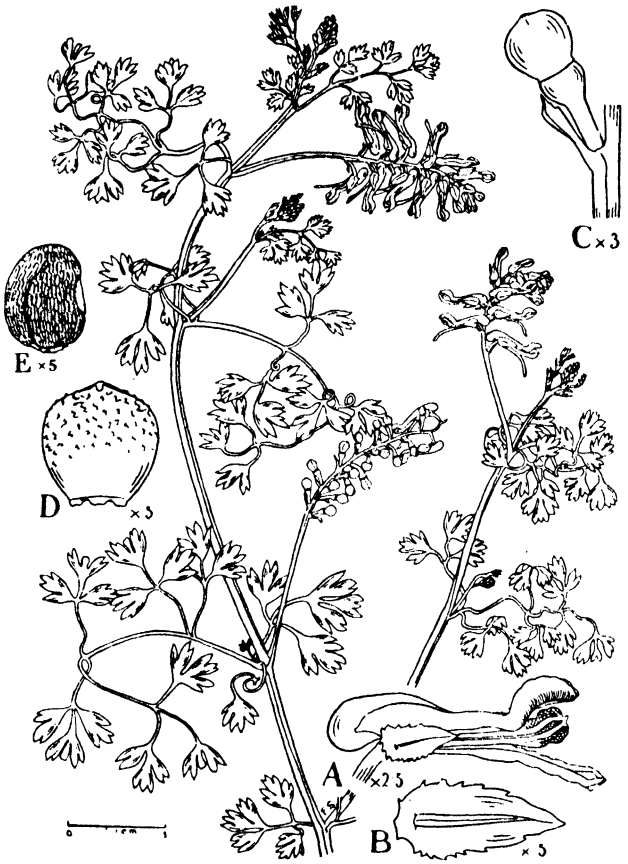
Mid June—late Aug. (Edlaston Coppy, Derbyshire.)
A. flower. B. fruit. C. seed.



138. CORYDALIS LUTEA (L.) DC. The YELLOW CORYDALIS is a slender perennial with numerous branched, brittle stems 12 in. (20 cm.) high, growing upright as a tuft from a fleshy stock. It is a garden plant which has become naturalized on walls and in waste places near villages throughout the British Isles. Leaves bipinnate on long stalks, leaflets cuneate, three-toothed. Flowers 18-20 mm. long, in a short, loose raceme, on a short stem; sepals minute, entire; petals yellow, spur very short; pod about 15 mm. long, 10-12 seeded; seed 1·7 mm., globose, granular-rugose, shining, black.

Mid May—late July. (Thorpe, Derbyshire.)
A. flower. B. fruit. C. seed.

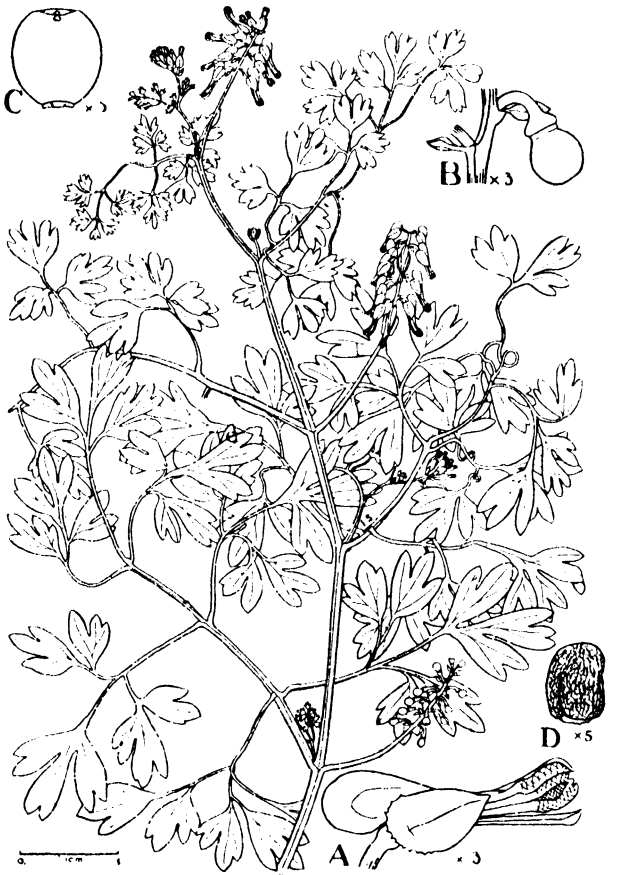
(*Corydalis solida* Sw., with red flowers and a solid tuber, is sometimes planted in copses.)



FUMARIA L. Herbaceous annual plants with much-divided leaves and irregular, spurred flowers; sepals 2; fruit a one-seeded nut; seeds not appendaged.

139. FUMARIA OCCIDENTALIS Pugsley. This CORNISH FUMITORY is a robust, climbing plant with stems up to 60 in. (150 cm.) long, which is found only in Cornwall. Leaf segments flat, broadly ovate. Flowers 15 mm. long, in rather dense racemes which equal peduncles; bracts nearly equalling the straight or curved, fruiting pedicels. Sepals one-third as long and one-half as broad as the large corolla; upper petal with large, dark purple wing, edged with white; lower petal with broad, spreading margin. Fruit 3 × 3 mm., keeled, rugose, acute.

Mid May—mid Sept. (St. Ives, Cornwall.)
A. flower. B. sepal. C. fruit on pedicel. D. dry fruit. E. seed.



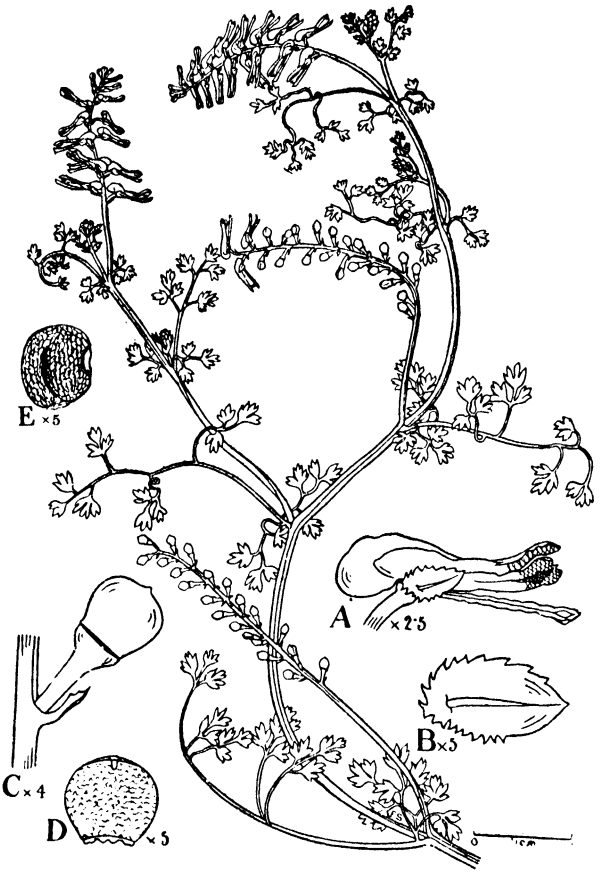
140. FUMARIA CAPREOLATA L. This WHITE CLIMBING FUMITORY is a rather robust, climbing annual, with stems 12-36 in. (30-90 cm.) long, which is found on banks and arable land, scattered over the British Isles. Leaf segments flat, broadly oval; racemes dense, shorter than peduncles; bracts equalling the strongly recurved fruiting pedicels. Sepals as broad as and one-half to one-third as long as the medium, 10-12 mm. long corolla; upper petal white or pink with purple wing not covering keel; lower petal with narrow spreading margin. Fruit with neck narrower than the pedicel tip 2·0-2·5 × 2·0-2·5 mm., not keeled, smooth or slightly rugose, flat-topped.

Mid May—mid Sept. (Melton, Suffolk.)
A. flower. B. fruit on pedicel. C. dry fruit. D. seed

141. FUMARIA PURPUREA Pugsley. The PURPLE FUMITORY is a rather robust, climbing plant with stems up to 24 in. (60 cm.) long. It grows in hedges and fields in S.W. and N. England and Ireland. Leaf segments flat, broadly ovate. Racemes rather lax, shorter than peduncles; bracts equalling patent-recurved fruiting pedicels. Sepals as broad, and half as long as the medium (10-13 mm. long) corolla; upper petal purple with darker tip, wing exceeding keel; lower petal with narrow, spreading margin. Fruit with neck narrower than pedicel tip, 2·5 × 2·5 mm., not keeled, faintly marked, flat-topped.

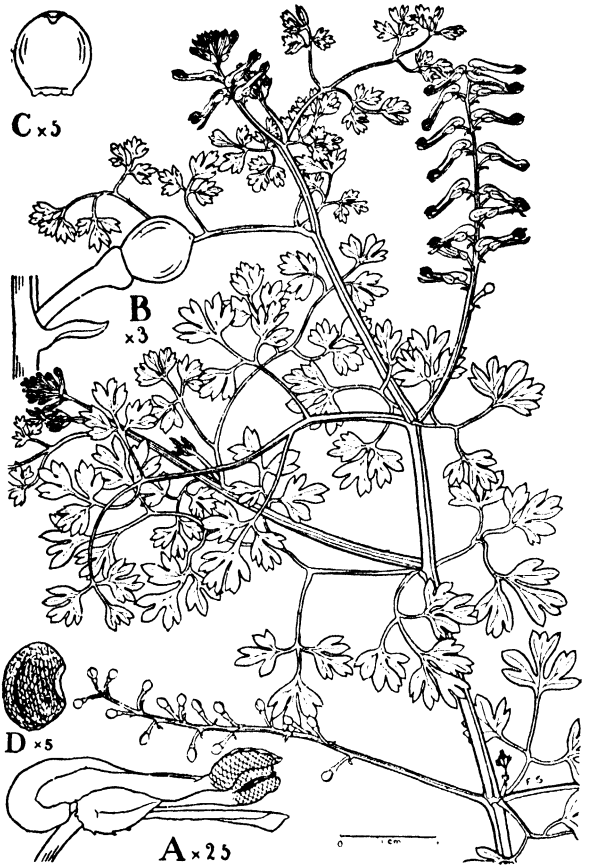
Mid May—mid Sept. (Reigate, Surrey.)

A flower. B. sepal. C. fruit on pedicel. D. dry fruit. E. seed.



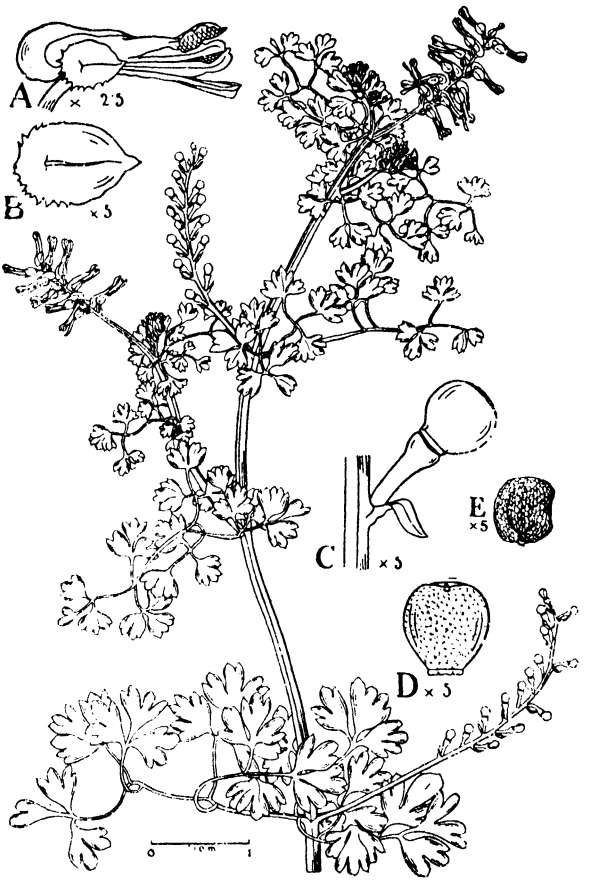
142. FUMARIA BASTARDI Bor. This BASTARD'S RAMPANT FUMITORY is a robust or slender, diffuse annual 12-30 in. (30-75 cm.) high, which is rather common in S W. England and Ireland. Leaf segments flat, oval. Racemes lax, longer than peduncles; bracts shorter than the sub-erect fruiting pedicels. Sepals one-third as broad and one-half as long as the medium (10-13 mm. long) corolla; upper petal pink with or without darker tip, wing narrow, equalling keel; lower petal with narrow, spreading margin. Fruit with base equalling pedicel tip, 2·0-2·5 × 2·0-2·5 mm., not keeled, rugose, obovate, sometimes with acute tip.

Mid June—mid Sept. (Tresamble, Cornwall.)
A. flower. B. sepal. C. fruit on pedicel. D. dry fruit. E. seed.



143. FUMARIA MARTINII Clavaud. This MARTIN'S FUMITORY is a very rare, robust, diffuse or climbing plant with stems up to 60 in. (150 cm.) long, which is found in Cornwall. Leaf segments flat, broadly oval. Racemes lax, much longer than peduncles; bracts shorter than the spreading or deflexed, fruiting pedicels. Sepals one-third as broad and one-quarter as long as the large (11-14 mm.) corolla; upper petal rose with dark tip, wing broad, exceeding keel; lower petal with narrow, spreading margin. Fruit with base narrower than pedicel tip, 2·5-2·8 × 2·0-2·5 mm. not keeled, almost smooth, long, ovate-acute.

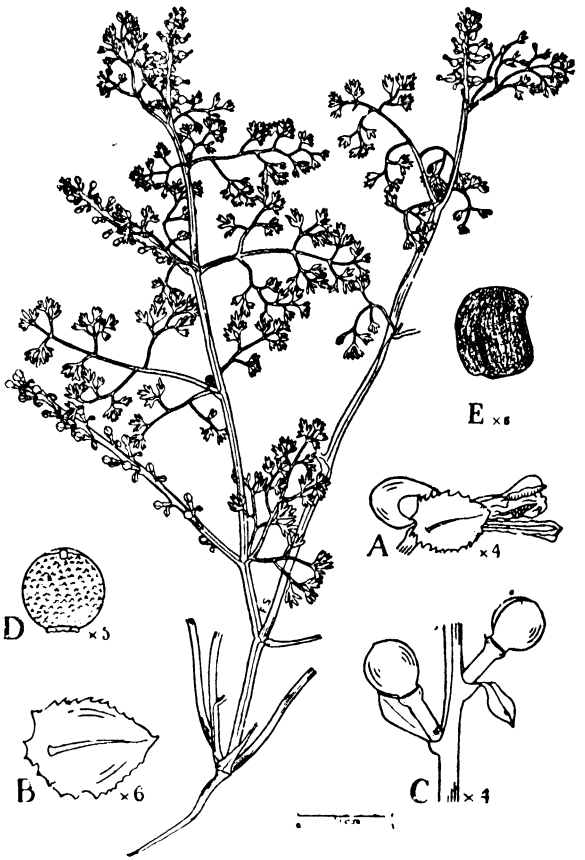
Early June—late Sept. (Tresamble, Cornwall.)
A. flower. B. fruit on pedicel. C. dry fruit. D. seed.



144. FUMARIA BORÆI (Jord.) Pugsl. This COMMON RAMPANT FUMITORY is a variable, slender or robust, climbing or sub-erect annual with stems 12-60 in. (30-150 cm.) long. It occurs in arable land here and there throughout the British Isles except the extreme north. Leaf segments flat, broadly oval. Racemes rather lax, equalling peduncles; bracts shorter than or equalling the spreading fruiting pedicels. Sepals one-half to one-third as broad, and one-quarter to one-third as long as the medium (9-12 mm.) corolla; upper petal pink with dark tip, wing exceeding keel; lower petal with narrow, erect margin. Fruit with neck as broad as the pedicel tip, 2·0-2·5 × 2·0-2·5 mm., not keeled, faintly rugose, obovate.

Early June—late Sept. (Lyndhurst, Hampshire.)
A. flower. B. sepal. C. fruit on pedicel. D. dry fruit. E. seed.

(This is sometimes considered a subspecies of the very rare *F. muralis* Sond.)

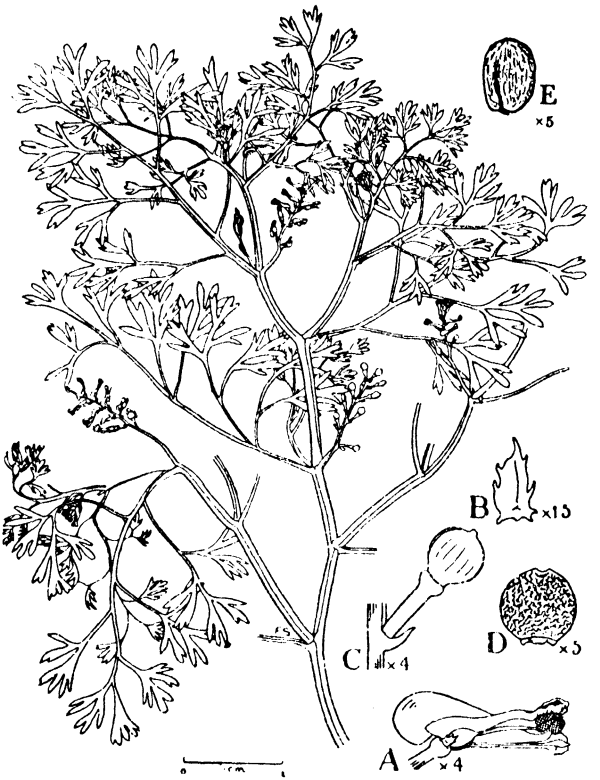


145. FUMARIA MICRANTHA Lag. This NARROW-LEAVED FUMITORY is a rather robust, diffuse or erect plant, which is rather common in dry, arable land in E. Britain. Leaf segments linear, channelled. Racemes dense, long, much exceeding peduncles; bracts exceeding the short, erect pedicels. Sepals broader than and one-half to one-third as long as the small (6-7 mm. long) corolla; upper petal rose with darker tip, wing not covering keel; lower petal with broad, spreading margin. Fruit with neck nearly equalling pedicel tip, 2·0-2·5 × 2·0-2·5 mm., keeled, rugose, round, obtuse.

Mid June—mid Sept. (Cobham, Kent.)
A. flower. B. sepal. C. fruit on pedicel. D. dry fruit. E. seed.

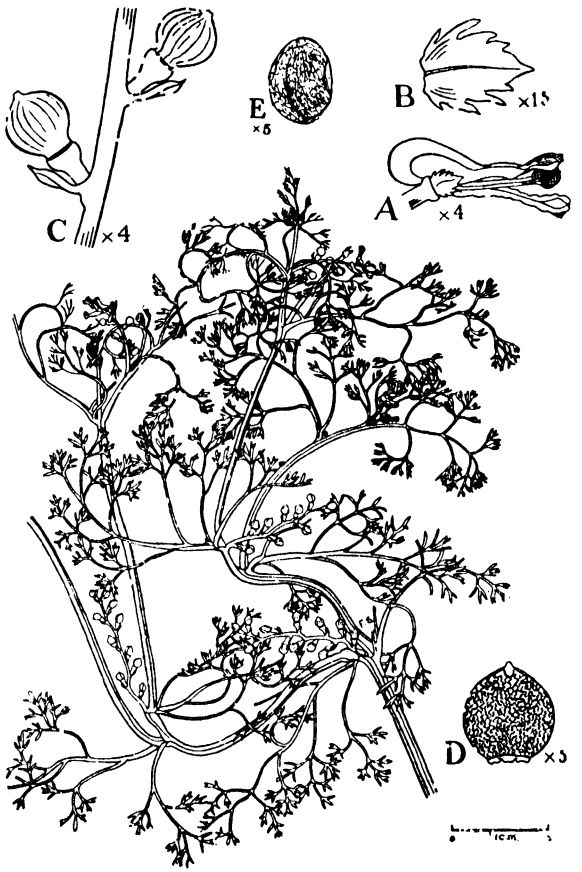
146. FUMARIA OFFICINALIS L. The COMMON FUMITORY is a robust or slender suberect annual 6-20 in. (15-50 cm.) high, which is abundant in arable and waste land throughout the British Isles. Leaf segments lanceolate, flat. Racemes dense or lax, exceeding peduncles; bracts shorter than spreading fruiting pedicels. Sepals one-half as broad and one-quarter to one-third as long as the medium (8-10 mm. long) corolla; upper petal pink with darker tip, wing exceeding keel; lower petal spathulate, with spreading margin. Fruit with base about equalling pedicel tip, 2·0-2·5 × 2·5-3·0 mm., scarcely keeled, somewhat rugose, almost obcordate, with retuse or truncate apex.

Mid June—mid Sept. (Icklingham, Suffolk.)
A. flower. B. sepal. C. fruit on pedicel. D. dry fruit. E. seed.



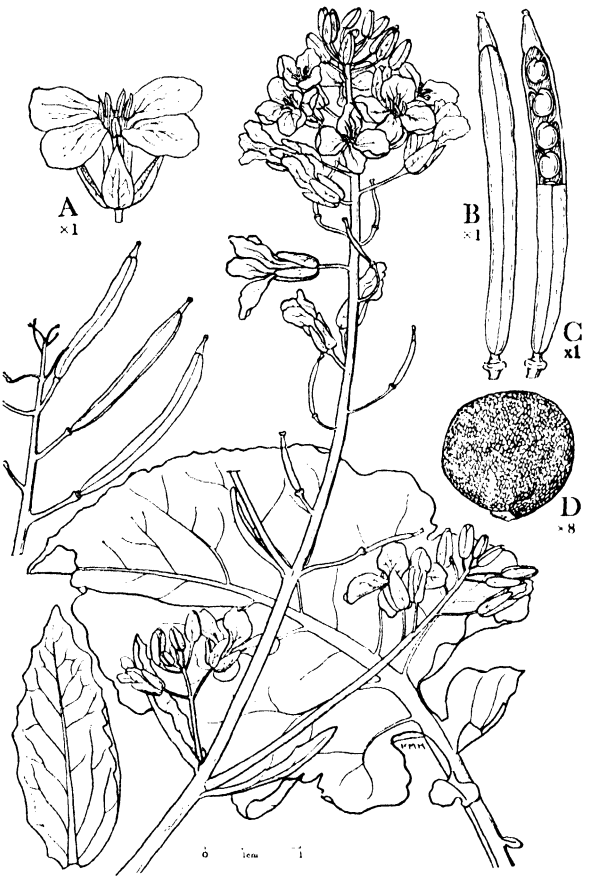
147. FUMARIA VAILLANTII Lois. This SMALL PINK FUMITORY is a slender, suberect annual 6-20 in. (15-50 cm.) high. It is a rather rare plant of calcareous arable land, chiefly in S.E. England. Leaf segments broadly linear, flat. Racemes dense, exceeding short peduncles; bracts shorter than erect fruiting pedicels. Sepals minute; corolla 5-6 mm. long; upper petal pink with slightly darker tip, wing about equalling keel; lower petal spathulate, with broad margin. Fruit with base narrower than pedicel, 2·0 × 2·0 mm., keeled, coarsely rugose, rounded, obtuse, sometimes apiculate.

Mid June—mid Sept. (Cherry Hinton, Cambridge.)
A. flower. B. sepal. C. fruit on pedicel. D. dry fruit. E. seed.



148. FUMARIA PARVIFLORA Lam. This SMALL WHITE FUMITORY is a slender suberect, glaucous, rather rare annual 6-20 in. (15-50 cm.) high, of calcareous arable land, chiefly in S. and E. England. Leaf segments linear, channelled. Racemes rather dense, sub-sessile; bracts equalling the short, erect, fruiting pedicels. Sepals minute; corolla 4-6 mm. long, upper petal white with pinkish tip and wing narrower than keel, lower petal ovate-spathulate, with spreading margin. Fruit with base narrower than tip of pedicel, 2·0-2·5 × 2·0 mm., keeled, coarsely rugose, acute or apiculate.

Mid June—mid Sept. (Littlebury, Essex.)
A. flower. B. sepal. C. fruit on pedicel. D. dry fruit. E. seed.

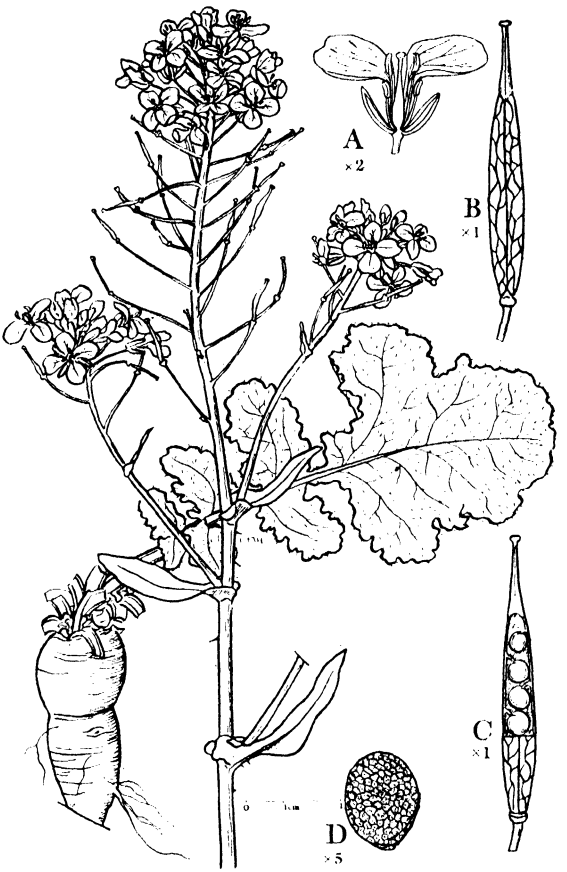


BRASSICA L. Herbs with yellow (or sometimes white) flowers and simple or divided leaves. Fruit a rounded, beaked pod. Seeds globose, in a single row. Cotyledons folded, with radicle in the fold. A large genus sometimes divided up into the sub-genera indicated.

149. BRASSICA OLERACEA L. The SEA CABBAGE is a stout biennial with thick, glaucous, radical leaves in the first year, and much-branched, woody, flowering stems 12-48 in. (30-120 cm.) high, growing from them in the second year. It is a rare plant of sea cliffs, chiefly in Wales and S. England. Root woody. Leaves thick, fleshy, lyrate, glabrous-glaucous, sinuate, upper elliptical, sessile. Flowers 25 mm., in an elongated raceme; sepals veined, pointed, erect, adpressed; petals pale yellow. Pods 30-40 mm. long, terete, 10-15 seeded; beak short, conical; valves veined; seed 2·2 × 2·0 mm., nearly spherical, faintly netted, black.

Late May—early July. (Little Orme, Cærnarvonshire.)

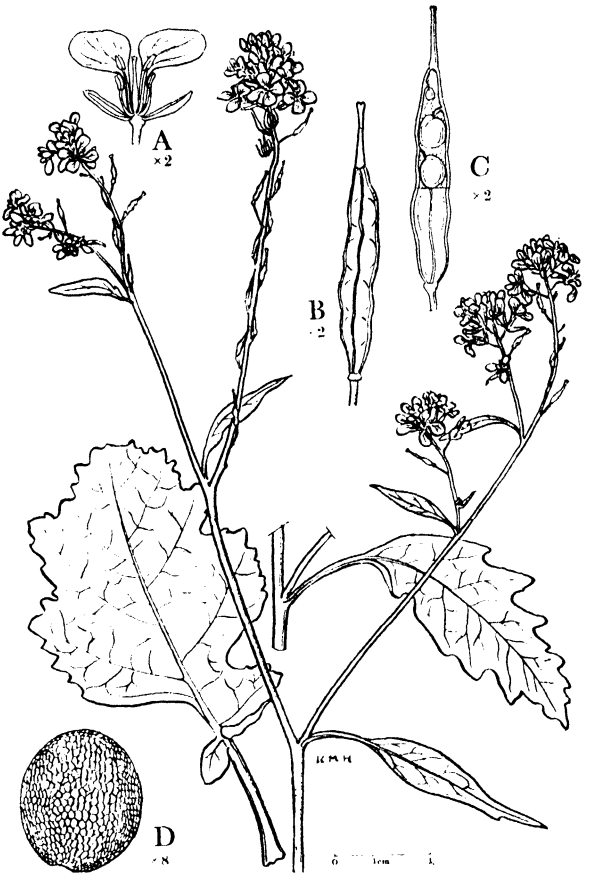
A. flower. B. pod. C. pod with part of valve removed. D. seed.



150. BRASSICA CAMPESTRIS L. The WILD TURNIP is a stout or rather slender annual or biennial, with rather thin, green, radical leaves the first year and much-branched, herbaceous, flowering stems 12-20 in. (30-50 cm.) high, growing from them in the second year. It is a rather common plant of river banks, while many forms of this species appear as relics of cultivation. Root tapering or swollen; lowest leaves rather thin, lyrate, hispid; upper, thicker, glabrous or glaucous, oval-lanceolate, auricled. Flowers 12-15 mm. diam., golden-yellow. Pod 40 mm. long, terete, sub-erect; seeds numerous; beak rounded, acuminate, seedless; valves netted, one-ribbed; seed 2·5 × 2·0 mm., honeycombed, finely pitted, yellow-brown.

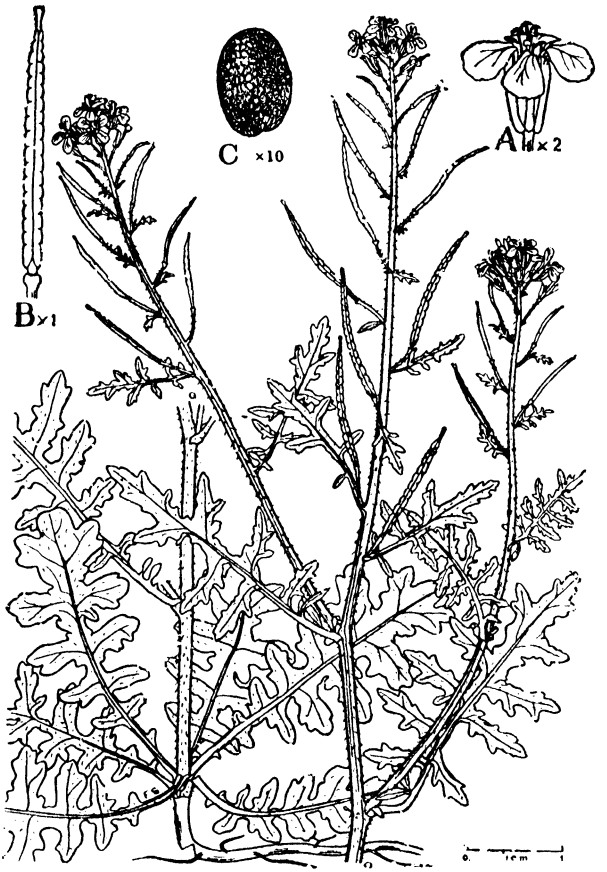
Early June—late July (Rocester, Staffordshire.)
A. flower. B. pod. C. pod with part of valve. D. seed.

(*Brassica napus* L., and many varieties of it occur only as recent relics of cultivation. It is said to be distinguished by its tuberous root, but *Brassica campestris* often develops this.)



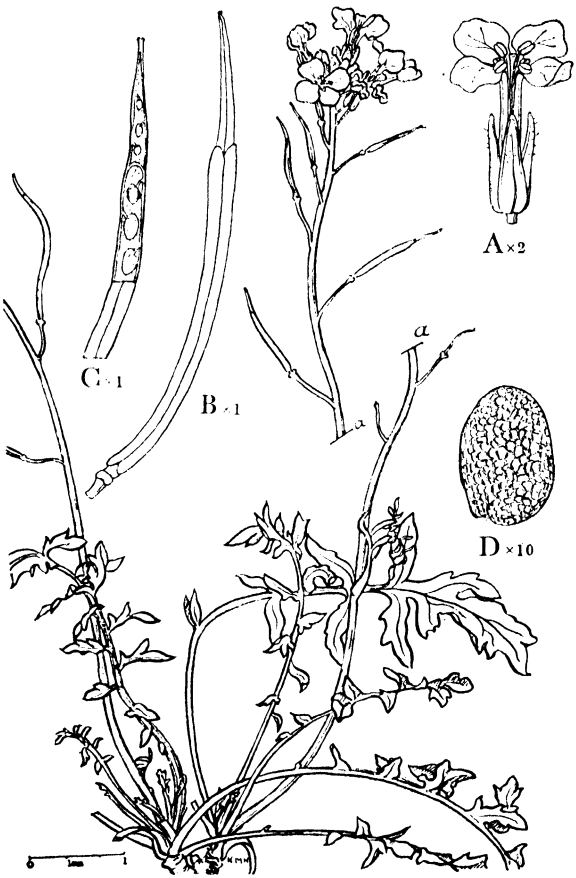
151. BRASSICA NIGRA (L.) Koch. The BLACK MUSTARD is a rather stout biennial with thin, green, hispid, radical leaves the first year and a much-branched, spreading, flowering stem 30-72 in. (75-180 cm.) high, growing from the rosette in the second year. It is found on river banks and in waste places in many parts of England, but rarely in Scotland. Rootstock simple. Leaves thin, lyrate, undulate, glabrous, or slightly hispid; upper glabrous, simple, stalked, entire, pointed. Flowers 8-10 mm. diam. in elongate racemes; calyx spreading; petals yellow. Pod 14 mm. long, terete, with a short (4 mm.), acuminate beak, each cell 3-5 seeded; valve with midrib, glabrous; seed 2·2 × 2·0 mm., nearly spherical, distinctly netted, brown.

Late June—late Aug. (Kniveton, Derbyshire.)
A. flower l.s. B. pod. C. pod with half valve removed. D. seed.



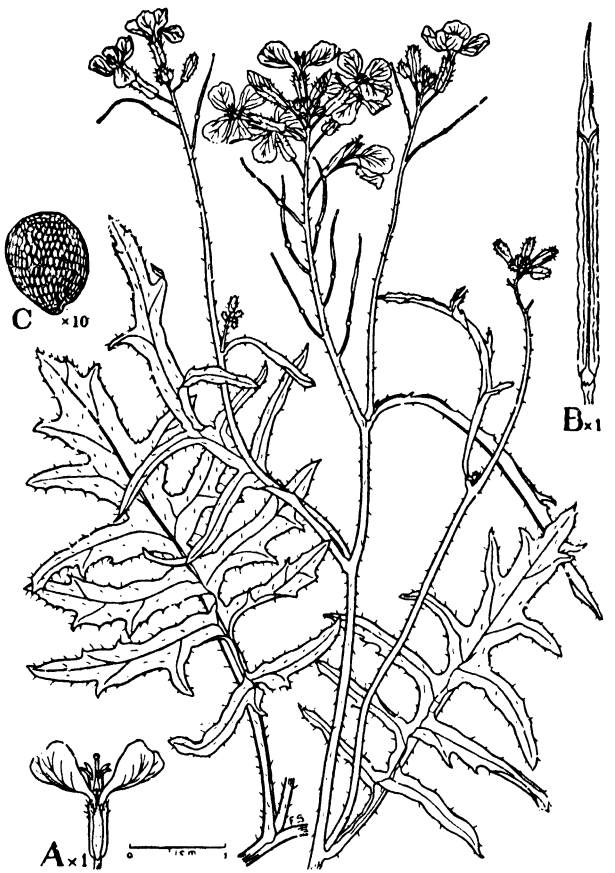
152. BRASSICA (ERUCASTRUM) GALLICA (Willd.) Druce. This EUROPEAN PALE MUSTARD is a much-branched, hairy annual or biennial 12-24 in. (30-60 cm.) high. It is found here and there in waste places in S. and E. England. Leaves all pinnatisect, terminal lobe cuneate, trifid, lobes of upper leaves narrower than the lower, all toothed. Flowers 9-10 mm. diam., in a lax, bracteate raceme; sepals sub-erect, spreading, top hispid; petals pale yellow. Pods 40 mm. long, spreading, cylindrical, each cell 15-25 seeded; valves with one vein; beak 3 mm., small, round, seedless; seed 1·5 × 1·0 mm., ovoid, honeycombed, brown

Late April—early Sept. (Salisbury Plain, Wiltshire.)
A. flower. B. pod. C. seed.



153. BRASSICA (RHYNCHOSINAPIS) MONENSIS (L.) Huds. The ISLE OF MAN CABBAGE is a rather slender, glabrous biennial with several hardly-branched, leafless stems 6-12 in. (15-30 cm.) high, growing from a long, simple rootstock. It is a rare plant of the sandhills of the west coast of Britain. Leaves thick, mostly radical, glabrous, pinnate, segments many, narrow, toothed. Flowers 15-17 mm. diam., in dense racemes, calyx adpressed, hairy at tip; petals pale yellow, thrice as long as sepals. Pod 40-45 mm. long, spreading, terete, each cell 8-10 seeded; valve with three glabrous ribs; beak slender with 1-3 seeds; seed 2·0 × 1·2 mm., ovoid, honeycombed, brown.

Mid June—late July. (Seascale, Cumberland.)
A. flower. B. pod. C. pod with portion of valve. D. seed.

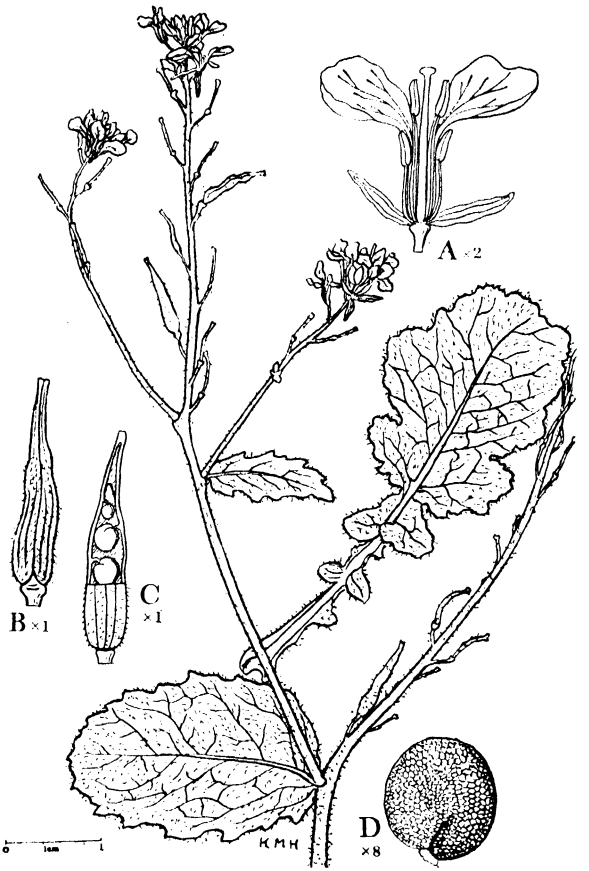


154. BRASSICA (RHYNCHOSINAPIS) CHEIRANTHUS Vill. This TALL WALLFLOWER CABBAGE is a rather slender biennial with one or more flowering stems 12-24 in. (30-60 cm.) high, branched above and growing from a tapering rootstock. It is a colonist or casual in a few sandy places in S.W. England and Wales. Leaves thick, hispid, pinnatifid; even the lowest with narrow lobes. Flowers 20 mm. diam., in a rather lax raceme, hispid near apex; calyx adpressed, erect; petals bright yellow. Pods 40-70 mm. long, spreading, terete, each cell 15-20 seeded; valve three-veined, hairy; beak dagger-like, compressed, 1-3 seeded; seed 2·0 × 1·7 mm., ovoid, honeycombed, brown.

Early June—mid July. (Sandhills, Cardiff.)
A. flower. B. pod. C. seed.

155. BRASSICA (RHYNCHOSINAPIS) WRIGHTII O. E. Schultz. This LUNDY CABBAGE is a robust, hairy perennial 18-36 in. (45-90 cm.) high, with a rosette of thick, pinnatifid leaves the first year. It is confined to the cliffs of Lundy Island. Rootstock tapering, simple. Leaves thick, hairy; the lowest lyrate-pinnatifid, with broad, sinuate lobes, the terminal one broadly ovate; upper leaves pinnate with narrow lobes. Flowers 25 mm. diam., racemes dense; calyx adpressed, erect; petals bright yellow. Pods 40 mm. long, spreading, terete, each cell 15-24 seeded; valve three-veined, hairy; beak dagger-like, compressed, 1-3 seeded; seed 1·8 mm., spherical, honeycombed, grey-brown.

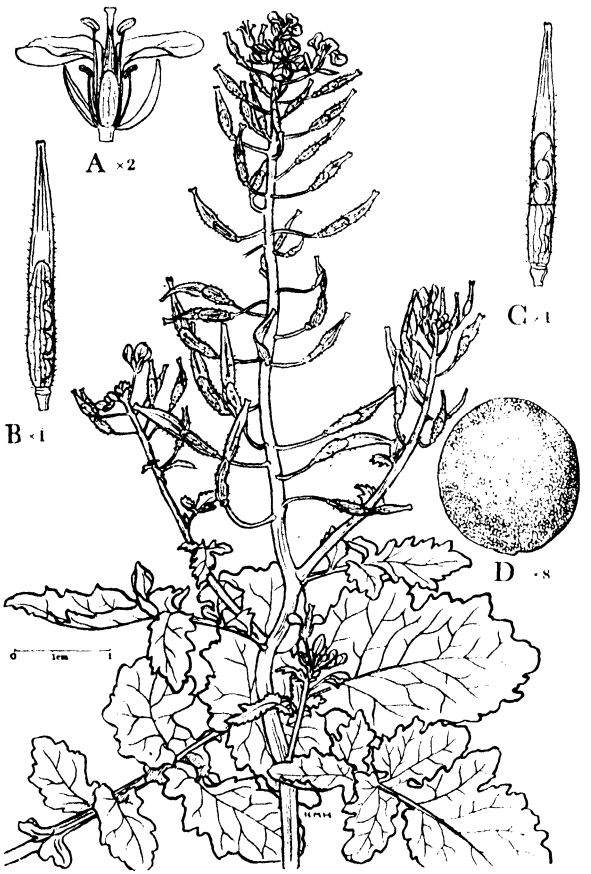
Mid June—mid July. (Lundy Island, Devon.)
A. flower. B. pod. C. pod with part of valve. D. seed.



156. BRASSICA (SINAPIS) ARVENSIS L. The CHARLOCK is a rather slender, hispid, branched annual, 10-15 in. (25-38 cm.) high, which is a very abundant weed of cultivated fields throughout the British Isles. Leaves thin, wrinkled, hispid; lowest lyrate with very small, lateral lobes; upper leaves simple, ovate, sessile. Flowers 14-17 mm. diam., in a short, dense, raceme; calyx spreading; petals golden yellow, thrice as long as sepals. Pods 27 mm. long, sub-erect, terete, each cell 2-4 seeded; valves three-veined, smooth, or with rough, deflexed bristles; beak 10 mm. long, conical, compressed, 1-seeded; seed 2 mm., spherical, distinctly netted, dark purple.

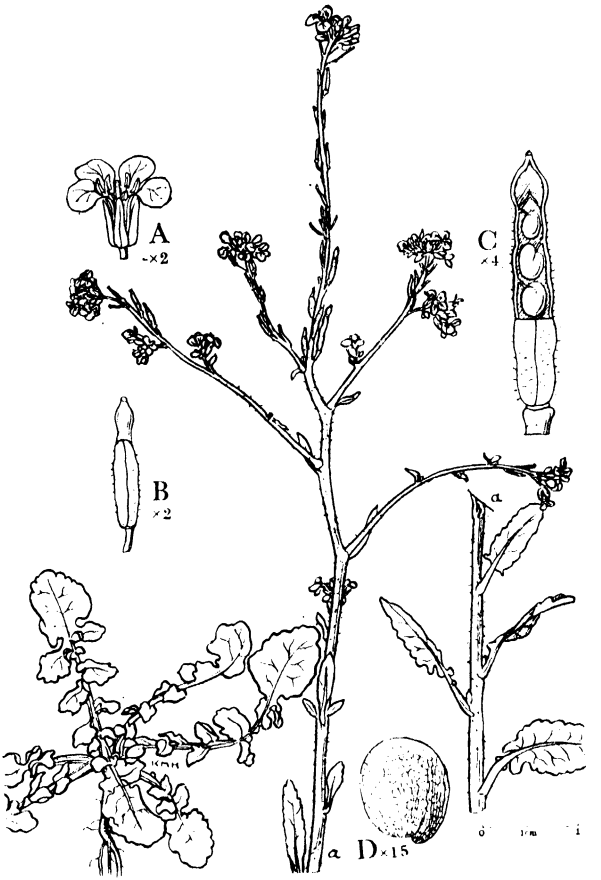
Late May—mid Sept. (Ashbourne, Derbyshire.)

A. flower with sepal, 2 petals, and 2 stamens removed. B. pod. C. pod with part of valve. D. seed.



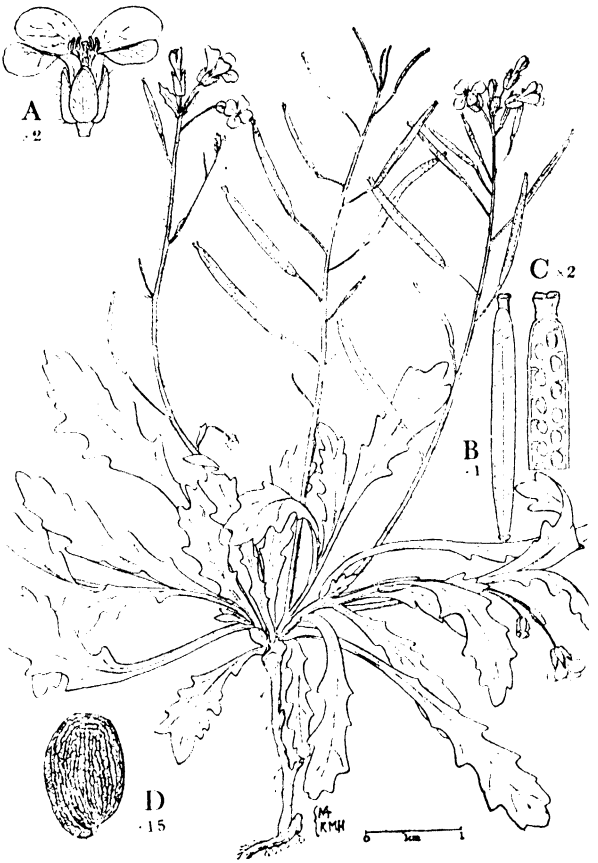
157. BRASSICA (SINAPIS) ALBA L. The WHITE MUSTARD is a rather large, strong-scented annual with branched, erect, flowering stem 12-18 in. (30-45 cm.) high, growing from a simple rootstock. It is a frequent plant of field borders throughout the British Isles, where it is usually a relic of cultivation. All leaves wrinkled, lower lyrate-pinnatifid, with 2-6 broad, sinuate lobes, terminal one ovate. Flowers 12-15 mm., in a rather dense raceme; calyx spreading; petals yellow, twice as long as sepals. Pod 20-30 mm. long, spreading, cylindrical, each cell 2-4 seeded; valves five-veined, hairy, netted; beak dagger-like without seed; seed 2·25 mm., spherical, finely netted, pale yellow.

Mid June—late July. (Hartlebury, Worcestershire.)
A. flower. B. pod. C. pod with part of valve. D. seed.



158. BRASSICA (HIRSCHFELDIA) INCANA L. The HOARY MUSTARD is a rather stout biennial or annual with a rosette of hispid, thin, green, divided leaves in the first year and a somewhat branched, erect, leafy stem 10-12 in. (25-30 cm.) high growing from it, in the second year. It occurs as a rare colonist in some places in S. England. Lower leaves lyrate, pinnatifid, with 6-8 ovate, sinuate lobes, hispid or hoary; upper leaves simple, lanceolate, stalked, hispid. Flowers 4 mm diam., in an elongated raceme; calyx rather erect; petals yellow. Pod 8-10 mm. long, adpressed, terete, each cell 3-6 seeded; beak 3 mm. thick, swollen, 1-seeded; valve with midrib, hairy; seed 1·5 × 1·2 mm., ovoid, distinctly netted, brown.

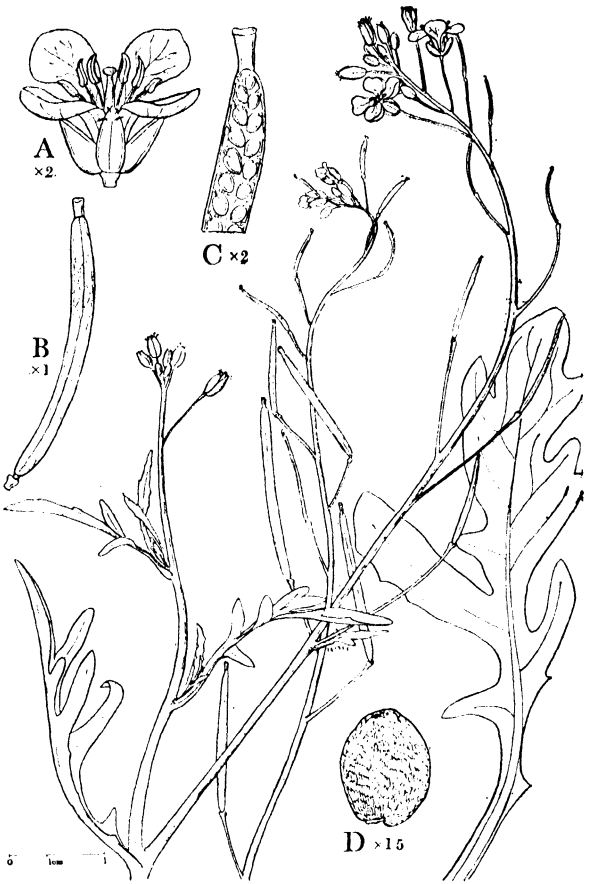
Mid June—mid Aug. (Glynde, Sussex.)
A. flower. B. pod. C. pod with part of valve. D. seed.



DIPLOTAXIS DC. Annual biennial or perennial plants with yellow or sometimes white flowers and simple or divided leaves. Fruit a rounded, beaked pod with seeds in two rows, small. Cotyledons folded with the radicle in the fold.

159. DIPLOTAXIS MURALIS (L.) DC. The LESSER WALL-MUSTARD or ROCKET is a small annual with several simple or, perhaps, branched, flowering scapes 6-9 in. (15-23 cm.) high, growing from a lax rosette of spathulate, toothed, radical leaves. It is a frequent, rather common plant in sandy and waste places, especially near the sea, in England, S. Scotland and E. Ireland. Flowers 14-17 mm. diam.; sepals sub-erect, hairy; petals yellow, ovate, twice as long as sepals. Pod 25-30 mm. long, spreading; valve one-veined, glabrous; seed 1·0-1·5 mm., ovoid, finely ribbed and netted, yellow.

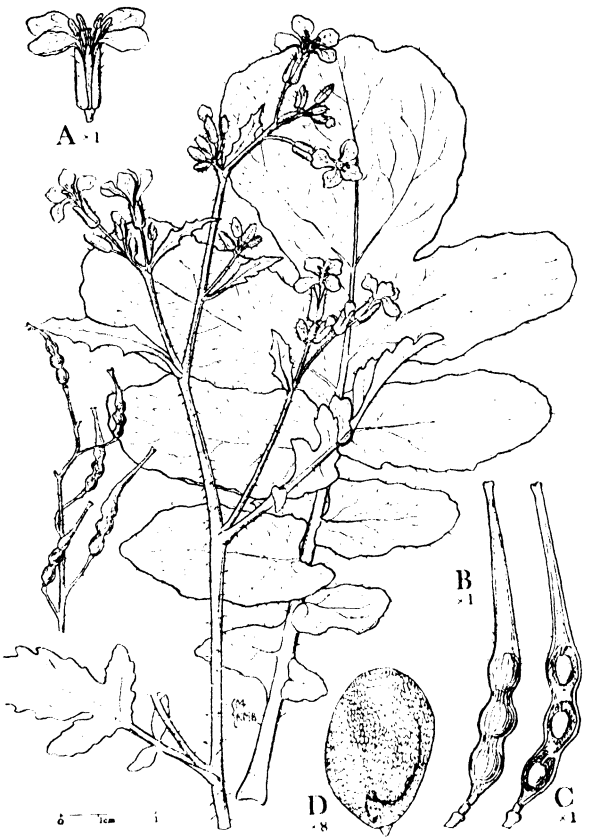
Mid July—mid Sept. (Mablethorpe, Lincolnshire.)
A. flower. B. pod. C. portion of pod with valve removed. D. seed.



160. DIPLOTAXIS TENUIFOLIA (L.) DC. The GREATER WALL-MUSTARD is a rather infrequent, bushy plant found on walls and waste ground, especially in towns near the coast in S. and E. England. Lower leaves pinnatifid, with few narrow segments; upper leaves lanceolate. Flowers 14-17 mm. diam., sepals sub-erect; petals yellow, ovate. Pod 50-60 mm. long, spreading; valve one-veined, glabrous; beak short, truncate; seed 2·0 × 1·5 mm., ovoid, finely netted, yellow.

Mid June—late Sept. (Ipswich, Suffolk.)
A. flower. B. pod. C. pod with valve removed. D. seed.

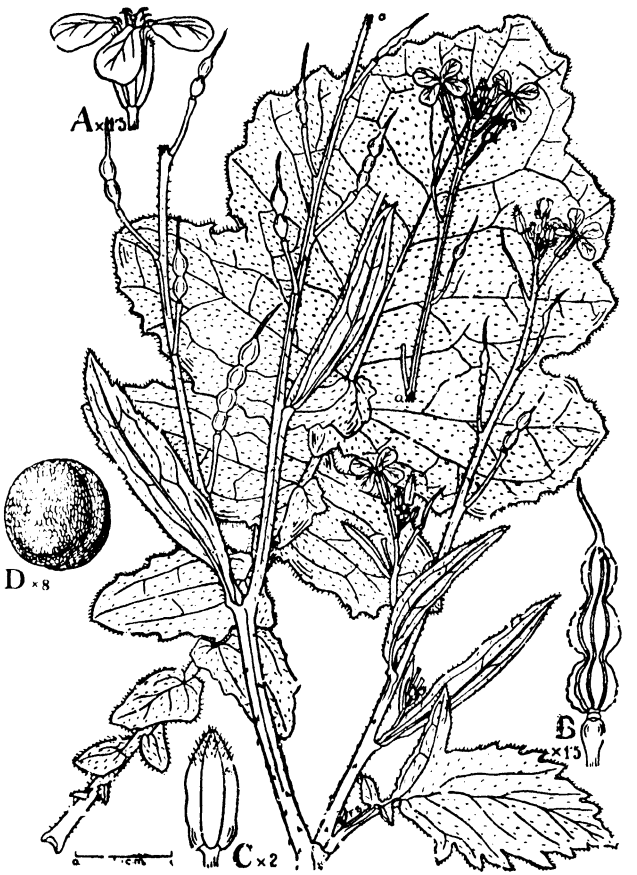
(*D. erucoides* [L.] DC with white flowers and a conical beak to the fruit is sometimes found as a casual.)



RAPHANUS L. Rather stout, biennial or annual herbs with flowers of varied colours. Fruit indehiscent, jointed, each joint except the basal one with a single seed. Cotyledons folded over the incumbent radicle.

161. RAPHANUS RAPHANISTRUM L. The WILD RADISH is a branched, rather slender, thinly hairy annual, about 12 in. (30 cm.) high. It is a common weed of arable land and waste places throughout the British Isles. Leaves pinnatifid, lobes distinct, terminal lobe ovate, ternate. Flowers 18 mm. diam., in irregular racemes; sepals narrow, erect, apex hairy; petals pale yellow, purple or white with purple veins. Pod 20-30 mm. long, narrow, with a long beak and 3-8 joints; seed 2·5 × 1·8 mm., ovoid, netted, chestnut.

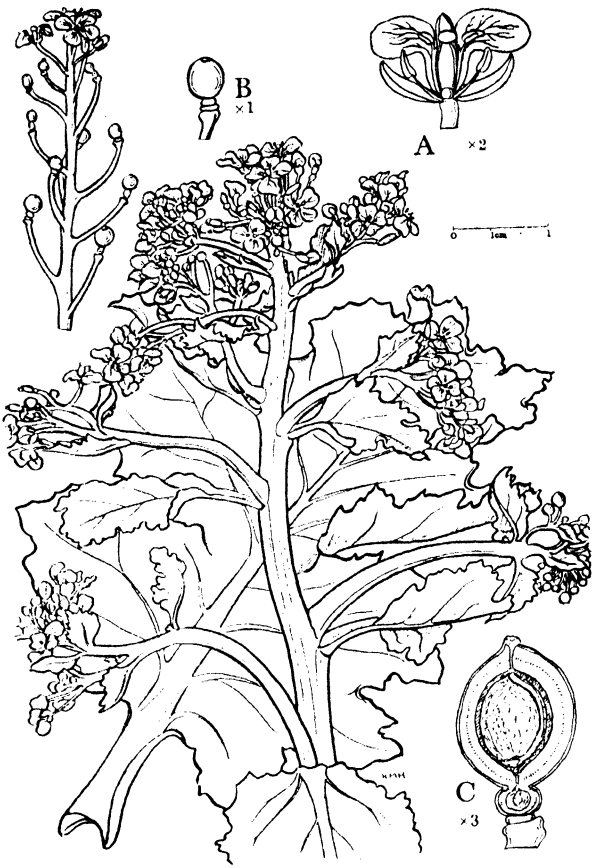
Late May—late Sept. (Radcliffe-on-Trent, Nottinghamshire.)
A. flower. B. pod. C. pod in l.s. D. seed.



162. RAPHANUS MARITIMUS Sm. The SEA RADISH is a much-branched, stout, bristly, bushy biennial, with branched stems 8-30 in. (20-75 cm.) high. It is a rare plant of the sea coast of S. England. Lower leaves runcinate, pinnatifid, hispid; terminal lobe ovate, 3-5 lobed; other lobes many, overlapping; upper leaves lanceolate. Flowers 12-15 mm.; sepals narrow, erect; apex hairy; petals pale yellow with purple veins. Pod 18-25 mm. long, narrow with a medium beak and 2-3 joints; seed 1·7 mm., subglobose, honeycombed, chestnut.

Mid June—late July. (St. Helen's, Isle of Wight.)
A. flower. B. pod. C. bud. D. seed.

(*R. sativus* L., the cultivated radish, has white flowers and a stout, 2-4 jointed pod.)

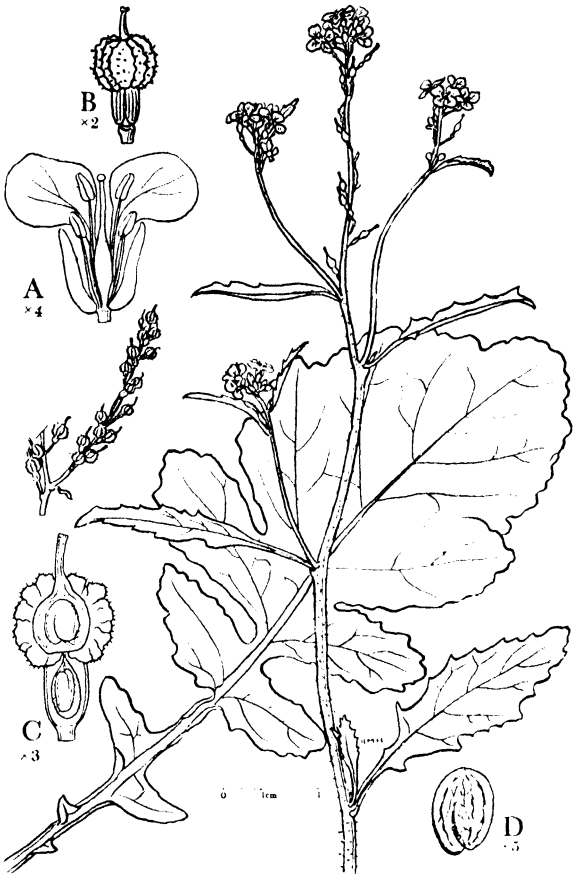


CRAMBE L. Stout, branched biennials with succulent leaves and white or pink flowers. Fruit indehiscent, one-jointed; upper limb one-seeded, lower abortive. Radicle accumbent.

163. CRAMBE MARITIMA L. The SEA KALE is a bushy, much-branched, fleshy, glaucous perennial 12-24 in. (30-60 cm.) high. It is found infrequently on sea shingle on the south coast of England. Leaves succulent, large, ovate, sinuate, glaucous. Flowers 12-15 mm. diam., in short, dense, crowded racemes; sepals ovate, spreading; petals lilac, ovate; fruit large, globular, glaucous; stigma sessile; seed 4 × 3 mm., large, spherical, with long stalk, black

Mid May—mid June. (Camber, Sussex.)

A. flower with sepal, 2 petals and 2 stamens removed. B. fruit. C. fruit l.s. and seed.

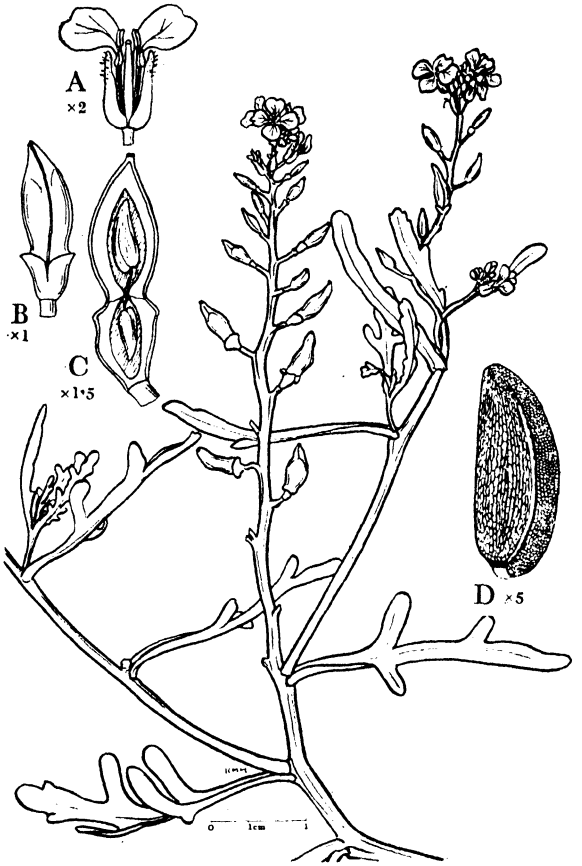


RAPISTRUM L. Annual or biennial herbs with yellow flowers. Fruit indehiscent, one-jointed; upper limb globular, one-seeded; lower cylindrical, with abortive seed

164. RAPISTRUM RUGOSUM (L.) All. This FALSE BLACK MUSTARD is an erect, much-branched biennial 24-36 in. (60-90 cm.) high. It is often found as a casual in waste places in lowland Britain. Lower leaves lyrate, sinuate, pinnatifid; upper lanceolate, toothed. Flowers 8-9 mm. diam., in elongated racemes; sepals erect, narrow; petals yellow, spathulate. Fruits 5-6 mm. long, erect; upper limb globular, rugose, hispid; lower cylindrical, striate; seed 2·0 × 1·5 mm., ovoid with longitudinal ridges.

Late May—mid Sept. (Aylesford, Kent.)

A. flower with sepals, 2 petals and 2 stamens removed. B. fruit. C. fruit l.s. D. seed.

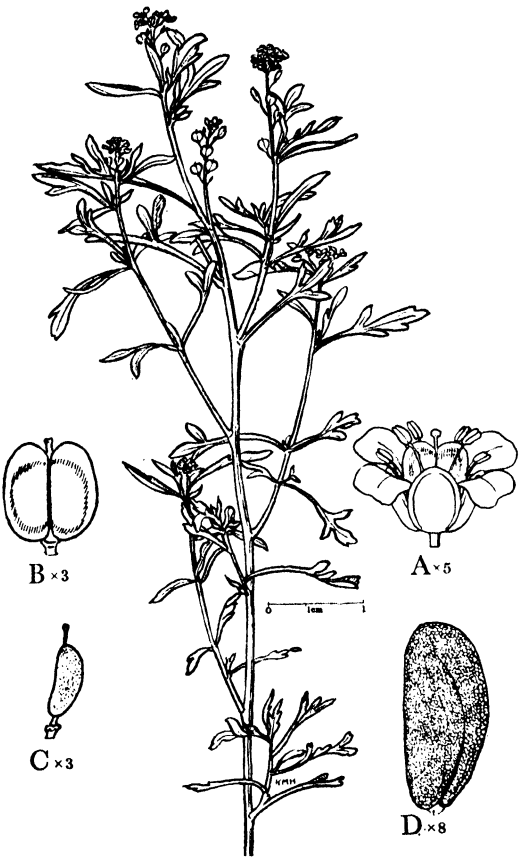


CAKILE Scop. Stout, branched annuals with succulent leaves and white or pink flowers. Fruit an angular, indehiscent pod, two-jointed, with barren lower part and two, one-seeded upper limbs. Radicle incumbent.

165. CAKILE MARITIMA Scop. The SEA ROCKET is a blue-green perennial with branched, decumbent glabrous stem 4-12 in. (10-30 cm.) high. It grows in shingle or sand near the sea and it is common all around the British sea coasts. Leaves succulent, almost linear, pinnatifid, with few, short segments. Flowers 15 mm. diam., in elongated racemes; sepals narrow, erect, with hairy tips; petals pink, showy. Pod 20 mm. long, two-edged, with two teeth at the base; seed 5·5 × 2·0 mm., large, semi-oval, striate, brown.

Mid June—early Sept. (Lowestoft, Suffolk.)

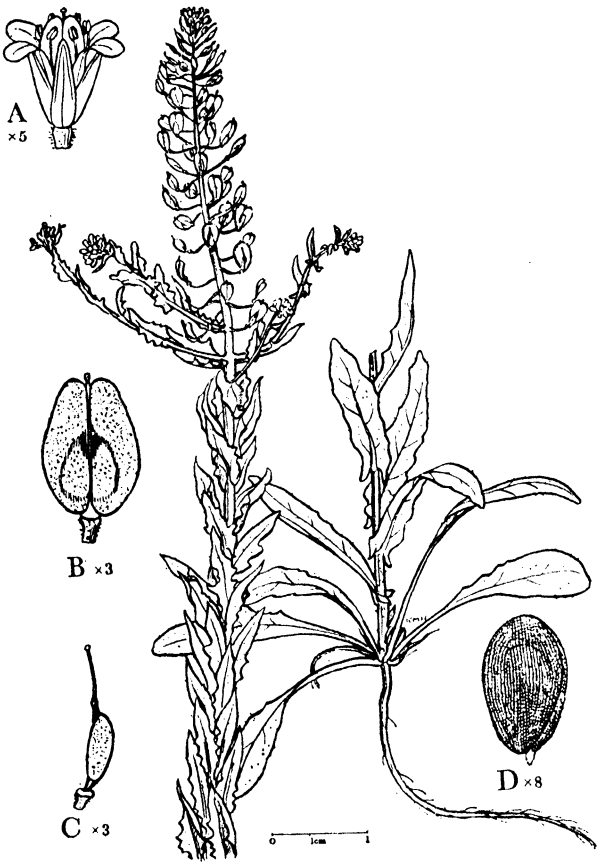
A. flower with sepal, 2 petals and 2 stamens removed. B. fruit. C. fruit l.s. D. seed.



LEPIDIUM L. Erect, rather stout annuals or perennials with undivided leaves and white flowers. Fruit a laterally compressed, rounded pouch, each cell one-seeded; radicle incumbent.

166. LEPIDIUM SATIVUM L. The GARDEN CRESS is a strongly-scented, erect, much-branched annual 3-12 in. (8-30 cm.) high, found frequently as an outcast of cultivation. Lower leaves pinnatifid, with few narrow lobes; upper leaves ternate to simple, stalked. Flowers 4-5 mm. diam., in short racemes; sepals ovate; petals emarginate, white, longer than sepals; stamens six. Pouch 4·2 × 4·0 mm. orbicular, notched, glaucous; style short; seed 3·0 × 1·3 mm., large, elongated, finely netted, red-brown.

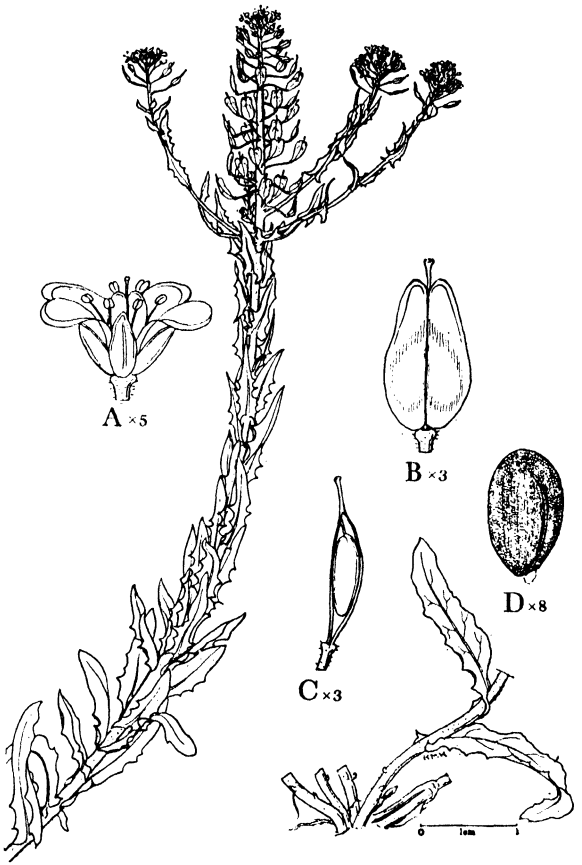
Late June—mid August. (Ashbourne, Derbyshire.)
A. flower. B. pouch. C. pouch without valve. D. seed.



167. LEPIDIUM CAMPESTRE (L.) R.Br. The COMMON FIELD PEPPERWORT is a more or less hairy annual or biennial with usually a single, erect, leafy stem 10-12 in. (25-30 cm.) high, branched only in the upper part. It is found, sometimes abundantly, in cornfields and waste places northwards to central Scotland though it is rare in Scotland and Ireland. Lower leaves lanceolate, spathulate, sinuate; upper lanceolate, sagittate, toothed, clasping. Flowers 3-4 mm. diam., in elongate racemes; sepals lanceolate; petals spathulate, white, entire, rather longer than sepals; stamens six. Pouch 3·2 × 2·0 mm., narrowly oval, with apical notch, winged, covered with scaly hairs; style of medium length; seed 2·0 × 1·2 mm., large, ovoid, netted, dull, black.

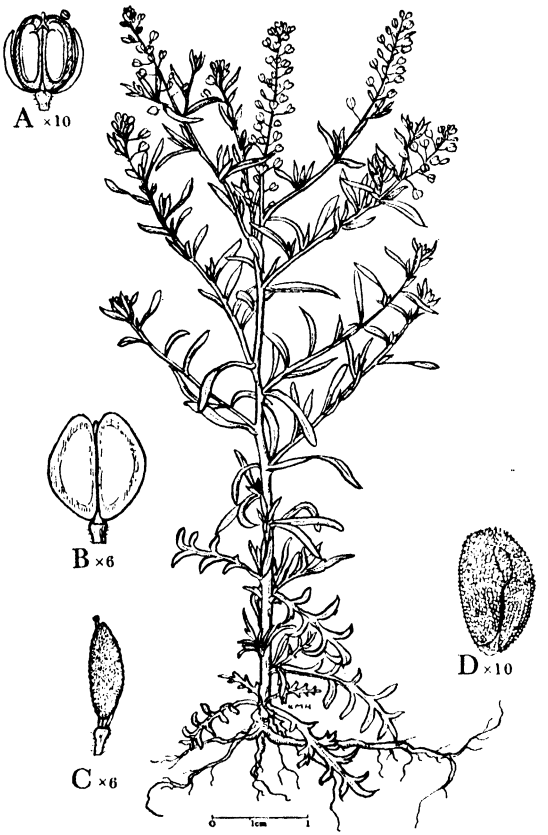
Late May—early Sept. (Rostrevor, Ireland.)

A. flower. B. pouch. C. pouch without valve. D. seed.



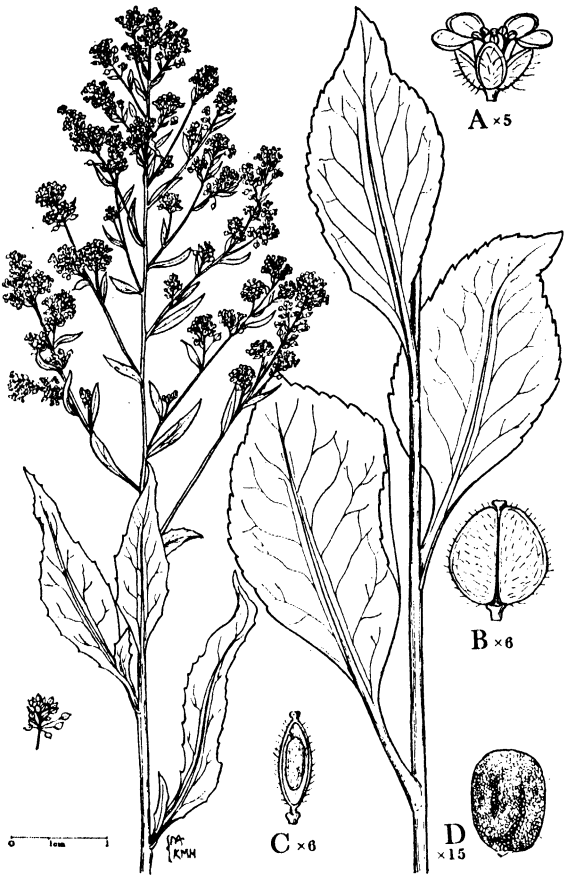
168. LEPIDIUM HETEROPHYLLUM Benth. (*L. smithii* Hook.) The HAIRY FIELD PEPPERWORT is a more or less hairy annual or biennial, with usually several sub-decumbent, leafy stems 9-12 in. (23-30 cm.) high, arising from a thick stock. It is found in cornfields and waste places, sometimes commonly, northwards to central Scotland. Lower leaves spathulate, hairy, sinuate; upper lanceolate, sagittate, toothed, clasping. Flowers 4-5 mm. diam., in elongate racemes; sepals lanceolate, hairy; petals white, spathulate, entire; stamens six, anthers violet. Pouch 3·5 × 2·5 mm., narrowly to broadly oval, with apical notch, winged, glabrous; style of medium size; seed 2·2 × 1·2 mm., large, ovoid, netted, black.

Mid May—early Sept. (Ambleside, Westmorland.)
A. flower. B. pouch. C. pouch with seed. D. seed.



169. LEPIDIUM RUDERALE L. This SMALL-FLOWERED PEPPERWORT is a much-branched, strongly-scented, erect annual 6-12 in. (15-30 cm.) high. It is an introduced plant, found commonly on rubbish tips and similar waste places throughout England. Lower leaves pinnatisect, with narrow lobes; upper linear, simple, sessile. Flowers 1·2 mm. diam., in elongate racemes; sepals ovate, green; petals absent; stamens only two. Pouch 2·0 × 2·5 mm., roundly oval, notched, glabrous; style minute; seed 1·6 × 1·0 mm., ovoid, finely honeycombed and tuberculate, brown.

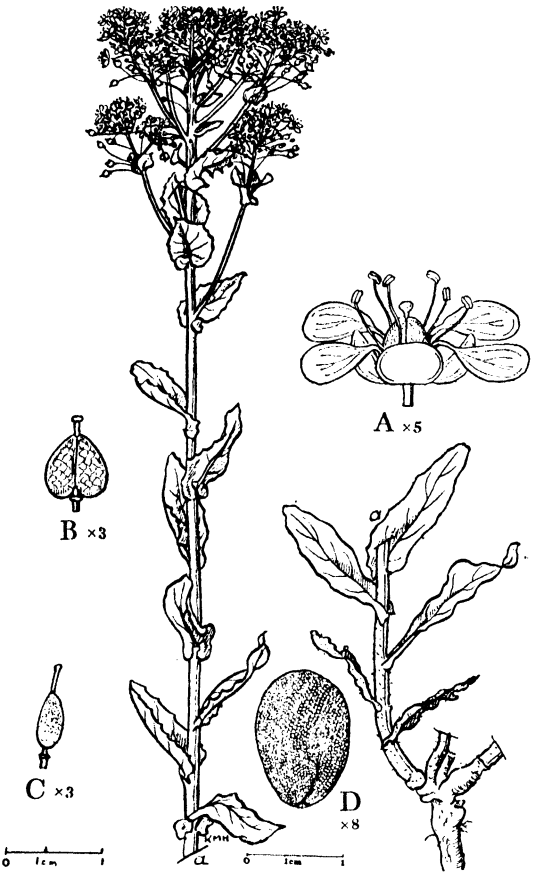
Mid June—early Sept. (Pendeford, Staffordshire.)
A. flower l.s.. B. pouch. C. pouch without valve. D. seed.



170. LEPIDIUM LATIFOLIUM L. The BROAD-LEAFED PEPPERWORT is a robust perennial with glabrous, almost simple, leafy flowering stems 36-48 in. (90-130 cm.) tall, branched above and rising singly from the apices of a fleshy, branching rootstock. It is a rather rare plant of estuarine banks and salt marshes around the English coast and also occurs very rarely inland. Lower leaves broadly ovate-lanceolate, serrate, stalked; upper narrower, sessile. Flowers 3 mm. diam., in dense, leafy, panicled clusters; sepals ovate, hairy; petals entire, white. Pouch 2 mm. long, roundly oval, hardly notched, hairy; style minute; seed 0·9 × 0·6 mm., ovoid, netted, yellowish.

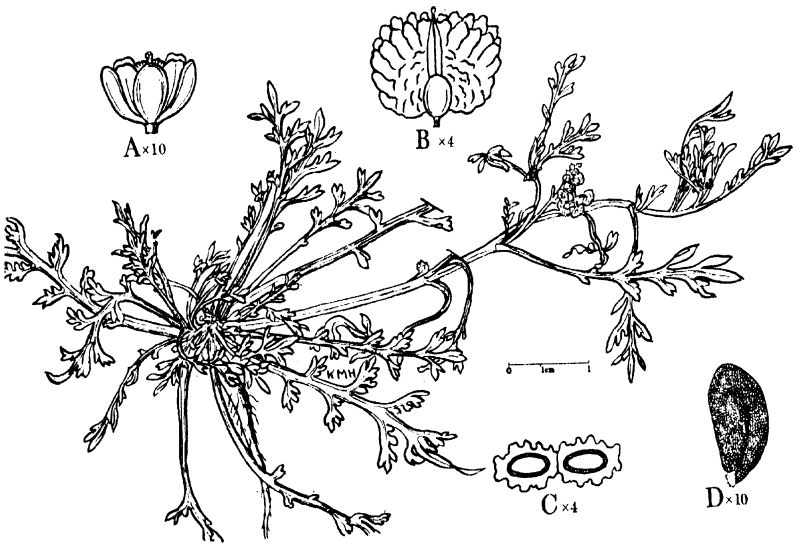
Mid July—early Sept. (Ipswich, Suffolk.)
A. flower. B. pouch. C. pouch without valve. D. seed.

(Several species of this genus occur as casuals. *L. graminifolium* L. is similar to the above, but has narrower leaves and a subcordate pouch; *L. neglectum* Thell. flowers similar to *L. ruderale*, but leaves entire.)



171. LEPIDIUM (CARDARIA) DRABA L. The HOARY PEPPERWORT is a more or less hoary perennial with erect, flowering stems about 9 in. (23 cm.) long, branched in the upper part, growing from a woody base and increasing by slender underground runners. It is an introduced plant, abundant in cornfields and waste places in S.E. England and less common elsewhere. Lower leaves broadly ovate, sinuate, hoary; upper narrowly ovate, toothed, clasping. Flowers 6 mm. diam., in short, crowded racemes; sepals broadly oval, glabrous; petals spathulate, white, entire, twice as long as sepals; stamens six, anthers yellow. Pouch 7·5 × 3·0 mm., cordate, small, glabrous; style long; seed 2·2 × 1·5 mm., ovoid, very finely netted, chestnut.

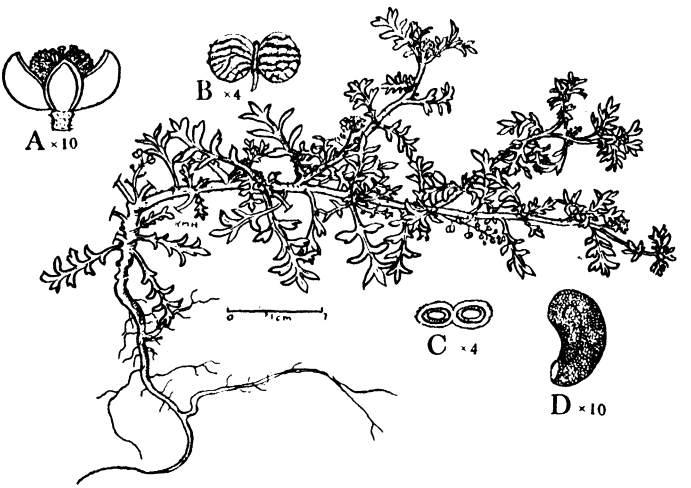
Mid May—late June. (Ashbourne, Derbyshire.)
A. flower. B. pouch. C. pouch without valve. D. seed .



CORONOPUS All. Prostrate annuals with pinnate leaves and racemes of small white flowers opposite the leaves. Fruit an indehiscent, reniform pouch with woody, non-separating valves and each cell one-seeded. Cotyledons incumbent, radicle recurved about its base.

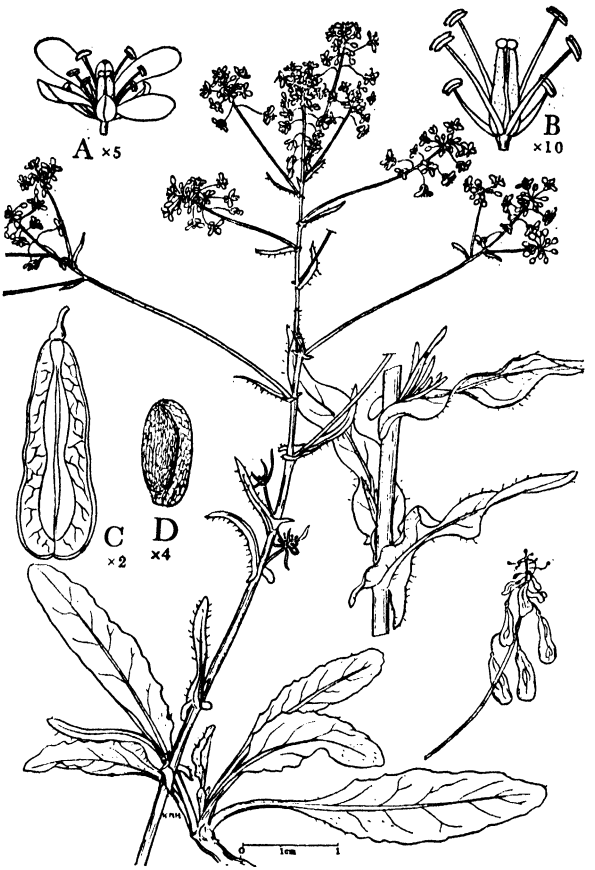
172. CORONOPUS SQUAMATUS (Forsk.) Asch. (*C. ruellii* All.). The COMMON SWINE'S or WART CRESS is a stout, prostrate annual with many stems 4-12 in. (10-30 cm.) long, arising from a loose, central rosette of leaves. It is a frequent plant on waste ground in England, but is rare in Scotland and Ireland. Leaves pinnate with large teeth and distant, linear lobes. Flowers 2 mm. diam., in close, lateral racemes or clusters; sepals ovate, blunt, glabrous; petals white, obovate, entire, equalling sepals. Pouch 3 × 5 mm., reniform, undivided, wrinkled, with marginal pits; style prominent; seed 1·6 × 0·9 mm., pale, semi-ovoid, finely netted.

Late June—mid Sept. (Attenborough, Nottinghamshire.)
A. flower. B. pouch. C. pouch t.s. D. seed.



173. CORONOPUS DIDYMUS (L) Sm. The LESSER SWINE'S CRESS is a much-branched, prostrate annual with several stems 6-15 in. (15-38 cm.) long. It is a rare plant of waste ground generally, but common only in the S.W. and S. of England. Leaves pinnate, segments almost entire, with close, linear lobes. Flowers 1-2 mm. diam., in elongated, lateral racemes; sepals ovate, glabrous, sub-erect; petals greenish-white, very short or none. Pouch 2 × 3 mm., reniform, wrinkled, the two almost spherical lobes easily separating; style minute; seed 0·7 × 0·3 mm., falcate, finely netted, pale yellow.

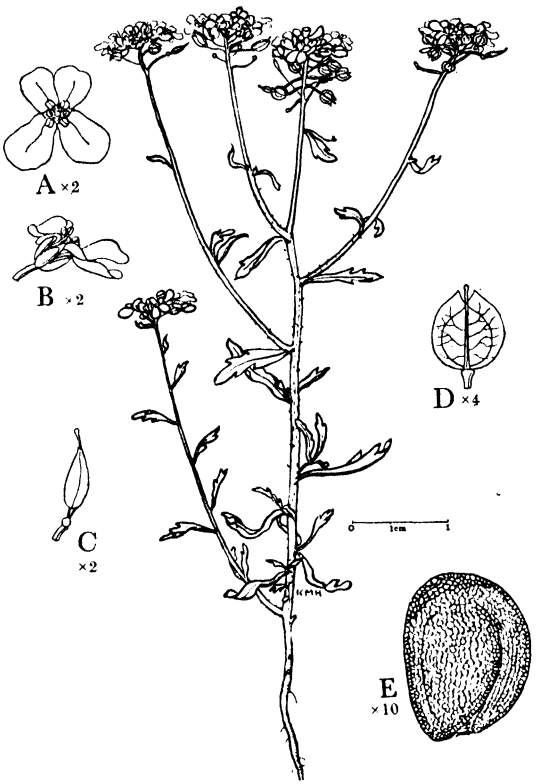
Late June—mid Oct. (Hereford)
A. flower. B. pouch. C. pouch t.s. D. seed.



ISATIS L. Small, glabrous or glaucous, much-branched annuals or perennials with yellow flowers. Fruit a flattened, one-seeded, 1-celled, indehiscent pod; radicle incumbent.

174. ISATIS TINCTORIA L. The WOAD is a stout perennial with a single flowering stem 24-36 in. (60-90 cm.) high, densely branched in the upper part. It is found in one or two places as a relic of cultivation and may be native on a marl cliff by the River Severn. Lower leaves obovate, lanceolate, sinuate, glaucous, coarsely toothed and stalked; upper with few hairs and prominent auricles. Flowers 3-4 mm. diam., in numerous, dense racemes; sepals ovoid, spreading; petals yellow, lanceolate, twice as long as sepals. Pod 14 mm. long, pendulous, obconical, veined, black; seed 3·5 × 1·8 mm., elliptical, netted, black.

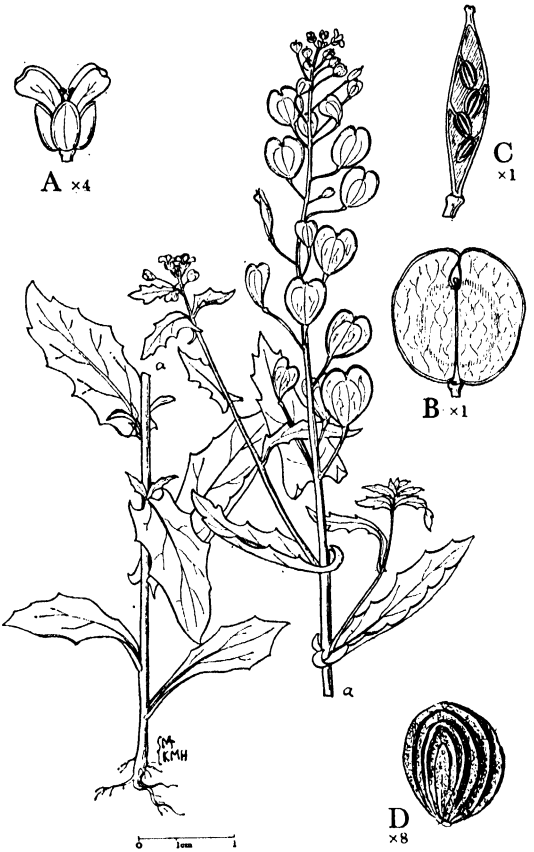
Early—late June. (by River Severn, Gloucestershire.)
A. flower. B. pistil and stamens. C. pod. D. seed.



IBERIS L. Small, branched annuals with white flowers. Fruit a laterally compressed pouch, winged at apex, each cell one-seeded; radicle accumbent; opposite petals unequal.

175. IBERIS AMARA L. The CANDYTUFT is a small, much-branched, slightly hairy annual, 4-8 in. (10-20 cm.) high, which is found rarely in chalky cornfields in S. England. Leaves linear-lanceolate, toothed, with a few hairs. Flowers 7 mm. diam., in very short racemes; sepals oval, with few hairs; petals white, unequal, twice as long as sepals. Pouch 2·5-3·0 mm., round, glabrous, broadly winged; valves net-veined; style long; seed 2·2 × 1·7 mm., ovoid, finely netted, chestnut.

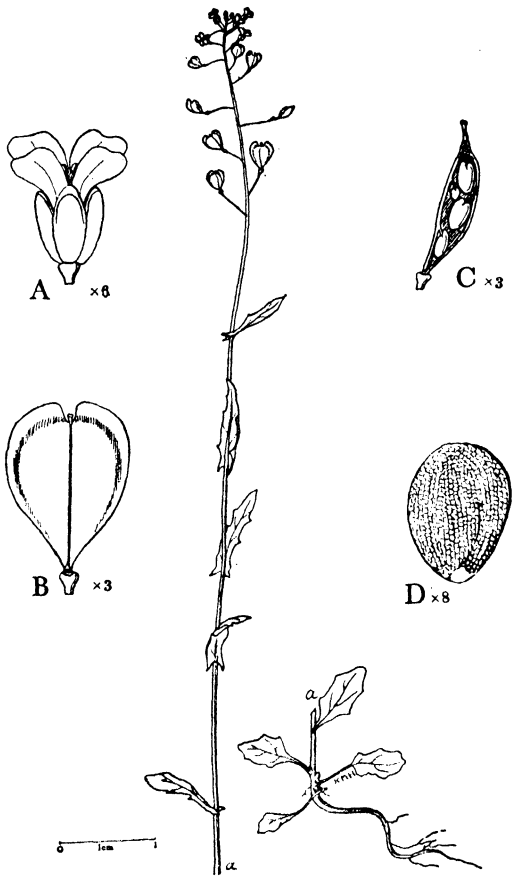
Mid June—late July. (Chinnor, Buckinghamshire.)
A. flower front view. B. side view. C. pouch without valve.
D. pouch. E. seed.



THLASPI L. Annuals or perennials with undivided leaves and white flowers. Fruit a rounded, winged, laterally compressed, many-seeded pod. Radicle incumbent.

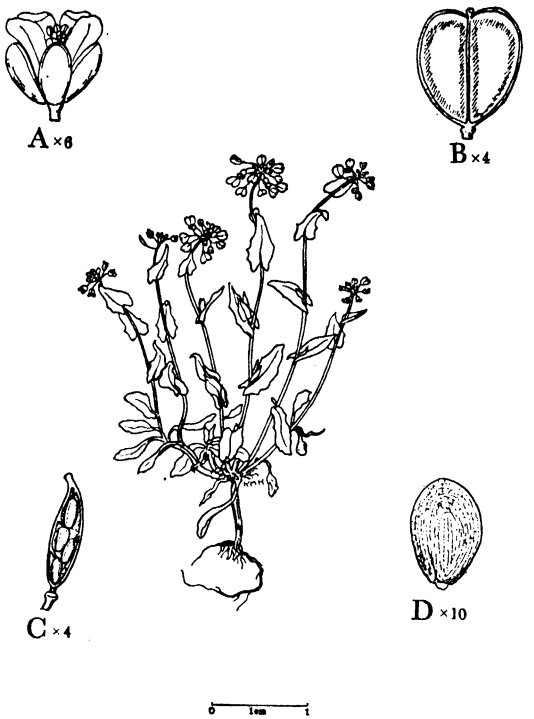
176. THLASPI ARVENSE L. The COMMON PENNYCRESS is a little-branched, glabrous, green annual, 8-12 in. (20-30 cm.) high, with a garlic scent, which is common in cultivated land in lowland parts of the British Isles. Leaves elliptical, toothed; upper clasping, sagittate. Flowers 3 mm. diam.; sepals small, ovate, smooth; petals emarginate, white, twice as long as sepals. Pouch 15 mm. long, erect, orbicular, with a broad wing; seed 2·0 × 1·8 mm., ovoid, with concentric ribs, black.

Mid May—late Aug. (Stourport, Worcestershire.)
A. flower. B. pouch. C. pouch, with valve removed. D. seed.



177. THLASPI ALLIACEUM L. This GARLIC PENNYCRESS is a slender, glabrous, erect, almost simple annual 4-12 in. (10-30 cm.) high, with a garlic scent. It has recently become naturalized in Kent and Essex. Lower leaves stalked, ovate, sinuate; upper leaves lanceolate, sinuate, amplexicaule. Flowers 2·5 mm. diam., in a long raceme; sepals ovate, blunt, bordered; petals white, notched. Pouch 8 × 5 mm., almost cordate, notch rather deep, with a very short style; seed 2·2 × 2·0 mm., ovoid, finely netted, almost black.

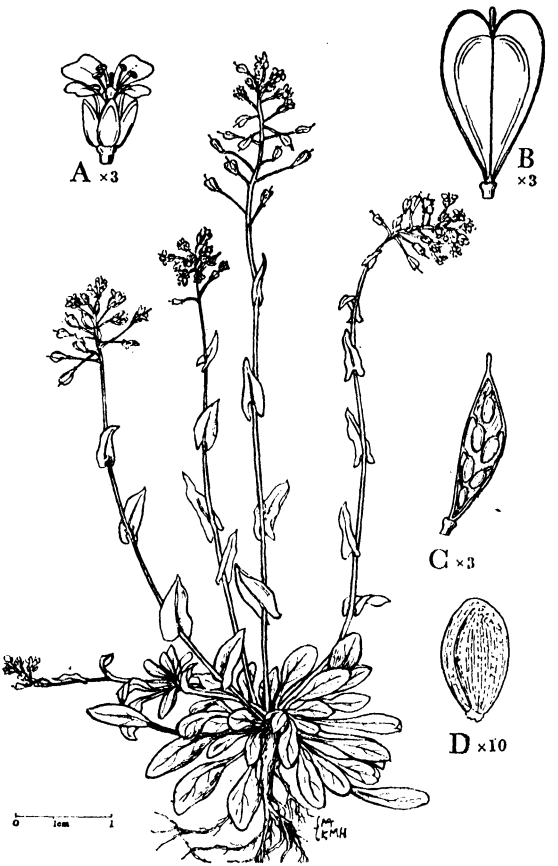
Mid April—late May. (Maldon, Essex.)
A. flower. B. pouch. C. pouch with valve removed. D. seed.



178. THLASPI PERFOLIATUM L. The PERFOLIATE PENNYCRESS is a small, glaucous-glabrous perennial with several flowering stems 3-6 in. (8-15 cm.) high, growing from an almost leafless base. It is a very rare plant of Oolite Limestone pastures from Oxford to Gloucester. Lower leaves spathulate; upper ovate clasping, toothed. Flowers about 2 mm. diam.; sepals elliptical, blunt; petals emarginate, white, rather longer than sepals. Pods 4 × 3 mm., spreading, obcordate, winged at top; style very short; seed 1·5 × 1·0 mm., ovoid, with fine, longitudinal markings, chestnut.

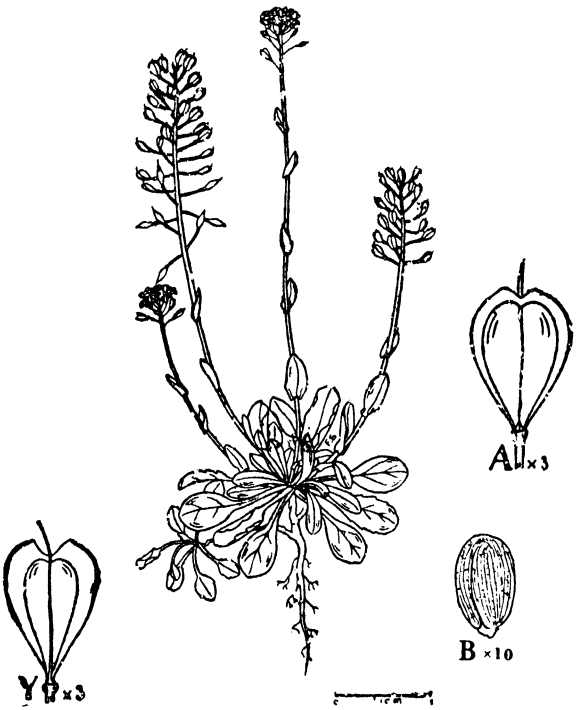
Mid April—late May. (Snowshill, Gloucestershire.)

A. flower. B. pouch. C. pouch with valve removed. D. seed.



179. THLASPI ALPESTRE L. The ALPINE PENNYCRESS is a small, glaucous and glabrous perennial with many, somewhat leafy, flowering scapes 2-10 in. (5-25 cm.) high, growing erect from a leafy rosette. It grows on basic rocks and screes in Somerset, Wales, N. England and Scotland. Lower leaves spathulate, entire; upper amplexicaul. Flowers 2-3 mm. diam.; sepals narrowly ovate, glabrous; petals truncate, white. Pouch 5·0 × 2·2 mm., obcordate, broadly winged at apex; style equalling notch in var. *sylvestre* Jord. and exceeding notch in var. *occitanum* Jord; seed 1·5 × 0·9 ovoid, with fine longitudinal markings, chestnut.

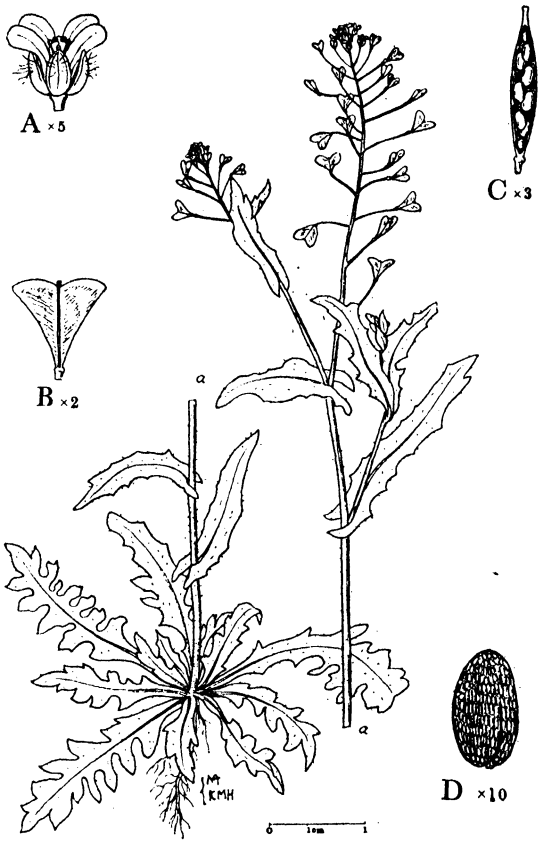
Mid June—mid Aug. (nr. Winscombe, Somerset.)
A. flower. B. pouch. C. pouch without valve. D. seed.



180. THLASPI CALAMINARE Lej. et Court. This REDDISH ALPINE PENNYCRESS is a small, glaucous and glabrous perennial with many, somewhat leafy, flowering scapes 2-6 in. (5-15 cm.) high, growing erect from a leafy rosette. It is a rare plant found in the Mountain Limestone district of Derbyshire and in one place in the Western Isles. Lower rosette leaves spathulate, entire or wavy; upper ovoid, clasping, almost entire. Flowers 3 mm. diam., in a short raceme; sepals ovoid, glabrous; petals entire, white or pink. Pouch 6 × 4 mm., triangular, almost truncate, with a long style; seed 1·3 × 0·8 mm., ovoid, finely marked longitudinally, chestnut.

Late April—mid June. (Bonsall, Derbyshire.)

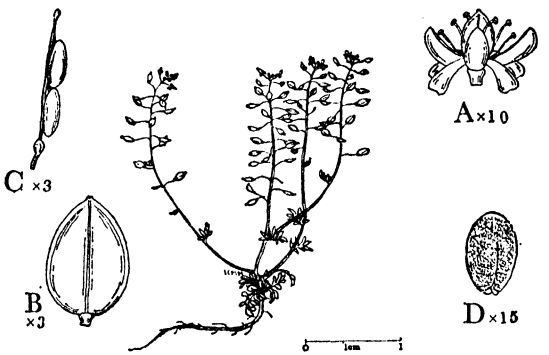
A. pouch. B. seed. Y. pouch of *Th. alpestre* var. *occitanum* Jord.



CAPSELLA Medic. Small annuals with somewhat divided leaves and white flowers. Fruit a triangular, laterally compressed, many-seeded pouch. Radicle incumbent.

181. CAPSELLA BURSA-PASTORIS (L.) Med. The SHEPHERD'S PURSE is a simple, erect, very variable annual with simple or somewhat branched, leafy stems 3-15 in. (8-38 cm.) high, growing from a rosette of radical leaves. It is abundant on waste and cultivated land everywhere throughout the British Isles. Leaves elliptical, toothed or pinnatifid; radical leaves in a rosette; upper leaves amplexicaul. Flowers 2-5 mm. diam.; sepals small, hairy; petals white, entire, twice as long as sepals. Pouch 5-7 mm. long, triangular but variable in shape; seed 1·5 × 0·9 mm., ovoid, honeycombed, yellow.

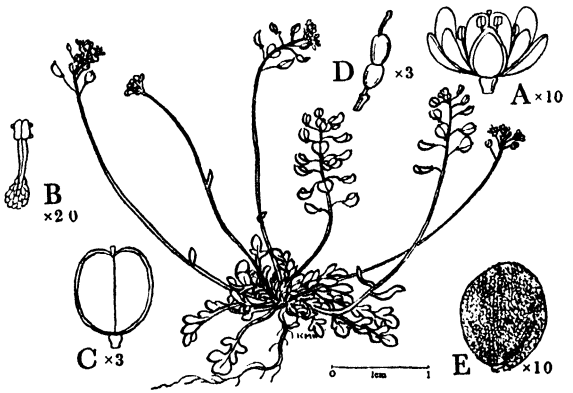
Early Feb.—late Nov. (Winscombe, Somerset.)
A. flower. B. pouch. C. pouch with valves removed. D. seed.



HORNUNGIA Rchb. (*Hutchinsia* R.Br.). Very small, glabrous annuals with pinnate leaves. Fruit a laterally compressed, unwinged pouch; each cell two-seeded; radicle accumbent; petals equal; stamens simple.

182. HORNUNGIA PETRÆA (L.) Reichb. The ROCK HUTCHINSIA is a very small, glabrous, much-branched annual 1-3 in. (2-8 cm.) high, which occurs among limestone rocks and in sand in W. and N. England. Leaves all pinnatisect, with linear segments, glabrous. Flowers 1·5-2·0 mm. diam., in rather long racemes; sepals lanceolate, smooth; petals white, emarginate, only equalling the sepals. Pouch 5 × 3 mm., pointed, ovoid, narrowly winged; valves unveined; style minute; seed 0·7 × 0·4 mm., ovoid, finely netted, red-brown.

Mid April—early June. (Millers Dale, Derbyshire.)
A. flower. B. pouch. C. pouch without valve. D. seed.

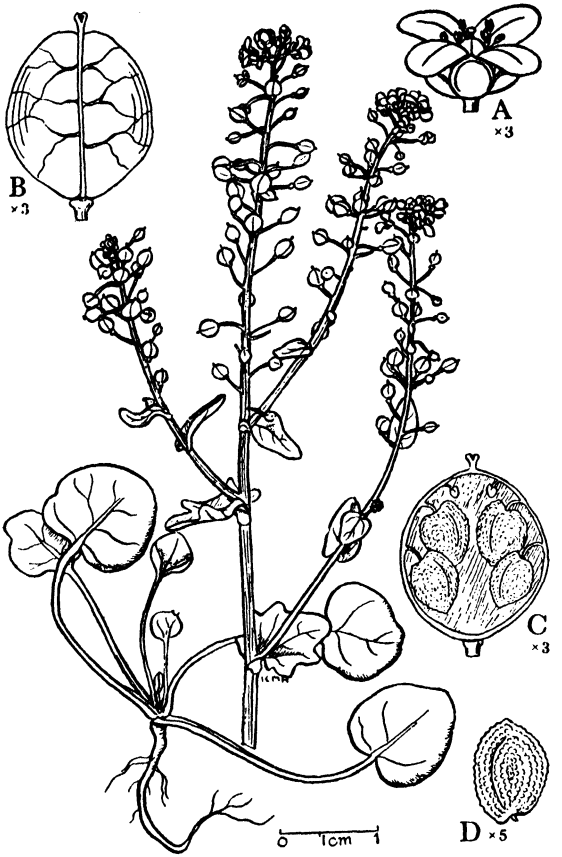


TEESDALIA R.Br. Very small, glabrous annuals with white flowers. Fruit a laterally compressed, winged pouch; each cell two-seeded; radicle accumbent; petals unequal; stamens with a basal scale.

183. TEESDALIA NUDICAULIS (L) R.Br. The TEESDALIA is a very small, glabrous annual with leafless, flowering scapes 3-6 in. (8-15 cm.) high, growing from a rosette of leaves. It is rather common on sandy soils in lowland Britain. Leaves all radical, stalked; pinnatifid with rounded lobes or entire, glabrous. Flowers 1·5-2·0 mm. diam.; sepals ovate, glabrous; petals white, entire, unequal, rather longer than sepals. Pouch 4·0 × 3·5 mm., oval, truncate, glabrous, narrowly winged; valves unveined; style minute; seed 1·4 × 1·0 mm., rounded, ovoid, finely netted, chestnut.

Mid April—early June. (Cavenham, Suffolk.)
A. flower B. stamen. C. pouch. D. pouch without valve. E. seed.

(*T. coronopifolia* (Berg.) Thell., similar to the above but leaves with acute lobes, is reported from the Inner Hebrides.)



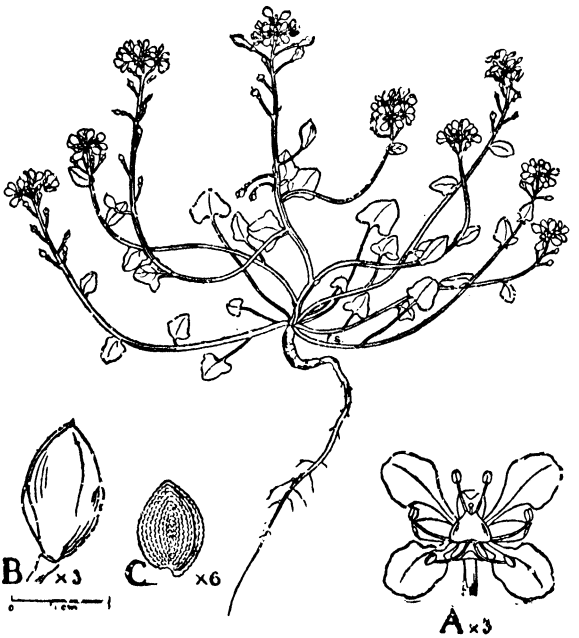
COCHLEARIA L. Straggling or stout, often almost succulent annuals or perennials with undivided leaves and white flowers; fruit an almost spherical, uncompressed, many-seeded pouch. Filaments simple. Radicle accumbent.

184. COCHLEARIA OFFICINALIS L. The COMMON SCURVY-GRASS is a large, robust, usually biennial plant 6-20 in. (15-50 cm.) high, commonly found on banks and cliffs in the neighbourhood of the sea and occasionally elsewhere. Stems stout, much-branched. Radical leaves cordate, stalked, fleshy; upper clasping, elliptical, sinuate-toothed, sessile. Flowers 6-8 mm. diam.; sepals nearly orbicular, suberect; petals white, rounded, twice as long as sepals. Pouch 3-7 mm., nearly globose, netted; seed 3 × 2 mm., ovoid, with wavy ribs, black.

Early May—late June. (Somerleyton, Suffolk.)
A. flower. B. pouch. C. pouch with valves removed. D. seed.

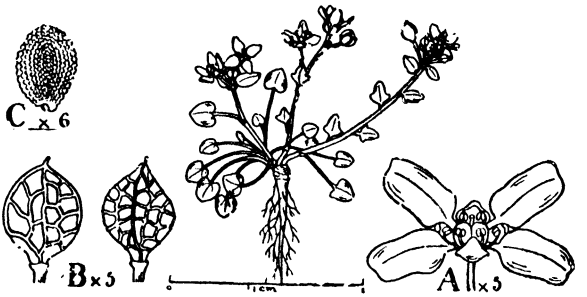
185. COCHLEARIA ALPINA (Bab.) C. Wats. The ALPINE SCURVY-GRASS is a rather stout biennial 4-12 in. (10-30 cm.) high, found frequently in wet places on mountains and river banks in N. England and Scotland. Stems rather stout to slender, much-branched. Radical leaves stalked, cordate, thin; upper triangular, clasping, toothed. Flowers 6-8 mm. diam.; sepals ovate, suberect, rounded; petals white. Pouch ovoid, tapering to apex, netted; seed 2·0 × 1·5 mm., ovoid, with wavy ribs, nearly black.

Mid May—early July. (Bolton Abbey, Yorkshire.)
A. flower. B. pouch. C. seed.



186. COCHLEARIA MICACEA E.S.Marsh. This HIGHLAND SCURVY-GRASS is a rather slender biennial with many decumbent and straggling stems 4-8 in. (10-20 cm.) high, which is found only in wet places and rocks on certain Scottish mountains. Radical leaves triangular or cordate, stalked, thin; upper triangular, not clasping, subsessile, margin irregular. Flowers 7 mm. diam.; sepals ovate, suberect, rounded; petals white. Pouch 5·5 × 2·5 mm., narrow, ellipsoid, tapering at both ends, smooth; seed 2·0 × 1·5 mm., ovoid, with wavy ribs, nearly black.

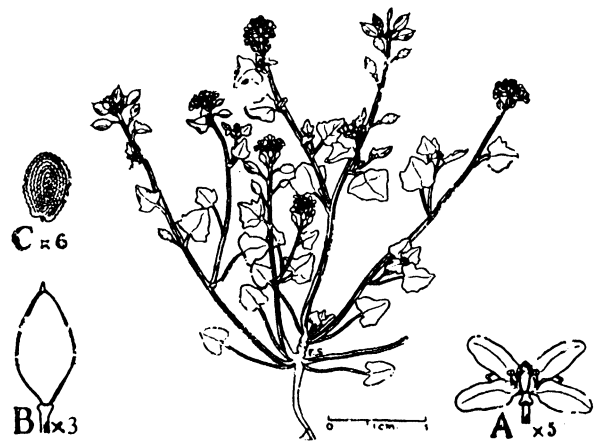
Early July—late Aug. (Ben Lawers, Perthshire.)
A. flower. B. pouch. C. seed.



187. COCHLEARIA SCOTICA Druce. This SCOTTISH SCURVY-GRASS is a dwarf, fleshy biennial with many ascending flowering stems 1-2 in. (2-5 cm.) long, growing from a central rosette. It is a very rare plant of the sea-shore of N. Scotland. Radical leaves orbicular-reniform, stalked, fleshy; upper sessile, not clasping, elliptic to rhomboidal, entire or two-toothed. Flowers 5-6 mm. diam.; sepals ovoid, acute; petals white. Pouch globose, honeycombed; seed 2·0 × 1·5 mm., ovoid, with wavy ribs, black.

Early—late July. (Hielan Ferry, Sutherland.)

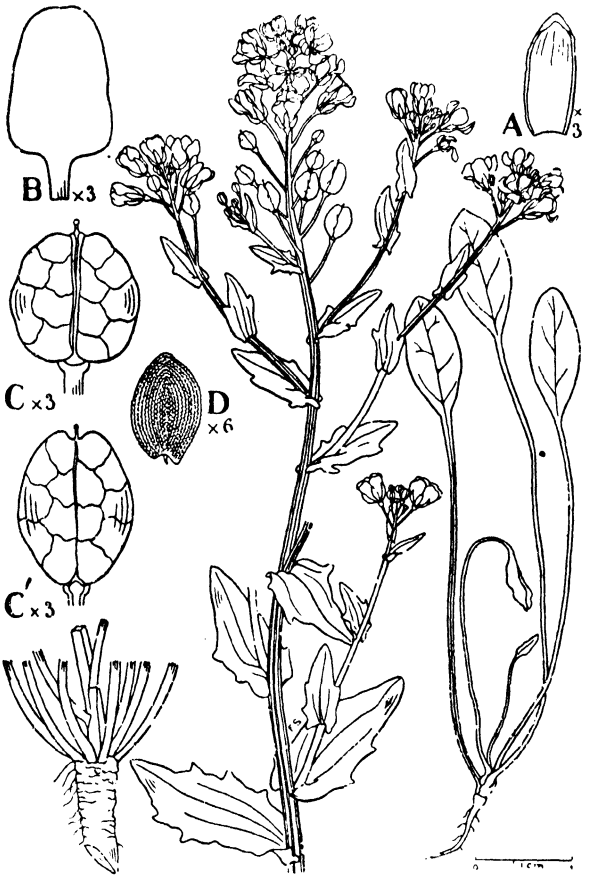
A. flower. B. pouch, 2 views. C. seed.



188. COCHLEARIA DANICA L. This DANISH SCURVY-GRASS is a rather slender, diffuse, branched biennial 1-6 in. (2-15 cm.) high, which grows commonly on maritime shingle all around Britain. Radical leaves cordate, stalked, fleshy; upper leaves also stalked and cordate or triangular, margin irregular. Flowers 4 mm. diam.; sepals rather narrow, spathulate; petals white or pink. Pouch elliptical-ovoid, tapering at both ends, smooth; seed 1·5 × 1·0 mm., small, with wavy ribs, black.

Early May—early July. (Dungeness, Kent.)

A. flower. B. pouch. C. seed.

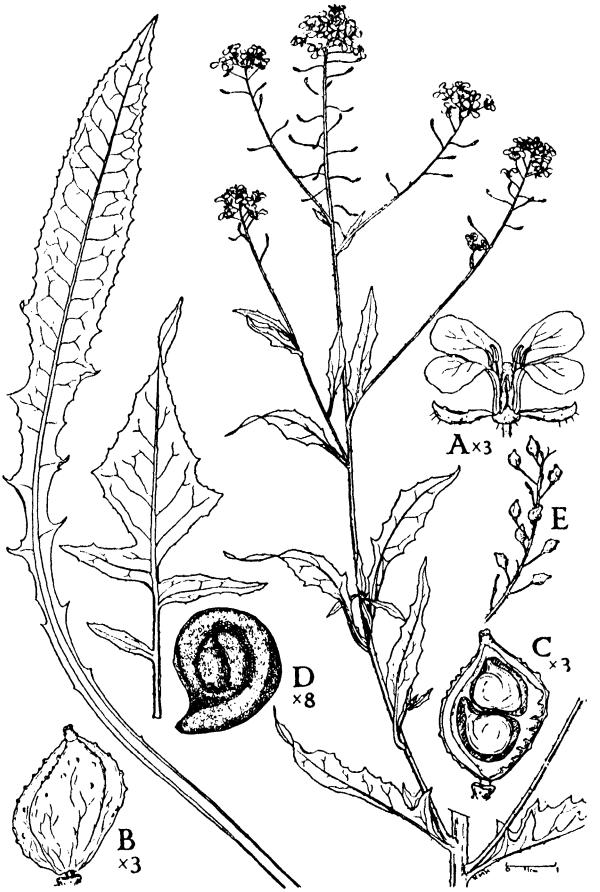


189. COCHLEARIA ANGLICA L. This ENGLISH SCURVY-GRASS is a robust, rather succulent biennial or perennial with erect, little-branched stem 9-20 in. (23-50 cm.) high. It is common in muddy salt marshes all around Britain except the far North. Radical leaves stalked, ovate-oblong, entire, thick; upper elliptical, clasping, sessile, toothed. Flowers 8-10 mm.; sepals broad, oblong, subacute; petals white, spathulate. Pouch globose (or elliptical in var. *hortii* Syme), netted; seed 2·5 × 1·5 mm., ovoid, with wavy ribs, almost black.

Late April—mid July. (Avon Gorge, Bristol.)
A. sepal. B. petal. C. pouch. C′. pouch of var. *hortii*. D. seed.

190. COCHLEARIA ARMORACIA L. = A. RUSTICANA Gærtn., Mey and Schreb. The HORSE-RADISH is a very robust perennial with much-branched, leafy, flowering stems 20-36 in. (50-90 cm.) high, and large, entire, radical leaves growing from a thick, aromatic, fleshy rhizome. It is a frequent escape from cultivation in waste places and on river banks throughout lowland Britain. Radical leaves large, lanceolate, 20-25 in. (50-60 cm.) long, stalked or at times sessile, entire or dissected, margin crenulate; upper leaves narrow, lanceolate. Flowers 6 mm. diam. in large, branched racemes; sepals nearly orbicular, suberect; petals white. Pouch rarely developing, ovoid, about eight-seeded; seed never formed in Britain.

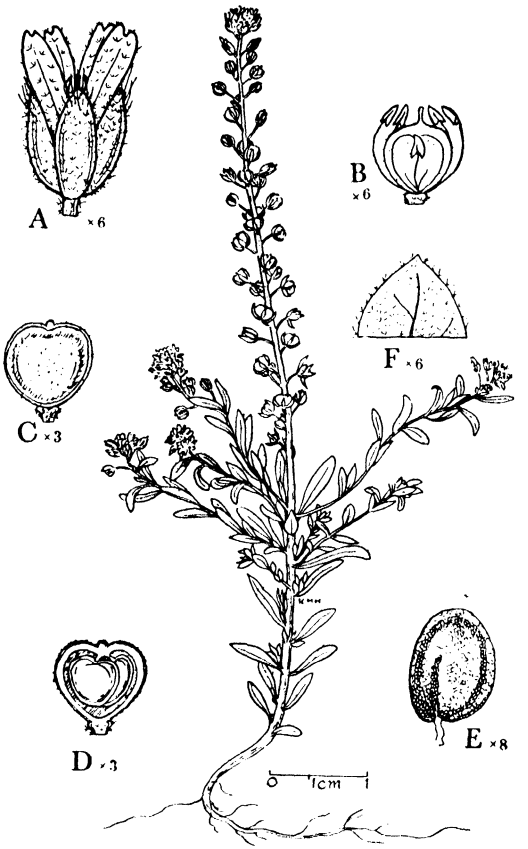
Early May—mid June. (Ashbourne, Derbyshire.)
A. flower. B. pouch. C. pouch with valve removed.



BUNIAS L. Stout, hispid perennials with yellow flowers. Fruit a short, indehiscent pod with vertical and horizontal divisions, thus forming 4, single-seeded cells. Cotyledons circinate.

191. BUNIAS ORIENTALIS L. This FALSE TURNIP is a large, hispid biennial with much-branched stems 9-40 in. (23-100 cm.) high. It is a European plant, naturalized in waste places in the district around London. Lower leaves lanceolate, runcinate; upper leaves spathulate, ± clasping, all toothed. Flowers in a branched raceme; sepals concave, lanceolate, spreading, bristly; petals yellow. Fruit 5 mm., spherical, rugose, acute; seed 2 mm. diam., helicoid, with protruding radicle, netted, white.

Late May—mid Sept. (Kent.)
A. flower. B. fruit. C. fruit l.s. D. seed. E. fruits.

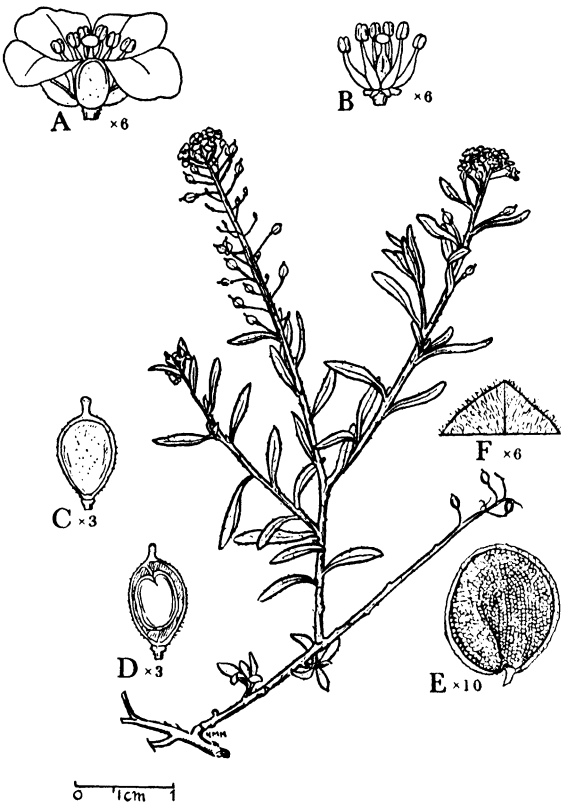


ALYSSUM L. Small annual or perennial herbs with hoary or stellate hairs and white or yellow flowers. Fruit a dorsally compressed, one to many-seeded pouch. Filaments flattened or with an appendage. Radicle accumbent, seeds flat.

192. ALYSSUM ALYSSOIDES (L.) L. The WILD YELLOW ALYSSUM is a little-branched, erect annual 6-9 in. (15-23 cm.) high, covered with stellate hairs. It is a rare cornfield weed in central and E. England and casual elsewhere. Leaves small, lanceolate, entire, stellately pubescent. Flowers 3 mm. diam.; sepals lanceolate; petals yellow, lanceolate, sub-erect, notched, both sepals and petals covered with stellate hairs; the short stamens placed between two setæ. Pouch two-seeded, rounded, emarginate; style very short; valve veinless, hairy; seed 2·0 × 1·5 mm., lenticular, winged, finely netted, brown.

Mid May—late June. (Flitwick, Bedfordshire.)

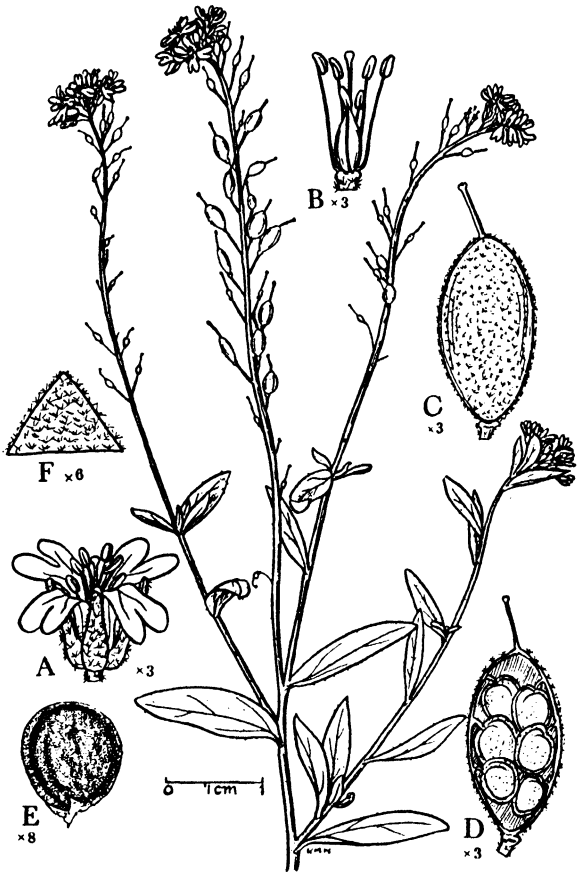
A. flower. B. pistil and stamens. C. pouch. D. pouch without valve. E. seed. F. leaf tip.



193. ALYSSUM (LOBULARIA) MARITIMUM (L.) Lam. The WHITE ALYSSUM is a straggling perennial, covered with simple hairs and with flowering branches 4-8 in. (10-20 cm.) high, growing from a decumbent stock. It is established on some sea cliffs here and there in England and S. Scotland. Leaves sessile, lanceolate, entire, stellately hairy. Flowers 3-4 mm. diam., in round-topped racemes; sepals rounded, hairy; petals white, broad, ovate, entire, twice as long as sepals; stamens with dilated base. Pouch one-seeded, oval; style long, valve veinless, hairy; seed 1·5 mm., lenticular, winged, netted, brown.

Mid June—mid Aug. (Plymouth, Devon.)

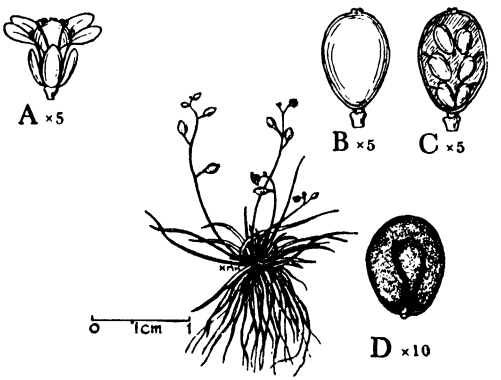
A. flower. B. pistil and stamens. C. pouch. D. pouch without valve. E. seed. F. leaf tip.



194. ALYSSUM (BERTEROA) INCANUM L. This EUROPEAN HOARY ALYSSUM is an erect, branched annual 12-25 in. (30-62 cm.) high, which is naturalized in a few places in England and casual elsewhere. Whole plant hoary, with stellate hairs. Leaves lanceolate, entire, grey-green. Flowers 7-9 mm. diam., in long, lax racemes; sepals narrow, lanceolate, hairy; petals white, bifid, spreading, twice as long as sepals; stamens simple. Pouch 8 × 4 mm., 6-8 seeded, elliptical; seed 2·0 × 1·8 mm., flattened, winged, netted, brown.

Mid June—early Aug. (Stoke Ferry, Norfolk.)

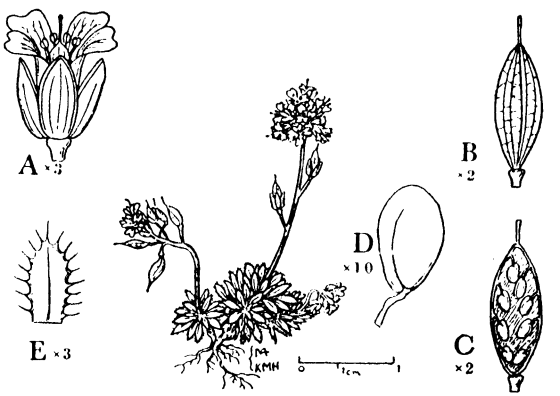
A. flower. B. stamens and ovary. C. pouch. D. pouch without valve. E. seed. F. leaf tip.



SUBULARIA L. A dwarf, aquatic annual; fruit an ovoid, laterally sub-compressed, many-seeded pouch. Cotyledons folded transversely; radicle accumbent.

195. SUBULARIA AQUATICA L. The WATER AWLWORT is a dwarf annual plant 1-3 in. (2-8 cm.) high, which grows submerged in lakes and is widely spread though rare, in Scotland and N. Wales. Leaves in a radical rosette, subulate. Flowers 3 mm. diam., in lax racemes on a naked scape; sepals lanceolate, erect; petals white, twice as long as sepals. Pouch 3 × 2 mm., ovoid; seed 0·5 × 0·3 mm., ovoid, faintly marked, light brown.

Early July—mid Aug. (Loch Dochart, Perthshire.)
A. flower. B. pouch. C. pouch without valve. D. seed.

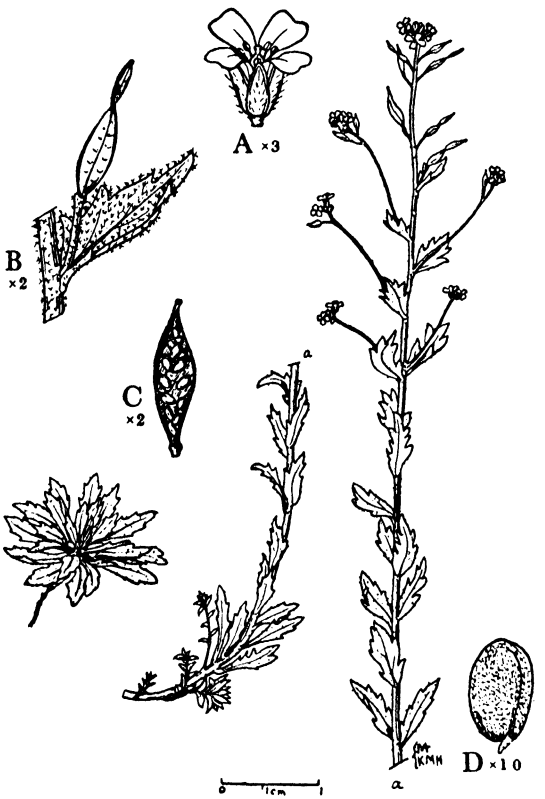


DRABA L. Dwarf to small, hairy or hoary annuals or perennials with white or yellow flowers. Fruit a dorsally-compressed, many-seeded pouch. Petals nearly entire; radicle accumbent; filaments simple.

196. DRABA AIZOIDES L. The YELLOW WHITLOW-GRASS is a dwarf, tufted perennial with numerous dense, leafy rosettes, from which grow leafless flowering stems 1-3 in. (2-8 cm.) high. It is confined to rocks and clefts on walls in the Gower Peninsula, S. Wales. Leaves all radical, sessile, ovate, fringed with long bristles, pubescent. Flowers 5-6 mm. diam., in short, crowded racemes; sepals lanceolate, glabrous, veined; petals yellow, emarginate. Pouch 8 × 2 mm., narrow, elliptical, net-veined; seed 1·5 × 0·9 mm., ovoid, smooth, yellow, stalk persistent.

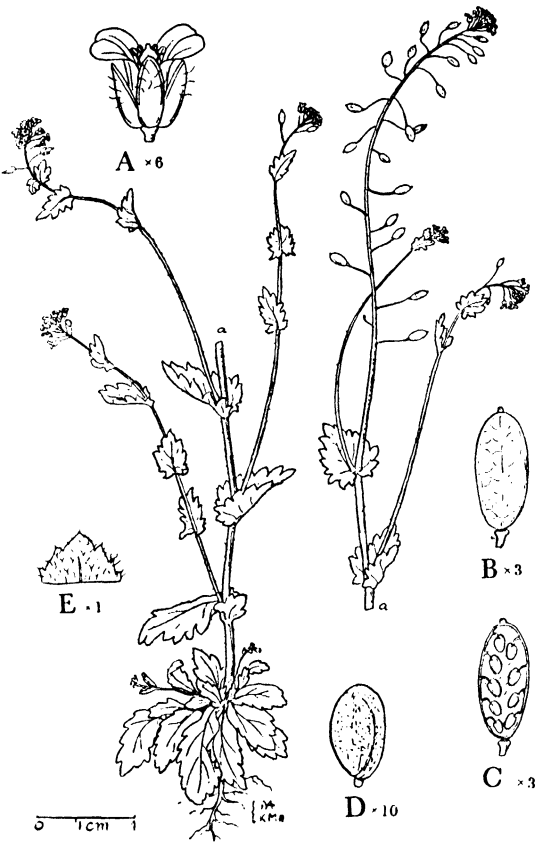
Late March—early May. (Pennard, Glamorganshire.)

A. flower. B. pouch. C. pouch without valve. D. seed. E. leaf.



197. DRABA INCANA L. The HOARY or TWISTED-PODDED WHITLOW-GRASS is a rather stout to slender biennial or perennial with a strong, almost simple flowering stem 4-12 in. (10-30 cm.) high, growing from a decumbent base. It is a rare plant of limestone rocks in N. England and Scotland. Leaves all pubescent with stellate hairs, narrowly lanceolate, acute, toothed, sessile, lowest ones often in rosettes. Flowers 5 mm. diam., in elongate racemes; sepals lanceolate, acute, hairy; petals white, lanceolate, emarginate, rather longer than sepals. Pouch narrowly elliptical, twisted when mature, veined; seed 1·5 × 0·9 mm., ovoid, with fine longitudinal markings, chestnut.

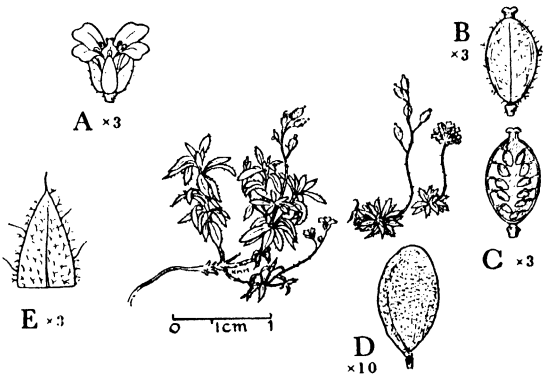
Mid May—late July. (Ashwood Dale, Derbyshire.)
A. flower. B. pouch and bract. C. pouch without valve. D. seed.



198. DRABA MURALIS L. The SPEEDWELL-LEAVED WHITLOW-GRASS is a slender, branched, somewhat hairy annual 4-12 in. (10-30 cm.) high, which occurs rather infrequently on limestone rocks and walls here and there throughout the British Isles. Radical leaves forming a rosette, roundly ovate with few large teeth; stem leaves smaller, ovate, sessile, clasping, with forked hairs. Flowers 3 mm. diam., in elongated racemes; sepals lanceolate with hairy tips; petals white, lanceolate, entire, rather longer than sepals. Pouch 5·0 × 2·5 mm., narrowly elliptical; valve faintly veined; seed 1·2 × 0·75 mm., faintly marked, ovoid, light brown.

Late April—late May. (Lode Mill, Derbyshire.)

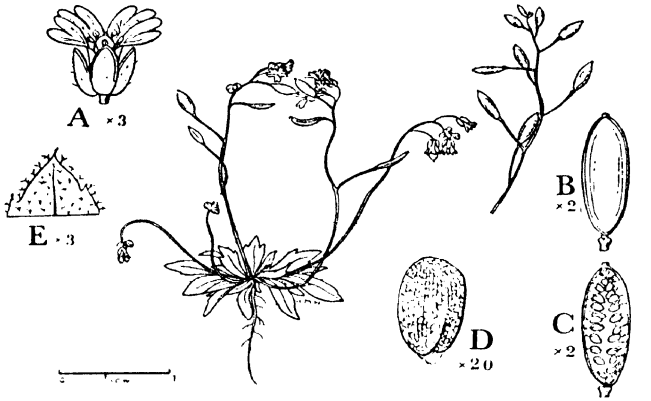
A. flower. B. pouch. C. pouch with valve removed. D. seed. E. portion of leaf.

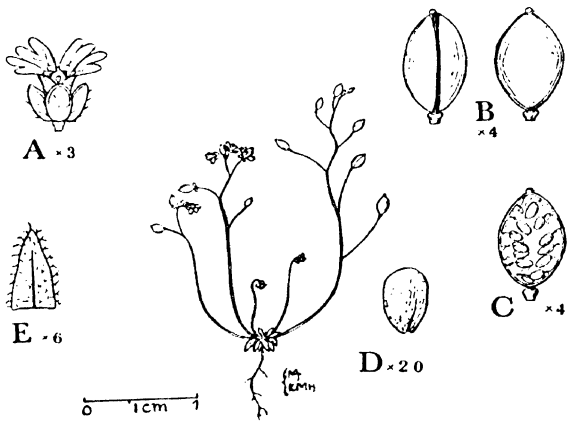


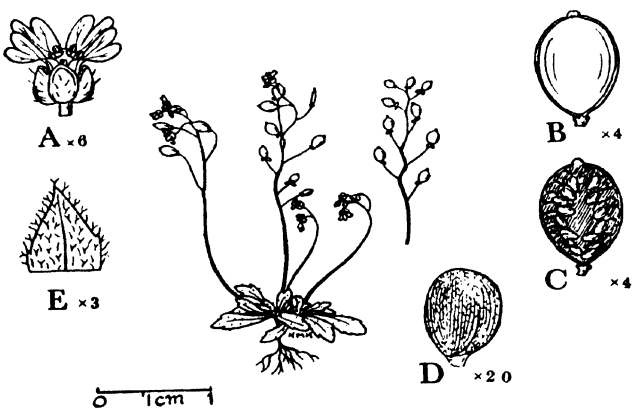
199. DRABA NORVEGICA Gunn (*D. rupestris* R.Br.). This ALPINE WHITLOW-GRASS is a dwarf, loosely-tufted perennial with basal rosettes of leaves, short, leafy stem 1-2 in. (2-5 cm.) long and leafless flowering scapes 1-4 in. (2-10 cm.) long. It is a very rare plant of alpine rocks on a few Scottish mountains. Leaves small, lanceolate, entire, acute, covered with a few long and many short, stellate hairs. Flowers 3-4 mm. diam., in short racemes; sepals lanceolate, acute, hairy; petals white, emarginate, twice as long as sepals. Pouch 5 × 2 mm., ovate, hairy, netted, nerve single; stigma thick, bifid; seed 1·5 × 0·8 mm., ovoid, finely marked vertically, brown.

Mid July—mid Aug. (Ben Lawers, Perthshire.)

A. flower. B. pouch. C. pouch with valve removed. D. seed. E. leaf tip.


A ×3
E ×3
B ×2
C ×2
D ×20


A ×3
E ×6
B ×4
C ×4
D ×20
0 1cm 1


A ×6
E ×3
B ×4
C ×4
D ×20
0 1cm 1

EROPHILA DC. Dwarf annuals with hairy, radical leaves and leafless flowering scapes, flowers with bifid petals. Fruit a dorsally compressed, many-seeded pouch; filaments simple.

200. EROPHILA VERNA (L.) Chevall. The COMMON WHITLOW-GRASS is a very variable annual with a basal rosette of leaves and erect, flowering stems 1-6 in. (2-15 cm.) high. It is abundant on walls, rocks, paths and other dry places throughout the British Isles. Leaves lanceolate, toothed, covered with stellate hairs. Flowers 4-5 mm. diam.; sepals lanceolate, hairy; petals white or pink. Pouch about 8 × 3 mm., elongate; valve flat; seeds 0·7 × 0·4 mm., ovoid, netted, light brown.

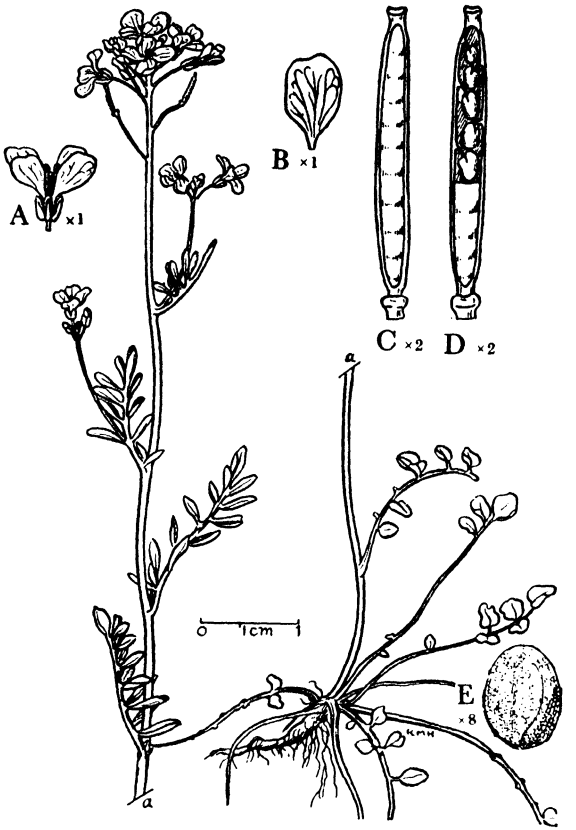
Late March—late May. (Dovedale, Derbyshire.)
A. flower. B. pouch. C. pouch without valve. D. seed. E. leaf tip.

201. EROPHILA SPATHULATA Láng. This INFLATED-PODDED WHITLOW-GRASS is a rare annual 1-3 in. (2-8 cm.) high, found on Ben Lawers and in a few other places. Leaves very small, ovate, spathulate, toothed, covered with stellate and forked hairs. Flowers 4 mm. diam.; sepals ovoid, hairy; petals white, at least twice as long as sepals. Pouch 3 × 2 mm., small, ovoid; valve convex, especially in var. *inflata* Wats.; seed 0·4 × 0·35 mm., ovoid, finely netted, brown.

Late May—early July. (Ben Lawers, Perthshire.)
A. flower. B. dorsal and ventral views of pouch. C. pouch with valve removed. D. seed. E. leaf tip.

202. EROPHILA PRÆCOX Stev. This EARLY WHITLOW-GRASS is a widely distributed but not common annual 1-3 in. (2-8 cm.) high, which grows on walls, rocks and paths and other dry places, chiefly in England. Leaves in a rosette, lanceolate, often toothed, covered with simple and long, forked hairs. Flowers 4-5 mm. diam.; sepals ovate with few hairs; petals white, twice as long as sepals. Pouch about 3·0 × 2·5 mm., short, rounded; valve flat; seed 0·6 × 0·4 mm., ovoid, finely netted, light brown.

Late March—late May. (Okeover, Staffordshire.)
A. flower. B. pouch. C. pouch with valve removed. D. seed. E. leaf tip.

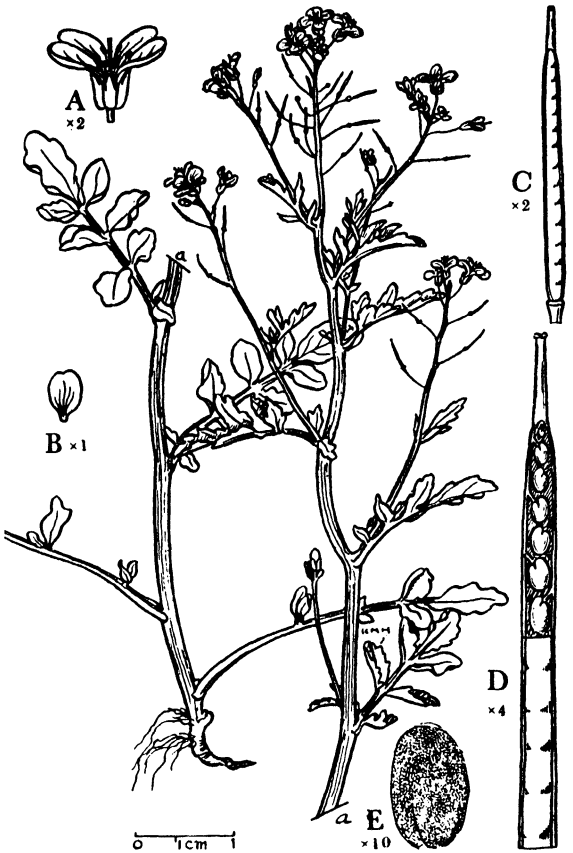


CARDAMINE L. Erect annuals or perennials with white or pink flowers. Fruit a long, linear, dehiscent, unbeaked pod; valves flat, unveined. Seeds in a single row; radicle accumbent.

203. CARDAMINE PRATENSIS L. The LADY SMOCK or CUCKOO FLOWER is an erect, rather stiff, little-branched perennial which is a common plant in moist meadows and along streams throughout the British Isles. Leaves pinnate, segments of upper leaves linear; of lower, elliptical or ovate, margin entire. Flowers about 15 mm. diam.; sepals linear, erect; petals veined, tinged with lilac, thrice as long as sepals; anthers yellow. Fruiting pedicels erect, longer than pods; pods 16-18 mm. long; seed 1·5 × 1·2 mm., ovoid, medium, finely netted, brown.

Mid April—early June. (Ashbourne, Derbyshire.)

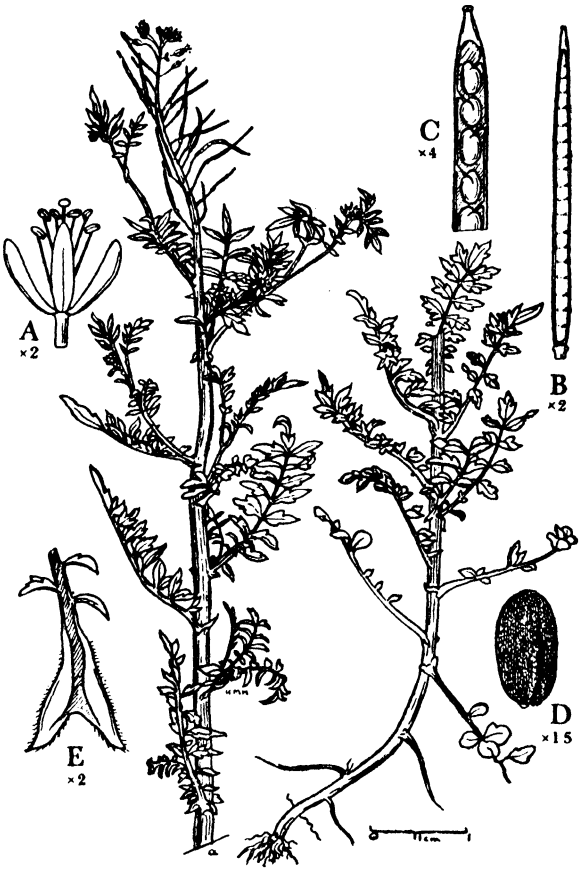
A. flower. B. petal. C. pod. D. pod with portion of valve removed. E. seed.



204. CARDAMINE AMARA L. The LARGE-FLOWERED BITTER-CRESS is an erect, rather weak, little-branched perennial 10-15 in. (25-38 cm.) high, growing from a decumbent base. It is an uncommon, though widely distributed plant of brooksides and wet meadows throughout lowland Britain. Leaves pinnate, all leaflets of about equal size, elliptical. Flowers about 10 mm. diam.; sepals erect, pointed, green; petals white, purple-veined, twice as long as sepals; anthers purple-violet. Fruiting pedicels long, slender, spreading; pods about 20 mm. long; seed 1·6 × 1·0 mm., ovoid, compressed, slightly winged at apex, finely netted, brown.

Late April—mid June. (Mappleton, Derbyshire.)

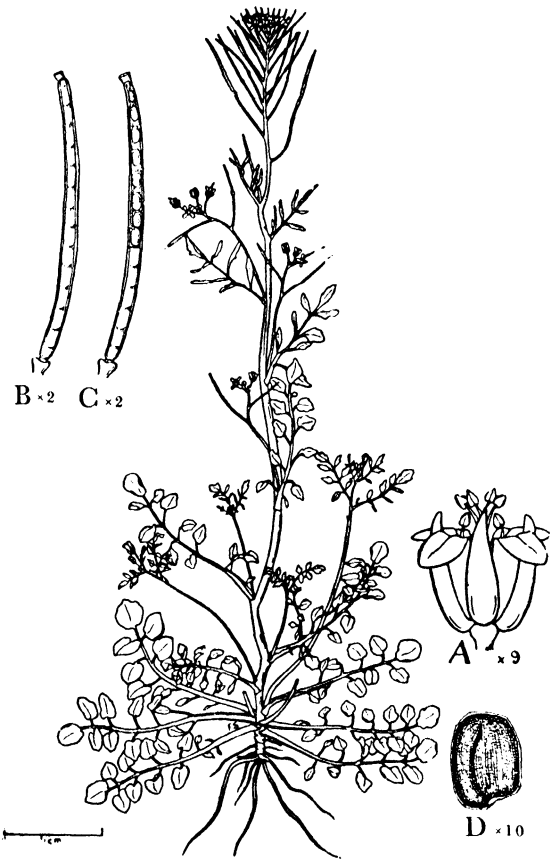
A. flower. B. petal. C. pod. D pod with portion of valve removed. E. seed.



205. CARDAMINE IMPATIENS L. The NARROW-LEAFED BITTER-CRESS is an erect, strong-scented annual or biennial with a simple or little-branched stem 9-15 in. (20-35 cm.) high. It is a rather rare plant of damp, shady places in N. and W. England and Wales. Leaves pinnate; all leaflets about equal size, narrow, lanceolate, deeply toothed, with a small curved appendage at the base of the petiole. Flowers 6 mm. diam.; sepals linear, blunt; petals minute or wanting, equalling sepals, greenish; anthers yellow. Fruiting pedicels patent, as long as pod; pod 20 mm. with elastic valves; seed 1·0 × 0·6 mm., compressed, ovoid, with flattened sides and parallel markings, greenish.

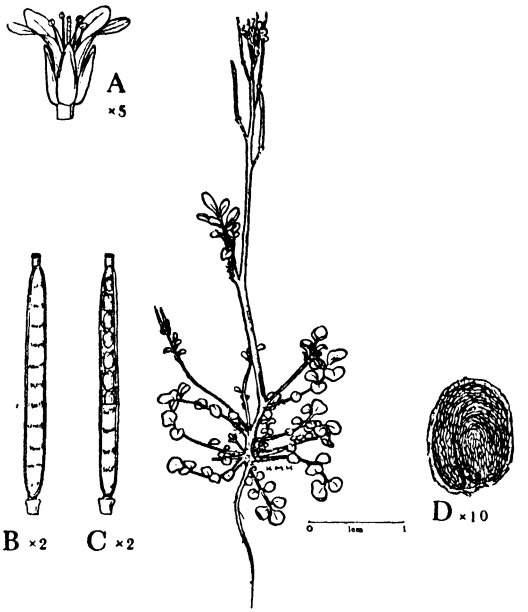
Late May—late Aug. (River Dove, Ashbourne, Derbyshire.)

A. flower. B. pod. C. part of pod with valve removed. D. seed. E. leaf base.



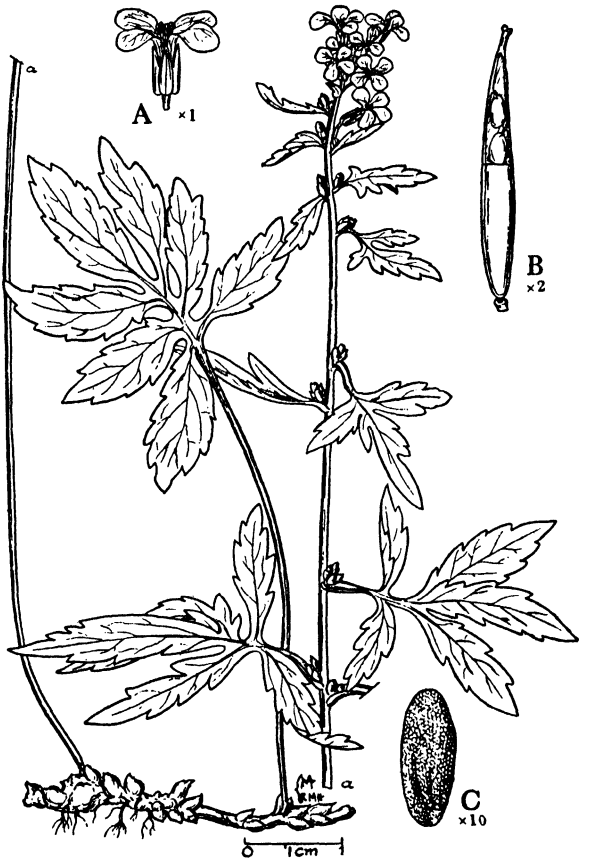
206. CARDAMINE FLEXUOSA With. The WAVY BITTERCRESS is a very common spring annual of damp, shady places and river banks throughout the British Isles with a leafy, wavy stem 4-6 in. (10-15 cm.) high, growing from a cluster of radical leaves. Leaves pinnate, segments of upper leaves elliptical; of lower, rounded, toothed. Flowers about 3 mm. diam.; sepals erect, pointed, green; petals white; stamens six; anthers yellow. Fruiting pedicels short, flexible; pods 20-25 mm., shorter than the inflorescence; seed 1·3 × 0·9 mm., yellow, ovoid, compressed, winged, with raised network.

Early April—mid Sept. (Brickendon, Hertfordshire.)
A. flower. B. pod. C. pod without portion of valve. D. seed.



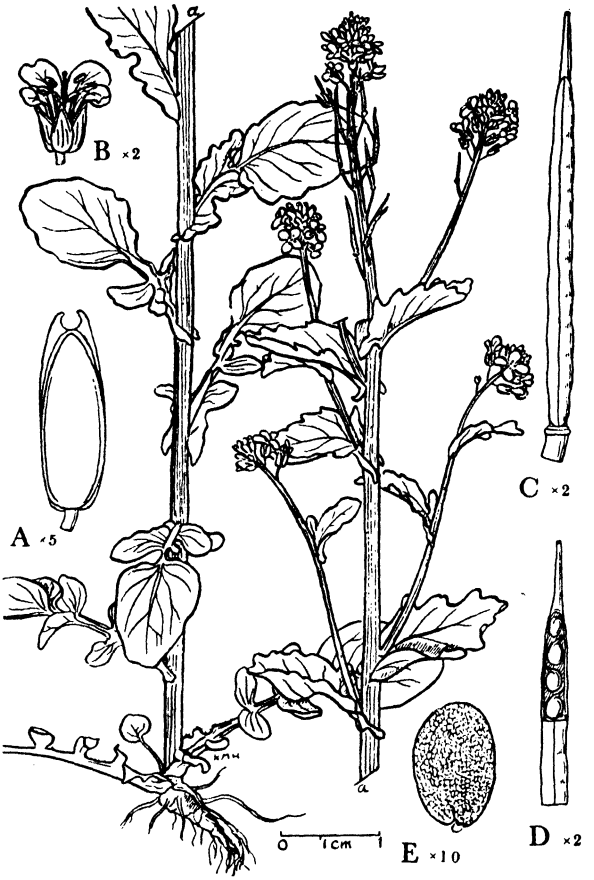
207. CARDAMINE HIRSUTA L. The HAIRY BITTERCRESS is a little-branched annual with numerous, nearly leafless, stiff, straight, almost simple flowering stems 3-6 in. (8-15 cm.) high, growing from a dense cluster of radical leaves. It is a very common spring plant of dry, barren, sandy places and walls throughout the British Isles. Leaves pinnate; segments of upper leaves elliptical; of lower, rounded, toothed. Flowers about 3 mm. diam.; sepals erect, pointed, green; petals white; stamens only four; anthers yellow. Fruiting pedicels short, stiff, erect; pods 20-25 mm. long, overtopping the inflorescence; seed 1·5 × 1·0 mm., ovoid, compressed, winged, with raised network, light brown.

Late March—late June. (Clifton, Derbyshire.)
A. flower. B. pod. C. pod with portion of valve removed. D. seed.



208. CARDAMINE (DENTARIA) BULBIFERA (L) Crantz. The BULBIFEROUS CORAL ROOT is an erect, rather slender perennial with simple, strong, glabrous stems 9 in. (23 cm.) high, growing erect from a creeping, whitish rhizome. It is a rare plant of woods in S.E. and central England. Leaves pinnate with narrow, dentate lobes and bulbils in the axils of the leaves. Flowers 15-17 mm. diam.; sepals narrow, acute, glabrous; petals deep pink, twice as long as sepals; anthers yellow. Pods rarely maturing, 40 mm. long; seed 2·0 × 0·8 mm., cylindrical, compressed, greenish, netted.

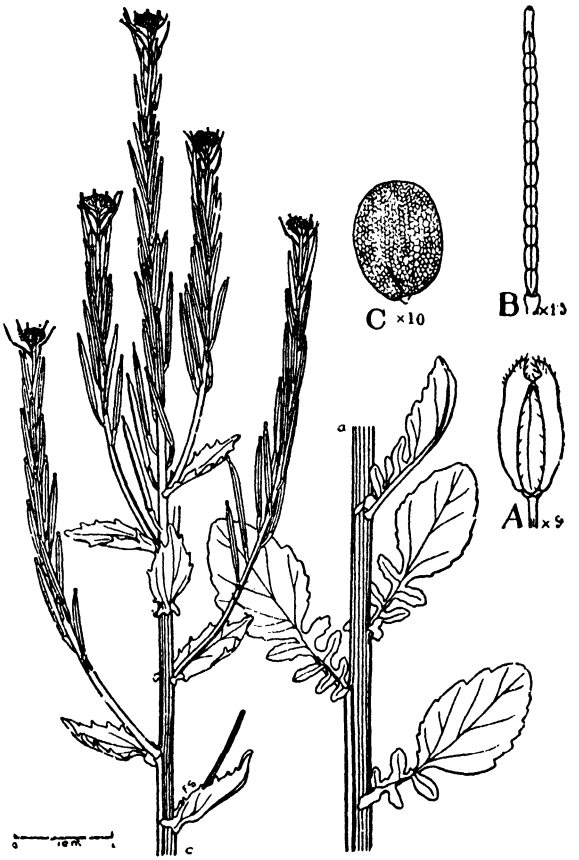
Mid May—mid June. (Harefield, Middlesex.)
A. flower. B. pod with portion of valve removed. C. seed.



BARBAREA R.Br. Biennial or annual herbs with yellow flowers. Fruit a long, terete pod; valve with a midrib; stigma capitate or slightly two-lobed. Seeds in one row; radicle accumbent.

209. BARBAREA VULGARIS R.Br. The COMMON WINTERCRESS is an erect, usually much branched, variable perennial 12-24 in. (30-60 cm.) high. It is common on river banks, hedgerows and fields throughout the British Isles except in the far north. Lower leaves pinnate, with large terminal lobes; upper leaves simple, crenate-dentate. Flowers 3-4 mm. diam.; tips of sepals unequal, glabrous; petals yellow, emarginate, exceeding sepals. Pods 20-30 mm. long, erect, with a long point; seed 1·6 × 1·0 mm., ovoid, netted, brown.

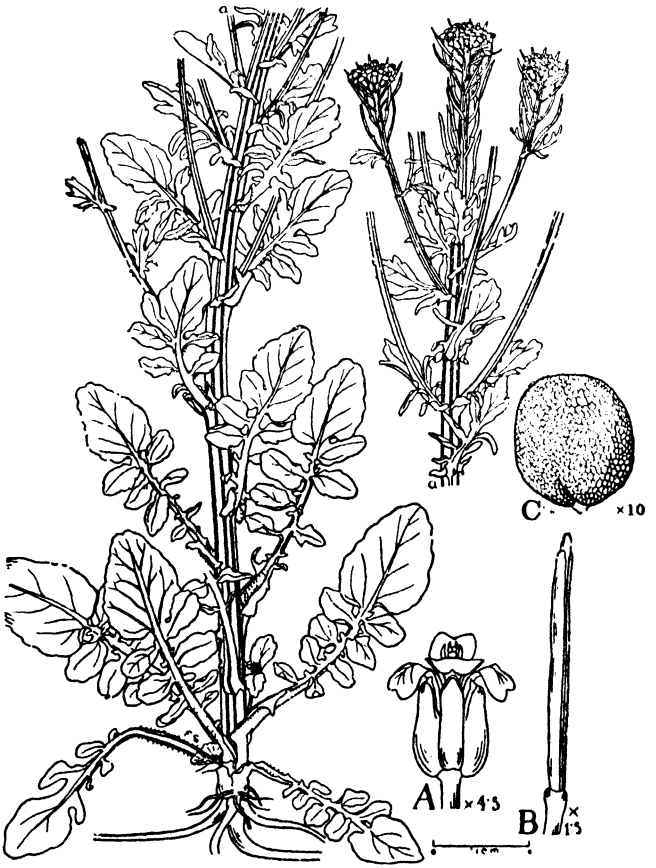
Late May—early Sept. (Ashbourne, Derbyshire.)
A. bud. B. flower. C. pod. D. part of pod with valve removed. E. seed.



210. BARBAREA STRICTA Andrz. This SLENDER WINTER CRESS is an erect, closely branched biennial 12-24 in. (30-60 cm.) high, which occurs uncommonly on river banks in England. Lower leaves pinnate with a large terminal lobe; upper leaves simple. Flowers 2 mm. diam.; tips of sepals unequal, hairy in bud; petals pale yellow, not much longer than sepals. Pods 20-25 mm. long, almost adpressed, with a short, subulate point; seed 1·5 × 1·1 mm., ovoid, coarsely netted, yellow-brown.

Mid May—mid July. (Clifton, York.)

A. bud. B. pod. C. seed.



211. BARBAREA INTERMEDIA Bor. This INTERMEDIATE WINTER-CRESS is an erect, branched biennial 12-24 in. (30-60 cm.) high, which occurs rather rarely in cultivated fields and waste places in England and S. Scotland. Lower leaves pinnate with large, oblong terminal lobe; upper leaves also pinnate. Flowers 3-4 mm. diam.; tips of sepals unequal, glabrous; petals yellow, twice as long as erect sepals. Pods 20-25 mm. long, erect-patent with a short, subulate point; seed 1·5 × 1·1 mm., broadly ovoid, coarsely netted, brown.

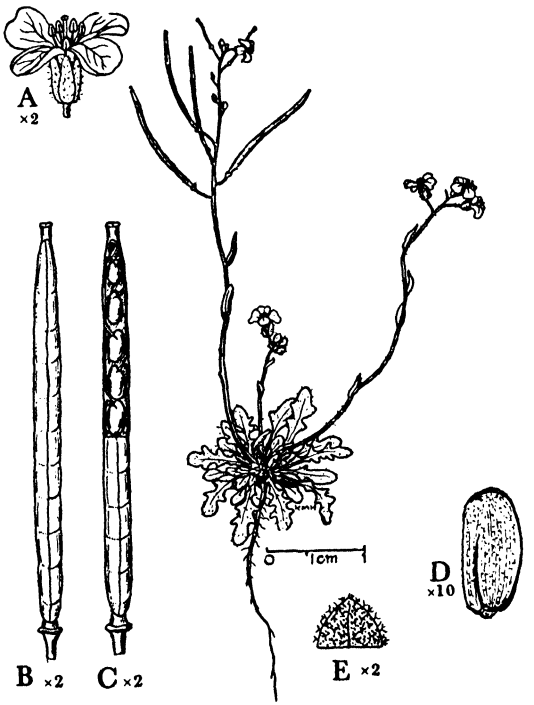
Mid May—late June. (Reigate, Surrey.)
A. flower. B. pod. C. seed.

(*B. arcuata* (J. and C. Presl.) Reich.) Fr. is similar to the above, but has rather spreading pods and a more cuneate base to terminal leaflet.)

212. BARBAREA VERNA (Mill.) Aschers. The EARLY WINTER-CRESS is a glabrous, slender, branched annual 9-15 in. (23-38 cm.) high, which occurs spasmodically on waste ground in various parts of England. Lower leaves pinnate with a narrow, oblong terminal lobe; upper leaves pinnate, all lobes narrow. Flowers 4-5 mm. diam., in a rather open, little-branched raceme; tips of sepals glabrous; petals bright yellow, twice as long as sepals. Pods 30-50 mm. long, patent spreading, with a short, thick point; seed 2·0 × 1·8 mm., large, ovoid, honeycombed, dark brown.

Late April—mid July. (Clifton, Bristol.)

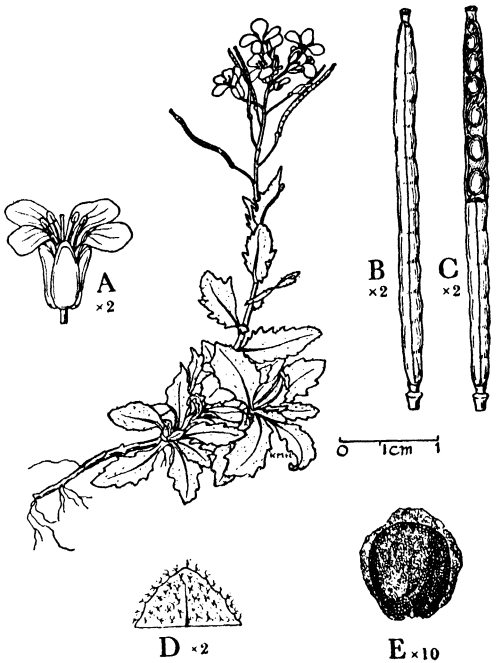
A. pod. B. radical leaf. C. seed.



ARABIS L. Annual or perennial herbs with white or pink flowers. Fruit a long, linear, unbeaked pod; valve flattened, veined. Seeds in one row, radicle accumbent.

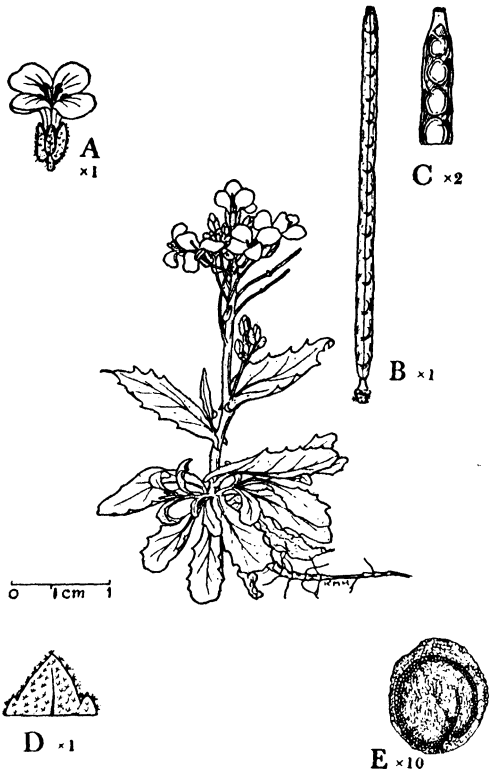
213. ARABIS (CARDAMINOPSIS) PETRÆA (L.) Lam. The MOUNTAIN ROCK-CRESS is a small and very variable perennial with branched, flowering stems 4-6 in. (10-15 cm.) high, growing from a dense or lax rosette of leaves. It grows on alpine rocks in Snowdon, Scotland and the Galtees, Ireland. Radical leaves lanceolate, sinuate or toothed, with forked and simple hairs, forming a rosette; stem leaves few, simple, sessile. Flowers 8-9 mm. diam.; calyx suberect, not gibbous at base; petals pink or white, spreading. Fruiting pedicels patent spreading; pods 40-50 mm. long, valves 1-veined; seed 1·8 × 0·8 mm., ovoid, slightly winged at apex, faintly marked, brown.

Late June—late July. (Quaritch Burn, Aberdeen.)
A. flower. B. pod. C. pod with part of valve removed. D. seed. E. leaf tip.



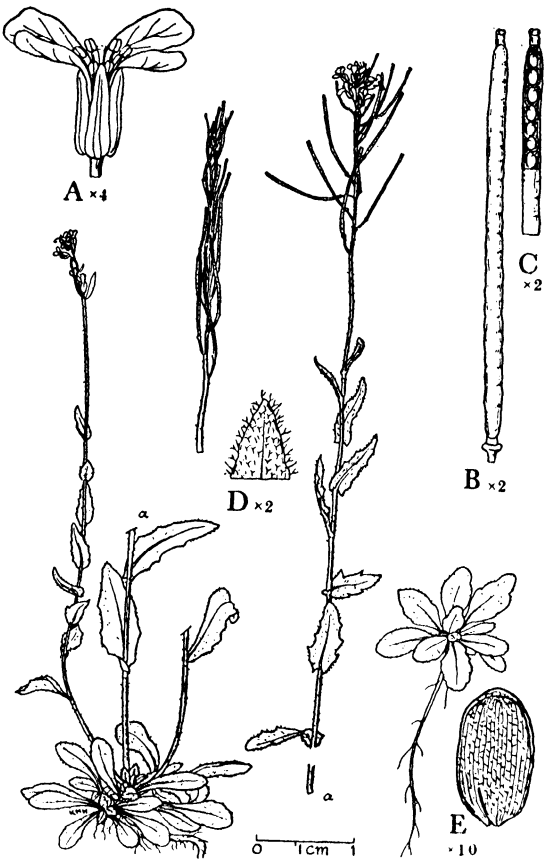
214. ARABIS ALPINA L. The ALPINE ROCK-CRESS is a loosely tufted perennial found in Britain only in damp rocky places on some mountains in the Isle of Skye. Barren stem 1-3 in. (3-8 cm.) high forming leafy rosettes; leaves obovate to oblong, toothed and covered with forked hairs; upper simple, amplexicaul auricled. Flowering scape 1-6 in. (2-15 cm.) high; flowers 10-12 mm. diam.; calyx gibbous at base; petals white entire exceeding the erect, glabrous sepals. Fruiting pedicels diffuse; pods 20-30 mm. long, often flexuous, valves faintly veined; seed 1·5 mm. diam., rounded, compressed, winged, coarsely netted, brown.

Early June—mid July. (Isle of Skye.)
A. flower. B. pod. C. pod with valve removed. D. leaf tip. E. seed.



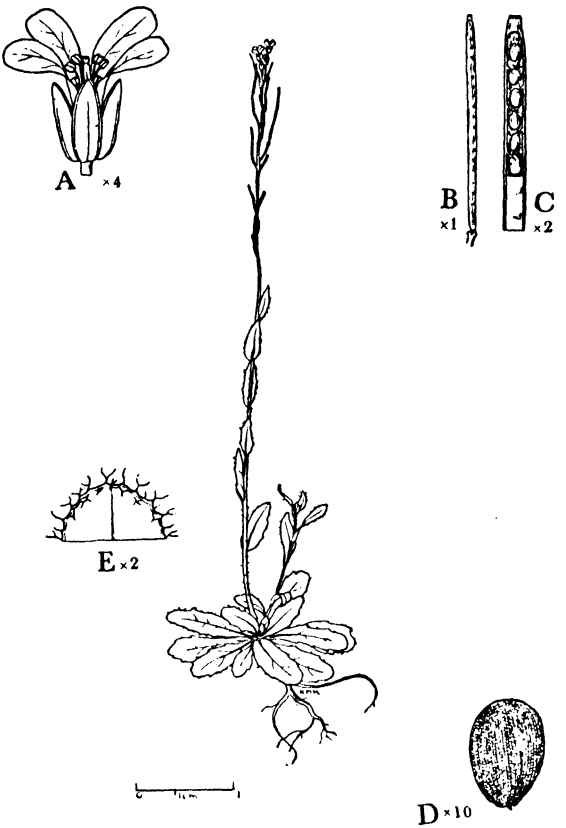
215. ARABIS CAUCASICA Willd. This GREY ROCK-CRESS is a familiar perennial garden plant which has become established on rocks, notably in the Matlock (Derbyshire) district. Barren stems short, 2-4 in. (5-10 cm.) high, forming large, leafy rosettes; leaves obovate, toothed, covered with a greyish down of forked and simple hairs, upper sessile, auricled. Flowering scape 3-6 in. (8-15 cm.) high; flowers 10-15 mm. diam.; calyx gibbous at base; petals white, notched, exceeding the erect, hairy sepals. Fruiting pedicels diffuse; pods 50 mm. long, compressed, flexuous; valves veined; seed 1·3 mm. diam., rounded, compressed, winged, coarsely netted, dark brown.

Late April—late May. (Cromford, Derbyshire.)
A. flower. B. pod. C. pod with valve removed. D. leaf tip. E. seed.



216. ARABIS HIRSUTA (L.) Scop. The HAIRY ROCK-CRESS is a hispid perennial with almost simple flowering stems 6-15 in. (15-38 cm.) high, growing from a rosette of hispid leaves. It is a common plant of dry places on calcareous soils throughout the British Isles. Radical leaves lanceolate, narrowed into a short stalk, toothed, green; stem leaves several, erect, clasping. Flowers 6-7 mm. diam.; calyx gibbous at base; petals white, spathulate, entire. Fruiting pedicels erect; pods 20-30 mm. long, short, stiff, adpressed, valves veined; seed 1·8 × 1·0 mm., elliptical, bordered, netted, dark-brown.

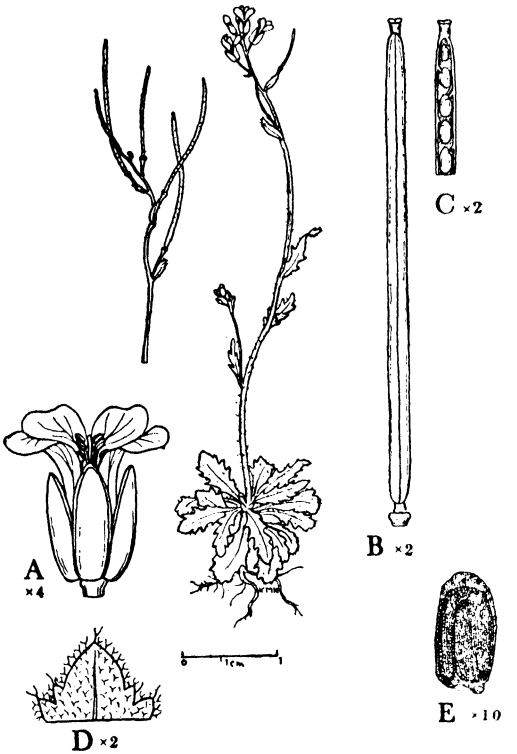
Late May—mid July. (Ashbourne, Derbyshire.)
A. flower. B. pod C. pod with part of valve removed. D. leaf tip. E. seed.



217. ARABIS BROWNII Jord. This FRINGED ROCK-CRESS is a small perennial with simple flowering stems 3-6 in. (7-15 cm.) high, growing from a rosette of green hispid leaves. It is found only near the sea-coast in western Ireland. Radical leaves ovate, sessile, toothed and ciliate, forming a dense rosette; stem leaves lanceolate, sessile, glabrous but ciliate in the margin, scarcely amplexicaul. Flowers 5·5 mm. diam., sepals erect, glabrous, lanceolate, acute; petals white, entire, exceeding calyx; fruiting pedicels erect, stiff; pods 15 mm. long, few, nearly adpressed; valves faintly veined; seed 1·5 × 1·0 mm., ovoid, not winged, finely netted, brown.

Late May—mid July. (Co. Galway, Ireland.)

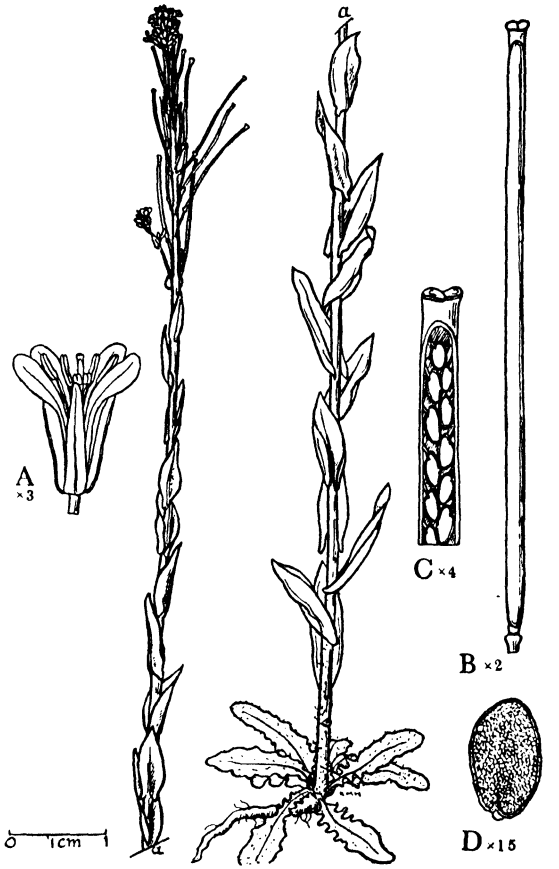
A. flower. B. pod. C. pod with part of valve removed. D. seed. E. leaf tip.



218. ARABIS STRICTA Huds. The BRISTOL ROCK CRESS is a small perennial with an almost simple flowering stem about 4 in. (10 cm.) high, growing from a flat rosette of green, hispid leaves. In England it is found only on limestone cliffs near Bristol. Radical leaves lanceolate, sessile, toothed, hispid and ciliate; stem leaves few, sessile. Flowers 5-6 mm. diam.; calyx somewhat gibbous at the base; petals cream-coloured, entire, exceeding the sepals; fruiting pedicels erect, stiff; pods few, 50-60 mm. long, valves faintly veined; seed 1·6 × 0·8 mm., ovoid, winged on top, coarsely netted, brown.

Mid April—late May. (Clifton, Bristol.)

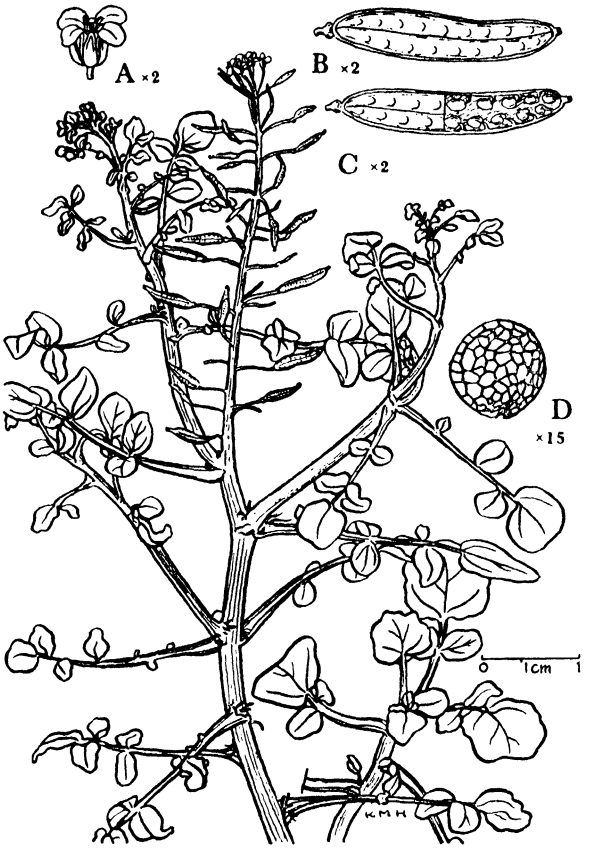
A. flower. B. pod. C. part of pod with valve removed. D. leaf tip. E. seed.



TURRITIS L. Small biennial herbs with whitish flowers. Fruit a long, linear, dehiscent, unbeaked pod; valves flat, unveined. Seeds in two rows; radicle accumbent.

219. TURRITIS GLABRA L. (*Arabis glabra* (L.) Bernh.). The TOWER CRESS is an erect biennial with strict, simple stem 12-36 in. (30-90 cm.) high, growing from a rosette of lanceolate, toothed, hispid leaves. It is an uncommon plant of sandy places and sheltered banks in England. Stem leaves glaucous, sagittate, entire, amplexicaul. Flowers 5-6 mm. diam., in a close raceme; sepals long, narrow, acute, erect; petals cream, narrow, patent. Pods 40-60 mm. long, erect, almost adpressed; valves without veins; seed 1·2 × 0·6 mm., oval, compressed, with a narrow wing, netted, light brown.

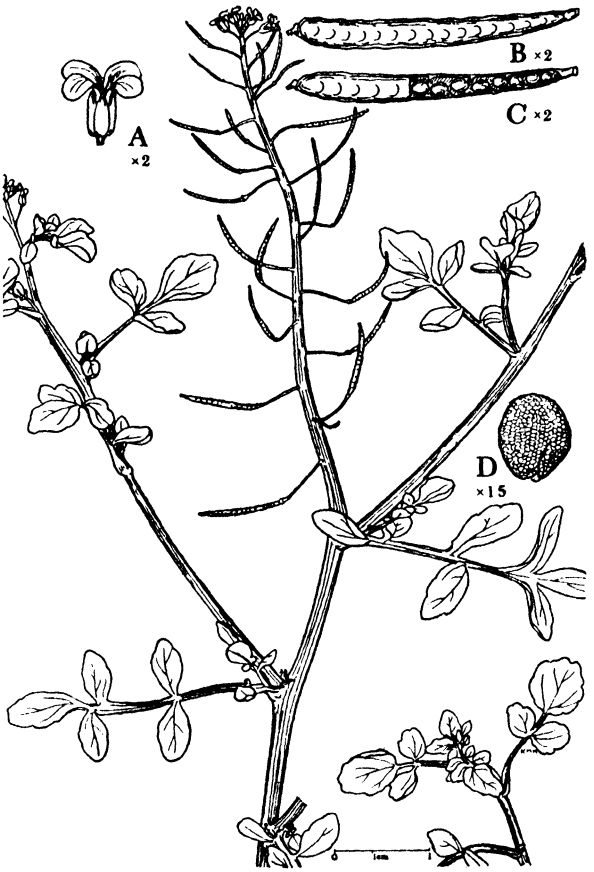
Mid May—late July. (Barrow Hills, Nottinghamshire.)
A. flower. B. pod. C. part of pod with valve removed. D. seed.



RORIPPA Scop. (*Nasturtium* R.Br.). Annual or perennial herbs with yellow or white flowers. Fruit a short, terete pod; valves convex, veinless. Stigma capitate; seeds arranged irregularly in two rows; radicle accumbent.

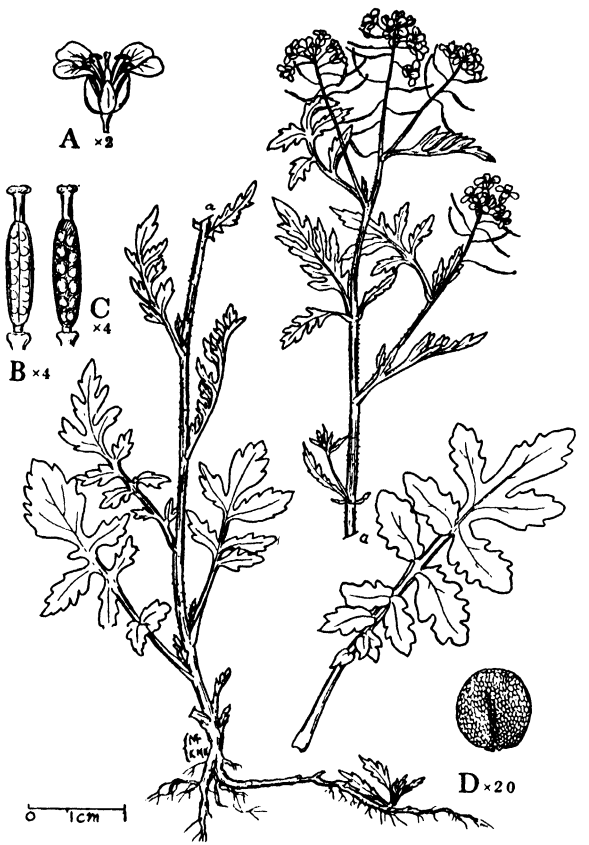
220. RORIPPA NASTURTIUM-AQUATICUM (L.) Hayek. The COMMON WATERCRESS is a much branched, rather succulent plant with stout, glabrous, decumbent, rooting stems 6-20 in. (15-50 cm.) high. It is common in shallow streams, springs and running water throughout the British Isles. Leaves pinnate, the terminal lobe broad, ovate or subcordate in nearly all leaves. Flowers 4-5 mm. diam.; petals white, twice as long as the suberect sepals. Pods 12-15 mm. long, stout, horizontal; valve keeled; seed in two rows, 1·0 × 0·9 mm., nearly globular, covered with a raised, broad network, orange.

Late May—early Oct. (R. Mimram, Welwyn, Hertfordshire.)
A. flower. B. pod. C. pod with half of valve removed. D. seed.



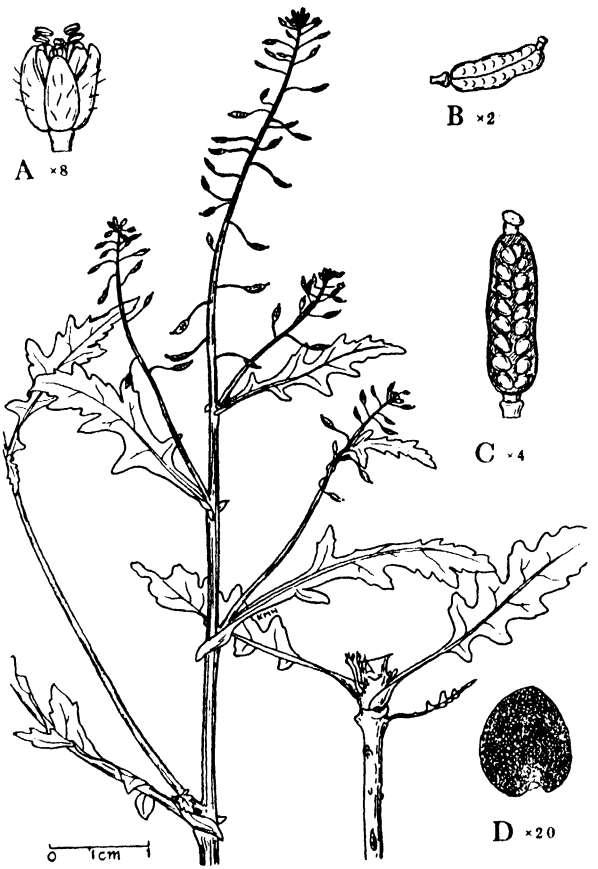
221. RORIPPA MICROPHYLLA (Bœnn) Hyland. This form of the COMMON WATER CRESS grows in similar places to the last and is almost as common. As well as having twice as many chromosomes as the last, it differs in pod, seed and laxer habit. Stem decumbent, rooting, 6-20 in. (15-50 cm.) high. Leaves pinnate, the terminal lobe broad in the lower leaves and narrower in the upper. Flowers 4-5 mm. diam.; petals white, twice as long as the sub-erect sepals; pods 20-35 mm. long, rather slender, valve not keeled; seed approximately in one row, 0·9 × 0·7 mm., ovoid, covered with a fine, unraised network, orange.

Early June—early Oct. (R. Penk, Staffordshire.)
A. flower. B. pod. C. pod with part of valve removed. D. seed.



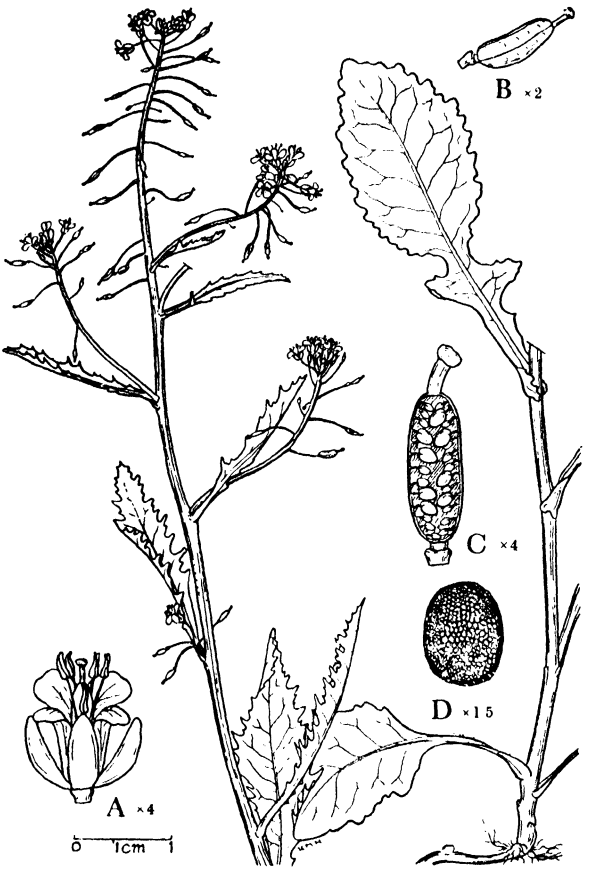
222. RORIPPA SYLVESTRIS (L.) Besser. The CREEPING YELLOW-CRESS is an erect, glabrous or slightly hairy perennial 12-15 in. (30-38 cm.) high, with a decumbent base and creeping stolons. It is an uncommon plant growing along river banks and in waste places in lowland Britain. Leaves pinnatifid; leaflets narrowly ovate or lanceolate, sharply toothed. Flowers 7-8 mm. diam., in short, lax racemes; petals ovate, yellow, twice as long as the sub-erect sepals. Pods almost straight, 5-8 mm. long, sub-erect, many-seeded; seed 0·5 mm., rounded, netted, red-brown, crowded in two rows, poorly developed.

Mid June—mid Sept. (R. Trent, below Nottingham.)
A. flower. B. pod. C. pod with valve removed. D. seed.



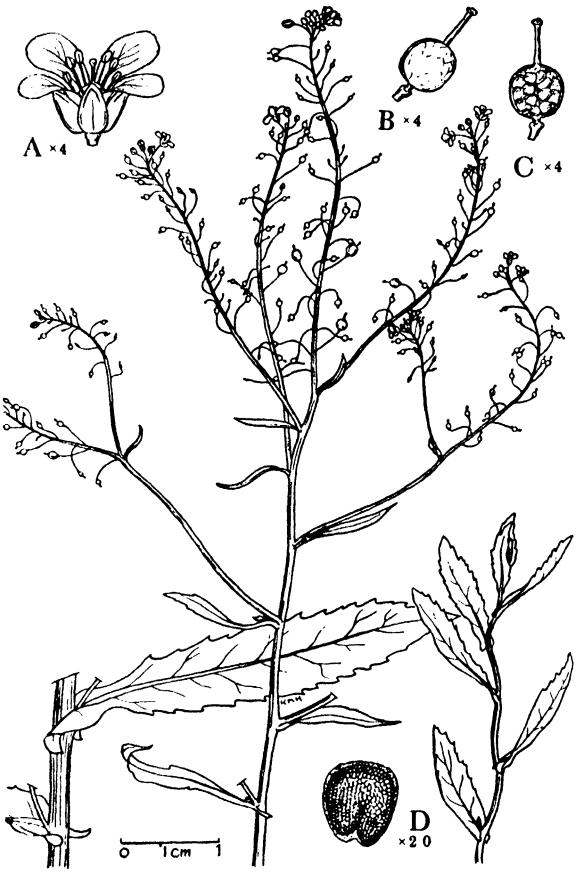
223. RORIPPA ISLANDICA (Œder) Borbas (*R. palustris* (L.) Mœnch). The MARSH YELLOW-CRESS is an erect, glabrous, little branched, annual or biennial about 20 in. (50 cm.) high, which grows commonly in muddy and watery places in lowland England and Ireland, but more rarely in Scotland. Leaves pinnatifid, lobes rather broad and coarsely toothed. Flowers 1-2 mm. diam., in rather long, lax racemes; petals pale yellow, spathulate, not exceeding the thinly hairy, ovate sepals. Pods boat-shaped, 6-8 mm. long, spreading; seed 0·7 × 0·6 mm., somewhat obconical, red-brown, pitted, crowded, in two irregular rows, well developed.

Early July—mid Oct. (R. Trent, below Nottingham.)
A. flower. B. pod. C. pod with valve removed. D. seed.



224. RORIPPA AMPHIBIA (L.) Besser. The GREAT YELLOW-CRESS is a glabrous, straggling and creeping, decumbent perennial with stems 12-30 in. (30-75 cm.) long. It occurs rather uncommonly on the margins of streams and in still, watery places in Britain as far north as the Forth. Lower leaves sessile, lanceolate, entire or pinnatifid; upper sessile, lanceolate, with irregular, acute teeth. Flowers 3-4 mm. diam., in long, rather dense racemes; petals bright yellow, truncate, exceeding the glabrous, sub-erect sepals; pods ovoid or spherical, 5-7 mm. long, spreading; seed 0·9 × 0·7 mm., ovoid, honeycombed, margined, brown, in two irregular rows, poorly developed.

Late June—early Sept. (R. Soar, Kegworth, Leicestershire.)
A. flower. B. pod. C. pod with valve removed. D. seed.



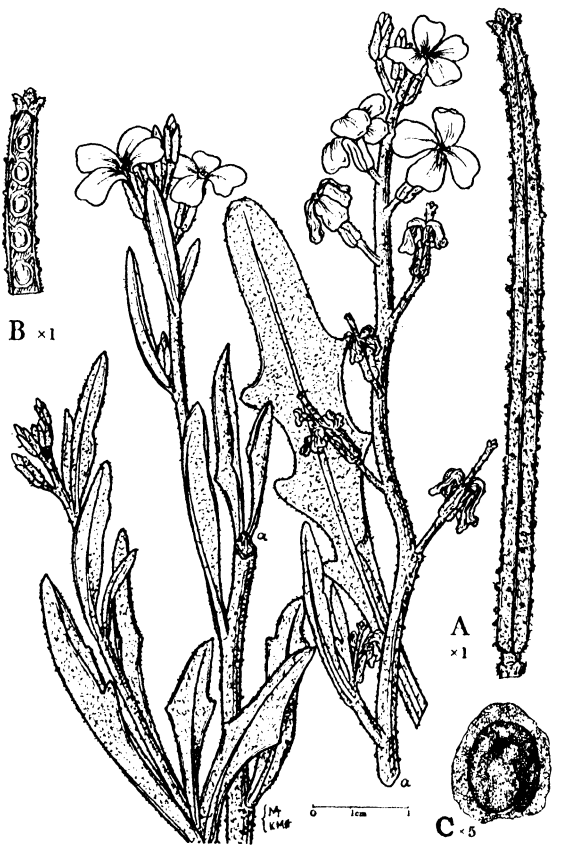
225. RORIPPA AUSTRIACA (Crantz) Besser. This AUSTRIAN CRESS is a glabrous, erect or diffuse perennial with somewhat branched stems 12-24 in. (30-60 cm.) high. It is a European plant, naturalized in a few places, notably in Middlesex. Leaves lanceolate, serrate, amplexicaul. Flowers 5 mm. diam., in long, lax racemes; petals yellow, exceeding the sub-erect, glabrous sepals. Pods almost spherical, 2 mm. long, spreading; seed 0·5 mm., spherical, netted, winged, brown, crowded in two rows, not well developed.

Late June—early Sept. (Brentford, Middlesex.)
A. flower. B. pod. C. pod with valve removed. D. seed.

MATTHIOLA R.Br. Annual or perennial plants often with woody stems; flowers showy. Fruit a terete or compressed pod, with erect, two-lobed, horned or gibbous stigma: seeds in one row, compressed; radicle accumbent, i.e. placed along the edge of the cotyledons.

226. MATTHIOLA INCANA (L.) R.Br. The HOARY STOCK is a branched, rather erect, hoary and somewhat woody perennial 12-24 in. (30-60 cm.) high, found on sea cliffs in a few places in the south of England. Leaves lanceolate, entire, densely downy with simple and stellate hairs. Flowers 30 mm. diam.; calyx erect, sepals unequal at base; petals red or purple. Pod 40-60 mm. long, compressed, hairy, but not glandular; stigmas short; seed 2·5-3·0 mm., lenticular, winged, finely netted, dark brown.

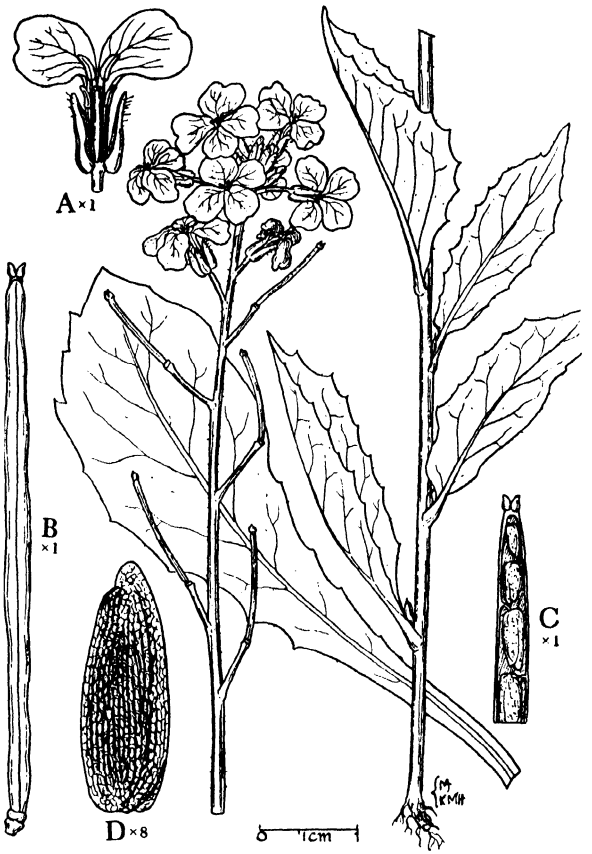
Mid May—mid July. (hort. ex Isle of Wight.)
A. pod. B. portion of pod with valve removed. C. seed.



227. MATTHIOLA SINUATA (L.) R.Br. This SEA STOCK is a branched, spreading, hoary, almost herbaceous perennial, 9-20 in. (23-50 cm.) high, which occurs very rarely on sea cliffs in south-western England. Leaves lanceolate, sinuate, densely downy with stellate hairs. Flowers 22-28 mm. diam.; calyx erect, sepals unequal at base; petals purple. Pod 80-120 mm. long, compressed, covered with large glands, stigmas short; seed 2·5-2·7 mm. diam., ovoid, compressed, winged, finely netted, dark brown.

Mid May—mid July. (Braunton, Devon.)
A. pod. B. portion of pod with valve removed. C. seed.

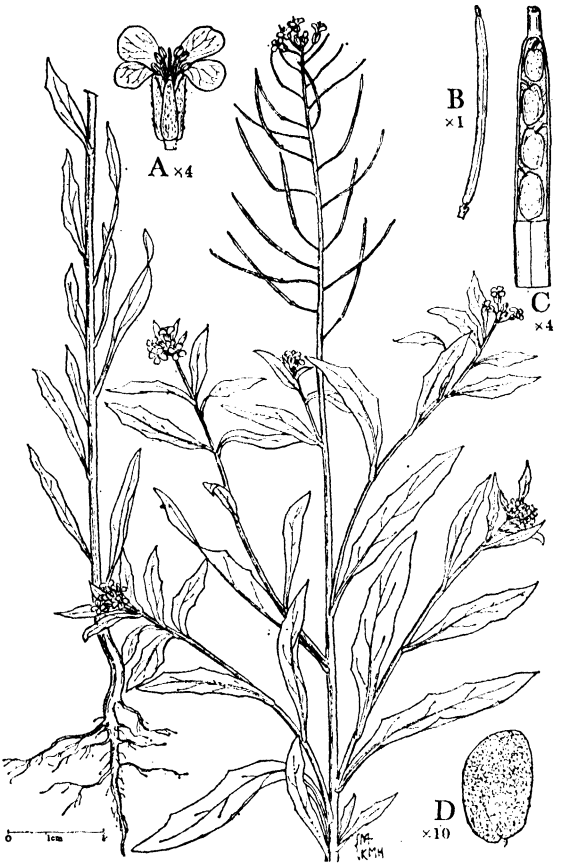
The Night-Scented Stock (*M. bicornis* L.), with very long stigmas, is found as a casual.



HESPERIS L. Stout biennials with usually simple leaves and pink or white flowers; fruit a long, quadrangular pod with keeled, veined valves. Seeds in one row; radicle incumbent (i.e. placed along the centre of the flat side of the cotyledons); stigma two-lobed.

228. HESPERIS MATRONALIS L. The DAME'S VIOLET is a stout, erect, somewhat branched, sweetly scented biennial 12-18 in. (30-45 cm.) high, which is naturalized along river banks and elsewhere in several parts of England. Leaves ovate-lanceolate, acute, toothed. Flowers 20-25 mm. diam., fragrant; sepals gibbous, with hairy ribs; petals lilac, emarginate. Pods 60-100 mm. long; seed 4·0 × 1·5 mm. long, cylindrical, acute, netted and ribbed, dark brown.

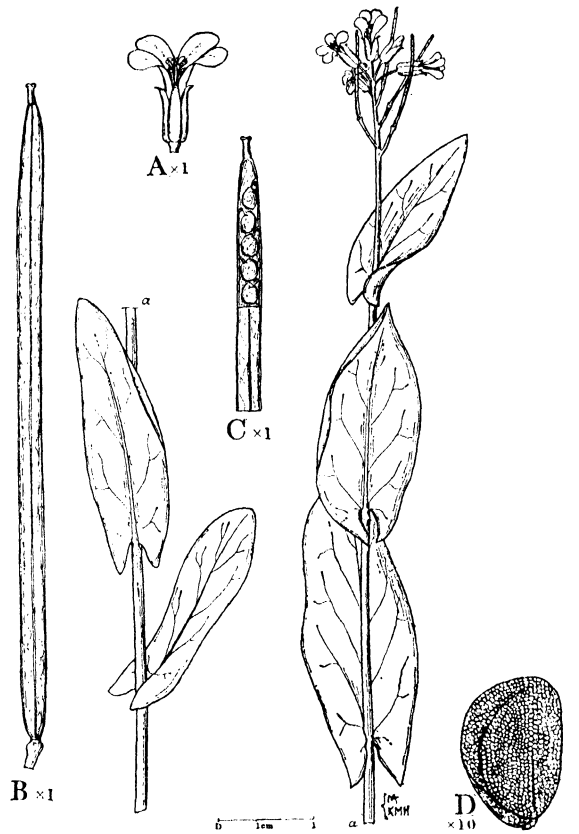
Mid May—late June. (Spondon, Derbyshire.)
A. flower l.s. B. pod. C. part of pod without valve. D. seed.



ERYSIMUM L. Erect annuals or perennials with entire leaves. Fruit a many-seeded, quadrangular pod with keeled, one-veined valves. Seeds in one row, smooth; radicle incumbent, i.e. lying over the face of the cotyledons.

229. ERYSIMUM CHEIRANTHOIDES L. The TREACLE MUSTARD is a stiff, erect, little-branched, sparsely hairy annual, 3-30 in. (8-75 cm.) high. It is a common weed in waste places in some parts of S. and E. England, but rare elsewhere. Leaves lanceolate, sinuate, entire, slightly hairy with stellate hairs, subsessile. Flowers 3-4 mm. diam.; sepals erect, lanceolate, acute, hairy; petals deep yellow. Pods 20-30 mm. long, twice as long as sepals, erect patent; valves one-veined; seed 1·0 × 1·5 mm., crowded, ovate, finely netted, yellow.

Late June—early Sept. (Shenley, Hertfordshire.)
A. flower. B. pod. C. part of pod without valve. D. seed.



230. ERYSIMUM (CONRINGIA) ORIENTALE (L.) Crantz. The HARE'S-EAR MUSTARD is an erect, scarcely branched, glaucous annual, 3-15 in. (8-38 cm.) high, which occurs uncommonly as a casual plant in waste places and river banks in England. Radical leaves obovate; stem leaves ovate, blunt, sessile, clasping; all smooth, entire, glaucous. Flowers 10 mm. diam.; sepals erect, linear-lanceolate, acute; petals cream, entire, twice as long as sepals. Pods 70-100 mm. long, erect, tetragonous, valves one-veined; seed 2·0 × 1·4 mm., semi-oval, netted, black.

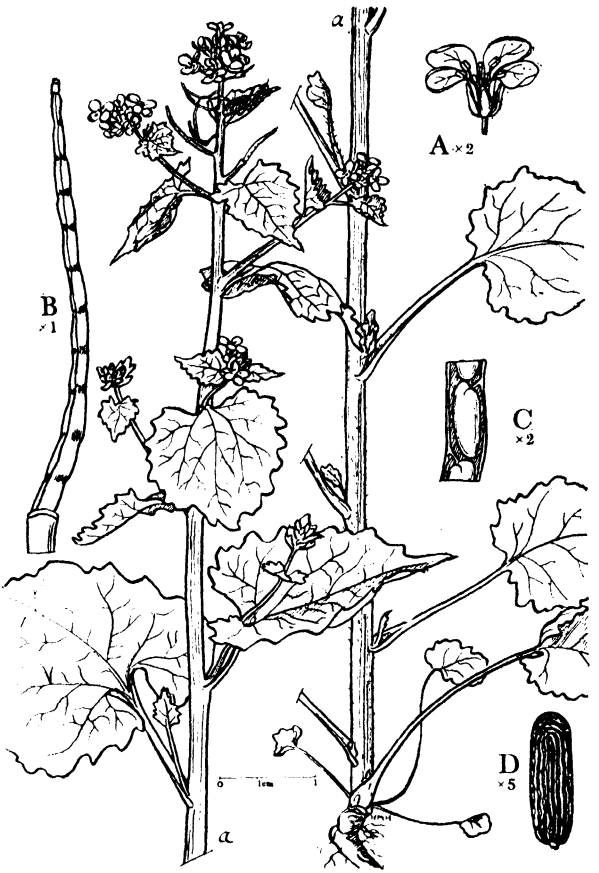
Late May—early July. (hort. ex Derby.)
A. flower. B. pod. C. pod without part of valve. D. seed.

CHEIRANTHUS L. Annual or perennial plants, often with woody stems, flowers showy, coloured. Fruit a compressed pod with a central, longitudinal rib on each valve and a patent two-lobed stigma; seeds in one row, compressed, radicle accumbent.

231. CHEIRANTHUS CHEIRI L. The WALLFLOWER is a branched, erect and woody perennial, 9-15 in. (23-38 cm.) high, established on old walls and ruins in many places. Stem shrubby, glabrous. Leaves lanceolate, entire, glabrous. Flowers 20-25 mm. diam., in short racemes; calyx erect; sepals unequal at base; petals usually yellow. Pod 50 mm. long, cylindrical, compressed, without glands; seed 3·5 × 2·0 mm., ovoid, winged, finely netted, light brown.

Mid May—early July. (Nottingham Castle.)

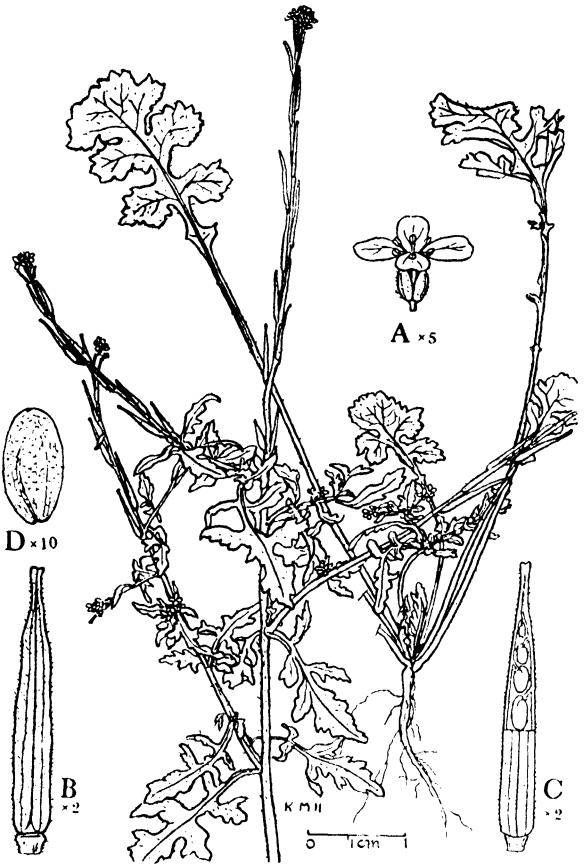
A. flower, with sepal, 2 petals and 2 stamens removed. B. pod. C. portion of pod with valve removed. D. seed.



ALLIARIA Scop. Annual or perennial herbs with undivided leaves and white flowers. Fruit a many-seeded, terete pod, with convex, three-veined valves. Seeds in one row, striate; radicle incumbent.

232. ALLIARIA PETIOLATA (Bieb.) Cav. et Grande (*Sisymbrium alliaria* (L.) Scop.). The GARLIC MUSTARD or JACK BY THE HEDGE is an erect, little-branched, slightly hairy, garlic-scented annual, 12-30 in. (30-75 cm.) high. It is a very common spring plant in hedges and on banks throughout lowland parts of the British Isles. Leaves all stalked, cordate, sinuate-dentate. Flowers 9 mm. diam.; sepals glabrous, erect; petals white. Pods 60-80 mm. long, erect-patent, valve obscurely three-veined; seed 3·6 × 1·2 mm., cylindrical, black, with vertical ribs.

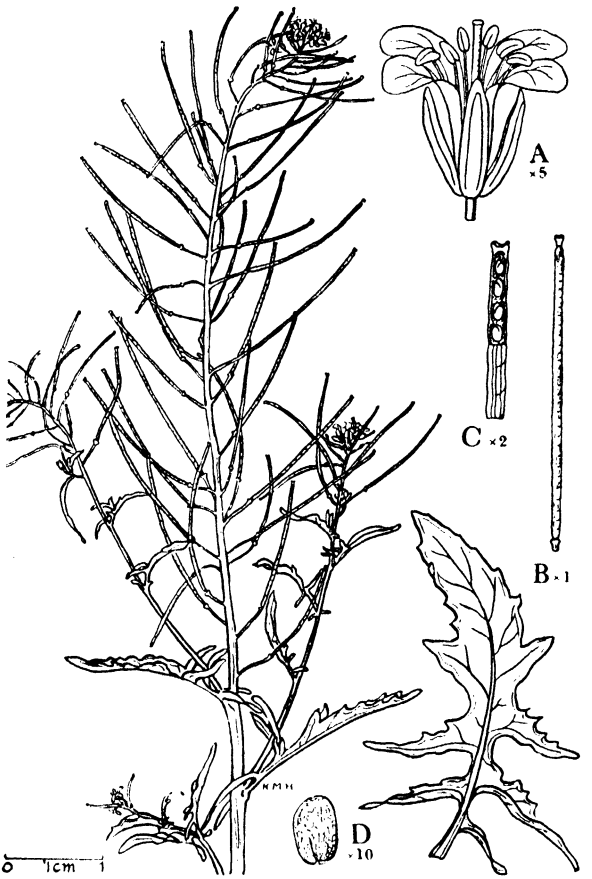
Early April—mid June. (Ashbourne, Derbyshire.)
A. flower. B. pod. C. portion of pod without valve. D. seed.



SISYMBRIUM L. Erect annuals or perennials, usually with divided leaves and yellow or white flowers; fruit a many-seeded, terete pod; valves three-veined. Radicle incumbent.

233. SISYMBRIUM OFFICINALE (L.) Scop. The COMMON HEDGE-MUSTARD is an erect, branched biennial 12-20 in. (30-50 cm.) high, which is abundant in waste places and hedgerows throughout the British Isles. Leaves pinnatifid; lower with broad, ovate segments; upper with narrow, lanceolate segments, all toothed and hispid. Flowers 2 mm. diam., in level-topped racemes; sepals hairy, ovate, erect; petals lemon, entire, twice as long as calyx. Pods 15-18 mm. long, adpressed, almost sessile, valves three-veined, hairy (or glabrous in var. *leiocarpum*); seed 1·5 × 0·8 mm., ellipsoid, with faint, vertical, parallel markings, yellow.

Mid June—late July. (Ashbourne, Derbyshire.)
A. flower. B. pod. C. pod with part of valve. D. seed.



234. SISYMBRIUM IRIO L. The LONDON ROCKET is an erect, branched, glabrous annual, 6-18 in. (15-45 cm.) high, which occurs rarely as a casual or denizen here and there in lowland Britain. Lowest leaves pinnate, terminal lobe lanceolate, linear, acute, toothed. Flowers 5 mm. diam., in long, level-topped racemes; sepals erect, glabrous; petals pale yellow, somewhat exceeding the sepals. Pods 30-40 mm. long, ascending, on slender pedicels, valves obscurely three-veined, style very short; seed 1·5 × 1·0 mm., ovoid, finely netted, yellow-brown.

Early July—late Sept. (hort. ex Oxford.)

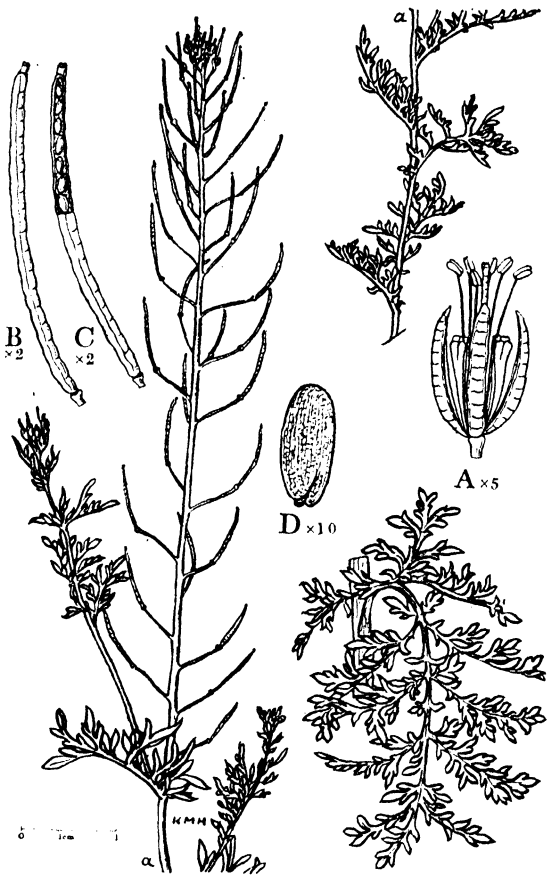
A. flower. B. pod. C. portion of pod with part of valve removed. D. seed.

235. SISYMBRIUM ORIENTALE L. This EASTERN ROCKET is a stout, erect branched annual 12-18 in. (30-45 cm.) high and is a European plant now naturalized in many waste places in various parts of England. Lower leaves pinnate with a triangular terminal lobe and lanceolate lateral ones; upper leaves narrow, sagittate. Flowers 3 mm. diam., in a short, lax raceme; sepals hispid, erect; petals yellow, spreading. Pod 80-100 mm. long, spreading, terete, three-veined; seed 1·0 × 0·6 mm., ovoid, with vertical lines, dark-brown.

Mid July—mid Sept. (Hertford.)
A. flower. B. seed.

236. SISYMBRIUM ALTISSIMUM L. This TALL EUROPEAN ROCKET is an erect, much-branched annual 12-30 in. (30-75 cm.) high, which is abundantly naturalized in waste places throughout the lowland parts of the British Isles. Lower leaves elliptical, lanceolate, with large teeth; upper leaves pinnate with narrow segments. Flowers 9 mm. diam., in a short raceme; sepals glabrous, erect; petals ovate, veined, yellow-green; pods 80-100 mm. long, spreading, terete, three-veined; seed 1·0 × 0·7 mm., ovoid with vertical network, brown.

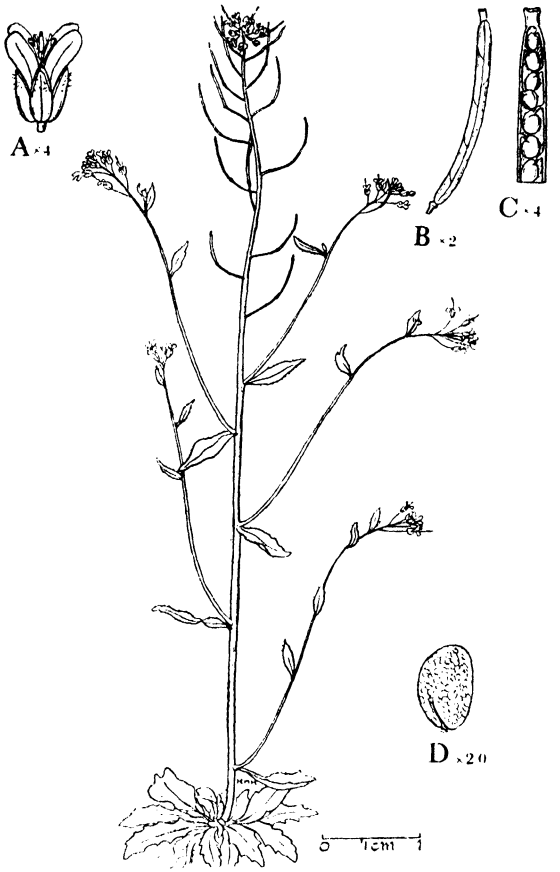
Mid May—late Sept. (Cheshunt, Hertfordshire.)
A. flower. B. seed.



237. SISYMBRIUM (DESCURAINIA) SOPHIA L. The FLIX-WEED is a slender, erect, somewhat branched annual, 6-20 in. (15-50 cm.) high. It is a common weed in sandy fields in some parts of England and thinly spread northwards to Caithness. Leaves bi- or tri-pinnatifid, with linear segments. Flowers 2-3 mm. diam., in level-topped racemes; sepals erect, linear; petals pale yellow, lined, shorter than sepals. Pods 20 mm. long, linear, stalks spreading; seed 1·5 × 0·7 mm. yellow-brown, ovoid-cylindrical, finely netted.

Mid June—late Aug. (Brandon, Suffolk.)

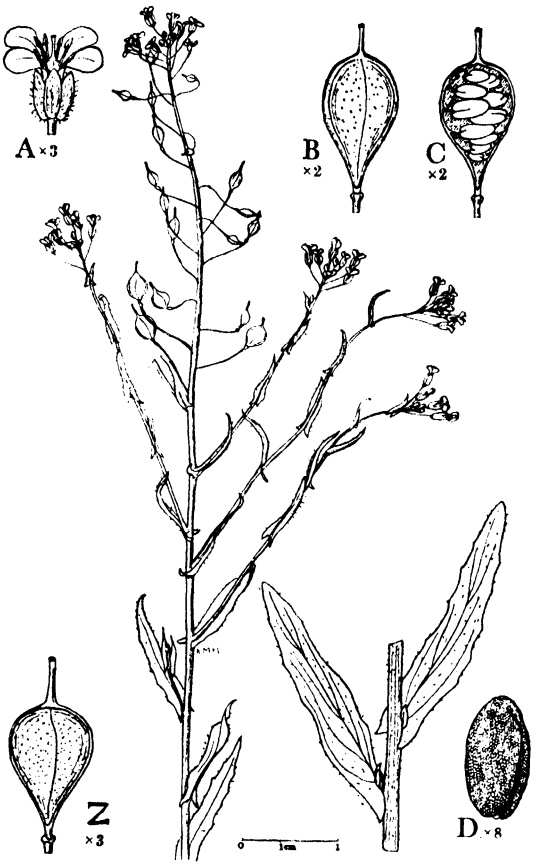
A. flower. B. pod. C. pod with part of valve removed. D. seed.



ARABIDIOPSIS Heynh. Slender annual or perennial herbs, usually with simple or little divided leaves and white flowers; fruit a many-seeded, terete, slender, unbeaked pod with convex one-veined valves; seeds in a single row; radicle incumbent.

238. ARABIDIOPSIS THALIANUM (L.) Heynh. The THALE-CRESS is a slender, simple or little-branched annual with an almost filiform stem 2-9 in. (5-23 cm.) high, growing from a rosette of leaves. It is an abundant plant of dry soils and waste places throughout the British Isles. Leaves mostly radical, elliptical, toothed, covered with a few simple hairs; stem leaves few, lanceolate, sessile. Flowers 3 mm. diam.; sepals erect, lanceolate, hairy at tips; petals cream-coloured, entire. Pods 15-20 mm. long, patent-erect, slender, terete, valve with a central, branched nerve; seed 3·0 × 1·6 mm., ovoid, finely netted, yellow. Mid March—early May. (Penkridge, Staffordshire.)

A. flower. B. pod. C. portion of pod without valve. D. seed.

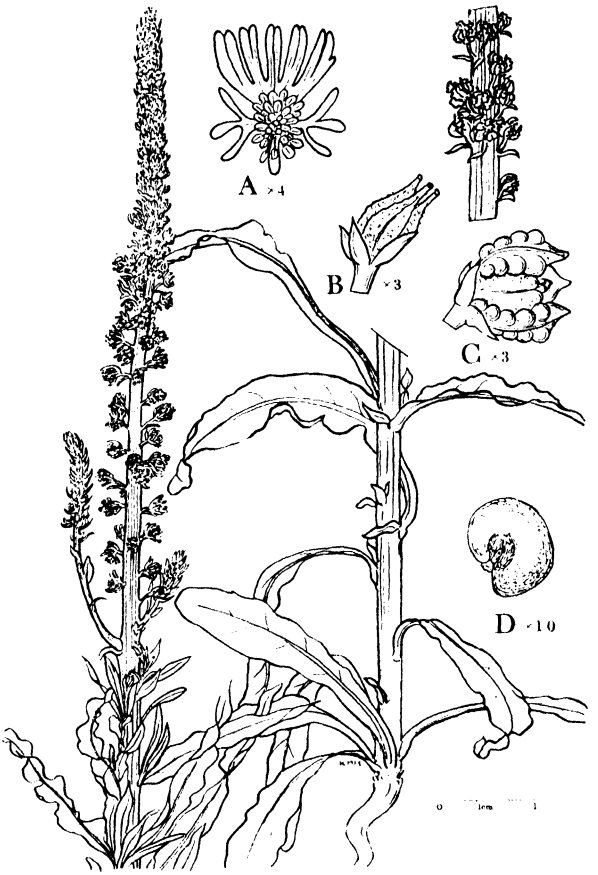


CAMELINA Crantz. Erect annuals with simple leaves and racemes of yellow or white flowers. Fruit an ovoid, non-compressed pouch, many-seeded. Filaments simple. Radicle incumbent.

239. CAMELINA SATIVA (L.) Crantz. The GOLD OF PLEASURE is a slender annual with a much-branched, erect, somewhat hispid stem, 12-20 in. (30-50 cm.) high. It is a rare but rather constant casual plant in cornfields and waste places. Leaves hispid, lower elliptical, stalked, undulate; upper sessile, lanceolate, with pointed auricles. Flowers 4 mm. diam., pale yellow. Fruits 9 × 5 mm., on long, slender stalks, narrowly obovoid; seed 2 × 1 mm., ellipsoid, rather large, faintly netted, light-brown.

mid June—late July. (Thirsk, Yorkshire.)
A. flower. B. pouch. C. pouch with valve removed. D. seed.

(*C. microcarpa* Andrz with a broader, more obovate pouch (Z) is also found occasionally.)

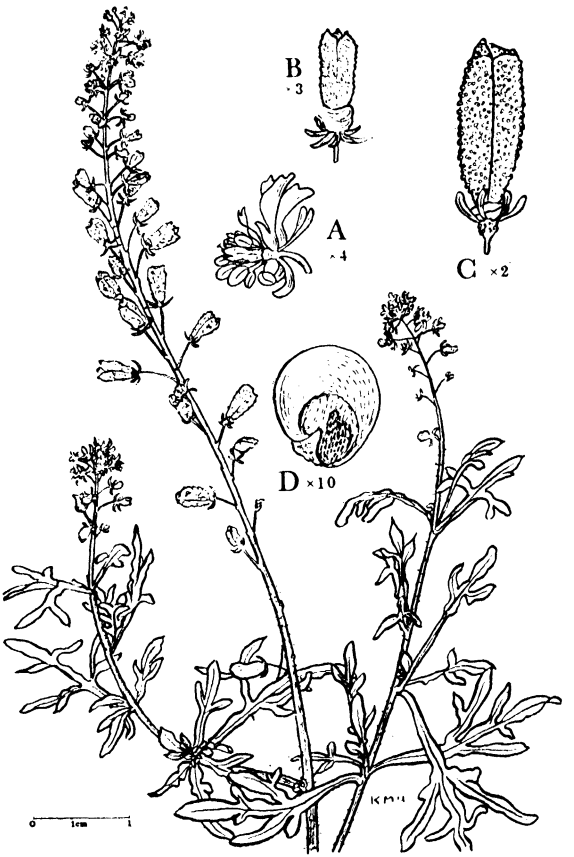


RESEDA L. Herbs with greenish-yellow or white flowers in terminal spikes. Calyx multi-partite, sepals and petals 4-6; petals much divided. Stamens 8-20; ovary single with apical teeth, each tooth with a short style.

240. RESEDA LUTEOLA L. The DYER'S WELD or ROCKET is a stout biennial of dry, waste places. It is common in S. England, but decreases northwards. Stem up to 36 in. (90 cm.) high, almost simple. Leaves lanceolate, acute, entire, undulate. Flowers 5 mm. diam., in long, linear racemes 20-30 mm. long; sepals 4; petals 4-5, very unequal; lowest entire; upper deeply divided. Capsule 5 mm., almost globular, with three long teeth; seed 1·2 × 1·1 mm., sub-globose, faintly reticulate, central depression small, shining, black.

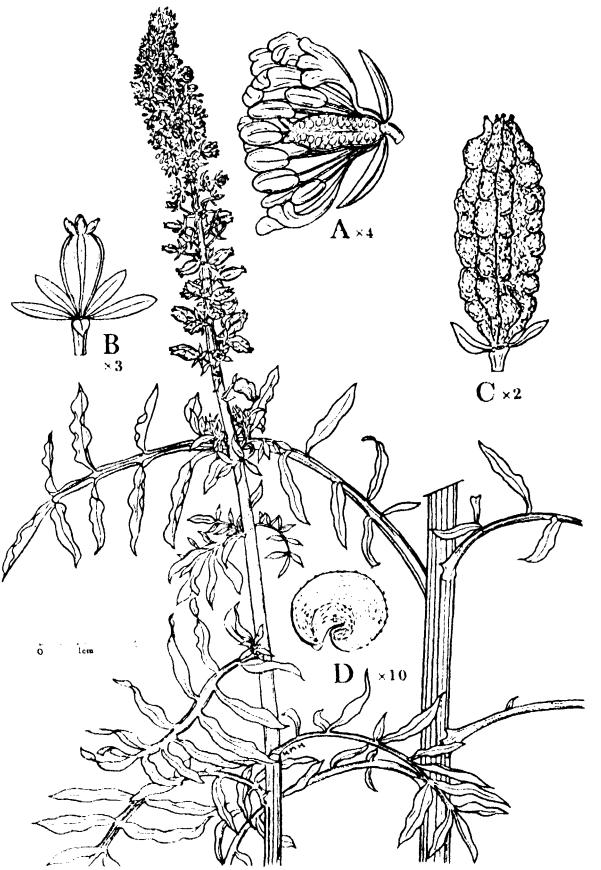
Mid June—late Sept. (Spondon, Derbyshire.)

A. flower. B. pistil. C. capsule. D. seed.



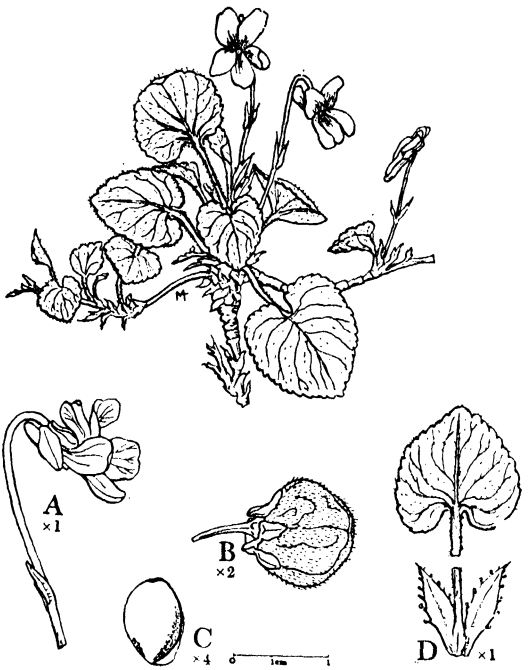
241. RESEDA LUTEA L. The WILD MIGNONETTE is an erect perennial herb with a little branched, glabrous stem about 12 in. (30 cm.) high. It occurs frequently in waste and grassy places on chalk and limestone soils in S.E. England, E. Scotland and N. Ireland. Leaves divided; segments few. Flowers 4-5 mm. diam., in an ovoid spike about 15 mm. long; sepals 5-6, lanceolate; petals many, yellow-green, lowest entire, others irregularly divided. Capsule 10 × 4 mm., oblong, with three very short teeth; seed 1·5 × 1·4 mm., ovoid, shining, with deep central depression, black.

Mid June—late Sept. (Chilham, Kent.)
A. flower. B. pistil. C. capsule. D. seed.



242. RESEDA ALBA L. The WHITE MIGNONETTE is a Mediterranean plant which has long been established in dry, waste places here and there in England. Stem 12-20 in. (30-50 cm.) high, little-branched or simple. Leaves pinnate, with 9-21 linear segments. Flowers 5-6 mm. diam., in rather long, dense racemes, which are 15 cm. long and narrowly ovoid; sepals 5-6 mm., linear-lanceolate; petals white, all equal and three-cleft. Capsule 15 × 5 mm., ovoid, with about 4 teeth; seed 1·0 × 1·3 mm., rather ovoid-reniform, striate, dull, black, central depression small.

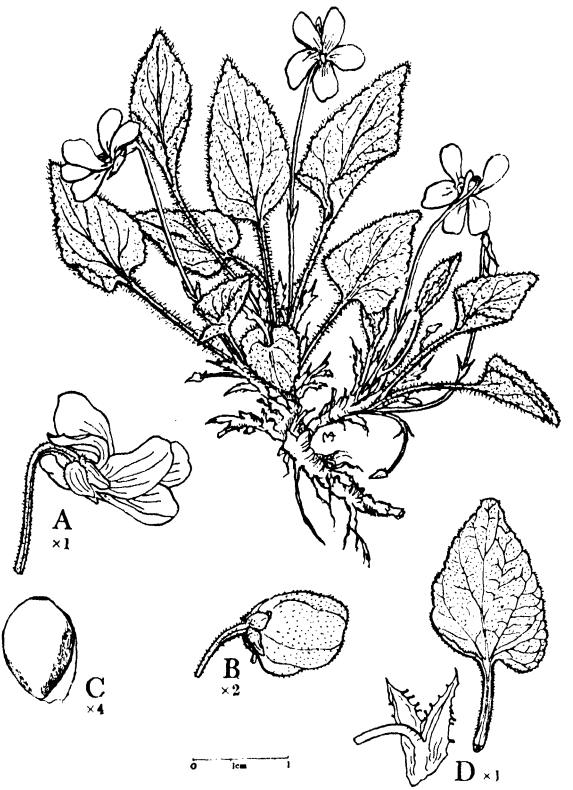
Mid June—early Aug. (St. Bride's, Cornwall.)
A. flower l.s. B. pistil. C. capsule. D. seed.



VIOLA L. Small annuals or perennials with stipulate, radical or alternate leaves. Sepals 5, extended behind the point of origin; petals 5, unequal, lower spurred. Stamens 5, the 2 lower spurred; placenta parietal; fruit a three-valved, many-seeded capsule.

243. VIOLA ODORATA L. The SWEET VIOLET is a small, rather variable perennial with a central flowering rosette 1-4 in. (2-10 cm.) high, and short, flowering or non-flowering stolons growing from an erect, woody stock. It is a common plant of shady places throughout Britain. Leaves cordate, nearly as broad as long, covered with rather long adpressed hairs; summer leaves very much longer; stipules lanceolate with glandular teeth. Bracts above or about the middle of the glabrous flower stalk. Flowers 10-15 mm. diam.; petals violet or white, rather broad; spur violet, short, channelled, blunt. Capsule 8-10 mm., prostrate, globose, covered with adpressed hairs and triangular, acute, glabrous sepals with small appendage; seed 2·5 × 2·0 mm., ovoid, smooth, pale yellow.

Mid Feb.—mid April. (Gotham, Nottinghamshire.)
A. flower. B. capsule. C. seed. D. leaf and stipules.

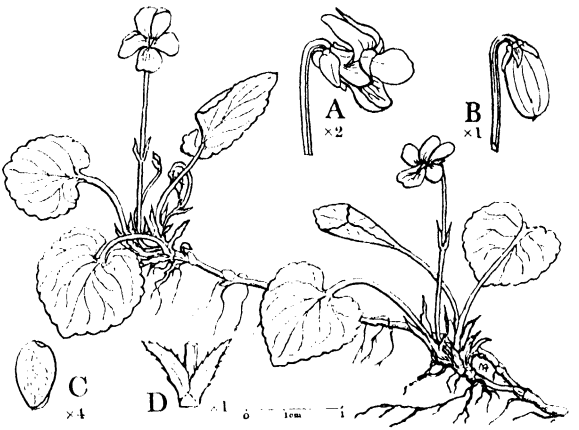


244. VIOLA HIRTA L. The HAIRY VIOLET is a small, rather variable perennial with many short flowering stems 3-6 in. (8-15 cm.) high, growing erect from a branched, woody rootstock without stolons. It is a common plant in chalk and limestone pastures throughout lowland Britain, but rare elsewhere. Leaves cordate, longer than broad, acute, covered with spreading hairs; stipules lanceolate, hairy, toothed, but without glands. Bracts arising below the middle of a hairy flower-stalk. Flowers 20 mm. diam.; petals violet or white, rather narrow; spur short, compressed, hooked. Capsule 5 mm., prostrate, irregularly globose, with spreading hairs and narrow, lanceolate, acute, fringed sepals without an appendage; seed 3 × 2 mm., ovoid, smooth, pale yellow.

Early May—late June. (Winscombe, Somerset.)
A. flower. B. capsule. C. seed. D. leaf and stipules.

245. VIOLA CALCAREA (Bab.) Gregory. This CHALK VIOLET is a small perennial with several short flowering stems 1-3 in. (2-8 cm.) high, growing erect from a branched rootstock without stolons. It is a rare plant of dry, calcareous places in some parts of England. Leaves cordate, longer than broad, acute; late summer leaves conduplicate, all covered with spreading hairs; stipules lanceolate, hairy, toothed, but without glands; bracts below the middle of the flower-stalk. Flowers 12-14 mm. diam.; corolla violet, the petals very narrow, forming a cross; spur very short, conical, not hooked. Capsule 10 mm., prostrate, globular, blunt, with spreading hairs and narrow, lanceolate, acute, fringed sepals; seed 3 × 2 mm., ovoid, smooth, pale yellow.

Mid May—early July. (Clifton, Bristol.)
A. flower. B. capsule. C. leaf and stipule. D. seed.

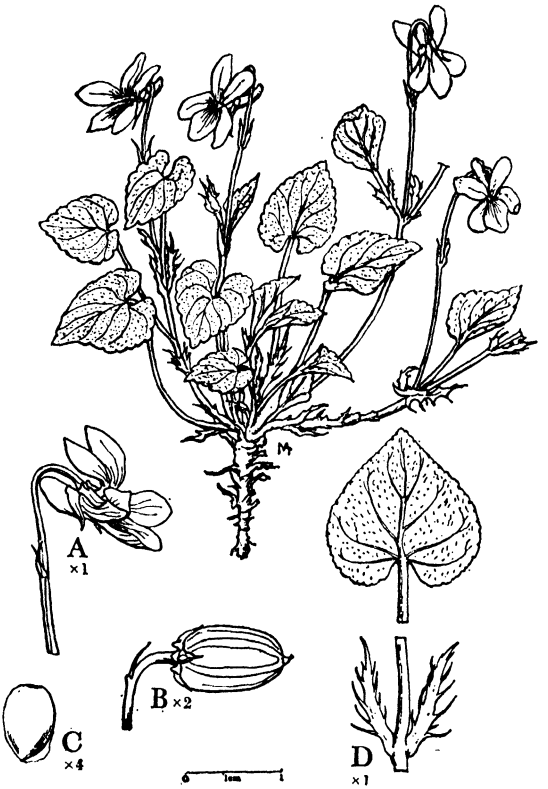


246. VIOLA PALUSTRIS L. The Bog Violet is a dwarf perennial with rosettes of leaves and flowers 2-4 in. (5-10 mm.) high, growing at the apex of long, slender, underground stolons. It is a common plant of acid bogs throughout the British Isles. Leaves roundly cordate, glabrous; stipules oval, entire, or finely serrate, glandular; bracts arising above the middle of a usually glabrous flower stalk. Flowers 15 mm. diam.; petals pale lilac with purple veins, rounded, recurved; spur very short, rounded, blunt, pale lilac. Capsule 10 mm., erect, cylindrical, acute, glabrous, sepals in fruiting time narrow, acute, with a small appendage; seed 2·0 × 1·5 mm., ovoid, faintly striate, yellow.

Late April—mid June. (Hulland, Derbyshire.)
A. flower. B. capsule. C. seed. D. stipules.

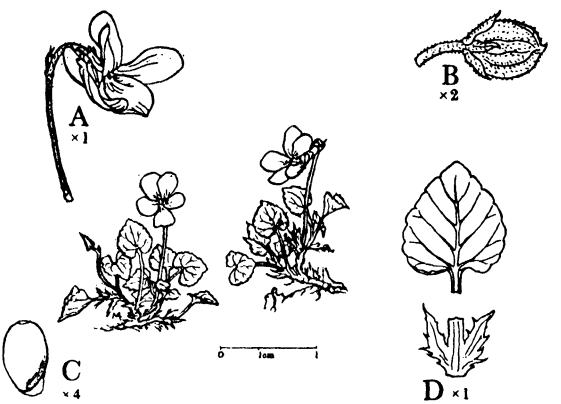
247. VIOLA RIVINIANA Reichb. This TRUE DOG VIOLET is a small, variable perennial herb with several decumbent, then erect, leafy flowering stems 1-7 in. (2-18 cm.) long, and a small, central, barren, leafy rosette, all growing from a rather long, ± erect, woody stock. It is common in woods and shady places throughout the British Isles. Leaves roundly cordate, about as broad as long, covered with small, appressed hairs; summer leaves much larger than spring ones; stipules fringed with rather short teeth; bracts above the middle of the glabrous flower stalks. Flowers 15-25 mm. diam.; petals violet, rather broad, with a rather stout, curved, furrowed or notched, pale spur. Capsule 8-10 × 7-8 mm., erect, cylindrical-ovoid, acute, glabrous; sepal appendages large, accrescent; seed 2 × 1·5 mm., ovoid, smooth, pale yellow.

Early April—mid-June. (Winscombe, Somerset.)
A. flower. B. capsule. C. seed. D. leaf and stipules.



248. VIOLA REICHENBACHIANA Jord. ex Bor. This WOOD DOG VIOLET is a small, variable perennial herb with several decumbent, then erect, flowering stems 1-5 in. (2-13 cm.) long, and a small central, barren, leafy rosette, all growing from an erect, woody stock. It is abundant in woods, hedgerows and shady pastures and heaths throughout the British Isles. Leaves roundly cordate, about as broad as long, covered with small appressed hairs; summer leaves much larger than spring ones; stipules glabrous, fringed with fimbriate teeth; petioles glabrous; bracts above the middle of the glabrous flower-stalks. Flowers 15 mm. diam., solitary; petals lilac, rather narrow, with slender, almost straight, unfurrowed, dark lilac spur. Capsule 8 × 4 mm., cylindrical, ovoid, acute, erect, glabrous; sepal appendage small or none; seed 2·0 × 1·5 mm., ovoid, smooth, pale yellow.

Early April—early June. (Winscombe, Somerset.)
A. flower. B. capsule. C. seed. D. leaf and stipules.



249. VIOLA RUPESTRIS Schmidt. This HAIRY-FRUITED or TEESDALE DOG VIOLET is a small perennial herb with short, decumbent, flowering stems 1-2 in. (3-5 cm.) high, and a central barren rosette, growing from a decumbent stock. Leaves about as long as broad, subobtuse, ± truncate or cordate; stipules glabrous, toothed or fimbriate; bracts near the top of the pubescent flower-stalk. Flowers 12-15 mm. diam.; petals blue-violet, rather broad, with rather thick, furrowed, pale spur. Capsule 4 mm. long, orbicular-ovoid, rather blunt, pubescent; sepal appendages of moderate size; seed 3 × 2 mm., ovoid, smooth, pale-yellow.

Early—late May. (Teesdale, Durham.)
A. flower. B. capsule. C. seed. D. leaf and stipules.

250. VIOLA CANINA L. This HEATH DOG VIOLET is a variable perennial herb with several decumbent then erect flowering stems 1-6 in. (2-15 cm.) long, growing from a creeping rhizome without a central, barren rosette. It is common on heaths, dry grassland and dunes scattered throughout the British Isles. Leaves cordate, rather longer than broad, glabrous; stipules glabrous with very few short teeth; bracts above the middle of the glabrous flower stalks. Flowers 15-20 mm. diam., petals bright blue, rather narrow with a rather stout curved, entire or notched, yellow spur. Capsule 10 mm., ovoid, acute on erect peduncle, glabrous; sepal appendages entire, evident; seed 2·0 × 1·5 mm., ovoid, smooth, pale yellow.

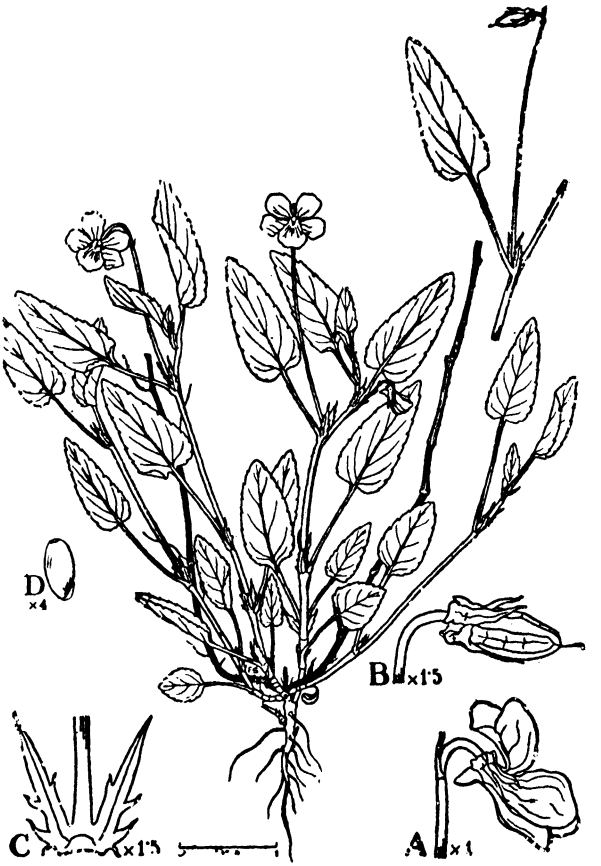
Late April—early June. (Headley Common, Surrey.)

A. flower. B. capsule. C. leaf and stipules. D. seed.

(Stouter and taller forms than the above occur in certain fens and damp woods, but they are rare. The above is often named var. *ericetorum* Reich.)

251. VIOLA LACTEA Sm. This PALE DOG VIOLET is a small variable perennial herb with several ascending, then erect, flowering stems 3-6 in. (8-15 cm.) long, growing from a very small stem base without a central rosette and without soboles. It is an uncommon plant of heaths and acid soils in the southern part of England. Leaves lanceolate, not cordate, often twice as long as broad, almost glabrous; stipules with 2-8 long, acute teeth; bracts above the middle of the glabrous flower-stalks. Flower 16 mm. diam.; petals pale blue, pointed; spur short, greenish-yellow, obtuse, entire or notched. Capsule 10 × 7 mm., at first obtuse, and when quite ripe, more acute, appendages notched, evident; seed 2·0 × 1·5 mm., ovoid, smooth, pale yellow.

Early May—late June. (Holmesley, Hampshire.)
A. flower. B. capsule. C. leaf and stipules. D. seed.



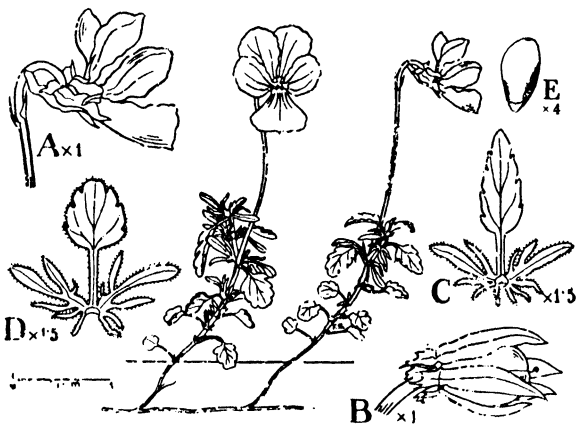
252. VIOLA STAGNINA Kit. The FEN or PEACH-LEAVED VIOLET is a rather small, variable perennial herb with several ascending flowering stems 6-10 in. (15-25 cm.) long, and soboliferous, leafy branches growing from a stem base, often with last year's soboles persisting. It is a rare plant of the fenland or turf-bogs in Ireland and E. England. Leaves long, narrow, lanceolate, with truncate or slightly cordate, glabrous base; stipules with 2-8 long, acute teeth; bracts near the top of the glabrous flower stalk. Flowers 16 mm. diam.; petals very pale violet, broad, obtuse, with short, greenish-yellow, entire spur. Capsule 10 × 5 mm., ovoid, acute; calyx appendages large, entire; seed 2·0 × 1·5 mm., ovoid, smooth, pale yellow.

Mid May—mid June. (Woodwalton Fen, Huntingdon.)
A. flower. B. capsule. C. stipules. D. seed.

253. VIOLA KITAIBELIANA Schult. This DWARF PANSY is a small, erect, branched or simple annual 1-3 in. (2-8 cm.) high. It occurs only on sandhills in W. Cornwall and the Scilly Isles. Leaves hairy, lowest round, cordate, very obtuse, grading rapidly to oblong-lanceolate, sub-acute. Stipule with an obtuse mid-lobe; lateral lobes few, often only two. Flowers 4-5 mm. diam.; sepals with short, entire appendages; petals very pale yellow or bluish, with a very short spur. Capsule globular, truncate; seed 1·6 × 1·2 mm., ovoid, smooth, yellow.

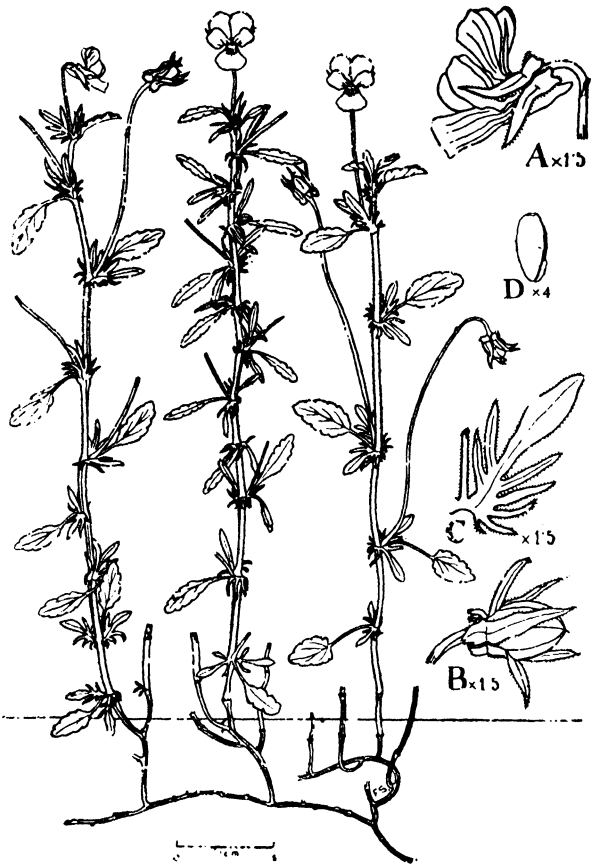
Mid June—early Sept. (hort. Devizes, ex Jersey.)

A. flower. B. capsule. C. upper leaf and stipules. D. lower leaf and stipule. E. seed.



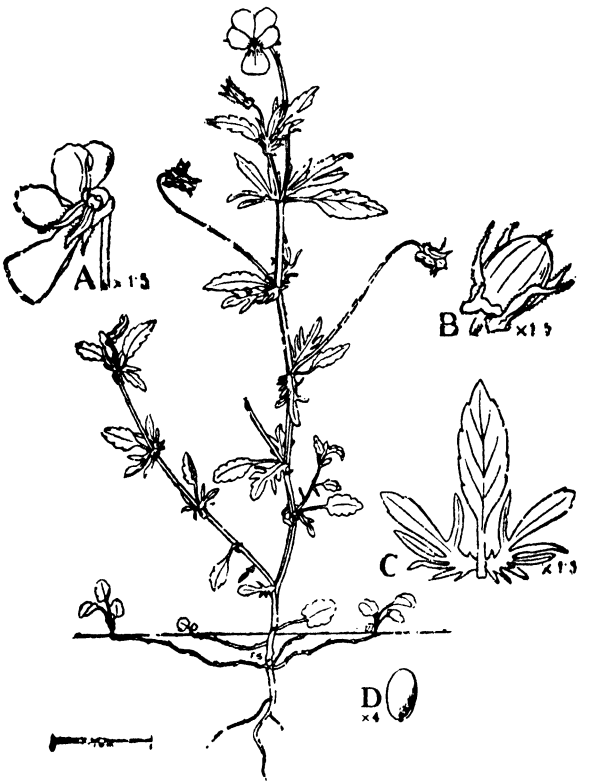
254. VIOLA LUTEA Huds. The MOUNTAIN PANSY is a small perennial with many simple flowering stems 2-5 in. (5-12 cm.) high, growing erect from a slender underground stem. It is common on basic soils in hill and mountain pastures in highland Britain. Lowest leaves very small, ovate-obtuse, grading rapidly to larger, linear-lanceolate, acute; stipules with a small, entire mid-lobe, lateral lobes arranged palmately. Flowers 20-24 mm. diam., large; sepals with appendages of moderate size, toothed; petals yellow (or blue in *V. amœnum*) spur slender, two to three times length of appendages. Capsule ovoid; seed 2·0 × 1·4 mm., ovoid, brownish, finely reticulate.

Early June—early Sept. (Forest in Teesdale, Durham.)
A. flower. B. capsule. C. upper, and D. lower leaf and stipules. E. seed.



255. VIOLA LEPIDA Jord. This HEATHLAND HEARTSEASE, which is the only British member of the *saxatilis* group, is a spreading perennial with many flowering stems 6-10 in. (15-25 cm.) high, growing erect from twiggy stems below the surface of the soil. It is rather common in bare, sandy places or where the turf is short. Lowest leaves small, ovate-obtuse, grading upwards to lanceolate-acute; stipules hairy, with a narrow, entire mid-lobe; lateral lobes arranged pinnately, except the lowest pair, which are ± diverging. Flowers 10-12 mm. diam.; petals blue or yellow, with a spur slightly larger than the smallish appendages. Capsule ovoid; seed 2·0 × 1·2 mm., ovoid, smooth, yellow.

Early June—mid Sept. (Thetford, Norfolk.)
A. flower. B. capsule. C. stipule. D. seed.



256. VIOLA CURTISII E. Forst. CURTIS'S HEARTSEASE is an erect or decumbent, simple or branched perennial 4-8 in. (10-20 cm.) high, which is found rarely among sandhills and on other sandy soils along various parts of the British coasts. Plant with underground stolons which produce small tufts of leaves. Lowest leaves very small, ovate, grading rapidly upwards to linear acute; stipule with a small slightly-toothed mid-lobe; lateral lobes arranged palmately. Flowers 10-12 mm. diam.; petals yellow with small calicine appendages and a spur nearly double their length. Capsule ovoid; seed 2·0 × 1·0 mm., ovoid, smooth, yellow.

Early June—mid Sept. (Braunton Burrows, Devon.)
A. flower. B. capsule. C. leaf and stipules. D. seed.

257. VIOLA TRICOLOR L. The COMMON HEARTSEASE is usually a bushy annual with many ascending stems 4-8 in. (10-20 cm.) high. It is a common plant of arable land throughout the British Isles. Leaves almost glabrous; lowest broadly ovate-obtuse, grading slowly to elliptical-obtuse; stipules palmately toothed. Flowers 15-20 mm. diam.; petals blue, yellow or similar colours, exceeding the sepals. Capsule ovoid, blunt, appendages large in fruit; seed 2·0 × 1·0 mm., ovoid, smooth, pale yellow.

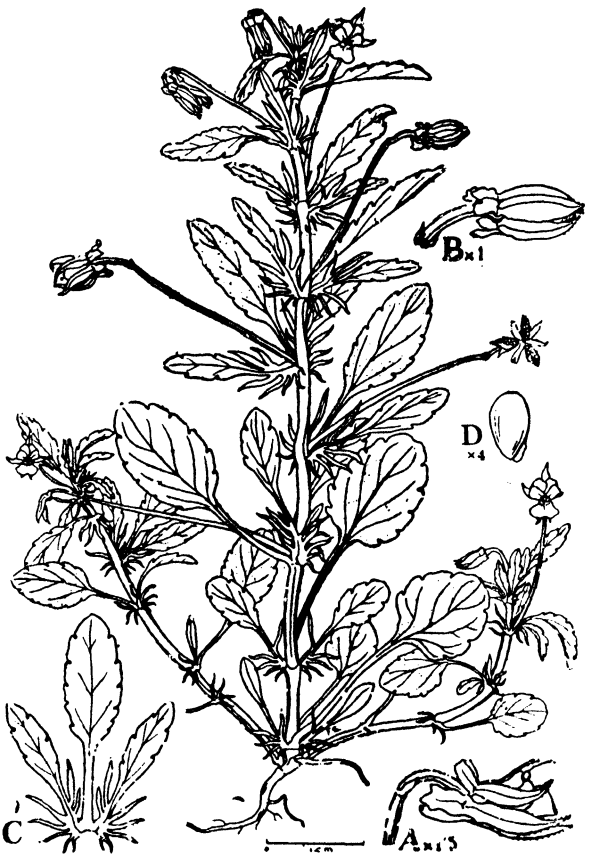
Mid May—late Aug. (Adel, Leeds.)
A. flower. B. capsule. C. stipule. D. seed.

(The plant shown comes under the segregate name of *V. lloydii* Jord.)

VIOLA ARVENSIS L. The FIELD PANSY is a very variable plant that has been divided into several sub-species, but recently it has been suggested that these are members of a hybrid swarm. The two following are the most distinct of these.

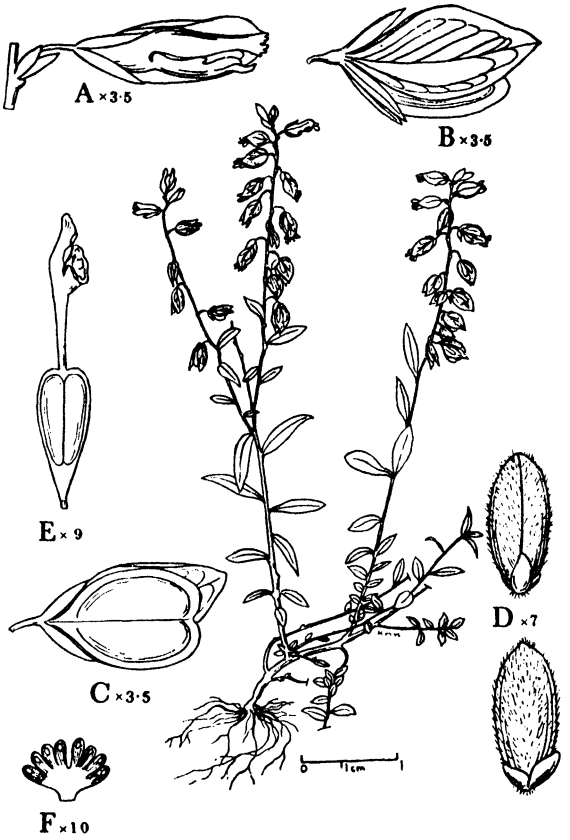
258. VIOLA ARVATICA Jord. This SMALLER FIELD PANSY is a small annual with a nearly simple, erect, flexuose stem 6-9 in. (15-23 cm.) high. It is a rather rare plant of arable land throughout the British Isles. Leaves small; lowest ovate-obtuse, grading rapidly to the lanceolate-acute upper ones; margins with truncate teeth; stipules with a small, entire or slightly dentate mid-lobe, lateral lobes arising pinnately. Flowers 8-10 mm. diam.; petals pale yellow or tinged with blue; spur very short. Capsule ovoid; seed 2·0 × 1·0 mm., ovoid, smooth, yellow.

Mid May—late Aug. (Freshwater, Isle of Wight.)
A. flower. B. capsule. C. leaf and stipules. D. seed.



259. VIOLA OBTUSIFOLIA Jord. This LARGER FIELD PANSY is an almost glabrous, nearly erect annual 6-9 in. (15-23 cm.) high, with decumbent, ascending branches. It is a rather common plant of arable land throughout the British Isles. Lowest leaves very broad, elliptical; others grading slowly to elliptical; upper ones all obtuse, teeth subacute; stipules palmately toothed. Flowers 7-9 mm. diam.; sepals with large appendages; petals pale yellow, spur very short. Capsule ovoid; seed 2·2 × 1·2 mm., ovoid, smooth, pale yellow.

Mid May—mid Sept. (Bury St. Edmunds, Suffolk.)
A. flower. B. capsule. C. leaf and stipules. D. seed.

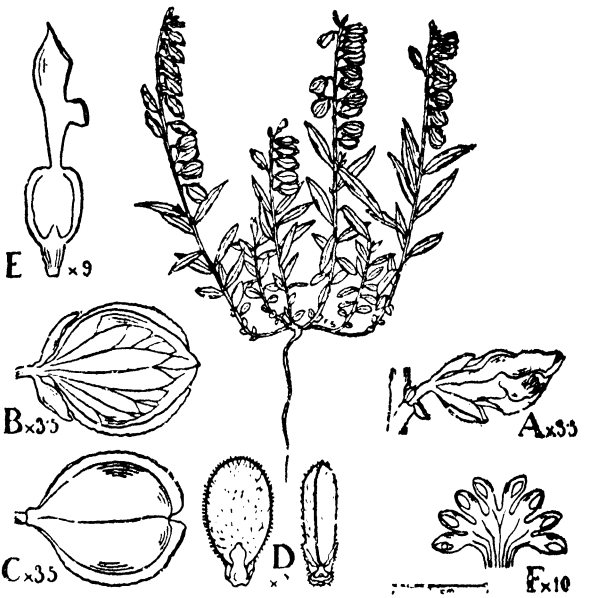


POLYGALA L. Small perennials with showy, irregular flowers; sepals 5, 3 outer, small and linear, 2 inner, petal-like; petals 3-5, connected; stamens 8 in two bundles; fruit a two-seeded capsule.

260. POLYGALA VULGARIS L. The COMMON MILKWORT is a rather small perennial with several straggling, almost simple, flowering stems 3-10 in. (7-25 cm.) long, growing from a simple base, without a rosette of leaves. It is frequent in grassland throughout the British Isles, usually on a basic soil. Leaves 10-25 mm., all acute, scattered, lanceolate, alternate; bract equalling the pedicel. Flowers 5-7 mm. long; sepals longer and wider than the capsule, branches of mid-vein meeting side vein just above the middle, side veins branched outward; sepals and petals blue, pink or white; seed 3·0 × 1·0 mm., ovoid, hairy, lobes of aril subequal, large, blunt.

Late May—early Aug. (Ashbourne, Derbyshire.)

A. flower. B. capsule and sepal. C. capsule. D. seed. E. ovary. F. stamens.

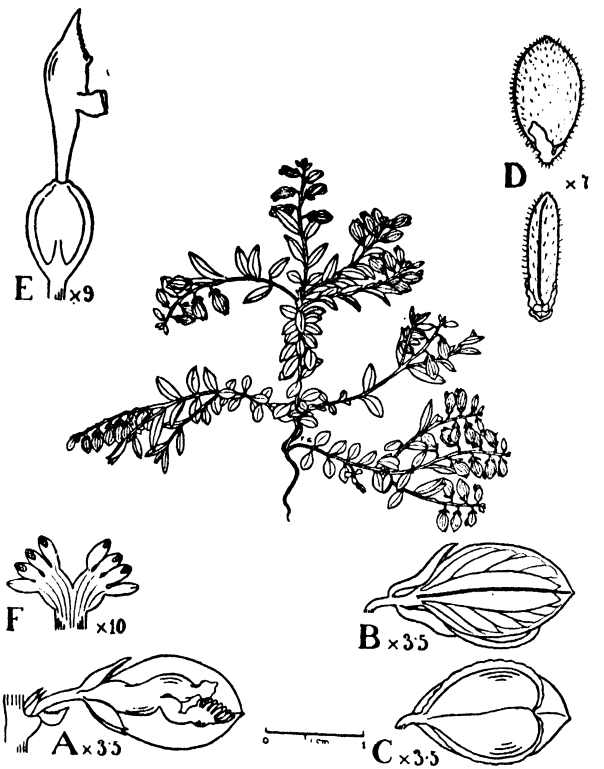


261. POLYGALA OXYPTERA Reichb. (*P. dubia* Bellynck.). This HEATH MILKWORT is a small perennial with several short, usually simple, flowering stems growing decumbent and then erect, from a simple base without a rosette of leaves. It grows uncommonly on heaths and among sandhills on acid soils throughout the British Isles. Lower leaves small, 3-4 mm. long, ovate; stem-leaves larger and longer, up to 18 mm. long, lanceolate, acute, irregularly alternate; bracts shorter than pedicel. Flowers 5-7 mm. long; sepals longer and rather narrower than capsule; branches of mid-vein meeting side veins well above the middle; side veins branched and meeting externally; sepals and petals blue or pink; seed 1·2 × 1·0 mm., ovoid, hairy, lobes of aril subequal, medium, blunt.

Late May—mid Aug. (Reigate, Surrey.)

A. flower B. capsule and sepals. C. capsule. D. seed (two views). E. ovary. F. stamens.

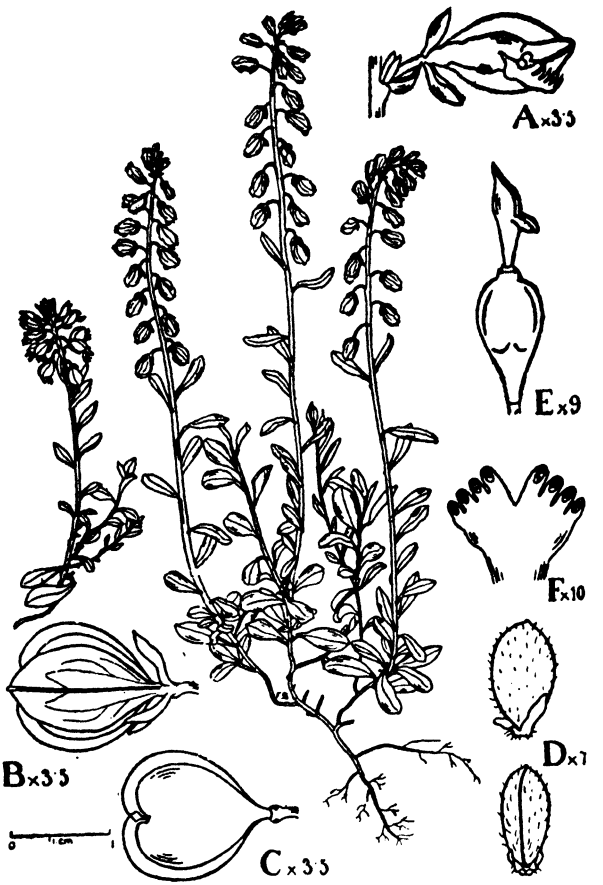
(This is sometimes considered to be a variety of *P. vulgaris* L.)



262. POLYGALA SERPYLLIFOLIA Hose (*P. serpyllacea* Weihe). The THYME-LEAVED MILKWORT is a small, variable perennial with numerous branched, straggling, flowering stems 3-6 in. (8-15 cm.) long, growing from a simple base without a rosette. It is common, particularly on heathland and acid soils, throughout the British Isles. Lower leaves crowded and opposite; stem-leaves larger, 10 mm. long, narrow, elliptical, opposite or scattered; bract shorter than pedicel. Flowers 5-6 mm. long; sepals longer and slightly wider than capsule; branches of mid-vein meeting side veins near the apex; side veins branched, meeting; sepals and petals blue or white; seed 1·2 × 1·0 mm., ovoid, hairy, smooth; lobes of aril equal, medium, somewhat acute.

Mid May—late Aug. (Hook Common, Hampshire.)

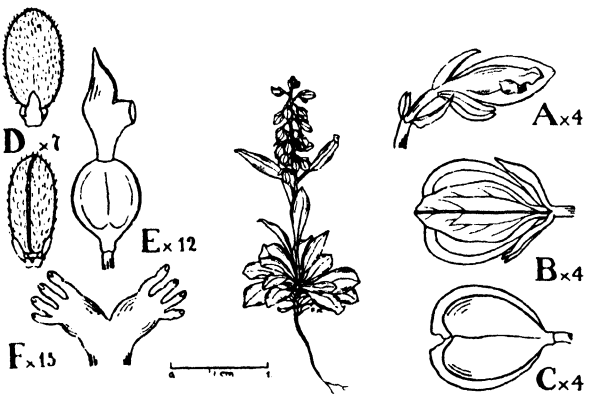
A. flower. B. capsule and sepals. C. capsule. D. seed (two views). E. ovary. F. stamens.



263. POLYGALA CALCAREA F. W. Schultz. The CHALK MILKWORT is a small perennial with numerous simple, straggling, flowering stems 2-4 in. (5-10 cm.) high, growing singly or in groups from an irregular rosette of obovate leaves. It grows, at times abundantly, in calcareous pastures in S. England. Root leaves 10-12 mm. long, ovate; stem-leaves rather smaller, shortly lanceolate, alternate. Flowers 6-7 mm. long; sepals longer and rather narrower than the capsule; branches of mid-vein meeting side veins just above the middle; side veins branched externally; sepals and petals blue, pink or white; seed 2·0 × 1·5 mm., ovoid; lobes of aril unequal, acute.

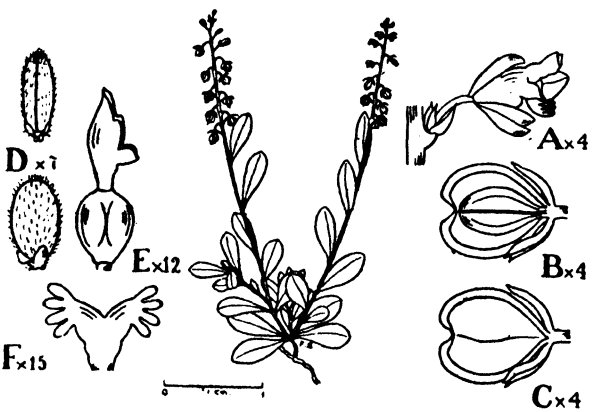
Mid May—mid July. (Reigate, Surrey.)

A. flower. B. capsule and sepals. C. capsule. D. seed (two views). E. ovary. F. stamens.



264. POLYGALA AMARA L. This BITTER DWARF MILKWORT is a small perennial with few, usually simple, flowering stems 2-4 in. (5-10 cm.) high, growing erect from a rosette of obovate leaves. It is a very rare plant of grassland in a few places in limestone districts of Yorkshire. Lower stem-leaves 12-15 mm. long, becoming smaller upwards, broadly lanceolate, acute, bracts longer than pedicels. Flowers 4-5 mm. long; sepals much narrower and longer than the capsule, veins slightly branching and not meeting; sepals and petals blue; seed 2·0 × 1·0 mm., ovoid, hairy; lobes of aril equal, blunt, short.

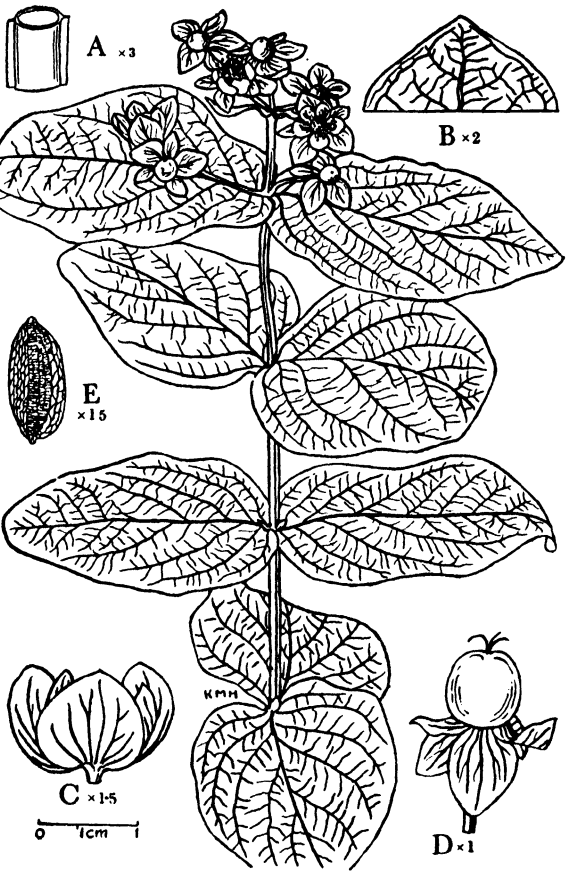
Mid June—mid Aug. (Grassington, Yorkshire.)
A. flower. B. capsule and sepals. C. capsule. D. seed (two views). E. ovary. F. stamens.



265. POLYGALA AUSTRIACA Crantz. This SOUTHERN DWARF MILKWORT is a small perennial with one or a few almost simple, flowering stems 4-6 in. (10-15 cm.) high, growing erect from a rosette of ovate-spathulate leaves. It is a very rare plant of a few chalky places in S.E. England. Stem leaves small, 14 mm. long, broadly lanceolate, obtuse. Flowers 2-3 mm. long; sepals much narrower than and as long as the capsule, veins simple; sepals and petals pink or blue; seed 1·7 × 1·0 mm., ovoid, hairy; lobes of aril equal, blunt, short.

Mid June—mid Aug. (nr. Wye, Kent.)

A. flower. B. capsule and sepals. C. capsule. D. seed (two views). E. ovary. F. stamens.

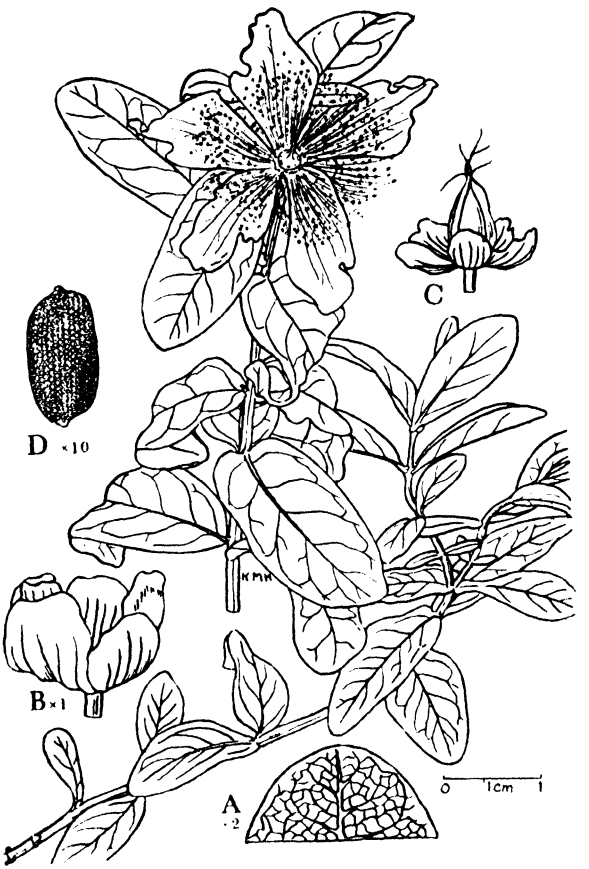


HYPERICUM L. Perennial, herbaceous or rather woody plants with opposite, entire, exstipulate leaves and yellow, usually regular flowers; stamens numerous, united by the base of their filaments. Fruit a many-celled, many-seeded capsule.

266. HYPERICUM ANDROSÆMUM L. The TUTSAN is a stout perennial with several simple, woody stems 15-20 in. (38-50 cm.) high, growing erect from a woody stock. It is an infrequent plant of bushy places in the lowlands, especially on the western side of Britain. Stem square, two-winged, glabrous. Leaves 70 mm. long, large, ovate, glabrous, net-veined. Flowers 15 mm. diam., in few-flowered cymes; sepals broadly ovate-cordate; petals yellow, tinged red, shorter than sepals, ovate, deciduous; styles 3, short. Capsule 10 mm., globular, pulpy; seed 1·2 × 0·5 mm., elliptical, pointed, finely netted, brown.

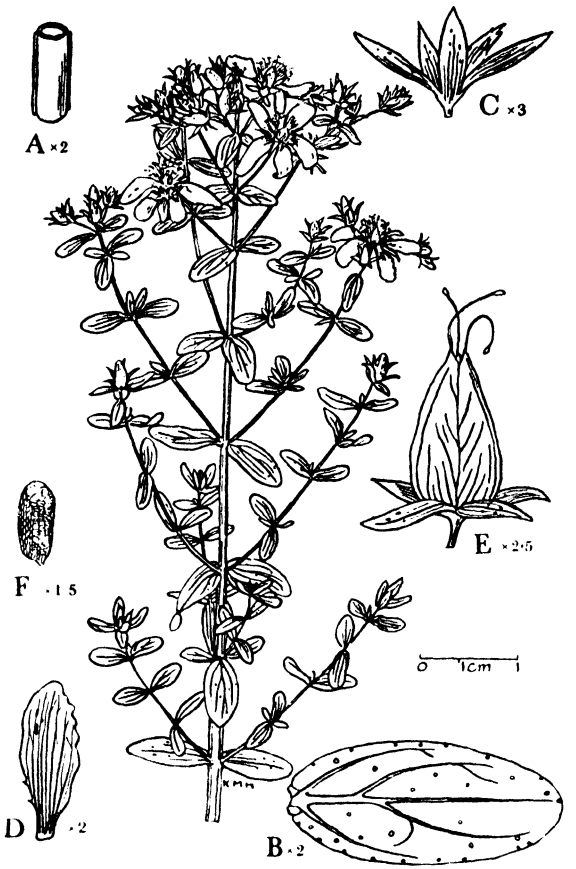
Late June—late July. (Stott Park, Westmorland.)

A. stem. B. leaf tip. C. calyx. D. capsule. E. seed.



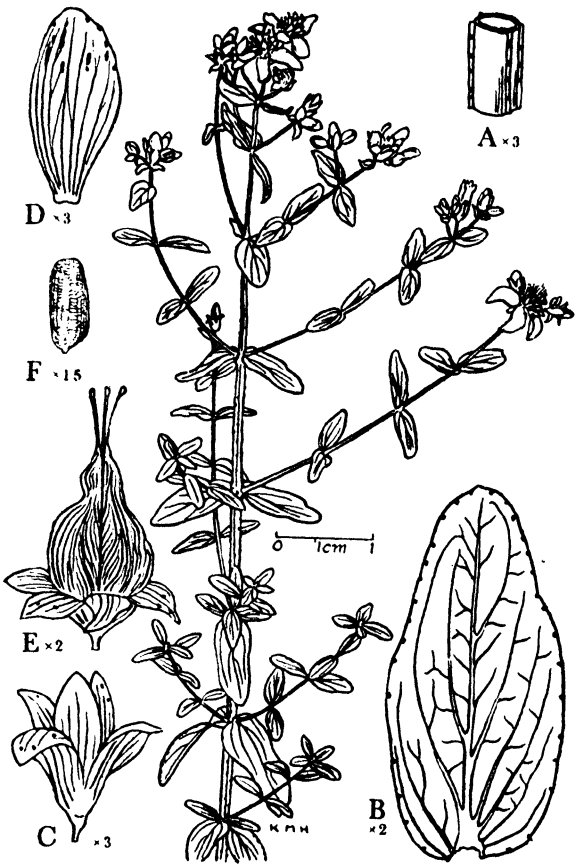
267. HYPERICUM CALYCINUM L. The ROSE OF SHARON is a robust plant with flowering and flowerless stems 10-12 in. (25-30 cm.) high, growing from a creeping, leafy, main stock. It is found in copses and bushy places in lowland Britain usually where it has been planted or naturalized. Leaves 50 mm. long, large, ovate, entire glabrous, net-veined. Flowers 80-100 mm. diam., solitary; sepals orbicular, overlapping; petals irregular, yellow; styles 5, short. Capsule 20 mm. long, unmarked, conical; seed 3·5 × 1·0 mm., large, oval, with regular pits, brown.

Mid June—mid July. (hort. Ashbourne, Derbyshire.)
A. leaf tip. B. calyx. C. capsule. D. seed.



268. HYPERICUM PERFORATUM L. The COMMON ST. JOHN'S-WORT is a robust perennial with glabrous, rather woody, branched stems 12-18 in. (30-45 cm.) high, growing from a woody rootstock. It is an abundant plant in woods, on hedge banks, cleared woodland and other waste places throughout the British Isles. Stem rounded, 2-winged, glabrous. Leaves 20 mm. long, ovate, sessile, with pellucid dots, and a few black glands on the margin. Flowers 20 mm. diam., in level-topped cymes; sepals acute; petals yellow, wavy, with a few black marks; styles 3, of medium length. Capsule 8 mm. long, woody, conical; seed 0·8 × 0·3 mm., cylindrical, pointed at one end, with network elongated in two directions, brown.

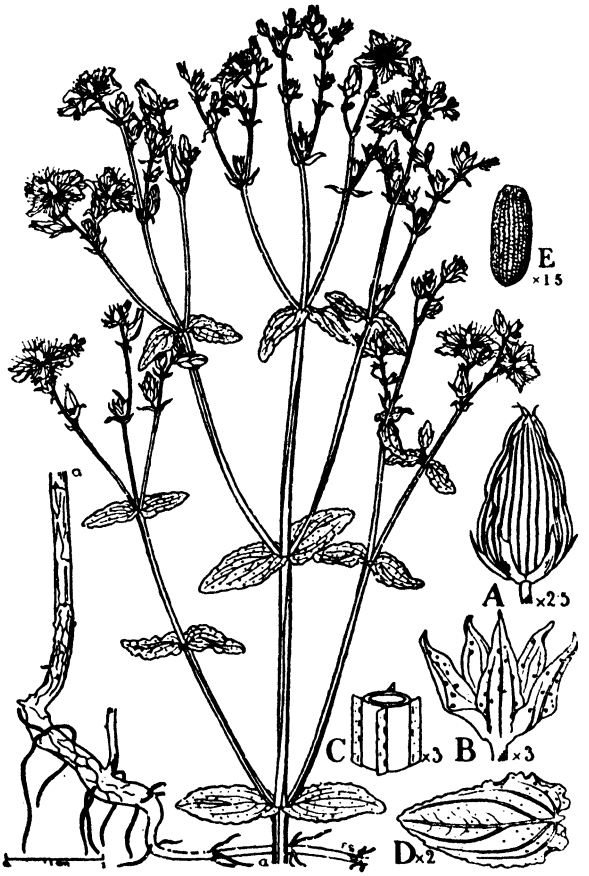
Late June—early Aug. (Ashbourne, Derbyshire.)
A. stem. B. leaf. C. calyx. D. petal. E. capsule. F. seed.



269. HYPERICUM MACULATUM Crantz. (*H. dubium* Leers). The IMPERFORATE ST. JOHN'S-WORT is a robust perennial with glabrous, rather woody, branched stems 12-18 in. (30-45 cm.) high, growing from a woody rootstock. It is a rather uncommon plant of damp places, woods and hedges throughout the British Isles. Stem obscurely 4-winged, glabrous. Leaves 25-32 mm. long, ovate, sessile, with few pellucid dots or none and with black glands on the margin. Flowers about 20 mm. diam., in a rather lax, irregular cyme; sepals obtuse, spreading or reflexed in fruit; petals yellow, entire; styles 3, medium. Capsule 12 mm., long, woody, striate, conical; seed 0·8 × 0·3 mm., cylindrical, pointed at one end, with network elongated in two directions, brown.

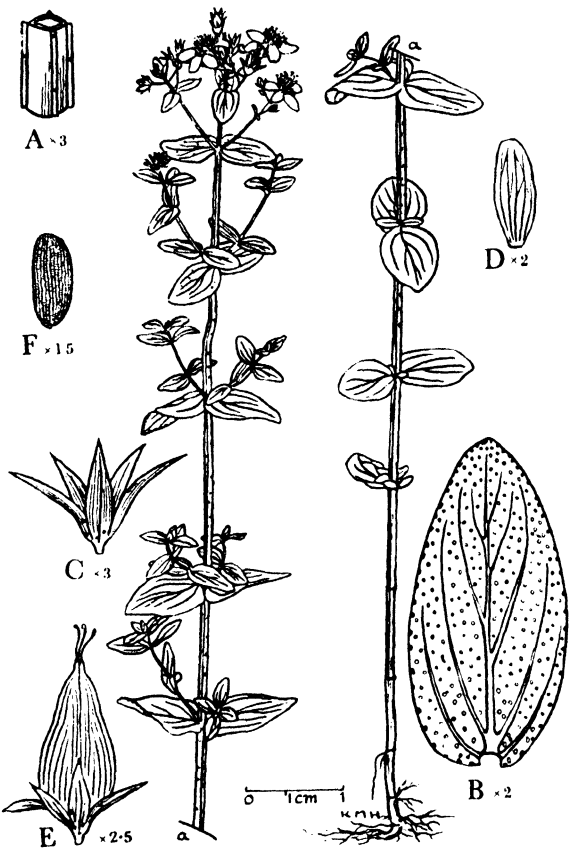
Late June—late July. (R. Dove, Ashbourne.)
A. stem. B. leaf. C. calyx. D. petal. E. capsule. F. seed.

(*H. desetangsii* Lam. is considered to be *H. maculatum* × *perforatum*.)



270. HYPERICUM UNDULATUM Schousb. The WAVY ST. JOHN'S-WORT is a rather robust perennial with branched flowering stems 12-24 in. (30-60 mm.) high, growing from a decumbent, stoloniferous stock. It is a very rare plant found in bogs in S. England. Stem 4-winged, square, glabrous. Leaves 10-12 mm. long, ovate, wavy, sessile, with many black glands and pellucid dots. Flowers 15 mm. diam., in a much-branched, spreading cyme; sepals rather broad, acute, edged with black glands; petals yellow tinged with red, entire, edged with black glands; styles 3, very short. Capsule 8-9 mm. long, woody, conical, veined; seed 1·0 × 0·3 mm., cylindrical, evenly netted longitudinally, brown.

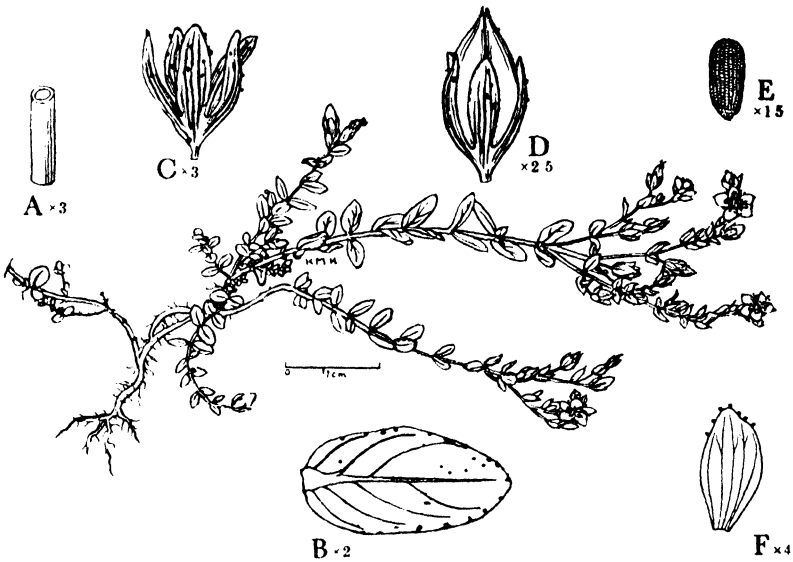
Early—late July. (Tremithick Moor, Cornwall.)
A. capsule. B. calyx. C. stem. D. leaf. E. seed.



271. HYPERICUM TETRAPTERUM Fr. (*H. quadrangulum* L.). The SQUARE-STALKED ST. JOHN'S-WORT is a rather stout perennial with erect, almost simple, strong stems 12-18 in. (30-45 cm.) high, growing from a decumbent, stoloniferous stock. It is a common plant in damp places in lowland Britain. Stem four-winged, square, glabrous, with a few dots. Leaves 25 mm. long, ovate, sessile, with many pellucid dots and black glands and sometimes with a few teeth. Flowers 15-20 mm. diam. in a dense cyme; sepals acute, equal, almost without glands; petals pale yellow, equalling sepals, with very few glands near apex; styles 3, very short. Capsule 8 mm., ovoid, unveined; seed 0·8 × 0·3 mm., cylindrical, netted vertically, brown.

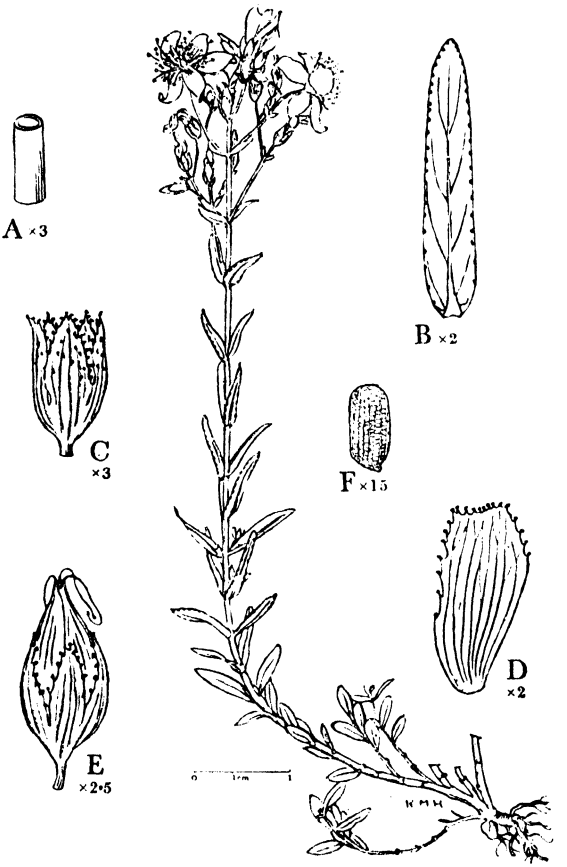
Late June—mid Sept. (Ashbourne, Derbyshire.)

A. stem. B. leaf. C. calyx. D. petal. E. capsule. F. seed.



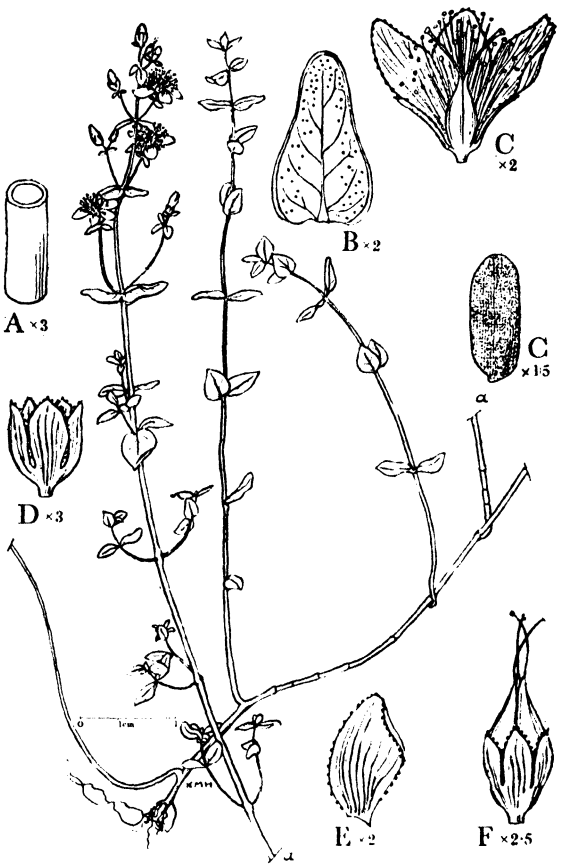
272. HYPERICUM HUMIFUSUM L. The TRAILING ST. JOHN'S WORT is a slender perennial with decumbent, much-branched, rather woody, glabrous stems 3-8 in. (8-20 cm.) long, growing from a perennial rootstock. It is a frequent plant of stony places, heaths and bogs in acid soils though less common in Scotland than in England. Stems cylindrical, glabrous. Leaves 8-10 mm. long, small, ovate, with a few pellucid dots and black glands on the edge. Flowers 5-10 mm., in lax cymes; 2 sepals oblong, blunt, the other 3 narrower, mucronate, all edged with black glands and sometimes with a few teeth; petals pale yellow, equalling sepals, with very few glands near apex; styles 3, very short. Capsule 8 mm., ovoid, unveined; seed 0·8 × 0·3 mm., cylindrical, netted vertically, brown.

Late June—mid Sept. (Holmesley, Hampshire.)
A. stem. B. leaf. C. calyx. D. capsule. E. seed. F. petal.



273. HYPERICUM LINARIFOLIUM Vahl. The NARROW-LEAVED ST. JOHN'S WORT is a rather slender perennial with many decumbent then erect, strong stems 9-12 in. (23-30 cm.) high, growing from a woody perennial stock. It grows rarely on river banks in parts of Cornwall and Devon. Stem cylindrical, glabrous. Lower leaves 8 mm. long, broadly linear; upper 10 mm. long and narrower, without pellucid dots, but edged with black glands, sessile. Flowers 17-20 mm. diam., in a small, level-topped cyme; sepals oblong, pointed, edged with glandular teeth; petals yellow, irregular, with glandular teeth. Capsule 10 mm. long, ovoid; styles 3, long; seed 0·8 × 0·3 mm., cylindrical, pointed at one end, with longitudinal ridges, brown.

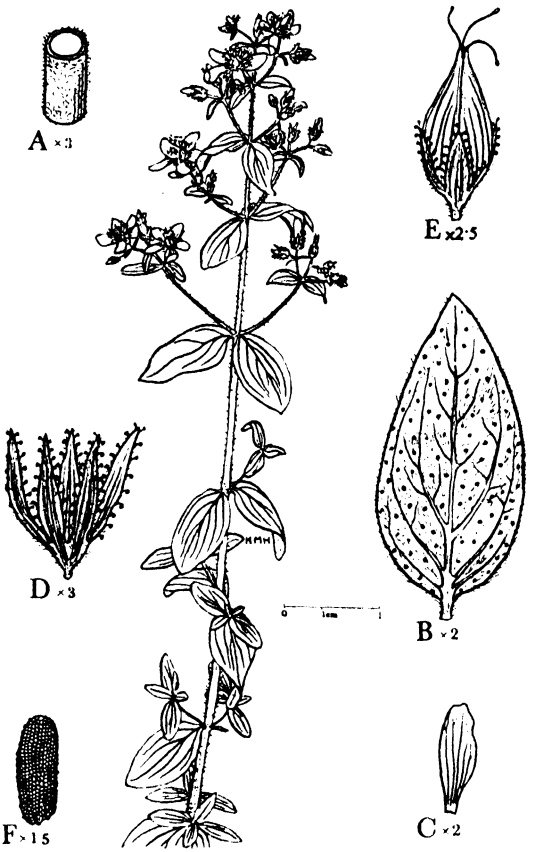
Early—late July. (Fingle Bridge, Devon.)
A. stem. B. leaf. C. calyx. D. petal. E. capsule. F. seed.



274. HYPERICUM PULCHRUM L. The SMALL ST. JOHN'S-WORT is a slender perennial with numerous, almost simple, flowering and flowerless stems 6-9 in. (15-23 cm.) high, growing from a long, decumbent basal stem. It is a common plant of heaths and dry woods throughout the British Isles. Stem cylindrical, glabrous. Leaves 8-9 mm. long, oval-triangular, with pellucid dots but no black glands, margin revolute. Flowers 15 mm. diam., in lax, elongated cymes; sepals ovate, fringed with glands; petals yellow and red, ovate, fringed with glands; styles 3, long. Capsule 7-8 mm., elliptical, veinless; seed 1·4 × 0·9 mm., cylindrical, finely netted, brown.

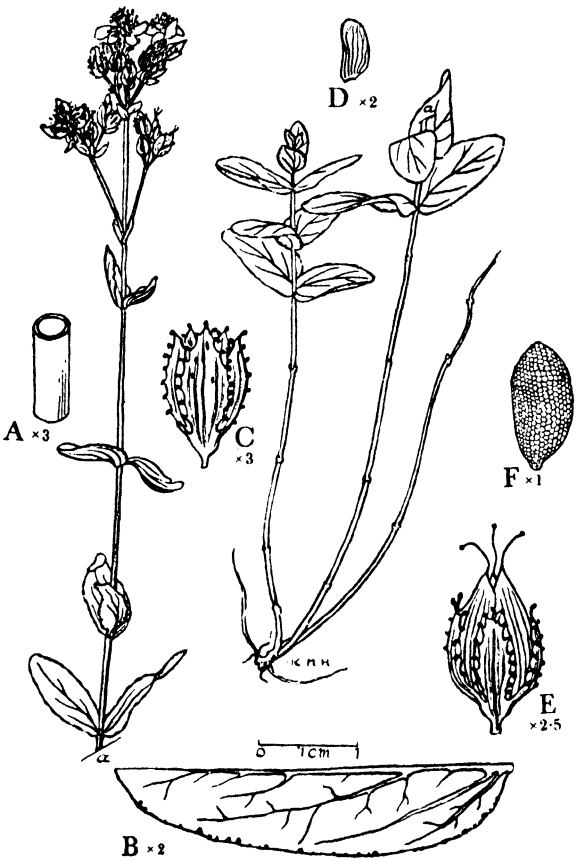
Early July—mid Aug. (Wotton, Staffordshire.)

A. stem. B. leaf. C. flower, l.s. D. calyx. E. petal. F. capsule. G. seed.



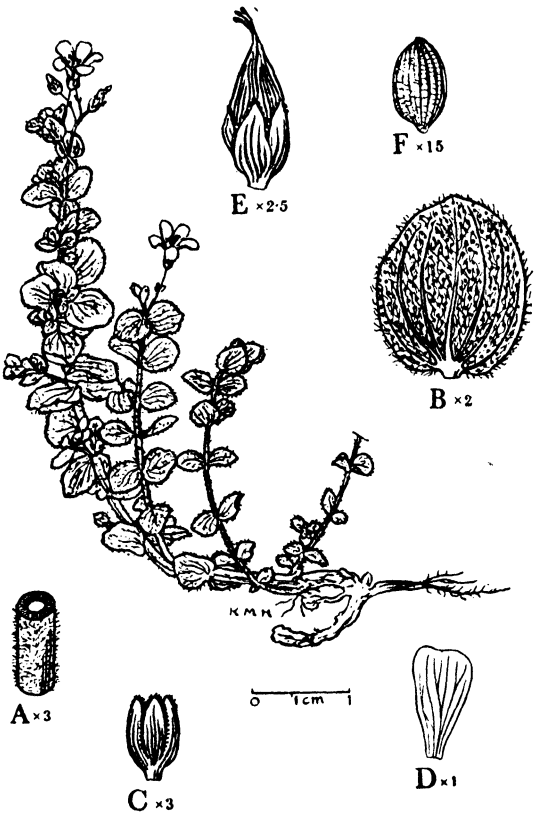
275. HYPERICUM HIRSUTUM L. The HAIRY ST. JOHN'S-WORT is a rather slender perennial with many erect, little-branched, wiry stems 9-24 in. (23-60 cm.) high, growing from a woody rootstock. It is a rather common plant of woods, thickets and waste places throughout lowland Britain. Stem cylindrical, hairy. Leaves 20-25 mm. long, broadly ovate, acute, with hairs and pellucid dots. Flowers 12-15 mm. diam., in an elongated cyme; sepals linear, hairy and edged with glands; petals buff, narrow, glabrous; styles 3, medium. Capsule 8 mm. long, ovate, acute; seed 0·8 × 0·2 mm., cylindrical, rough, with raised tubercles, dark brown.

Mid June—late July. (Norbury, Derbyshire.)
A. stem. B. leaf. C. petal. D. calyx. E. capsule. F. seed.



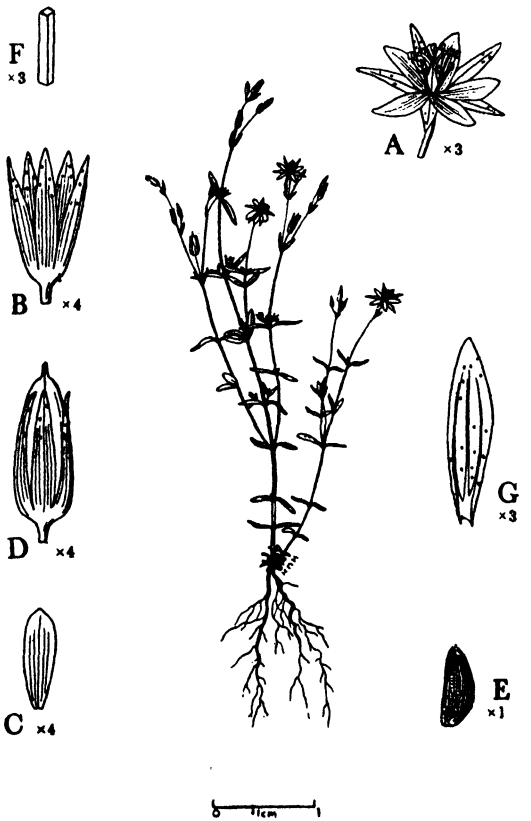
276. HYPERICUM MONTANUM L. The MOUNTAIN ST. JOHN'S-WORT is a rather stout perennial with several flowering stems 12-18 in. (30-45 cm.) high, growing erect from a tufted base. It is an infrequent plant, but common in some calcareous woods and scrub in England and Scotland as far north as Ayrshire. Stem cylindrical, glabrous. Leaves 3 mm., ovate, fringed with glands and with a few pellucid dots. Flowers 15 mm., in dense cymes; sepals lanceolate, with glandular teeth; petals yellow, glabrous. Capsule 8 mm., ovate, veined; styles 3, rather long; seed 1·2 × 0·4 mm., cylindrical, pointed, netted.

Late June—mid Aug. (Hartington, Derbyshire.)
A. stem. B. leaf. C. calyx. D. petal. E. capsule. F. seed.



277. HYPERICUM ELODES L. The BOG ST. JOHN'S WORT is a rather stout perennial with many flowerless and flowering, ascending stems 4-8 in. (10-20 cm.) high, growing from a decumbent or prostrate, rooting main stem. It is abundant in acid bogs throughout the British Isles. Stem hairy, round. Leaves 10-12 mm. long, roundly ovate, sessile, glandular and hairy. Flowers about 15 mm. diam., almost solitary; sepals lanceolate, glabrous, but fringed with glands; petals pale yellow, symmetrical, erect; styles 3, short. Capsule 7 mm. long, narrowly conical, veined; seed 0·5 × 0·8 mm., oval, with raised, longitudinal ribs, brown.

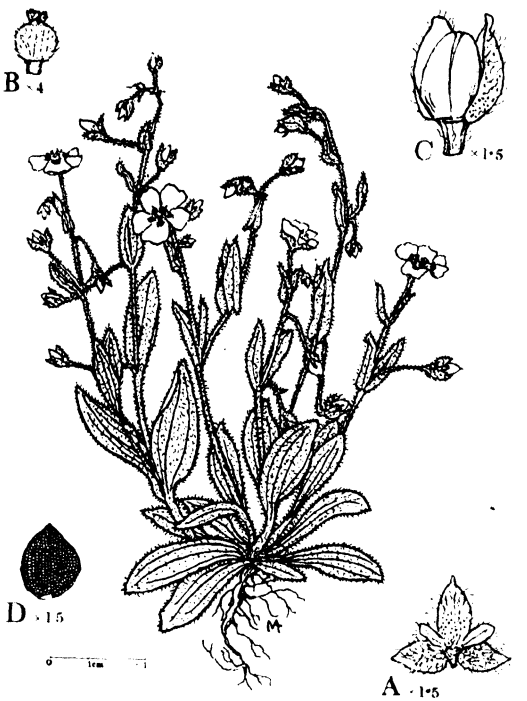
Late July—early Sept. (Sway, Hampshire.)
A. stem. B. leaf. C. calyx. D. petal. E. capsule. F. seed.



278. HYPERICUM CANADENSE L. This CANADIAN ST. JOHN'S-WORT is a slender perennial with much-branched erect, glabrous stems 4-10 in. (10-25 cm.) long. It has been recently discovered growing by a stream in Ireland. Stem somewhat quadrangular, glabrous. Leaves 5-7 mm. long, ovate, with a few pellucid dots. Flowers about 6 mm. diam., in dichotomous cymes; sepals linear-lanceolate, striate, entire, with few pellucid dots at apex; petals golden yellow, somewhat shorter than sepals; styles 2, rather long. Capsule 5 mm. long, ovate, cylindrical, apiculate, not veined; seed 0·7 × 0·3 mm., half-ovoid, with raised vertical striæ, pale buff.

Mid July—late Aug. (Co. Mayo, Ireland.)

A. flower. B. calyx. C. petal. D. capsule. E. seed. F. stem. G. leaf.

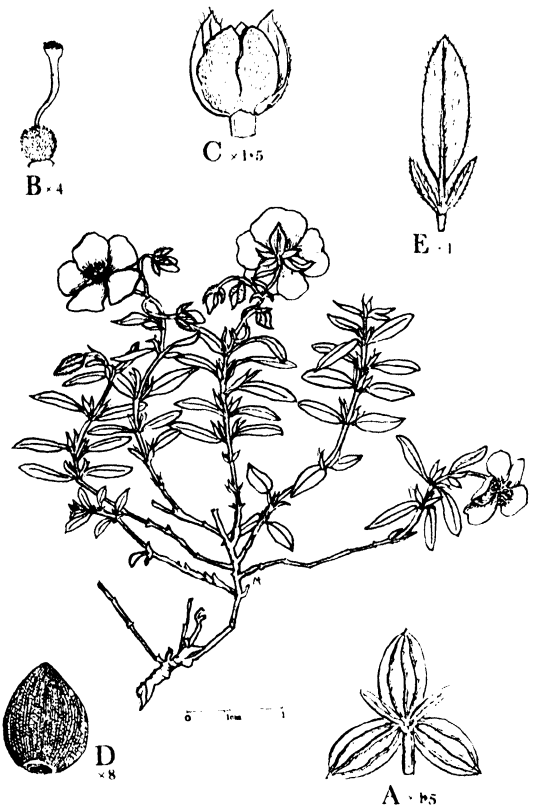


HELIANTHEMUM L. Herbs or low, diffuse, woody plants with yellow or white flowers. Calyx of 3 large inner and 2 small outer sepals; petals 5; stamens numerous; fruit a many-seeded capsule opening by three valves.

279. HELIANTHEMUM (TUBERARIA) GUTTATUM L. This SPOTTED ROCK ROSE is a small annual with branched, flowering stems 2-6 in. (5-15 cm.) high, growing from a rosette of hairy leaves. It grows very rarely on dry cliffs in Anglesey and W. Ireland. Radical leaves in a rosette, obovate, obtuse; upper more acute, often with stipules which are lacking in the radical leaves. Flowers 10 mm. diam, on bracteate pedicels; sepals hairy and spotted; petals yellow, with or without a dark spot at the base; style straight. Capsule 8 × 5 mm., ovoid, pointed; seed 0·7 × 0·5 mm., ovoid, acute, deeply pitted, brown.

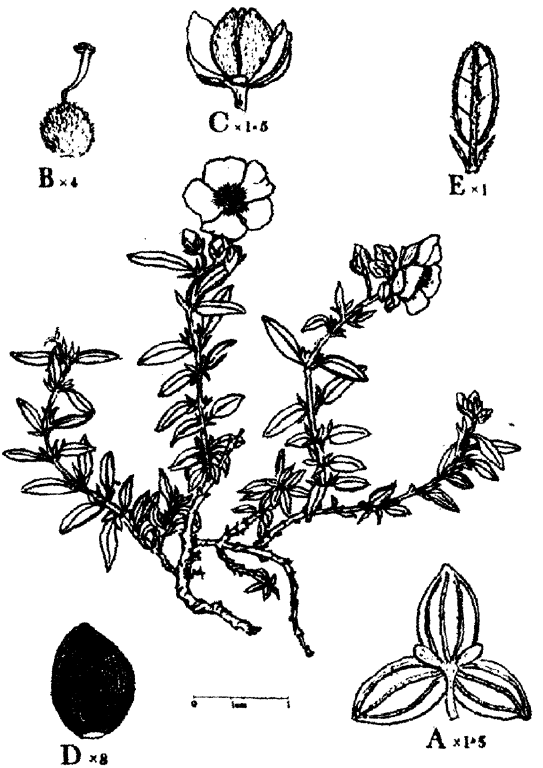
Mid May—late June. (hort. Lavington ex Holyhead.)
A. calyx. B. ovary. C. capsule. D. seed.

The above figure is the var. *breweri* (Plan.) Mill.



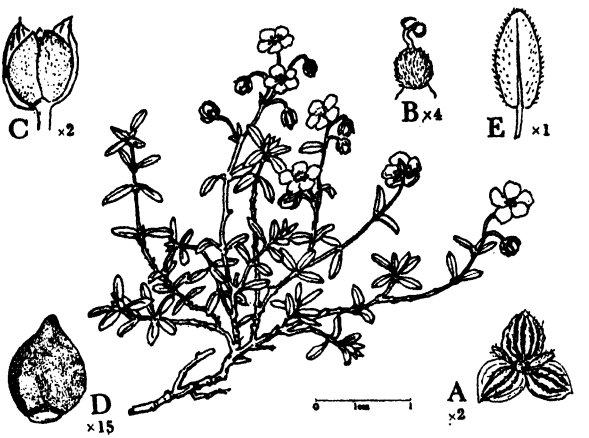
280. HELIANTHEMUM CHAMÆCISTUS Mill (*H. nummularium* auct.). The COMMON ROCK ROSE is a much-branched, low, woody perennial with decumbent, flowering pedicels 3-6 in. (8-15 cm.) long, growing from numerous, woody, decumbent stems. It is an abundant plant of basic pasture and rocks throughout Britain. Leaves 12-15 mm. long, small, lanceolate, hairy, stipulate, margin flat. Flowers 25 mm. diam., on bracteate pedicels; sepals ovate, three-veined, hairy only on the veins; petals yellow; styles curved or crooked. Capsule 8 × 7 mm., globular; seed 2·0 × 1·5 mm., more or less conical, finely netted, brown.

Mid June—mid Aug. (Winscombe, Somerset.)
A. calyx. B. ovary. C. capsule. D. seed. E. leaf.



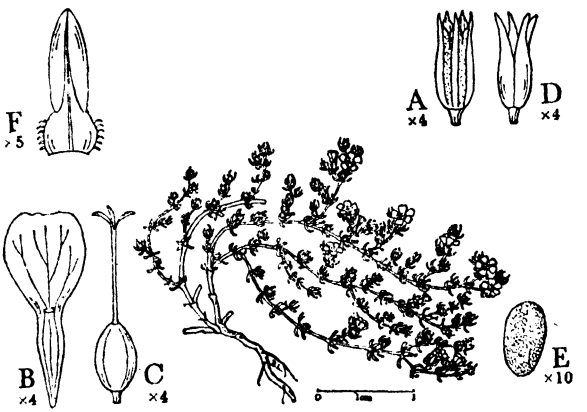
281. HELIANTHEMUM APENNINUM (L.) Mill (*H. polifolium* Mill.). The WHITE ROCK ROSE is a much-branched, low, woody, perennial with many flowering stems 3-6 in. (8-15 cm.) high, growing from numerous woody, prostrate, leafy stems. It occurs on chalk cliffs in Somerset and Devon near the coast. Leaves 6 mm. long, small, lanceolate, hairy, stipulate, margin recurved. Flowers 25 mm., on bracteate pedicels; sepals ovate, three-veined, hairy only on the veins; petals white; styles crooked or curved. Capsule 7 × 6 mm., ovoid; seed 2·0 × 1·2 mm., more or less conical, netted, brown.

Early June—late July. (Brean Down, Somerset.)
A. calyx. B. ovary. C. capsule. D. seed. E. leaf.



282. HELIANTHEMUM CANUM (L) Baum. The HOARY ROCK ROSE is a small, woody perennial with many flowering stems 2-5 in. (5-12 cm.) high, growing from numerous woody, prostrate, leafy stems. It is a rare plant of limestone cliffs in N. England and N. Wales. Leaves 6-7 mm. long, very small, lanceolate, hoary with stellate hairs, exstipulate, margin flat. Flowers 12-15 mm., in bracteate cymes; sepals hairy all over; petals yellow; style crooked. Capsule 5 × 3 mm., conical; seed 1·0 × 0·7 mm., ± conical, netted, brown.

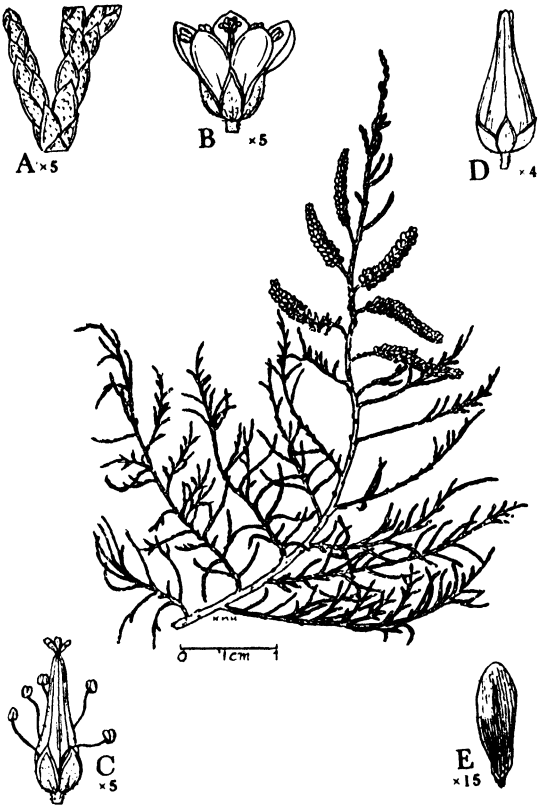
Early May—early July. (Great Orme, Caernarvonshire.)
A. calyx. B. ovary. C. capsule. D. seed. E. leaf.



FRANKENIA L. Straggling perennials with small, crowded leaves and regular, small but conspicuous flowers. Calyx tubular with 4-5 teeth; petals 4-5 with long claws; stamens 4-5; ovary several seeded, style 1, stigmas 2-4, fruit a one-celled capsule.

283. FRANKENIA LÆVIS L. The SEA HEATH is a straggling perennial with many decumbent much-branched stems 1-6 in. (3-15 cm.) long with a woody base. It occurs on mud in estuaries and salt marshes, though rarely, on the S.E. coast of England from Suffolk to Sussex. Leaves 2-4 mm. long, linear with revolute margins, ciliate at base, mostly crowded on short, lateral shoots. Flowers 5 mm. diam., solitary in the forks of the branches, sessile; calyx teeth erect, narrow, acute; corolla pink, petals obovate, cuneate, obtuse. Capsule rarely ripening, concealed in the calyx tube, conical, trigonous; seed 1·0 × 0·5 mm. ovoid, smooth.

Mid July—early Sept. (New Romney, Kent.)
A. calyx. B. petal. C. pistil. D. capsule. E. seed.

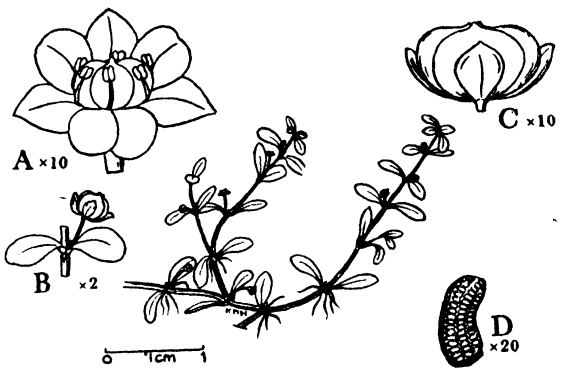


TAMARIX L. Shrubs with twiggy branches and small, imbricate leaves. Sepals and petals 4 or 5; stamens 5; capsule elliptical, acute, with many seeds; seeds with a tuft of hairs.

284. TAMARIX ANGLICA Webb. The TAMARISK is a spreading green shrub 3-6 ft. (1-2 m.) high, established on sandy sea shores, chiefly in S. and E. England. Leaves 1·5 mm. long, minute, scale-like, pointed. Flowers 3 mm., in spikes 20-50 mm. long; sepals acute, hairy; petals pink or white, persistent till fruit ripens; stamens 5. Capsule 5 mm. long, narrowly conical, acuminate; valves 5; seed 1·0 × 0·3 mm., ovoid, with a tuft of hairs at the radicle end, striate, yellow.

Mid July—early Aug. (Burnham-on-Crouch, Essex.)
A. part of branch with leaves. B. flower. C. pistil and stamens. D. capsule.

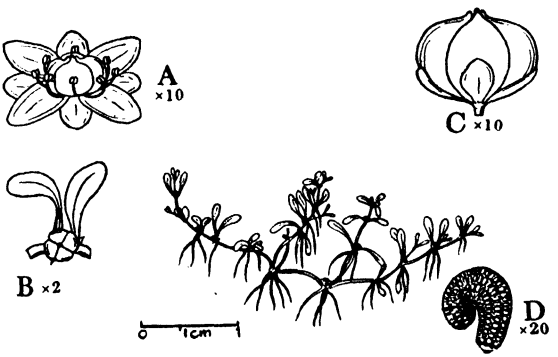
(*T. gallica* L. differs in being glaucous and having globose instead of ovoid buds.)



ELATINE L. Dwarf aquatic annuals with regular flowers; calyx 3-4 partite; petals 3-4, free; stamens 3-4 or 6-8. Capsule three- to four-celled, many-seeded.

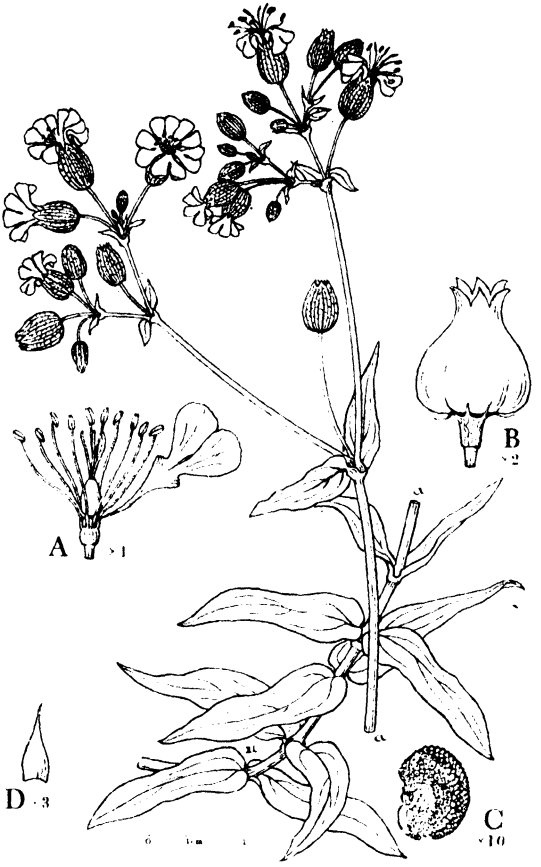
285. ELATINE HEXANDRA (Lapierre) DC. The SIX-STAMENED WATERWORT is a dwarf, creeping and rooting, prostrate plant, found very rarely on sandy shores of pools and lakes in many parts of Britain and often growing under water. Leaves 12 mm. long, opposite, spathulate, sessile. Flowers 2·5 mm. diam., stalked; sepals 3, acute; petals 3, green, emarginate, equalling sepals; stamens 6. Capsule lenticular, depressed at apex; seed 0·8 × 0·3 mm., cylindrical, almost straight, with oval pits, black.

Mid July—early Sept. (Bedgebury, Kent.)
A. flower. B. fruit and bract. C. capsule. D. seed.



286. ELATINE HYDROPIPER L. The EIGHT-STAMENED WATER-WORT is a dwarf, creeping and rooting, loosely-tufted plant, found very rarely on sandy shores of a few pools in S. and C. England, often growing under water. Leaves 10 mm. long, opposite, strap-shaped, stalked. Flowers 1·8-2·0 mm. diam., subsessile; sepals 4, blunt; petals 4, green, exceeding sepals; stamens 8. Capsule lenticular, not depressed at apex; seed 1 mm., hooked, with oval pits, black.

Early June—early Sept. (Westwood Pool, Droitwich.)
A. flower. B. fruit and bract. C. capsule. D. seed.

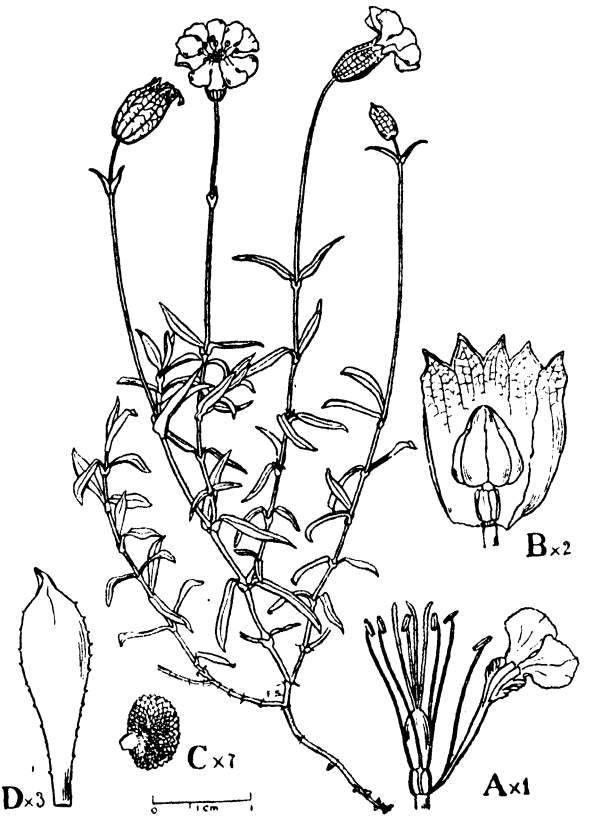


SILENE L. Annual or perennial herbs with exstipulate leaves. Epicalyx 0; sepals united, coronal scale absent or present; stamens 10; styles 3; ovary three-celled at base.

287. SILENE VULGARIS (Mœnch) Garcke (*S. cucubalus* Wibel). The BLADDER CAMPION is a very common perennial with erect, branched, glabrous (or hairy) stems 9-30 in. (23-75 cm.) high, growing from a decumbent base. It is common on grassy banks and more rarely on arable land throughout the British Isles. Leaves sessile, upper connate, linear-lanceolate, acute, somewhat glaucous. Flowers 18-20 mm. diam., in dichotomous cymes; calyx inflated, netted, twenty-veined; petals white (or pink), deeply bifid, with small, simple coronal scales. Capsule 10 mm. long, conical, loose in the calyx and half its length; gynophore short; seed 1·2 × 0·9, cuneoid, reniform, tubercled, white when young, dark-brown when mature.

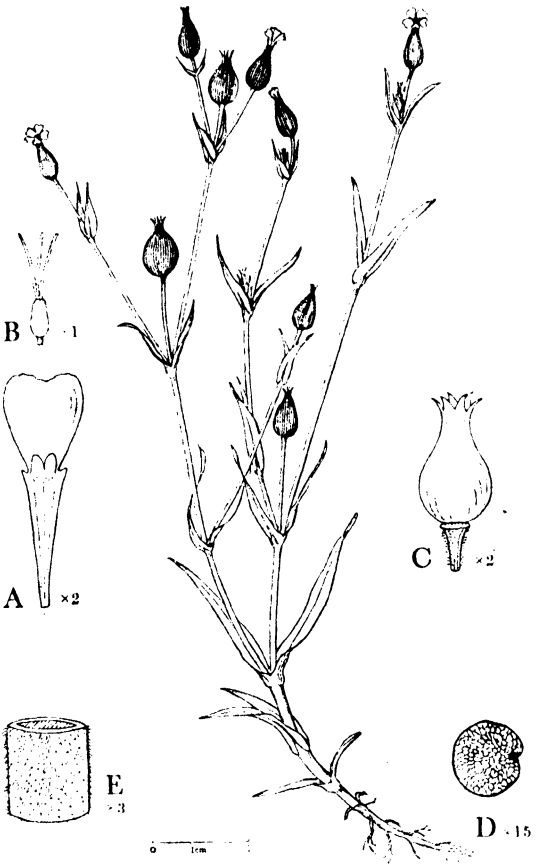
Mid June—mid Sept. (Shardlow, Derbyshire.)

A. stamens, pistil and 1 petal. B. capsule. C. seed. D. bract.



288. SILENE MARITIMA With. THE SEASIDE CAMPION is a straggling perennial with flowering stems 6-9 in. (15-28 cm.) high, growing from a mass of prostrate leafy stems. It is a common plant on the seashore and shingle and, more rarely, on mountains. Leaves 15-25 mm., narrow, lanceolate, glaucous. Flowers 20 mm. diam., in little-branched cymes or solitary; calyx inflated, ellipsoid, twenty-veined; petals white, or rarely pink, deeply bifid with sub-lateral coronal scales; stamens 10; styles 3. Capsule enclosed in calyx, short, conical, with 6 recurved teeth; gynophore one-half as long as capsule; seed 1·2 × 0·9 mm., reniform, cuneoid, with large acute tubercles, usually pink when young, brown when mature.

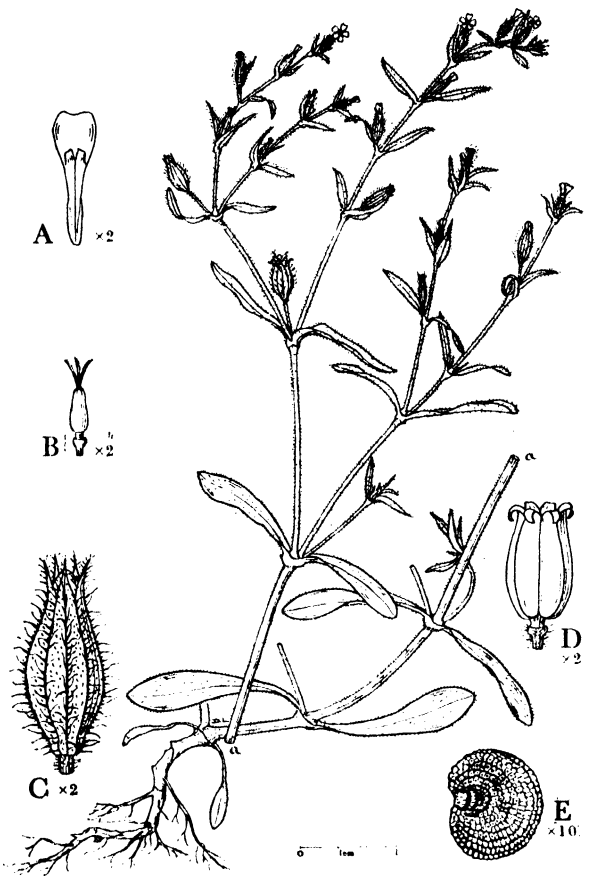
Mid May—mid Sept. (Dungeness. Kent.)
A. part of flower. B. capsule and calyx. C. seed. D. bract.



289. SILENE CONICA L. The STRIATED CORN CATCHFLY is an erect annual with branched, slightly hoary stem, 4-9 in. (10-28 cm.) high. It is found infrequently in sandy cornfields chiefly in E. and S. England. Leaves connate, linear, acute, downy, grey-green. Flowers 6-7 mm. diam. in a very lax dichotomous cyme; calyx inflated, striate, conical, 25-30 veined, teeth long, subulate; petals pink, somewhat bifid with a bifid coronal scale. Capsule short, conical, tightly enclosed in calyx, sessile; seed 0·3 mm., sub-globose, somewhat compressed, netted or finely tubercled, grey.

Early May—late June. (Icklingham, Suffolk.)

A. petal. B. pistil C. capsule. D. seed. E. portion of stem.



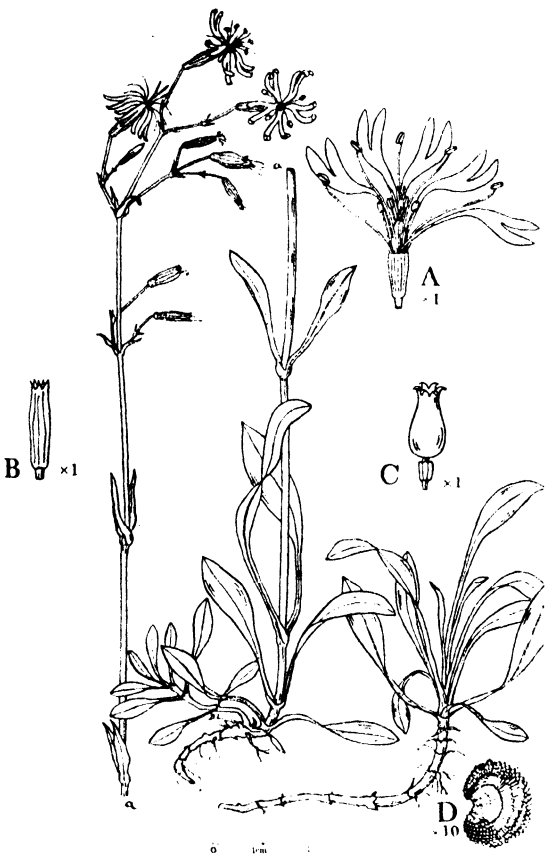
290. SILENE GALLICA L. (*S. anglica* L.). The SMALL-FLOWERED CATCHFLY is a hairy and viscid, erect or spreading, much-branched annual, 6-12 in. (15-30 cm.) high, which occurs in cultivated ground mostly in S. and central England. Leaves lanceolate-spathulate, subobtuse, hairy. Flowers 4-6 mm. diam., in a simple or branched, rather one-sided cyme; calyx tubular, later cylindrical to ovoid, hairy and glandular, ten-veined; petals white or pinkish (or with a red patch in var. *quinquevulnera* L.), with a bifid coronal scale. Capsule ovoid, rather tightly enclosed in calyx; gynophore very short; seed 1·2-1·4 mm., subglobose, somewhat compressed, finely tuberculate, black.

Mid June—late Aug. (Lowestoft, Suffolk.)
A. petal. B. pistil. C. fruiting calyx. D. capsule. E. seed.

291. SILENE OTITES (L.) Wibel. The SPANISH CATCHFLY is a rare, sub-dioecious perennial with erect, almost simple, glabrous stems growing from a cluster of small spathulate glabrous leaves. It occurs only on sandy soils in E. Anglia. Flowers 3-5 mm. diam., numerous, in crowded whorls; calyx tubular, glabrous, faintly ten-veined; petals greenish-yellow, lanceolate, without a coronal scale. Capsule ovoid, rather tightly encased in calyx, almost sessile; seed 0·4 × 0·3 mm., reniform and cuneoid, netted, grey.

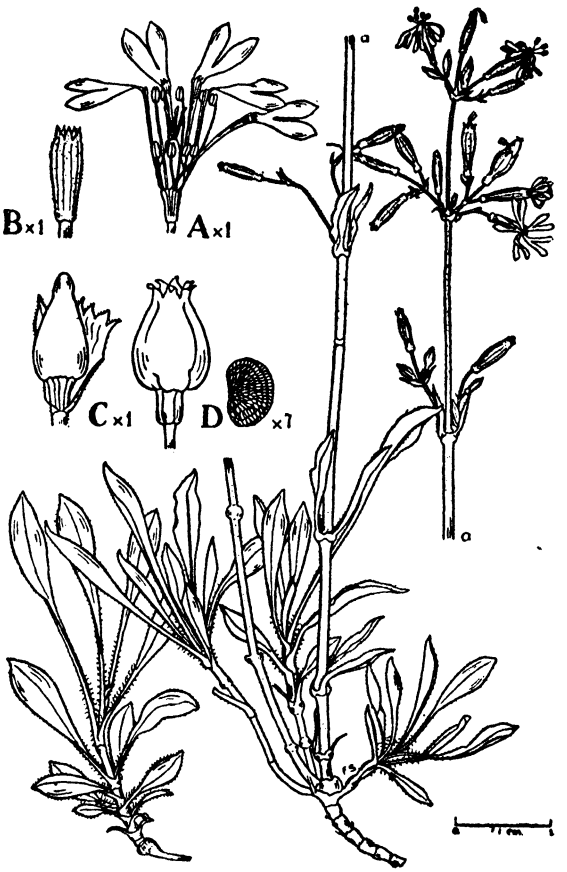
Late June—late July. (Icklingham, Suffolk.)

A. male flower l.s. B. female flower l.s. C. petal. D. calyx. E. capsule. F. seed.



292. SILENE NUTANS L. The NOTTINGHAM CATCHFLY is an uncommon, very variable, perennial with erect branched stems 9-12 in. (23-30 cm.) high, rising from a cluster of glabrous and viscid, lanceolate to spathulate leaves. It grows among limestone rocks and debris in parts of England, N. Wales and E. Scotland. Flowers 12-15 mm., few, in a long-stalked cyme; calyx cylindrical, viscid, ten-veined; petals white, deeply bifid, with a long narrow claw; coronal scale absent. Capsule 9-11 mm. long, conical, bursting the calyx; gynophore 2·5-3·0 mm. long; seed 1·0 × 0·9 mm., reniform and cuneoid, with small tubercles, grey-black.

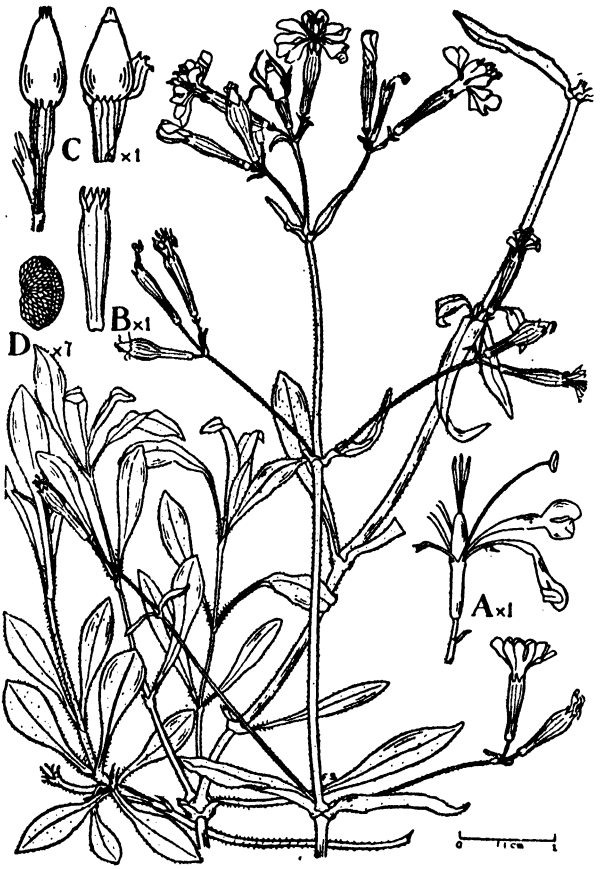
Late June—mid Aug. (Dovedale, Derbyshire.)
A. part of flower. B. calyx. C. capsule. D. seed.



293. SILENE SALMONIANA Hepper (*S. dubia* auct.). This EARLY CATCHFLY is a rare perennial with erect, somewhat branched stems 6-10 in. (15-25 cm.) high, rising from a cluster of almost glabrous and viscid, spathulate, acute and long-petioled leaves. It grows chiefly on sea cliffs and shingle in S.E. England. Flowers 12-15 mm. diam., several in a rather compact, shortly stalked, cyme or false whorl; calyx cylindrical, viscid, ten-veined; petals yellowish, deeply bifid, with a long claw and a small coronal scale. Capsule 11-14 mm. long, conical, bursting calyx; gynophore 3-4 mm. long; seed 1·0 × 0·9 mm., cuneoid, finely tubercled, grey-black.

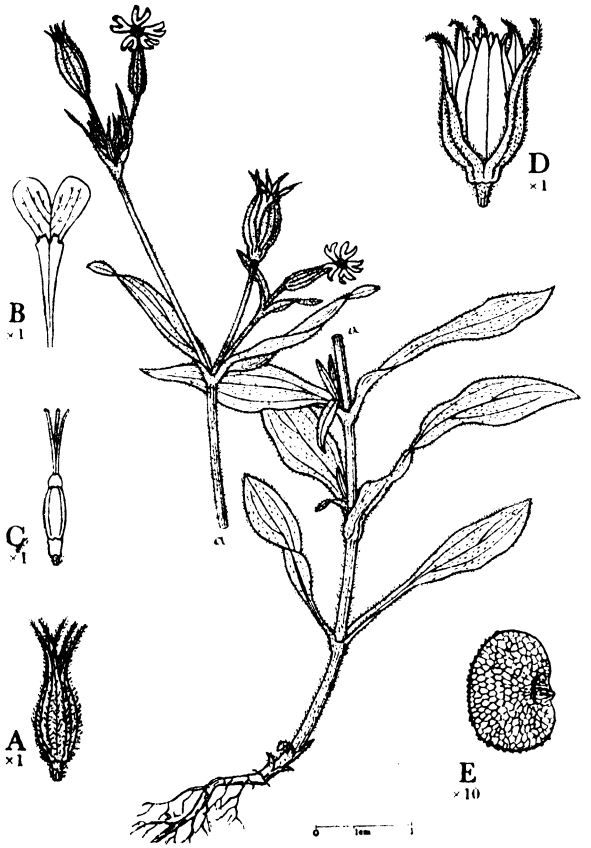
Early May—late June. (Dungeness, Kent.)
A. part of flower. B. calyx. C. capsules. D. seed.

(This is often considered a variety or sub-species of *S. nutans*.)



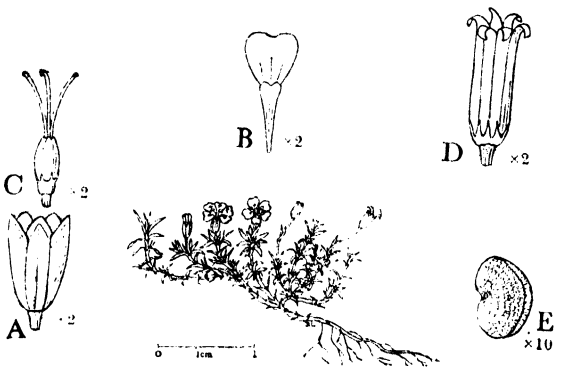
294. SILENE ITALICA (L.) Pers. The ITALIAN CATCHFLY is a slender perennial with erect, branched stems 10-18 in. (25-45 cm.) high, growing from a cluster of viscid, ovate-spathulate, shortly stalked leaves. It occurs rarely in the chalk district of Kent. Flowers 20 mm. diam., few, in a long-stalked dichotomous cyme; calyx clavate, viscid, with acute teeth, ten-veined; petals white, bifid, without a coronal scale. Capsule 50-55 mm. long, conical; gynophore 30 mm. long; seed 1·5 × 1·0 mm., cuneoid, with fine tubercles, grey-black.

Mid July—mid Aug. (Darenth, Kent.)
A. part of flower. B. calyx. C. capsules. D. seed.



295. SILENE (MELANDRIUM) NOCTIFLORA L. The NIGHT-FLOWERING CATCHFLY is a hairy, viscid, erect, simple or somewhat branched annual, which is a common cornfield weed on heavy basic soils throughout lowland Britain. Leaves connate, lowest with winged petioles, lanceolate, acute, hairy and viscid. Flowers 12-17 mm. diam., in a short, dichotomous cyme; calyx rather conical when young, hairy and glandular, ten-veined; petals cream-white, rather deeply bifid, with a bifid, coronal scale, incurved by day, spreading by night. Capsule ovoid-conical, splitting the calyx; gynophore very short; seed 1·5 × 1·0 mm., ovoid and somewhat reniform, tubercled, dark brown.

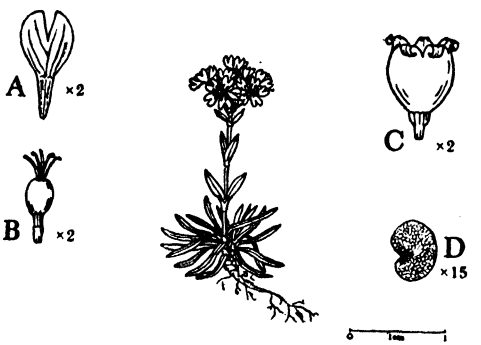
Mid June—late Sept. (Hitcham, Suffolk.)
A. calyx. B. petal. C. pistil. D. capsule. E. seed.



296. SILENE ACAULIS (L.) Jacq. The MOSS CAMPION is an alpine perennial with flowering stems 1-3 in. (2-8 cm.) high, growing from a dense tuft of leaves. It is rather common on mountain rocks above 1,500 ft. in Scotland and rare in similar places in the rest of Britain. Leaves 5 mm. long, linear acute, green. Flowers 5-12 mm. diam., usually solitary; calyx tubular, glabrous, ten-veined; petals red with a bifid, coronal scale. Capsule 10 mm. long, cylindrical; gynophore short, teeth 6, recurved; seed 1·1 × 0·8 mm., reniform, cuneoid and compressed, netted, yellowish.

Mid June—mid Aug. (Ben Lawers, Perthshire.)

A. calyx. B. petal. C. pistil. D. capsule. E. seed.



LYCHNIS L. Annual or perennial herbs with exstipulate leaves. No bracts under calyx tube; sepals united. Stamens 10; styles 5; ovary one-celled; capsule opening by 5 or 10 teeth.

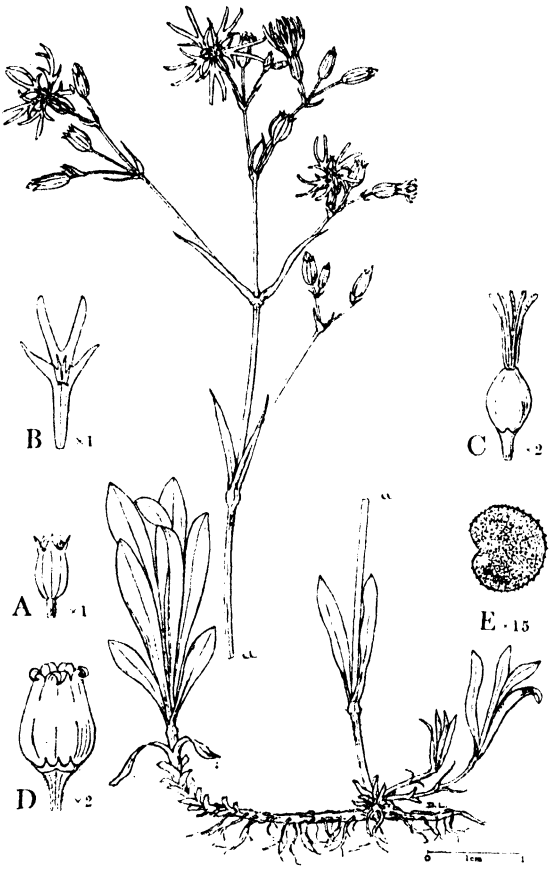
297. LYCHNIS (VISCARIA) ALPINA L. The ALPINE CATCHFLY is a dwarf, tufted perennial, 1-6 in. (3-15 cm.) high, found rarely on alpine rocks in Cumberland and Forfar. Leaves radical, glabrous. Flowers 6-10 mm., hermaphrodite in a crowded corymbose head; petals red, deeply bifid, coronal scale short; calyx tube 4 mm. long, glabrous, faintly ten-veined, campanulate. Capsule 5 mm. long, ovoid, gynophore short, teeth 5, recurved; seed 0·4 × 0·2 mm., reniform, with many blunt tubercles, black.

Early June—mid July. (Clova, Forfarshire.)
A. petal. B. pistil. C. capsule. D. seed.

298. LYCHNIS VISCARIA L. = V. VULGARIS Bernh. This RED GERMAN CATCHFLY is a tufted perennial with stems 9-12 in. (23-30 cm.) high, growing from a loose rosette of leaves. It is found very rarely on rocks in C. Wales and Scotland. Stem viscid under the nodes; leaves mostly radical, spathulate, glabrous except at base; stem leaves oblong, acute. Flowers 15-20 mm. diam., hermaphrodite, in a cymose panicle; calyx tube 12 mm. long, glabrous, ten-veined, cylindrical; petals red, emarginate, coronal scale evident; styles 5, short. Capsule 8 mm. long, ovoid; gynophore long; teeth 5, recurved; seed 0·7 mm., reniform, with small, acute tubercles, black.

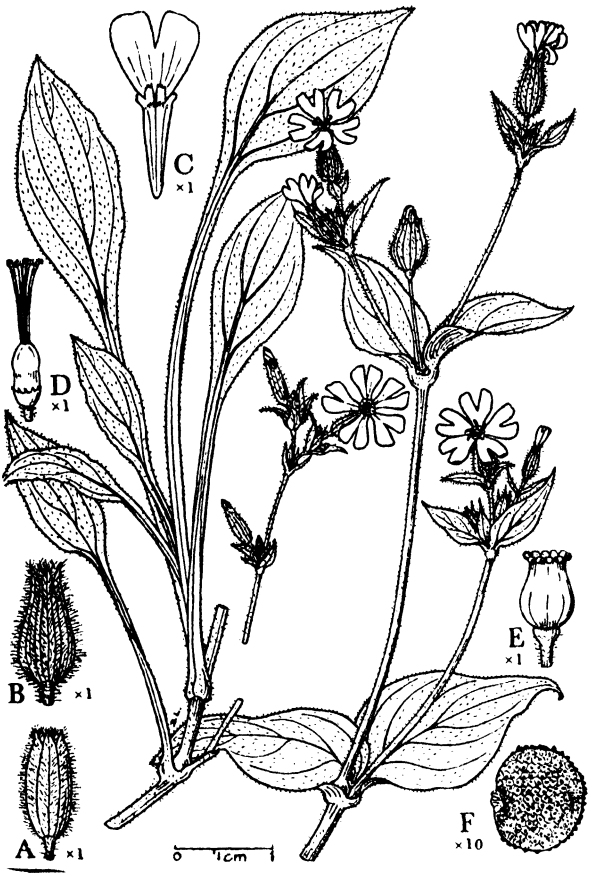
Early June—mid July. (Stannar Rocks, Radnor.)

A. pistil, petals and some stamens. B. capsule. C. seed. D. portion of stem.



299. LYCHNIS FLOS-CUCULI L. THE RAGGED ROBIN is a glabrous perennial with stems 9-15 in. (23-38 cm.) high, growing from a creeping base. It is common in wet, grassy places throughout the British Isles. Leaves mostly basal but not tufted. Flowers 25 mm. diam., hermaphrodite, several in a lax cyme; petals red, deeply 4-fid, with an evident, 4-fid, coronal scale; calyx tube 8 mm. long, glabrous, strongly ten-veined, campanulate. Capsule 7 mm. long, urceolate; gynophore 0, teeth 5, recurved; seed 0·7 mm., reniform, somewhat compressed, with acute tubercles, black.

Early June—mid July. (Bramcote, Nottingham.)
A. calyx. B. petal. C. pistil. D. capsule. E. seed.

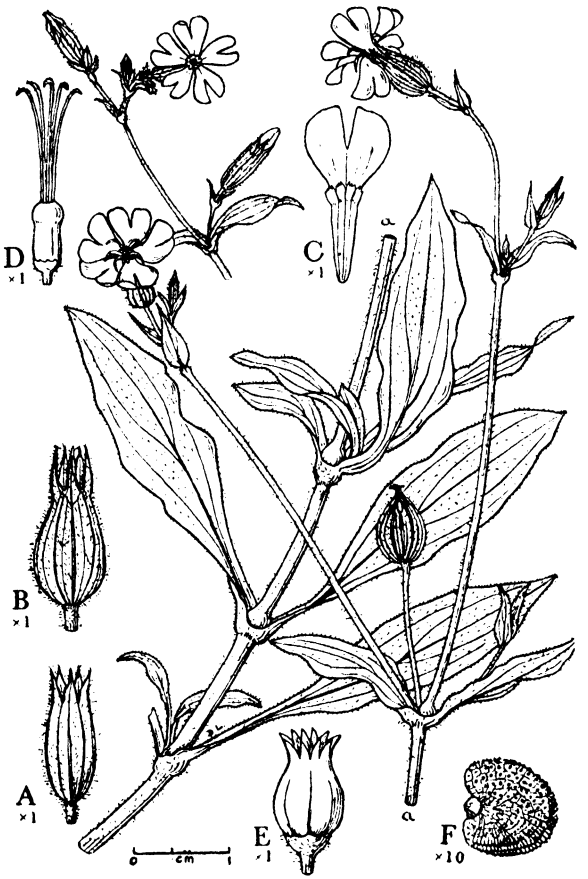


300. LYCHNIS (MELANDRIUM) DIOICA L. The RED CAMPION is a soft-haired annual or short-lived perennial, with erect stems 9-20 in. (23-50 cm.) high, found in woods and shady places abundantly throughout the British Isles. Leaves softly hairy, lower ovate-spathulate. Flowers 20-25 mm. diam., unisexual, in a lax, several-flowered, little branched cyme; petals red, deeply bifid, coronal scale evident; calyx tube 15-20 mm. long, hairy, ten-veined and cylindrical in the male; twenty-veined and conical in the female; styles 5. Capsule 10 × 8 mm., ovoid, teeth 10, recurved; seed 1·3 mm., reniform, or nearly globular, acutely tubercled, black.

Mid May—late June. (Clifton, Nottingham.)

A. calyx of male; B. of female plant. C. petal of male plant.
D. pistil. E. capsule. F. seed.

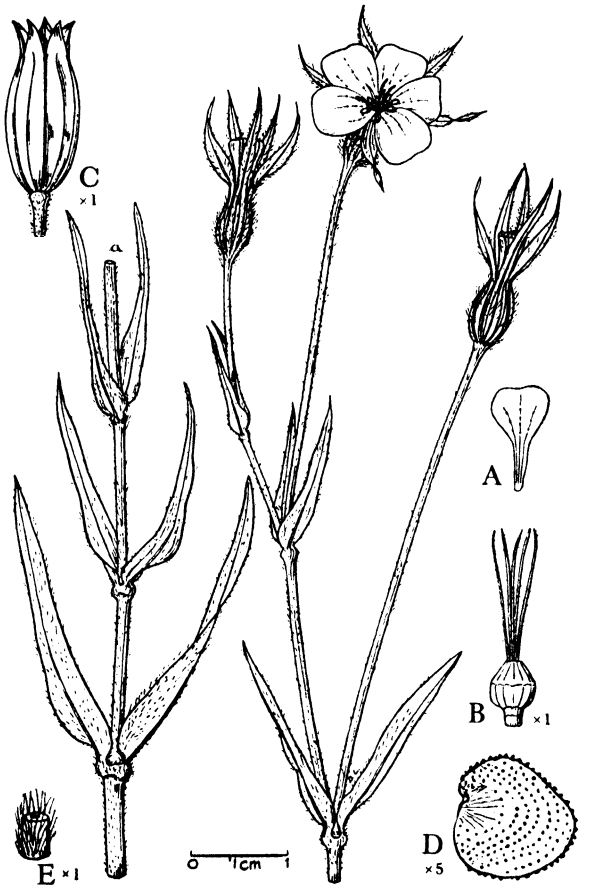
(Hybrids of this species and the next are frequent.)



301. LYCHNIS (MELANDRIUM) ALBA Mill. The WHITE CAMPION is an annual or short-lived perennial, 9-30 in. (23-75 cm.) high, with branched, hairy stems, found in fields and waste places abundantly throughout the British Isles. Leaves lanceolate, soft-haired, green. Flowers unisexual, in a lax, little-branched cyme; petals white, deeply bifid, coronal scale evident; calyx tube 18-25 mm. long, viscid, ten-veined and cylindrical in the male; twenty-veined and conical in the female; styles 5. Capsule 20 × 15 mm., ovoid, teeth 10, suberect; seed 1·2-1·4 mm., reniform-cuneate, bluntly tubercled, grey.

Mid June—mid Sept. (Hitcham, Suffolk.)

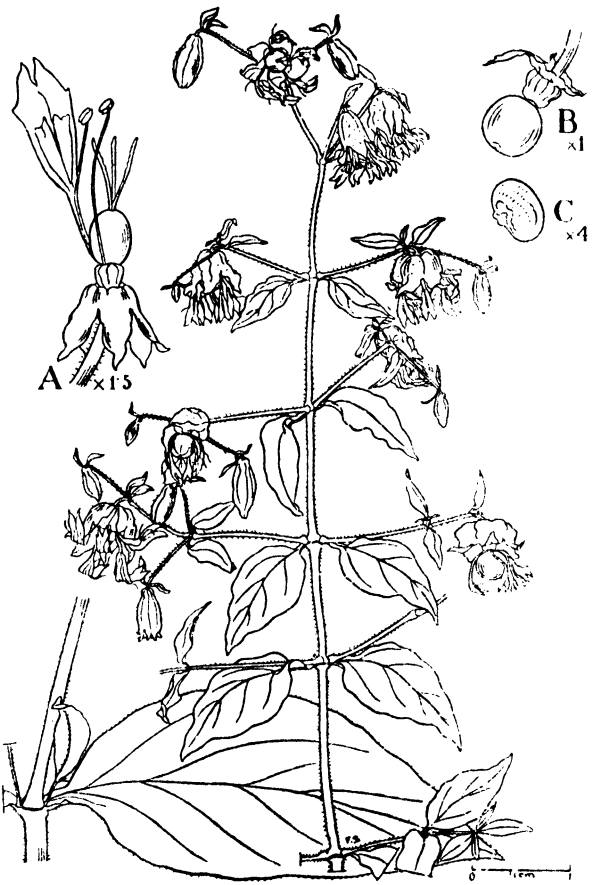
A. calyx of male; B. of female flower. C. petal of male flower.
D. pistil. E. capsule. F. seed.



302. LYCHNIS (AGROSTEMMA) GITHAGO (L.) Scop. The CORN-COCKLE is a stout, soft-haired annual with erect, branched stems 12-30 in. (30-75 cm.) high. It was formerly a common cornfield weed throughout the lowland parts of the British Isles, but is now rare. Leaves linear-lanceolate, acute, hairy. Flowers 40-50 mm. diam., hermaphrodite, solitary on long peduncles; calyx lobes linear, much exceeding the petals, the tube 20 mm. long, hairy, ovoid, strongly ten-veined; petals crimson, entire with no coronal scale. Capsule 45 mm. long, ovoid, with 5 suberect teeth, gynophore absent; seed 3 mm. wide, semi-circular in outline, tubercled, black.

Late June—late July. (St. Albans, Hertfordshire.)

A. petal. B. pistil. C. capsule. D. seed. E. portion of stem.

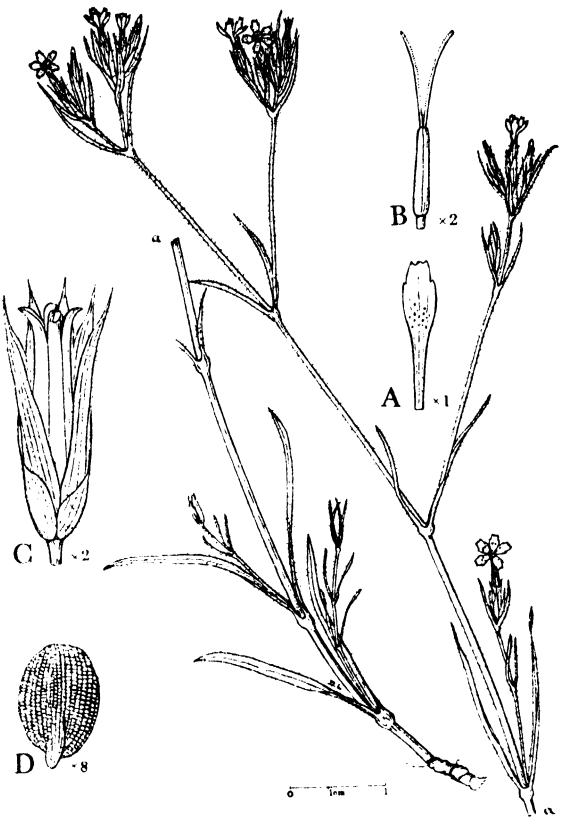


CUCUBALUS L. Includes a single species which is a herbaceous perennial. Epicalyx absent; calyx five-toothed, sepals united, petals with a coronal scale; stamens 10; ovary three-celled; styles 3; fruit a berry.

303. CUCUBALUS BACCIFER L. The BERRY CHICKWEED is a long, straggling plant with stems 24-48 in. (60-120 cm.) long, which is naturalized in a few copses in S. and E. England. Leaves ovate, acute, yellow-green. Flowers 8-10 mm. diam., calyx inflated; petals greenish-white, remote, lanceolate, bifid, with large coronal scale. Fruit a black, fleshy, globular berry, 6-8 mm. diam.; gynophore a third of the length of berry; seed 1·5 mm., reniform, tubercled, black.

Mid July—early Sept. (Watton, Norfolk.)

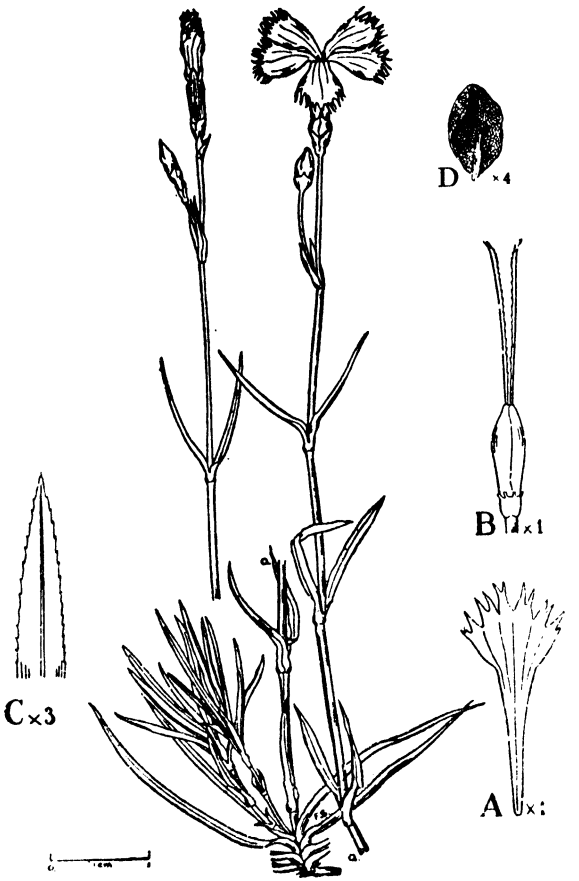
A. part of flower. B. fruit. C. seed.



DIANTHUS L. Annual or perennial herbs with exstipulate leaves. Scales present as an epicalyx at base of calyx tube; sepals united. Stamens 10; styles 2; ovary one-celled, capsule opening by 4 teeth.

304. DIANTHUS ARMERIA L. The DEPTFORD PINK is an erect, branched, leafy annual, 6-24 in. (15-60 cm.) high, found in hedgerows and dry pastures throughout England and Wales. Leaves 30-60 mm. long, linear, pointed, hairy, somewhat glaucous. Flowers 10 mm. diam., in crowded cymes; epicalyx nearly the length of calyx; scales 2, gradually acuminate; calyx striate, hairy, teeth acuminate; petals red, spotted, spathulate, serrate. Capsule cylindrical, shorter than calyx; seed 2·0 × 1·5 mm., flattened, ovate, black, netted.

Mid July—mid Aug. (Peckham Wood, Kent.)
A. petal. B. pistil. C. capsule. D. seed.



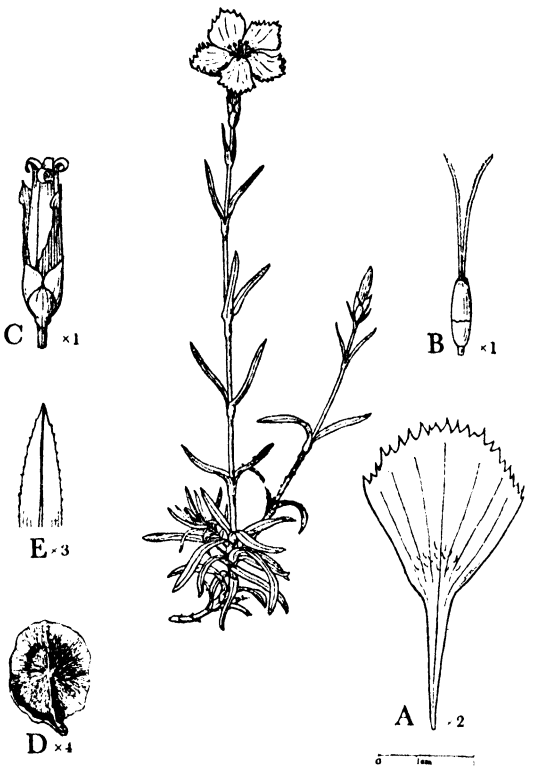
305. DIANTHUS PLUMARIUS L. This FEATHER PINK is a tufted, glaucous perennial, with erect flowering scapes 9-15 in. (23-38 cm.) high, which is naturalized on old walls in several places. Leaves linear, pointed, rough on the edges, glaucous. Flowers 20-25 mm. diam., 1-5 in a lax cyme; epicalyx one-quarter the length of tube; scales tapering to a short, acute tip; calyx striate, smooth, teeth acute; petals pink, spathulate, fimbriate. Capsule narrowly ovoid, just exceeding calyx; seed 3·0 × 1·7 mm., flat, ovate, margin irregularly incurved, finely honeycombed, black.

Mid June—mid Aug. (Fountains Abbey, Yorkshire.)
A. petal. B. pistil. C. leaf tip. D. seed.

306. DIANTHUS CARYOPHYLLUS L. This CLOVE PINK is a tufted, glaucous perennial, with erect flowering scapes 9-20 in. (23-50 cm.) high, which is naturalized on old walls in a few places in England. Leaves 130-150 mm. long, linear, pointed, with smooth edges, glaucous. Flowers 30-40 mm. diam., 1-5 in a lax cyme; epicalyx one-tenth of length of tube; scales ending suddenly in a very short point; calyx striate, smooth, teeth acute; petals reddish pink, spathulate; deeply serrate. Capsule ovoid, no longer than calyx; seed 4·0 × 2·5 mm., flattened, ovate, finely honeycombed, black.

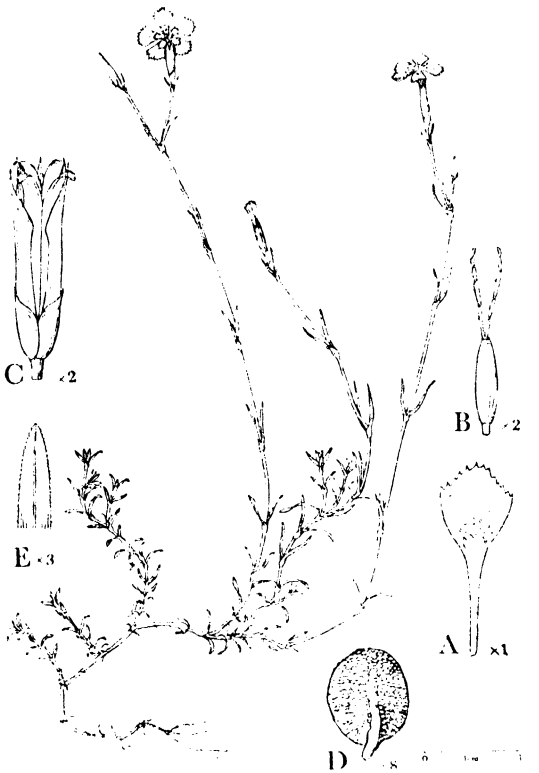
Mid July—mid Aug. (Rochester Castle, Kent.)

A. petal. B. pistil. C. seed.



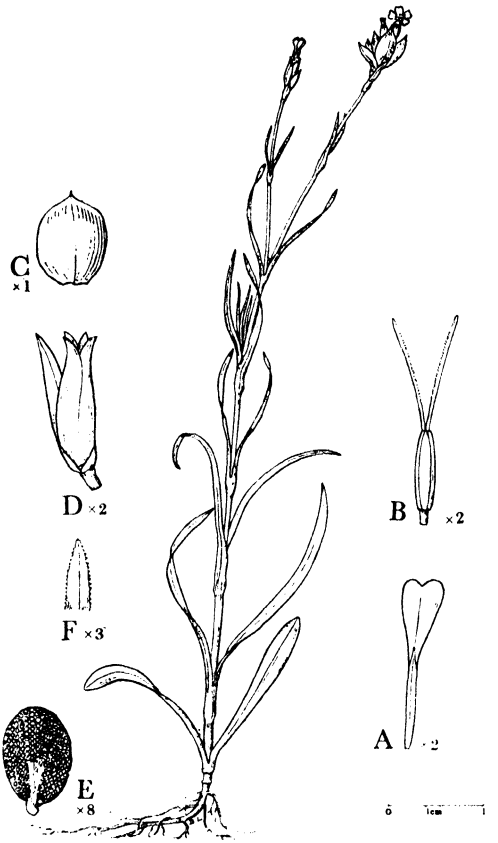
307. DIANTHUS GRATIANOPOLITANUS Vill. (*D. cæsius* Sm.). The CHEDDAR PINK is a densely tufted, glaucous perennial with erect flowering stems 3-10 in. (8-25 cm.) high, growing from a cæspitose mass of glaucous leaves. It is found in Britain only on the limestone cliffs of Cheddar Gorge. Leaves 20-60 mm. long, bluntish with rough edges. Flowers 25 mm. diam., usually solitary; epicalyx hardly one-quarter as long as tube; scales ending suddenly in a mucronate or obtuse apex; calyx striate, glabrous, teeth triangular; petals deep pink, spathulate, limb irregularly and finely toothed. Capsule cylindrical; seed 4 × 3 mm., flattened, ovate, wrinkled, black.

Mid June—mid July. (Cheddar, Somerset.)
A. petal. B. pistil. C. capsule. D. seed. E. leaf tip.



308. DIANTHUS DELTOIDES L. The MAIDEN PINK is a loosely tufted, glabrous perennial with erect flowering stems 4-12 in. (10-30 cm.) high, found uncommonly in grassy pastures throughout the British Isles. Leaves 12-15 mm. long, short, broadly linear, blunt, hairy on the margins, somewhat glaucous. Flowers 17-20 mm. diam., in lax few-flowered cymes; epicalyx one-third as long as calyx; scales 2-4, broadly ovate, cuspidate; calyx striate, glabrous, teeth acuminate; petals rose with pale spots and dark at base, serrate. Capsule cylindrical, no longer than calyx; seed 1·5 × 1·2 mm., flattened, oval, netted, dark brown.

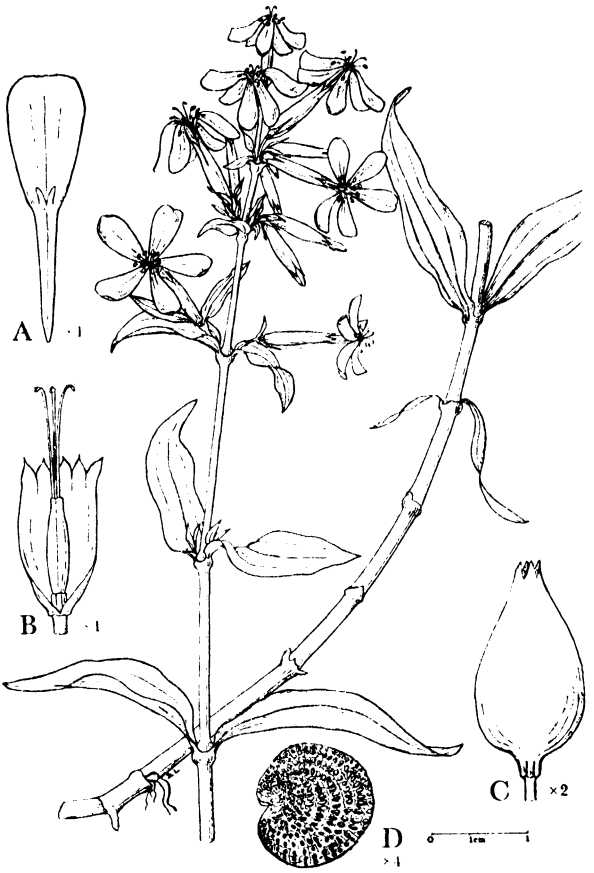
Mid June—mid Sept. (Deganwy, N. Wales.)
A. petal. B. pistil. C. capsule. D. seed. E. leaf tip.



309. DIANTHUS (KOHLRAUSCHIA) PROLIFER L. This PROLIFEROUS PINK is an erect, leafy annual, 4-18 in. (10-45 cm.) high, found rarely in lowland, sandy and gravelly places in S. England. Stem glabrous, little branched. Leaves 40-60 mm., linear, with scabrid margins, green. Flowers 6-8 mm. diam. in loose heads surrounded by an involucre of scarious, ovate bracts; epicalyx, one ovate scale equalling calyx; calyx cylindrical, teeth blunt; petals pink-purple or purple-red, entire, spathulate, emarginate. Capsule ellipsoid, shorter than calyx; seed 1·7 × 1·0 mm., flattened, ovate, tubercled, black.

Late June—late July. (Worthing, Sussex.)

A. petal. B. pistil. C. epicalyx. D. capsule. E. seed. F. leaf tip.

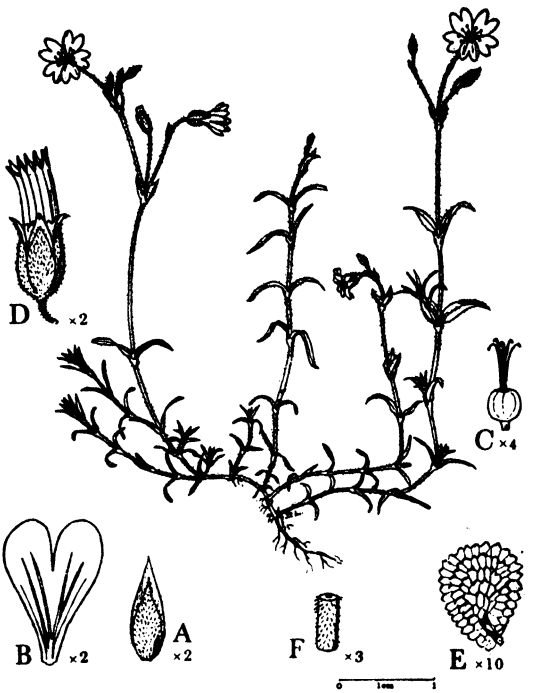


SAPONARIA L. Annual or perennial herbs with exstipulate leaves. Epicalyx 0; sepals united; coronal scale present on petals. Stamens 10; styles 2-3; ovary one-celled; capsule opening by 4 teeth.

310. SAPONARIA OFFICINALIS L. The COMMON SOAPWORT is an erect, leafy perennial, 6-30 in. (15-75 cm.) high, with an extensive, creeping rhizome. It is found on river banks or as an outcast from cultivation scattered all over the British Isles. Leaves ovate, glabrous, shining, with parallel veins. Flowers 25-30 mm. diam., in dense cymes; calyx tube long, cylindrical, teeth very short, triangular; petals pink, spathulate, entire; coronal scale, small bifid. Capsule urceolate, teeth small, triangular; seed 4 mm., reniform, with large tubercles, black.

Mid Aug.—mid Sept. (Denton, E. Kent.)
A. petal. B. pistil and part calyx. C. capsule. D. seed.

(*Saponaria vaccaria* L., with flowers in much-branched cymes, inflated calyx and pink petals, occurs rather frequently as a casual.)

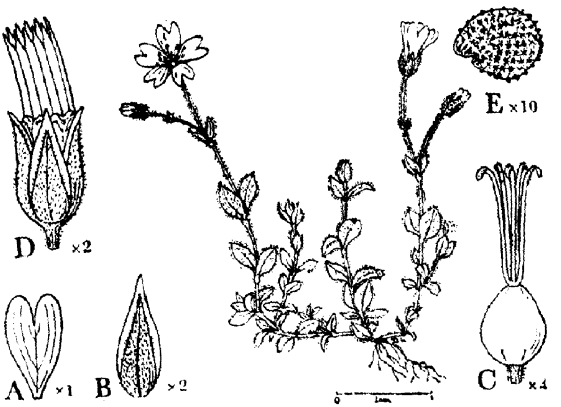


CERASTIUM L. Small annual or perennial herbs, usually pubescent. Sepals 5, or occasionally 4, free; petals 5, bifid; styles 3, 4 or 6 opposite the sepals; capsule cylindrical, with twice as many teeth as styles.

311. CERASTIUM ARVENSE L. The FIELD MOUSE-EAR CHICKWEED is a prostrate, much-branched, pubescent perennial, with flowering scapes 2-6 in. (5-15 cm.) high, growing from a loosely tufted prostrate base. It is found frequently on sandy heaths and similar places throughout lowland Britain. Leaves 12 mm. long, linear-lanceolate, pointed, softly hairy. Flowers 15-17 mm. diam., in a loose cyme; sepals acute, glandular, hairy, with membranous tips and margin; petals white, twice as long as sepals, divided half-way; styles 5. Capsule 10 mm. long, oblique, longer than calyx; seed 1·5 × 1·2 mm., pyriform, ridged with blunt tubercles, orange.

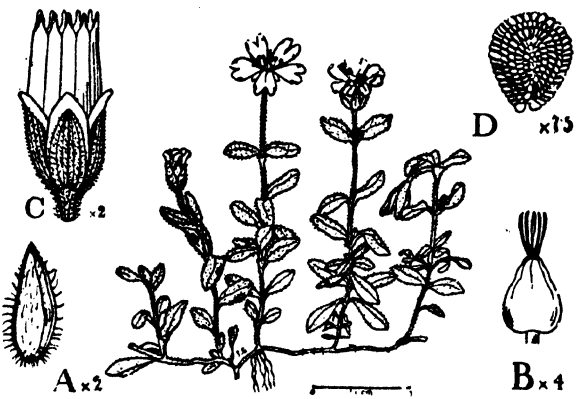
Late April—mid Aug. (Bottesford, Lincolnshire.)
A. sepal. B. petal. C. pistil. D. capsule. E. seed. F. stem.

(C. *tomentosum* L., a common garden plant with grey leaves and flowers 20-25 mm. diam.; often occurs as an impermanent casual.)



312. CERASTIUM ALPINUM L. The ALPINE MOUSE-EAR CHICKWEED is a tomentose plant with flowering stems 1-4 in. (3-10 cm.) high, growing from loose tufts. It is found in mountain grassland in Scotland and N. Wales. Leaves obovate to elliptical, covered with short, whitish hairs; bracts leafy. Flowers 18-23 mm. diam.; sepals broadly lanceolate, with broad, scarious margins; petals white, twice as long as sepals, bifid a third of the way; styles 5. Capsule 14 mm., slightly conical, twice as long as calyx, almost straight; seed 1·5 × 1·8 mm., cuneoid, comma-like, with a concentric honeycomb, brown.

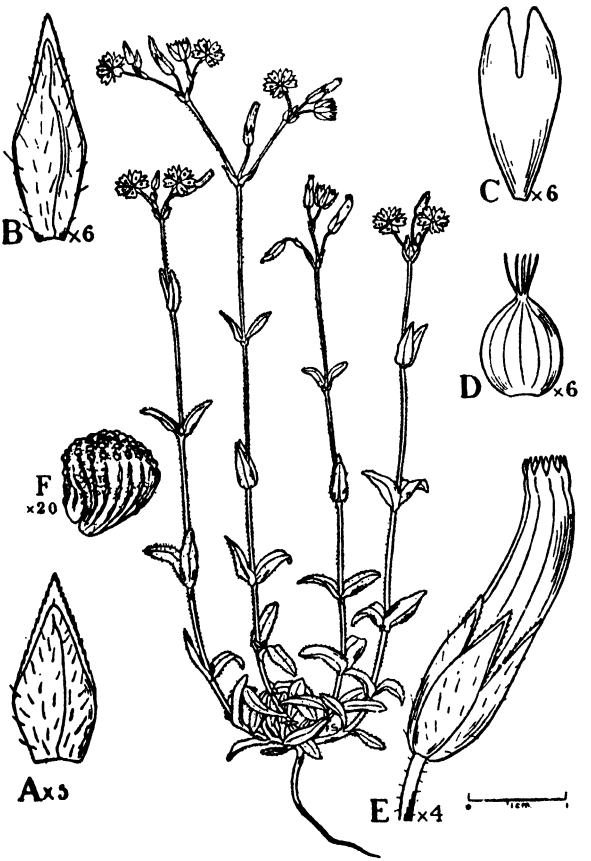
Mid June—mid Aug. (Glen Clova, Forfar.)
A. petal. B. sepal. C. pistil. D. capsule. E. seed.



313. CERASTIUM ARCTICUM Lange. The ARCTIC MOUSE-EAR CHICKWEED is a loosely tufted, prostrate, much-branched, downy plant with flowering stems 1-4 in. (2-10 cm.) high, growing from very loose tufts. It is found on rocks on mountains in Scotland, Wales and N.W. England. Leaves obovate to elliptical, covered with long, soft, white hairs. Flowers 18-25 mm. diam.; sepals narrowly lanceolate with scarious margins, hairy; petals white, twice as long as sepals, bifid a third of the way; styles 5. Capsule cylindrical to conical, twice as long as calyx, curved near the apex; seed 1·5 mm., pyriform, acutely tubercled, brown.

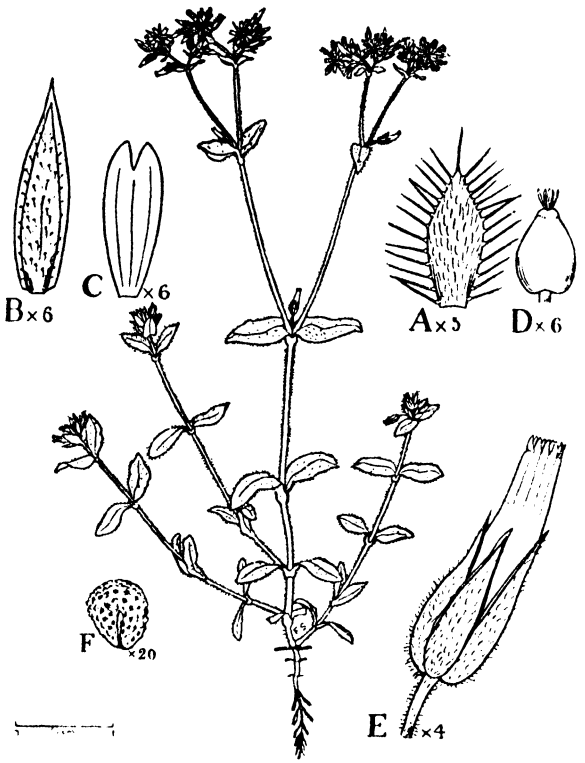
Mid June—mid Aug. (Ben Lawers, Perthshire.)
A. sepal. B. pistil. C. capsule. D. seed.

(C. *nigrescens* Edmonst. differs from the above in the short, roundish leaves and densely glandular, rather blunt sepals and pedicels.)



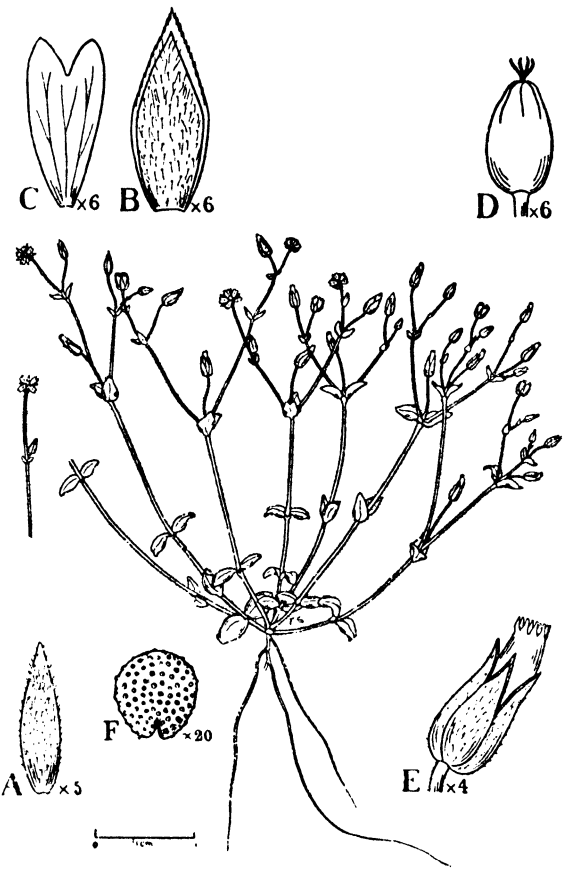
314. CERASTIUM HOLOSTEOIDES Fr. (*C. vulgatum* auct.). The COMMON MOUSE-EAR CHICKWEED is a rather slender, hairy, but not glandular, perennial, with decumbent, then erect, flowering stems 2-6 in. (5-15 cm.) high, growing from a slender, creeping rootstock. It is found abundantly in fields and waste ground throughout the British Isles. Stems few, almost simple; bracts with membranous tips. Flowers 5-partite, 8-10 mm. diam., in an elongated cyme; sepals ovate-acute, with a membranous apex and margin; petals white, usually veinless, rather broad, deeply bifid, about as long as sepals. Capsule 10-13 mm. long, curved, twice as long as calyx, about as long as pedicels, more or less erect; seed 7 × 6 mm., roundly ovoid, ridged and tubercled, lobed, yellow.

Early May—mid Oct. (Cheshunt, Hertfordshire.)
A. bract. B. sepal. C. petal. D. pistil. E. capsule. F. seed.



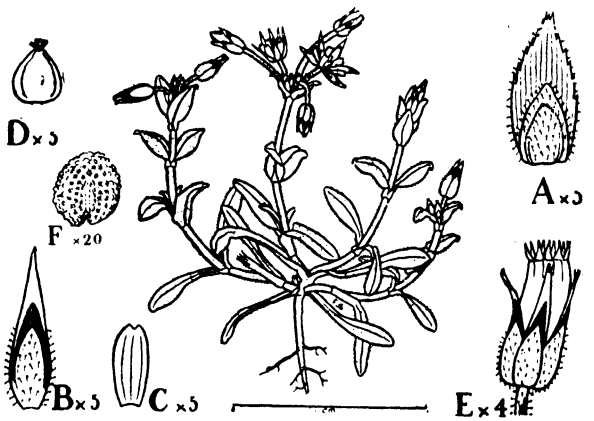
315. CERASTIUM GLOMERATUM Thuill. This BROAD-LEAVED MOUSE-EAR CHICKWEED is a rather slender, hairy and glandular annual, with sub-erect, then erect, flowering stems 2-6 in. (5-15 cm.) high, found abundantly in fields and waste ground throughout Britain. Lower leaves yellow-green, broadly lanceolate, sessile; bracts leafy, hairy. Flowers 4-5 mm. diam., in compact cymes, 5-partite; sepals lanceolate, very acute, with a very narrow, membranous margin; petals white with very faint veins, narrow, deeply notched, about as long as sepals. Capsule 8-10 mm. long, large, curved, twice as long as calyx and longer than pedicel, erect; seed 4·5 × 4·0 mm., pyriform, tubercled, chestnut brown.

Mid May—mid Oct. (Waltham Cross, Hertfordshire.)
A. bract. B. sepal. C. petal. D. pistil. E. capsule. F. seed.



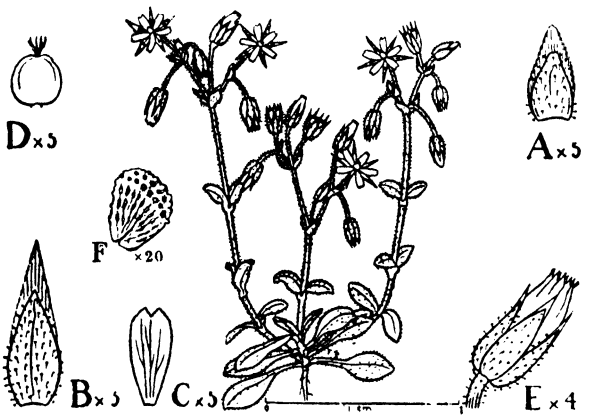
316. CERASTIUM ATROVIRENS Bab. (*C. tetrandrum* Curt). This SEASIDE MOUSE-EAR CHICKWEED is a viscid, glandular and hairy annual with numerous flowering stems 2-6 in. (5-15 cm.) high. It is common on the sea coast all round the British Isles, and rare in sandy places inland. Stems many, inflorescence grey-green. Lower leaves grey-green, oval or oblong; bracts small, leafy. Flowers 4- or 5-partite, 3-6 mm. diam.; sepals ovate-acute with a narrow, scarious margin; petals white, with branched veins, narrow, deeply notched, about as long as sepals; styles 4 or 5. Capsule 2·5 mm. long, nearly straight, much shorter than pedicel, which is always erect; seed 0·5 mm., globular, lobed near the radicle, tubercled, dark yellow.

Mid May—early July. (Dungeness, Kent.)
A. bract. B. sepal. C. petal. D. pistil. E. capsule. F. seed.



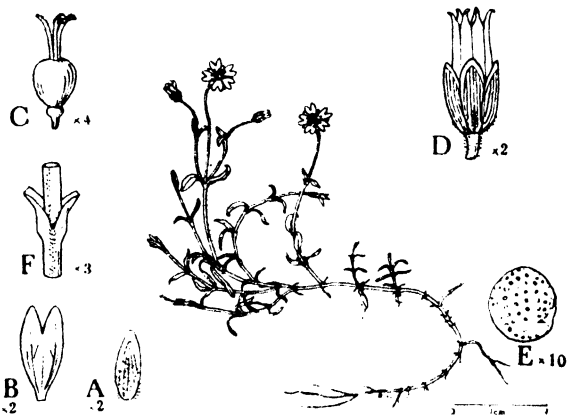
317. CERASTIUM SEMIDECANDRUM L. This DWARF MOUSE-EAR CHICKWEED is a glandular and hairy annual with erect or ascending flowering stems 1-3 in. (3-8 cm.) high, branched from the base, and growing from a leafy rosette. It is common throughout the British Isles, except the far North, in dry, sandy ground. Lower leaves oblong, long-stalked; bracts with the upper half membranous, glandular. Flowers 5-6 mm. diam., in a small, dense cyme; sepals narrow, acute, with a long membranous tip; petals with simple veins, white, slightly notched, shorter than the sepals; styles 5. Capsule 4 mm. long, almost straight, shorter than pedicels, which are at first recurved, later erect, straight; seed 0·5 × 0·4 mm., broadly ovoid, tubercled and lobed at base, yellow.

Mid April—mid June. (Woking, Surrey.)
A. bract. B. sepal. C. petal. D. pistil. E. capsule. F. seed.



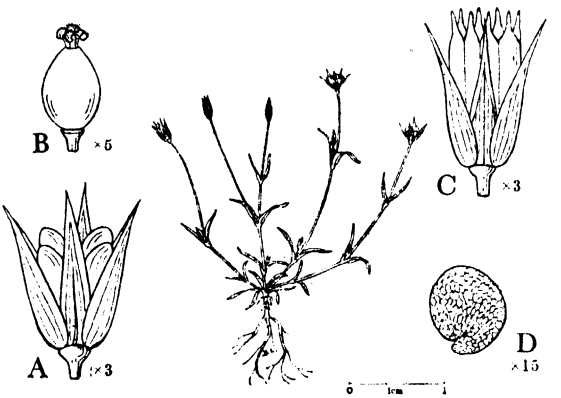
318. CERASTIUM PUMILUM Curt. This LESSER MOUSE-EAR CHICKWEED is a glandular and hairy annual with erect or ascending flowering stems 1-4 in. (3-10 cm.) high, branched from the base and growing from a leafy rosette. It is a rare plant of limestone grassland in S. and C. England. Lower leaves spathulate, long stalked; bracts small, with a very narrow scarious margin. Flowers 6 mm. diam., in a small, dense cyme; sepals lanceolate, acute, with a distinct, membranous tip, glandular; petals with branched veins, slightly notched, rather shorter than the sepals. Capsule 4-5 mm. long, almost straight, shorter than pedicels, which are at first reflexed, later erect and curved at top; seed 0·5 × 0·4 mm., ovoid, tubercled and lobed at base, orange.

Mid April—mid May. (St. Vincent's Rocks, Bristol.)
A. bract. B. sepal. C. petal. D. pistil. E. capsule. F. seed.



319. CERASTIUM CERASTOIDES (L.) Britton. This MOUNTAIN CHICKWEED is a slender, straggling perennial with decumbent flowering scapes 2-4 in. (5-10 cm.) long, growing from prostrate and rooting, much-branched, leafy stems, glabrous except for a thin line of hairs. It is a very rare alpine, growing about 1,500 ft. on Cross Fell, Ben Nevis and the Cairngorms. Leaves about 10 mm. long, pale green, blunt, glabrous. Flowers 9-12 mm. diam., solitary; sepals subacute, glandular-hairy, with a membranous margin; petals white, exceeding sepals, divided nearly half-way; styles 3. Capsule 8 mm., cylindrical, straight, twice as long as calyx; seed 0·8-1·0 mm., sub-orbicular, tuberculate, orange.

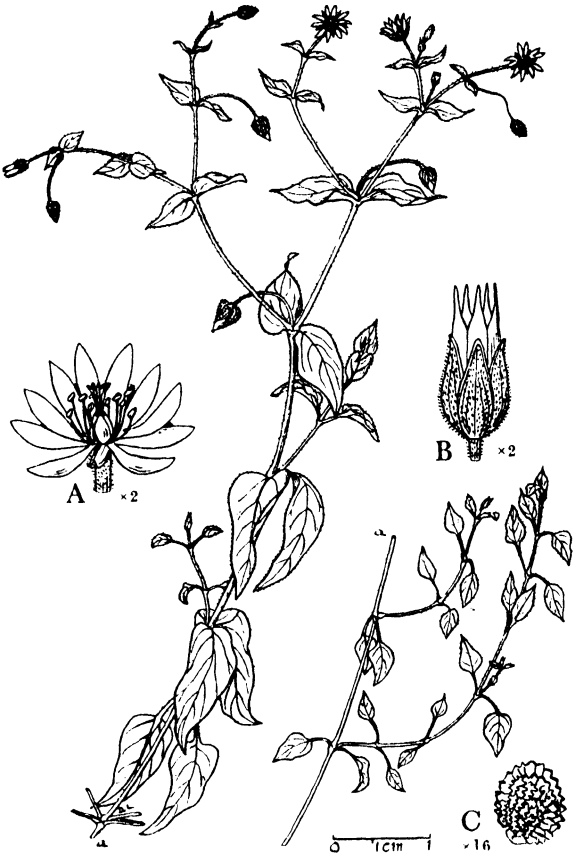
Mid May—late July. (Cairngorm Mts.)
A. sepal. B. petal. C. pistil. D. capsule. E. seed. F. node.



MŒNCHIA Ehrh. Small, stiff, erect annuals; sepals 4, free; petals 4, entire; stamens 4 or 8; styles 4. Capsule with 8 teeth.

320. MŒNCHIA ERECTA (L.) Gærtn. Mey. and Scherb. The UPRIGHT CHICKWEED is a dwarf, glaucous, erect annual, with few or many flowering stems 1-3 in. (3-8 cm.) high, growing from a loose rosette. It is an uncommon plant on sandy grassland in England as far north as the Cheviots. Leaves 10 mm., linear-lanceolate, glaucous. Flowers 8 mm., in very lax, long-stalked cymes; sepals acute with white edge; petals white, two-thirds length of sepals, entire; styles 4, short. Capsule 7 mm., almost cylindrical, about as long as calyx; seed 0·7 × 0·6 mm., ovoid and comma-like, honeycombed, light brown.

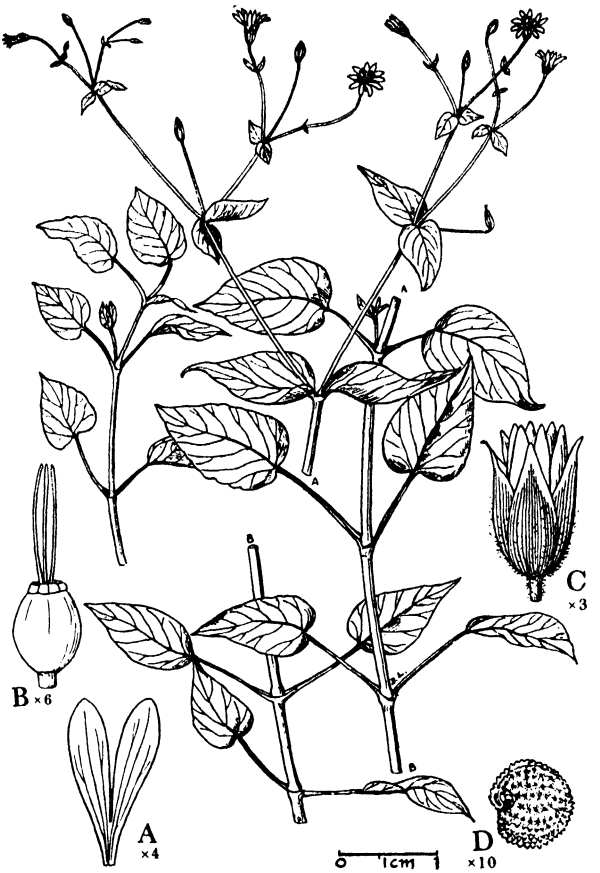
Mid May—early June. (Gustard Wood Common, Hertfordshire.)
A. flower. B. pistil. C. capsule. D. seed.



MYOSOTON Mœnch. A leafy annual or perennial herb. Epicalyx absent, sepals, 5 free, petals, 5 bifid; stamens 10; ovary one-celled, styles 5. Capsule opening by 5 bifid teeth.

321. MYOSOTON AQUATICUM (L.) Mœnch (*Stellaria aquatica* L). This WATER STITCHWORT is a straggling, much-branched annual or perennial with decumbent, spreading, weak stems 8-36 in. (20-90 cm.) long. It occurs on streamsides and ditches, frequently in lowland England, Wales and S. Scotland. Stems terete, glandular-hairy above. Leaves ovate-cordate, acuminate, margin often wavy; lower stalked upper sessile. Flowers 15 mm. diam., in long-stalked cymes, peduncles 20-30 mm.; sepals lanceolate, acute, glandular-hairy, many veined; petals white, deeply bifid, nearly twice as long as sepals; stamens 10. Capsule 8-10 mm. long, ovoid, much longer than calyx; seed 0·6 × 0·4 mm., roundly ovoid, covered with serrate papillæ, brown.

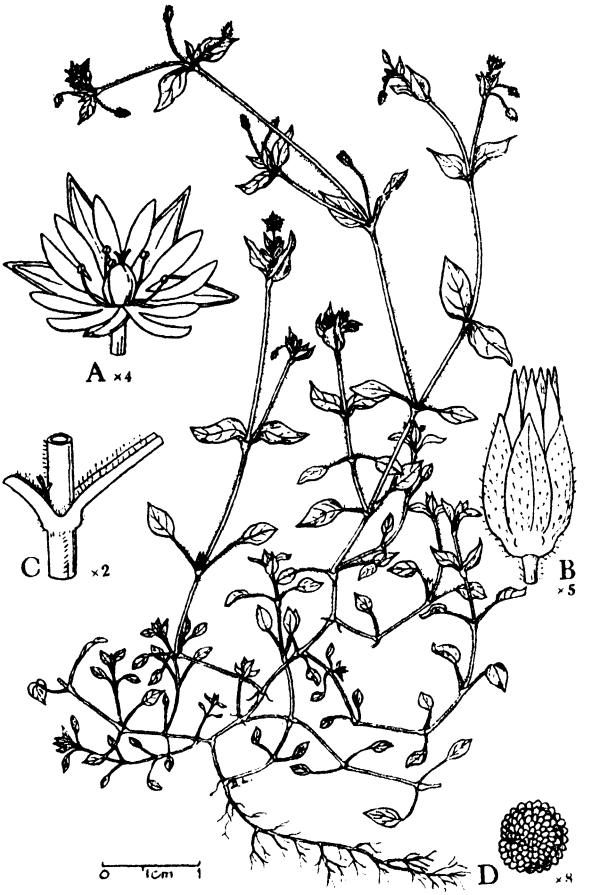
Early July—early Sept. (Twyford, Derbyshire.)
A. flower. B. capsule. C. seed.



STELLARIA L. Weak, subglabrous, straggling herbs. Epicalyx absent; sepals free; petals 5, bifid; stamens 10 or fewer; styles 3; capsule conical with 6 valves.

322. STELLARIA NEMORUM L. The WOOD STITCHWORT is a straggling perennial with weak stems 12-20 in. (30-50 cm.) high, which is found uncommonly in damp woods in W. and N. England and Scotland. Stem hairy all round. Leaves ovate-cordate, entire; lower long-stalked; upper subsessile, thin and sparsely hairy. Flowers 10-12 mm., peduncles 15-20 mm. long; sepals ovate, blunt, hairy, many-veined; petals white, deeply bifid, twice as long as sepals; stamens 10. Capsule 6-8 mm. long, ovoid, just exceeding the calyx; valves 6, erect; seed 1·2 mm., globular, with acute tubercles, orange.

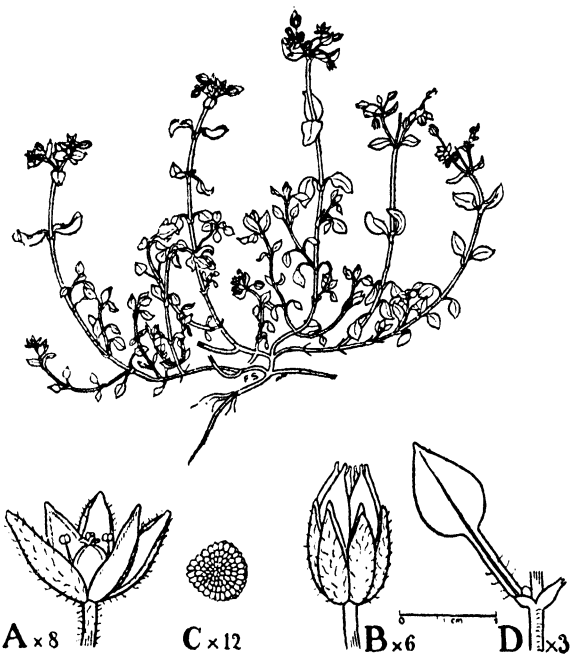
Mid May—late June. (Alton, Staffordshire.)
A. petal. B. pistil. C. capsule. D. seed.



323. STELLARIA MEDIA (L.) Vill. The COMMON CHICKWEED is a much-branched, straggling plant, 2-12 in. (5-30 cm.) high, abundant everywhere on open ground throughout the British Isles. Stems weak, with two lines of hairs. Leaves ovate, acute, entire; lower stalked, upper sessile. Flowers 7-8 mm. diam., peduncles 10-15 mm.; sepals lanceolate, hairy; petals white, deeply bifid, shorter than sepals; stamens 5; styles 3. Capsule 6 mm. long, longer than calyx; seed 0·9-1·2 mm., globular, acutely tubercled, chestnut-brown.

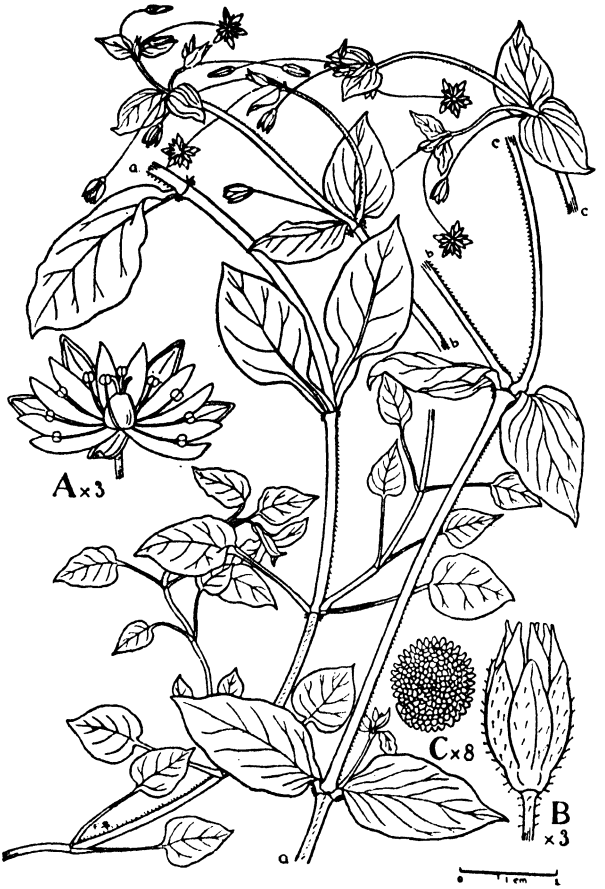
Early Jan.—late Dec. (Denton, E. Kent.)

A. flower. B. capsule. C. node. D. seed.



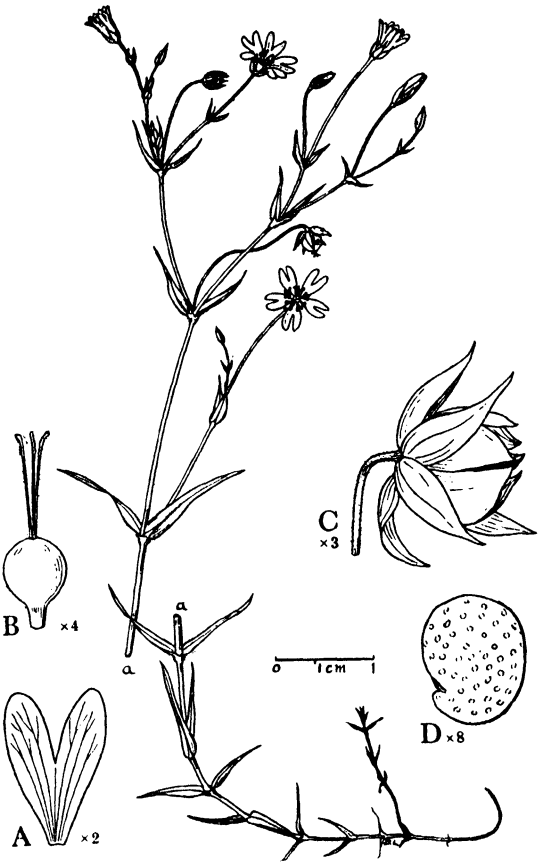
324. STELLARIA PALLIDA (Dum.) Piré (*S. apetala* auct.) This LESSER CHICKWEED is a small, prostrate, much-branched annual which is common on light, sandy soils and dunes in S. and E. England, and rare elsewhere. Stems 4-10 in. (10-25 cm.) long, with a single line of hairs. Lower leaves small, ovate, acute, stalked; upper sessile. Flowers 2·5-3·0 mm. diam., in small, dense cymes; peduncles 10-20 mm.; sepals lanceolate, acute, hairy; petals absent or minute; stamens 2-3; styles 3. Capsule ellipsoid, a little longer than calyx; seed 0·7 mm., globular, with small, blunt tubercles, light brown.

Mid March—mid June. (Pilgrims' Way, Guildford.)
A. flower. B. capsule. C. seed. D. leaf.



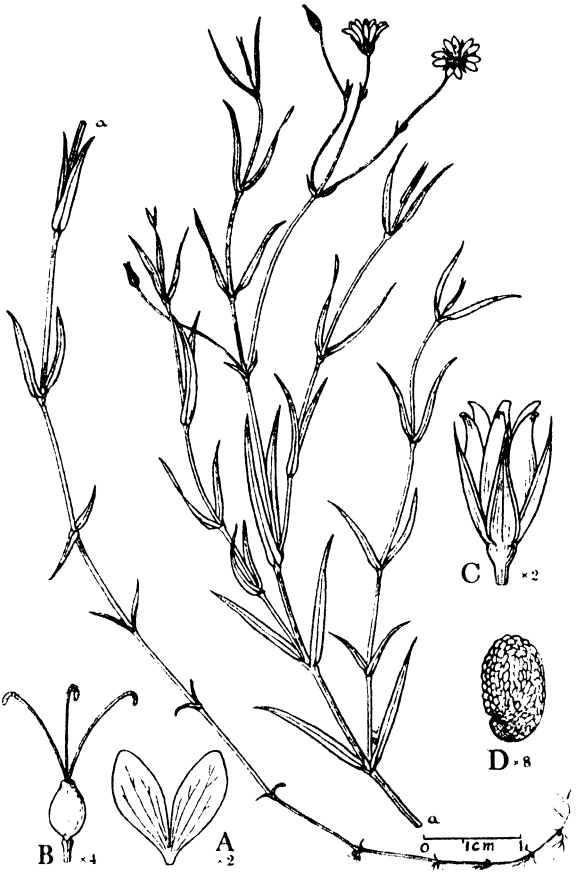
325. STELLARIA NEGLECTA Weihe. This GREATER CHICKWEED is a decumbent, then erect, straggling plant which is frequent in damp, shady places, especially in the west of Britain. Stems weak, about 12-20 in. (30-50 cm.) long, with a single line of hairs. Lower leaves triangular, ovate, stalked; upper leaves ovate, elliptical, acute, sessile, almost glabrous. Flowers 10 mm. diam., in short cymes; sepals lanceolate, hairy; petals white, bifid almost to base; stamens 10; styles 3. Capsule 7 mm. long, conical, a little longer than calyx; seed 1·5 mm., globular, with acute tubercles, chestnut.

Mid April—early July. (Bovey Tracy, Devon.)
A. flower. B. capsule. C. seed.



326. STELLARIA HOLOSTEA L. The GREATER STITCHWORT is a glaucous, sub-erect, branched perennial with short, leafy stems 3-6 in. (8-15 cm.) high and longer flowering stems 6-15 in. (15-38 cm.) high, growing from a slender, creeping stock. It is abundant in hedgerows and shady places throughout the British Isles. Stems four-angled, slightly hairy at times. Leaves linear-lanceolate, acuminate, somewhat glaucous. Flowers 17-20 mm. diam., in long-stalked cymes; peduncles 20-30 mm.; sepals ovate-lanceolate, obscurely three-veined, with a membranous margin; petals white, deeply bifid, exceeding sepals; stamens 10; styles 3. Capsule 5 mm., globular, shorter than calyx; seed 2·0 × 1·7 mm., ovoid, comma-like, with distant tubercles, pale yellow.

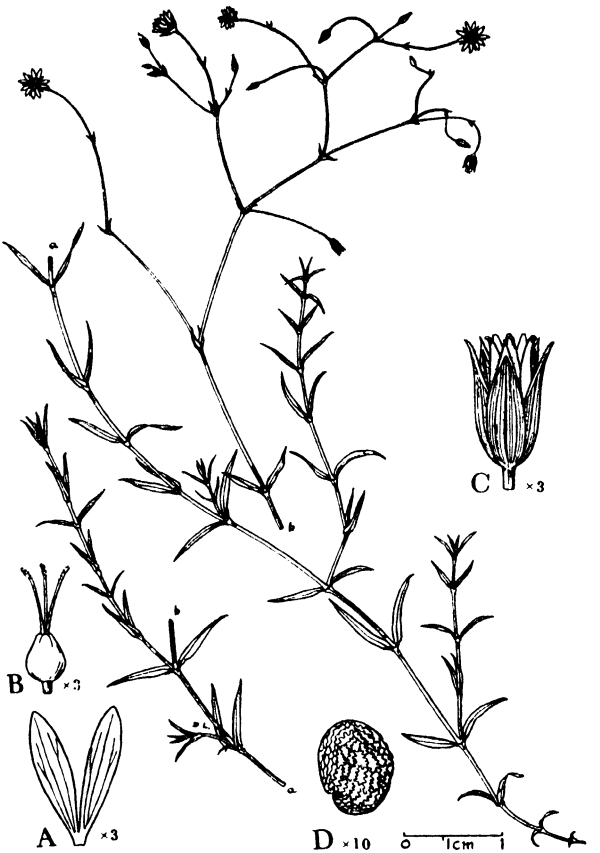
Early May—late June. (Denton, E. Kent.)
A. petal. B. pistil. C. capsule. D. seed.



327. STELLARIA PALUSTRIS Retz. The MARSH STITCHWORT is a glaucous, sub-erect, branched perennial, with flowering and non-flowering stems 9-20 in. (23-50 cm.) high, growing from an underground stock. It is found, largely in marshes and fens, from Perthshire southwards. Stems 4-angled, smooth. Leaves 25-35 mm. long, linear, glaucous, glabrous. Flowers 12-13 mm. diam., almost solitary; peduncles 20-30 mm.; sepals three-veined, lanceolate, acute, with broad, scarious margins; petals white, deeply bifid, twice as long as sepals; stamens 10; styles 3. Capsule 9-10 mm. long, ovoid, about equal to the calyx, valves 6, erect; seed 1·4 × 0·8 mm., ovoid, bluntly tubercled, orange.

Late May—mid July. (West Stow, Suffolk.)

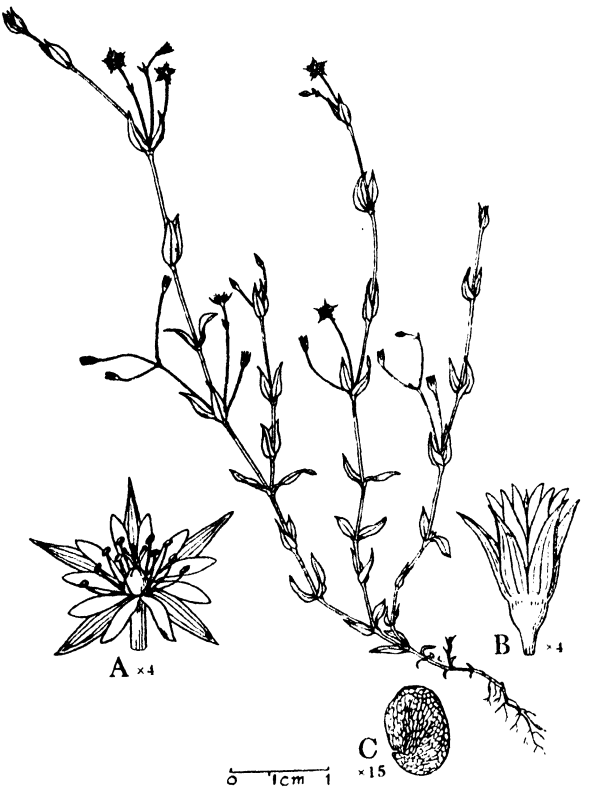
A. petal. B. pistil. C. capsule. D. seed.



328. STELLARIA GRAMINEA L. The LESSER STITCHWORT is a much-branched, glabrous perennial, with weak, flowering and non-flowering stems 6-18 in. (15-45 cm.) long, growing from a creeping stock. It is very common on heaths and grassy places throughout the British Isles. Stem four-angled, smooth. Leaves 15-30 mm. long, linear, acute, glabrous. Flowers 5-7 mm. diam., in lax cymes; peduncles 15-25 mm.; sepals veined, lanceolate, with an acute, scarious tip; petals white, deeply bifid, just exceeding sepals; stamens 10; styles 3. Capsule 6 mm., ellipsoid, not exceeding the calyx; seed 1·3 × 0·8 mm., ovoid, with undulate tubercles, yellow.

Mid May—late Aug. (Barham, Kent.)

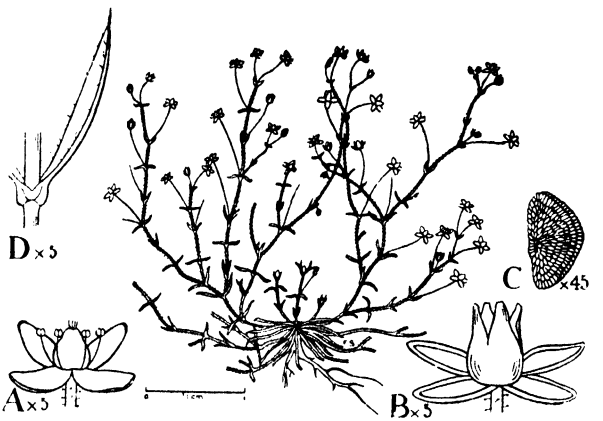
A. petal. B. pistil. C. capsule. D. seed.



329. STELLARIA ALSINE Grimm. (*S. uliginosa* Murr.). The Bog Stitchwort is a glabrous perennial with many weak, flowering and non-flowering stems, about 6 in. (15 cm.) high, straggling from a slender, creeping stock. It is very common in bogs and wet places throughout the British Isles. Stems 4-angled, smooth. Leaves 10 mm. long, linear-lanceolate, glabrous. Flowers 6 mm. diam.; peduncles 10-20 mm.; sepals three-veined, narrowly lanceolate, with an acute green tip; petals white, deeply bifid, shorter than the sepals; stamens 10. Capsule 4 mm., ellipsoid, hardly exceeding the calyx; valves 5; seed 0·8 × 0·5 mm., ovoid, finely reticulate, light brown.

Mid May—early July. (Leek, Staffordshire.)
A. flower. B. capsule. C. seed.

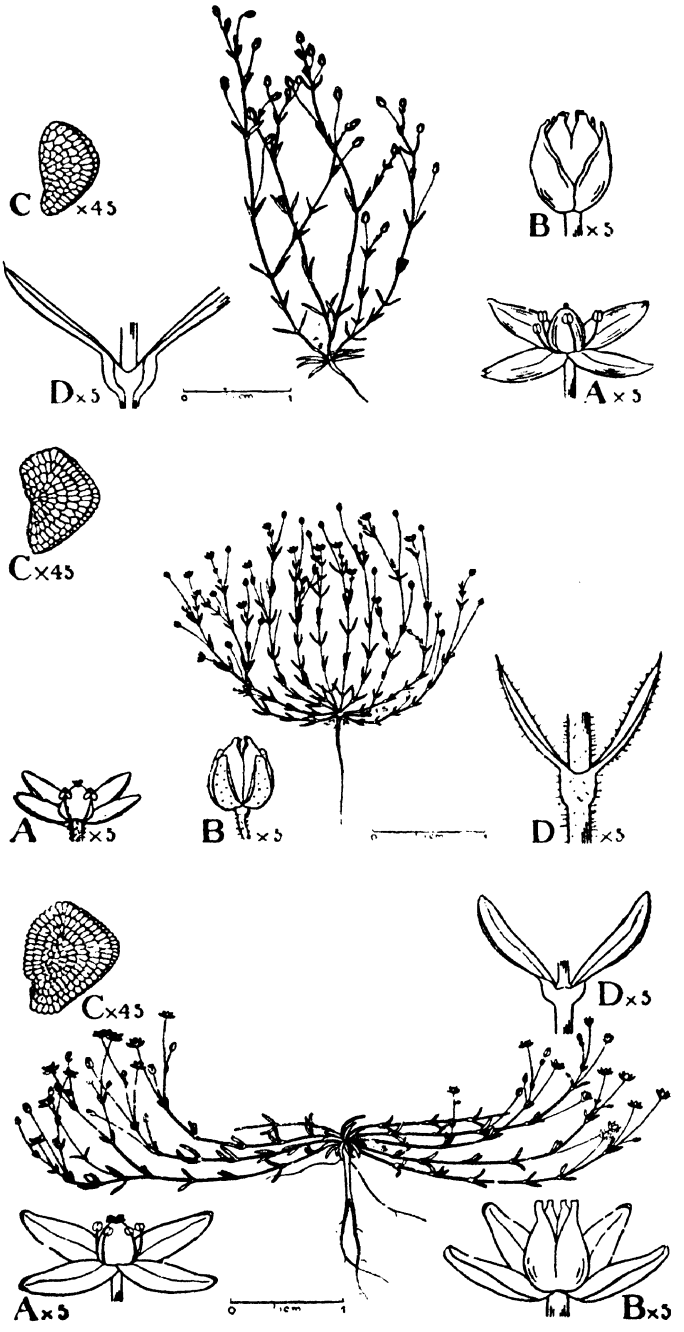
(*Holosteum umbellatum* L., the Jagged Chickweed, with flowers in umbels and pink, ovate, toothed petals, is now apparently extinct. It was found on old walls in Norfolk, Suffolk and Surrey.)



SAGINA L. Small glabrous, hairy or glandular tufted perennials; sepals 4 or 5, free; petals 4 or 5 entire, free or absent; stamens as many or twice as many as the sepals; styles 4-5. Fruit a capsule splitting to the base into 4-5 valves.

330. SAGINA APETALA Ard. This SPREADING PEARLWORT is a small, loosely-tufted annual with spreading, slender, leafy stems 3-5 in. (8-13 cm.) high. It is a very common plant of bare and dry places throughout the British Isles. Central stem forming a rosette and also flowering; other stems decumbent-erect (or prostrate in var. *prostrata* S. Gibs.), not rooting, many-flowered. Leaves 3-4 mm. long, linear, awned, ciliate or glabrous. Pedicels glandular or glabrous, always erect; flowers 4 mm. diam., 4- or 5-partite; petals, if present, minute. Capsule 3·5 mm. long, with blunt, glabrous, spreading sepals and obtuse valves; seed 0·2 mm., cuneoid, honeycombed, brown.

Late May—mid Sept. (Byfleet, Surrey.)
A. flower. B. capsule. C. seed. D. leaf and node.


C ×45
B ×5
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A×5
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A ×5
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D ×5
C×45
D×5
A×5
B×5

331. SAGINA CILIATA Fr. This FRINGED PEARLWORT is a slender annual with many small, suberect or diffuse flowering stems 3-5 in. 8-12 cm.) high, growing from a stem base without a distinct rosette. It is a common plant of bare and dry places throughout most of the British Isles. Leaves 4 mm., linear, awned, glabrous or ciliate. Pedicels usually glabrous, always erect; flowers 4 mm. diam., 4-partite, petals rarely present, if so, minute. Capsule with 2 pointed and 2 blunter, glabrous, erect sepals and rather acute valves; seed 0·2 mm., wedge-like, honeycombed, brown.

Mid May—early Aug. (Alresford, Hampshire.)
A. flower. B. capsule. C. seed. D. leaf and node.

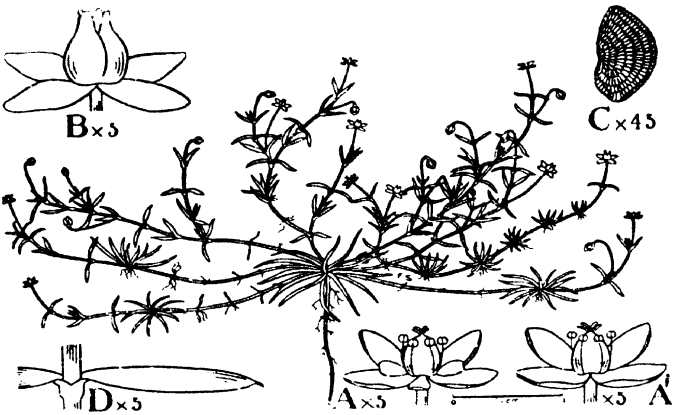
332. SAGINA FILICAULIS Jord. This erect SLENDER-STEMMED PEARLWORT is a slender annual with many sub-erect or diffuse, flowering stems 1-2 in. (3-5 cm.) high, growing from a stem base without a distinct rosette. It is a rare or overlooked plant in dry places in England. Leaves 4-6 mm. long, linear, awned, glandular-hairy. Pedicels glandular, long, slender, always erect; flowers 3 mm., 4-partite, petals absent. Capsule with glandular, bluntish, erect sepals and rather acute valves; seed 0·2 mm., cuneoid, honeycombed, brown.

Mid May—mid Sept. (Malvern, Worcestershire.)
A. flower. B. capsule. C. seed. D. leaves and node.

(This is sometimes considered to be a form of *S. ciliata* Fr. *S. reuteri* auct. is probably a dwarf glandular form of *S. ciliata* Fr.)

333. SAGINA MARITIMA Don. The SEASIDE PEARLWORT is a small, branched, variable perennial 3-5 in. (8-12 cm.) high, and it is a rather common plant of the sea-coast around Britain. Branching very varied, either decumbent-erect, prostrate or dwarf-tufted; rosette often not obvious; stems several-flowered. Leaves thick and blunt or acute, but never mucronate, glabrous; pedicels glabrous, medium, usually straight. Flowers 4 mm. diam., 4-partite, petals absent or minute. Capsule blunt, glabrous, with spreading or sub-erect sepals and rather blunt valves; seed 0·6 × 0·3 mm. pyriform, papillose, brown.

Mid May—early Sept. (Ilfracombe, Devon.)
A. flower. B. capsule. C. seed. D. leaves and node.


B×5
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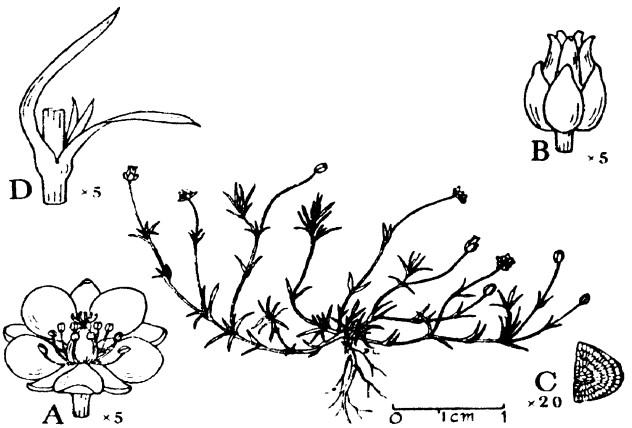
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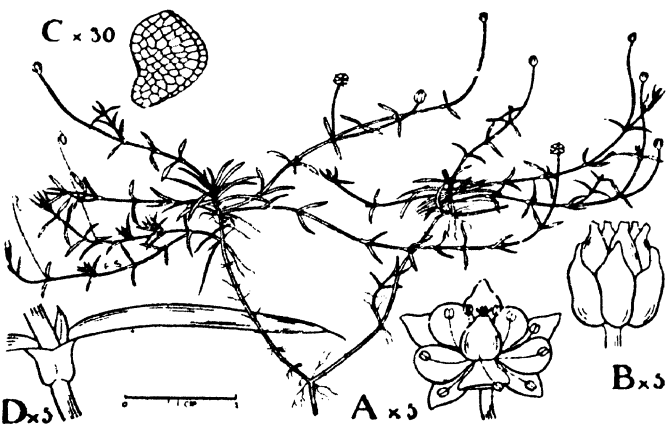
C ×20


C × 30
D×5
A ×5
B×5

334. SAGINA PROCUMBENS L. The PROCUMBENT PEARLWORT is a small, tufted perennial with several slender, leafy, prostrate then decumbent and rooting, flowering stems, 1-3 in. (2-8 cm.) long, growing from a central barren rosette and often forming other rosettes. Leaves 3-4 mm. long, acute, mucronate, glabrous. Flowers 4 mm. diam., 4- or 5-partite, in short, several-flowered cymes; pedicels glabrous, deflexed after flowering, later erect; sepals ovate, blunt, spreading in fruit; petals absent or minute, white. Capsule 3·5 mm. long, with blunt, spreading sepals and obtuse valves; seed 0·25 mm., cuneoid, honeycombed, brown.

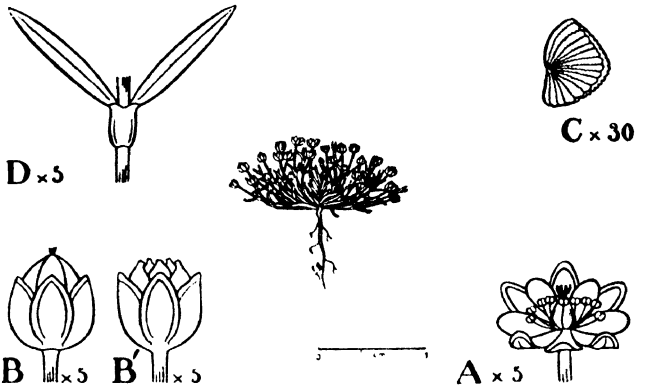
Late May—mid Sept. (Clevedon, Somerset.)
A, A′. flowers. B. capsule. C. seed. D. leaf and node.

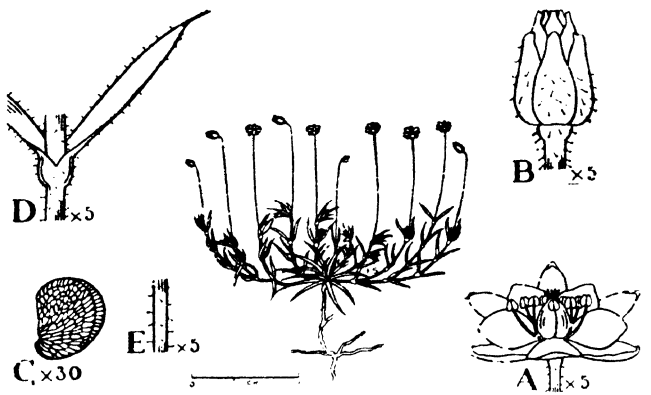
335. SAGINA SAGINOIDES (L.) Karst. The GREATER ALPINE PEARLWORT is a small, rather densely tufted perennial with several leafy, prostrate, then decumbent, flowering stems 2-4 in. (5-10 cm.) long, growing from a central barren rosette. It is a rare plant of some Scottish mountains. Leaves 4 mm., awned, linear, glabrous. Flowers 4·5 mm. diam., 5-partite, deflexed after flowering, erect in fruit; sepals blunt, erect in fruit, without white edges; petals white, broad, shorter than sepals. Capsule 2·5 mm., much longer than sepals, teeth acute, erect; seed 0·4 × 0·3 mm., cuneoid, finely tuberculate, or honeycombed.

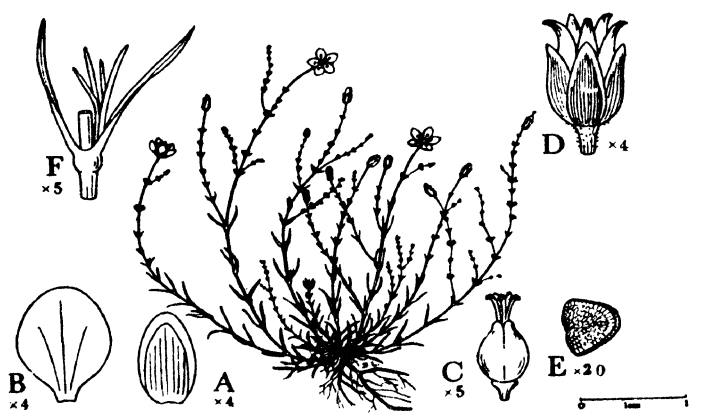
Mid June—mid Aug. (Ben Lawers. Perthshire.)
A. flower. B. capsule. C. seed. D. node.

336. SAGINA NORMANIANA Lag. (*S. scotica* Druce). This ALPINE PEARLWORT is a small, loosely tufted perennial with several slender, leafy, prostrate then decumbent, flowering stems 2-4 in. (5-10 cm.) long, growing from a central barren rosette. It occurs in grassland on certain Scottish mountains. Leaves 4 mm. long, linear, awned, glabrous. Flowers 4 mm. diam., 5-partite; pedicels glabrous, long, partially deflexed after flowering; sepals blunt, erect or spreading in fruit, glabrous, without white edges; petals white, broad, shorter than sepals. Capsule 2-5 mm. long, just exceeding sepals; seed 0·4 × 0·3 mm., cuneoid, finely tuberculate, honeycombed, yellow-brown.

Mid July—early Sept. (Ben Lawers, Perthshire.)
A. flower. B. capsule. C. seed. D. leaf and node.


D ×5
C × 30
B ×5
B′ ×5
A × 5


D ×5
B ×5
E ×5
C ×30
A ×5


F ×5
D ×4
B ×4
A ×4
C ×5
E ×20

337. SAGINA INTERMEDIA Fenzl. (*S. nivalis* auct.). The TUFTED ALPINE PEARLWORT is a dwarf, densely cæspitose perennial with many leafy, decumbent, flowering stems 1-2 in. (3-5 cm.) long, growing from a somewhat elongated central stem which has not a well-marked rosette. Leaves 3-4 mm. long, linear, mucronate, glabrous. Flowers 3 mm. diam., 5- or 4-partite; pedicels glabrous, very short, always erect; sepals blunt, erect in fruit, with white edges; petals white, shorter than sepals. Capsule 3 mm., longer than sepals; seed 0·4 × 0·3 mm., cuneoid, honeycombed, yellow-brown.

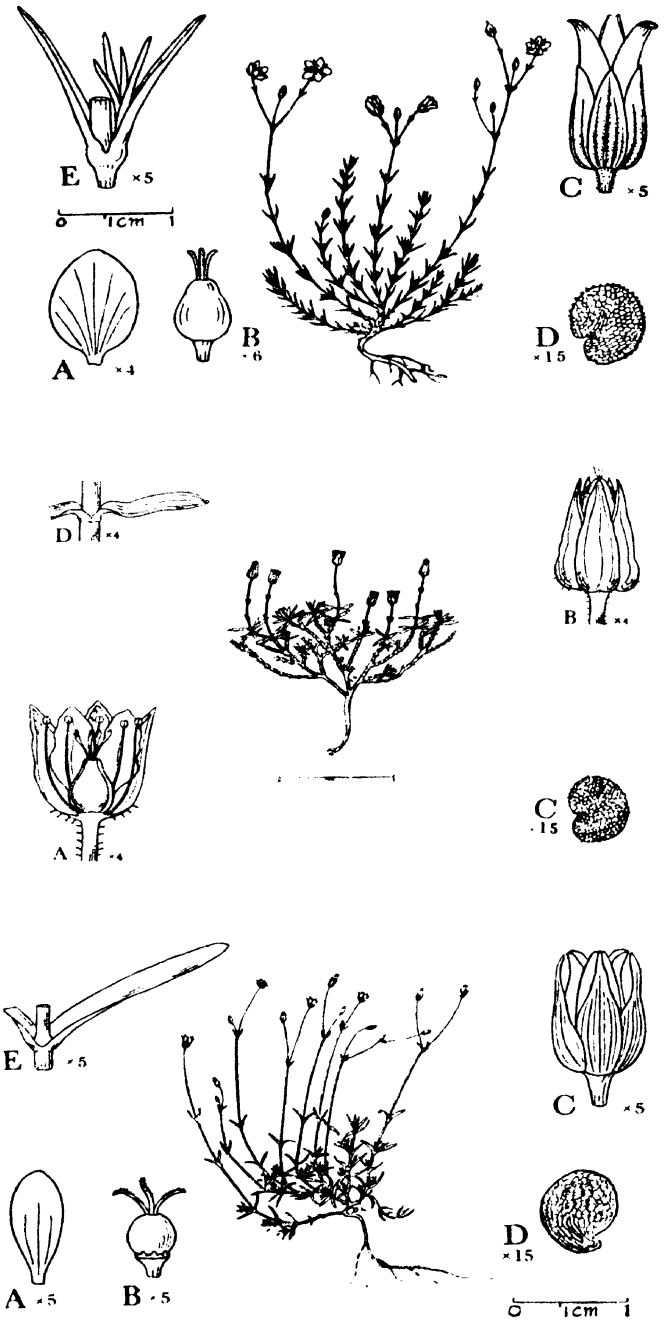
Mid July—late Aug. (Ben Lawers, Perthshire.)
A. flower. B, B′. capsules. C. seed. D. leaf and node.

338. SAGINA SUBULATA (Sw.) Presl. The AWL-LEAVED PEARLWORT is a small, tufted perennial with many decumbent, leafy, flowering shoots 3-4 in. (8-10 cm.) long, growing from a small, dense rosette of leaves. It is a rather uncommon plant of dry, sandy places, and of mountains, particularly in the North of Britain. Leaves linear, awned, ciliate. Flowers 4 mm. diam., five-partite; pedicels glandular, very long, reflexed just after flowering; sepals rather acute, erect in fruit, glandular; petals obvious, white, shorter than sepals. Capsule 3 mm. long, somewhat longer than sepals; seed 0·4 × 0·3 mm., cuneoid, honeycombed, yellow-brown.

Mid July—early Sept. (Studland Heath, Dorset.)
A. flower. B. capsule. C. seed. D. leaf and node. E. stem.

339. SAGINA NODOSA (L.) Fenzl. The KNOTTED PEARLWORT is a small, tufted perennial with many erect or decumbent, flowering stems 2-4 in. (5-10 cm.) high, growing from an ill-defined rosette. It is frequent in damp, sandy places throughout the British Isles. Leaves 4-5 mm. long, linear, glabrous, mucronate, with smaller leaves in the axils. Flowers 8-9 mm. diam., five partite; pedicels [2-5 cm.] long, glabrous, short, erect; sepals glandular, erect in fruit; petals entire, white, longer than sepals; styles 5. Capsule 4 mm. long, longer than sepals; seed 0·4 × 0·35 mm., cuneoid, netted, grey.

Early July—early Sept. (Combes Dale, Derbyshire.)
A. sepal. B. petal. C. pistil. D. capsule. E. seed. F. leaves and node.


E ×5
0 1cm 1
A ×4
B ×6
C ×5
D ×15
D ×4
B ×4
A ×4
C ×15
E ×5
C ×5
A ×5
B ×5
D ×15
0 1cm 1

ARENARIA L. Small, glabrous annuals or tufted perennials; sepals 5, free; petals 5, entire, without a coronal scale; stamens 10; styles 3, or rarely 4-5; capsule with 3 or 6 valves.

340. ARENARIA (MINUARTIA) VERNA L. The VERNAL SANDWORT is a small, glabrous perennial with a herbaceous rootstock and slender, flowering stems 2-6 in. (5-10 cm.) high, growing from a rather dense cushion, formed by rosettes of small leaves. It is found, commonly, on limestone debris and rocks and pastures in nearly all limestone districts of the British Isles. Leaves 4-5 mm. long, subulate, acuminate, rather stiff, glabrous. Flowers 7-8 mm. diam., in lax cymes; sepals acuminate, 3-nerved, nerves ciliate; petals white, a little longer than sepals. Capsule narow, conical, with 3 long, narrow teeth; seed 0·7 × 0·6 mm., comma-like, finely tubercled, brown.

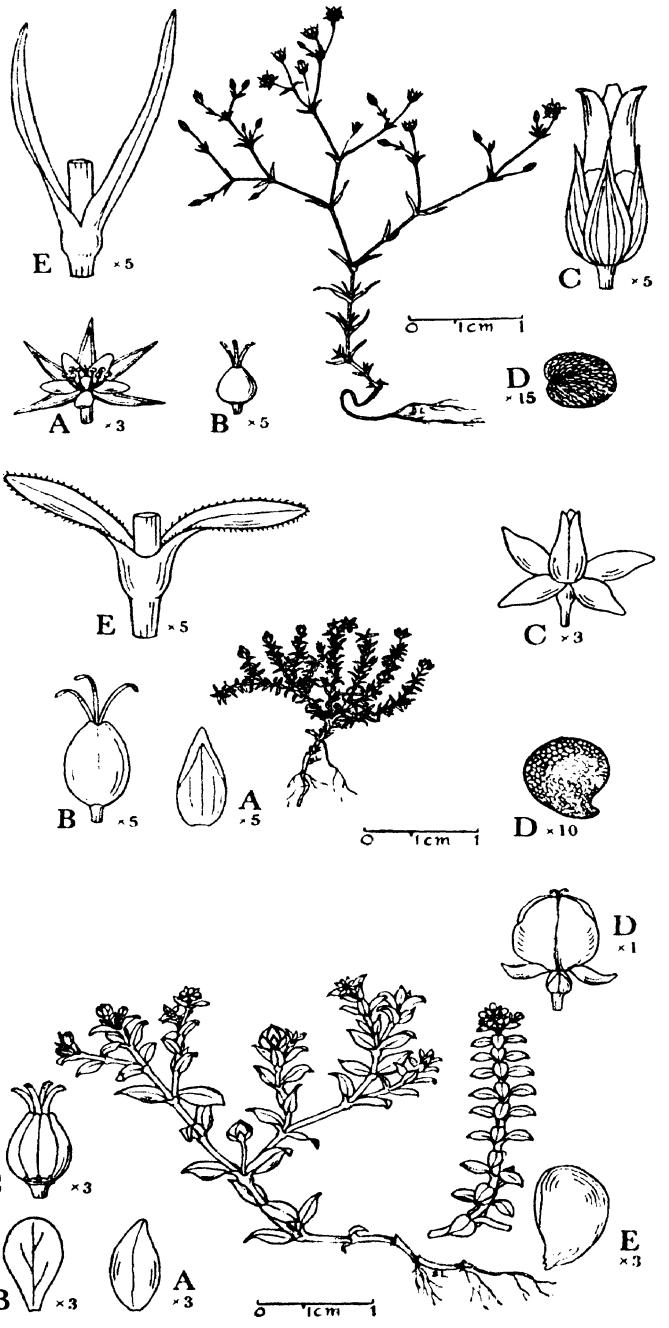
Mid May—mid Sept. (Bonsall, Derbyshire.)
A. petal. B. pistil. C. capsule. D. seed. E. node.

341. ARENARIA (MINUARTIA) RUBELLA (Wahl.) Sm. This ALPINE SANDWORT is a small perennial with woody rootstock and glabrous, almost leafless, flowering stems 1-2 in. (3-5 cm.) high, growing from a dense cushion, formed by rosettes of small leaves. It grows very rarely on mountain rock ledges in Perthshire, Sutherland and Shetland. Leaves 4 mm. long, linear, obtuse, crowded; flowers 6-8 mm. diam., solitary; sepals glandular at base, three-nerved, lanceolate, acute; petals white, equalling sepals. Capsule 4 mm. long, narrowly ovate with 4 teeth, equalling sepals; styles usually 4; seed 0·6 × 0·4 mm., reniform, honeycombed, yellow.

Early—late July. (Ben Lawers, Perthshire.)
A. flower l.s. B. capsule. C. seed. D. leaf and node.

342. ARENARIA ULIGINOSA DC = MINUARTIA STRICTA (Sw) Hiern. This BOG SANDWORT is a small, glabrous perennial with a rather woody stock and slender, flowering scapes 1-3 in. (3-8 cm.) high, growing from a loose tuft formed by rosettes of small leaves, found only on wet, calcareous screes in Teesdale at about 1,500 ft. Leaves 4-5 mm., filiform, blunt, veinless. Flowers 4 mm. diam., in 2-3 flowered cymes; pedicels long; sepals glabrous, faintly three-veined, broad-lanceolate, acute; petals white, a little shorter than sepals, narrow. Capsule 3 mm. long, ovoid, equalling the sepals; seed 0·7 × 0·6, comma-like, honeycombed and bluntly tuberculate on edge, yellow.

Early—late June. (Teesdale, Durham.)
A. flower. B. pistil. C. capsule. D. seed. E. leaf and node.


E ×5
C ×5
1cm
A ×3
B ×5
D ×15
E ×5
C ×3
B ×5
A ×5
1cm
D ×10
D ×1
C ×3
B ×3
A ×3
1cm
E ×3

343. ARENARIA TENUIFOLIA L. = MINUARTIA HYBRIDA (Vill) Schis. The FINE-LEAVED SANDWORT is a small, slender, much-branched, glabrous annual 1-4 in. (3-10 cm.) high, that is common in certain dry, sandy and calcareous places scattered throughout England and Ireland. Leaves 9-10 mm. long, subulate, acute. Flowers 5 mm. diam., in much-branched cymes; pedicels medium, glabrous; sepals lanceolate, acuminate, with scarious margins; petals white, half as long as sepals; styles 3. Capsule 5 mm., lanceolate oblong, exceeding sepals; valves 3, long; seed 0·5 × 0·4 mm., reniform, honeycombed and finely tubercled, yellow.

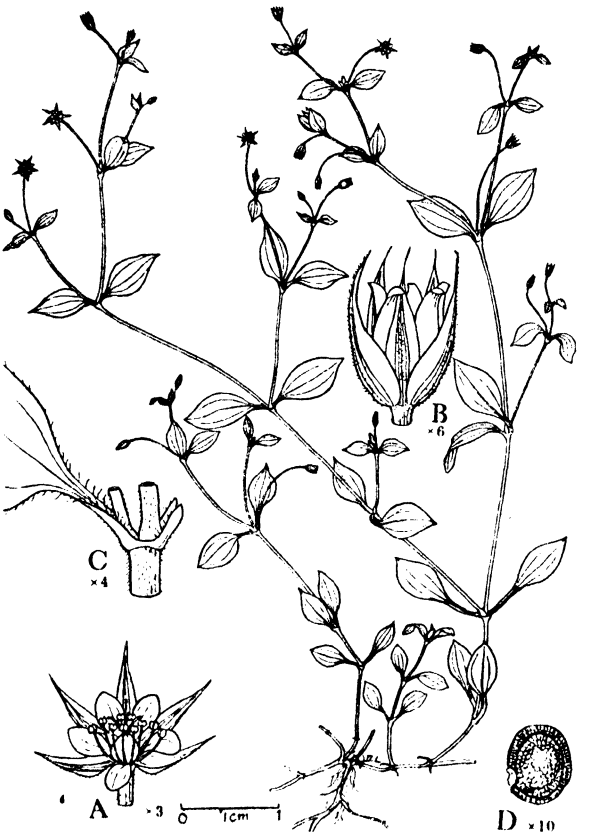
Mid May—late June. (Thorpe Cloud, Derbyshire.)
A. flower. B. pistil. C. capsule. D. seed. E. leaf and node.

344. ARENARIA (CHERLERIA) SEDOIDES (L.) F. J. Hanb. The MOSSY CYPHEL is a dwarf perennial with woody stock and numerous, dense rosettes of leaves growing together to form a dense tuft from which grow the leafy, flowering shoots 0·5-1·0 in. (1-3 cm.) long. It is abundant in rocky places on many Scottish mountains and rare at lower levels. Leaves 3·5 mm., crowded, subulate, ciliate. Flowers 4·5 mm. diam. usually dicœcious and in clusters of 1-4; sepals yellow-green, ovate, blunt, three-veined, with membranous margins; stamens 10; styles 3. Capsule 3 mm., narrow, conical, twice as long as sepals; seed 1 mm., comma-like, netted, grey.

Mid June—late July. (Ben Lawers, Perthshire.)
A. sepal. B. pistil. C. capsule. D. seed. E. node.

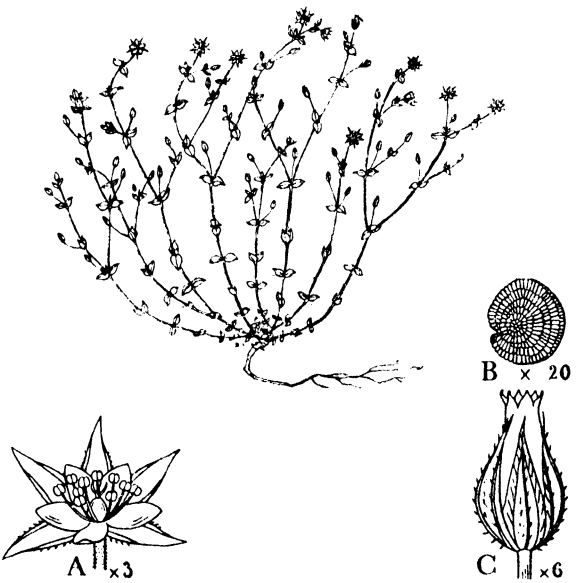
345. ARENARIA (HONKENYA) PEPLOIDES L. The SEA PURSLANE is a succulent perennial with many leafy, flowering and non-flowering shoots 2-4 in. (5-10 cm.) high, growing from long, pale stems which creep among the shingle. It is common on sand and shingle on the coasts all around Britain. Leaves 6-15 mm. long, ovate, sessile, shining, margins wavy. Flowers 6-8 mm. diam., dicœcious solitary subsessile; sepals ovate, blunt, with membranous margins; petals white, equalling sepals in male, shorter than sepals in female; stamens 10; styles 3-5. Capsule 8-10 mm. long, broadly ovoid, longer than sepals; seed 4 × 2 mm., pyriform, netted, chestnut.

Mid May—mid Aug. (Ballycastle, Co. Antrim.)
A. sepal. B. petal. C. pistil. D. capsule. E. seed.



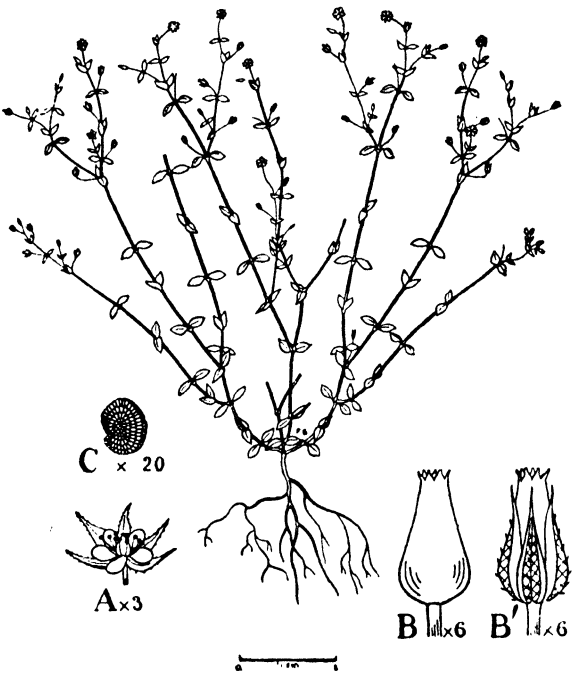
346. ARENARIA (MŒHRINGIA) TRINERVIA L. The THREE-NERVED SANDWORT is a small, rather slender, much-branched, slightly hairy annual about 5-6 in. (12-15 cm.) high, common in shady places on loamy soils throughout the British Isles. Leaves 2·5-3·3 mm. long, ovate, three-veined, ciliate. Flowers 6-7 mm. diam., solitary in upper leaves; pedicels long, hairy; sepals lanceolate, acuminate, three-veined, hairy on the veins, with scarious margins; petals white, two-thirds as long as sepals; styles 3. Capsule 2·5 mm., almost globular, shorter than sepals; valves usually 6, recurved; seed 1·0 × 0·8 mm., sub-globular, shining, finely netted, with a laciniate appendage, black.

Mid May—late July. (Droitwich, Worcestershire.)
A. flower. B. capsule. C. node. D. seed.



347. ARENARIA SERPYLLIFOLIA L. The THYME-LEAVED SAND-WORT is a small, rather stout, branched, bushy, sub-glabrous annual, 2-6 in. (5-15 cm.) high, very common on bare ground, walls and arable land throughout the British Isles, preferring a basic soil. Leaves 5-6 mm. long, ovate, acute, one-veined, subsessile, ciliate. Flowers 8 mm. diam., in branched cymes; pedicels short, ciliate; sepals broadly lanceolate, acuminate, three-veined, hairy; inner with a scarious margin; petals white, half the length of sepals; styles 3. Capsule 3·5 mm. long, bottle-shaped with convex side and 6 short, brittle teeth; seed 0·5 mm., discoid, honeycombed or papillate, black.

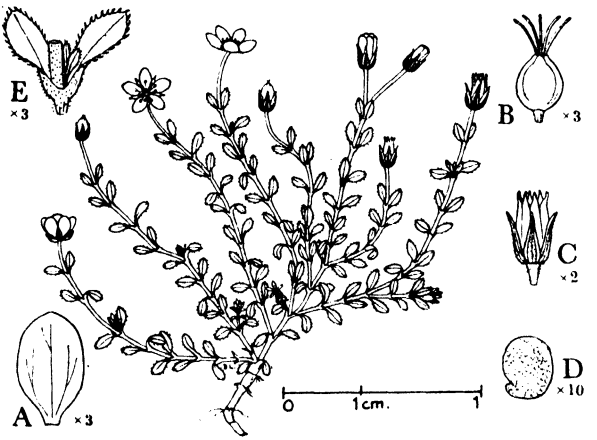
Mid May—mid Sept. (Denton, E. Kent.)
A. flower. B. seed. C. capsule.



348. ARENARIA LEPTOCLADOS (Reichb.) Guss. This SLENDER THYME-LEAVED SANDWORT is a small, rather slender, much-branched, sub-glabrous annual 2-8 in. (5-20 cm.) high, which is very common on bare ground, walls and arable land throughout the British Isles, preferring a neutral or acid soil. Leaves 5-6 mm. long, ovate, acute, one-veined, sub-sessile, ciliate. Flowers 5 mm. diam.. in branched cymes; pedicels short, ciliate; sepals lanceolate, acuminate, three-veined, hairy, inner with scarious margins; petals white, half the length of sepals; styles 5. Capsule 3 mm. long, conical, with straight sides and 6 short, turgid teeth; seed 0·3 mm., subdiscoid, honeycombed or papillate, black.

Mid May—mid Sept. (Eriswell, Suffolk.)

A. flower. B, B′. capsules. C. seed.

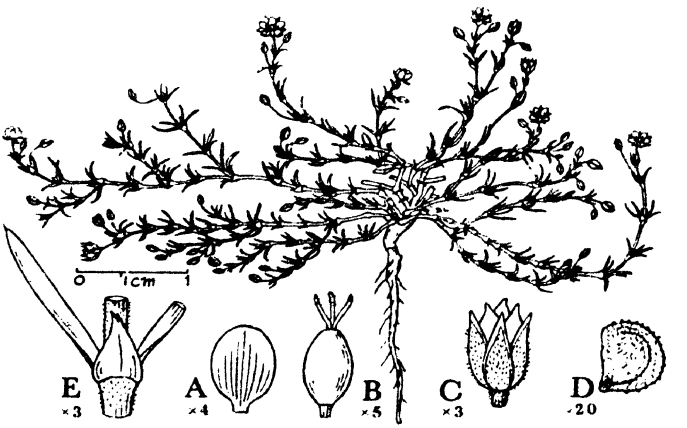


349. ARENARIA CILIATA L. This MOUNTAIN SANDWORT is a dwarf, tufted, hairy perennial with many flowering shoots 1-2 in. (3-5 cm.) high, growing from a prostrate, somewhat woody, rooting stem. It is found only on limestone cliffs on the mountains of the Ben Bulben range, Ireland. Leaves 5-8 mm. long, spathulate, rather obtuse, one-veined, ciliate; sepals ovate-lanceolate, with 3 hairy veins; petals white, twice the length of the sepals; styles 5. Capsule ovoid, longer than sepals, with 6 short teeth; seed 1·0 × 0·9 mm., comma-like, honey-combed, black.

Early June—mid July. (Co. Sligo, Ireland.)
A. petal B. pistil. C. capsule. D. seed. E. leaves and node.

C × 10
A × 15
B ×2
D×4

C×10
A × 1·5
B × 2
D × 4


0 1cm 1
E ×3
A ×4
B ×5
C ×3
D ·20

350. ARENARIA NORVEGICA Gunn. This NORWEGIAN SANDWORT is a dwarf, tufted, glabrous perennial, with many decumbent, then erect, branched flowering stems 1-3 in. (2-8 cm.) high, found very rarely in stony or rocky places in northernmost Britain. Leaves 3-4 mm. long, ovate, spathulate, acute, one-veined, with a few hairs only at base. Flowers 8 mm. diam., in three-flowered cymes; pedicels medium, glabrous; sepals lanceolate, acute, one-veined, glabrous; petals white, twice the length of sepals; styles 5. Capsule conical with 5 acute, recurved teeth, longer than sepals; seed 1·2 mm., comma-shaped, honeycombed or papillate, black.

Mid June—mid Aug. (Inchnadamph, Sutherland.)
A. pistil. B. capsule. C. seed. D. leaves and stem.

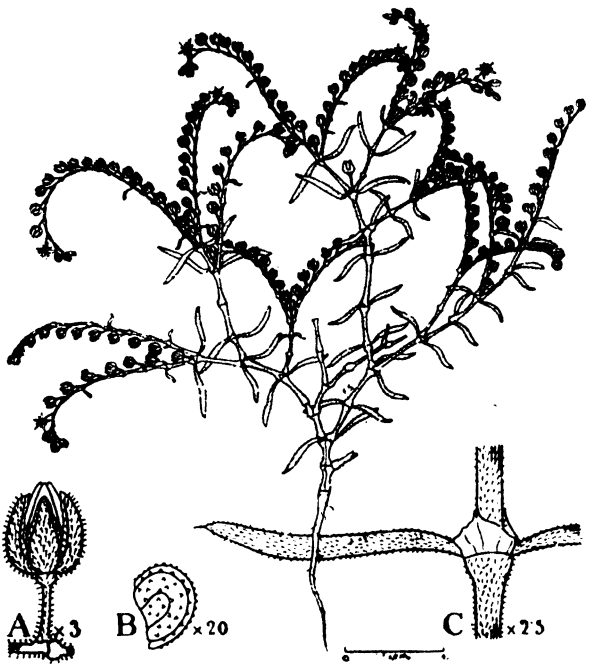
351. ARENARIA GOTHICA Fries. This GOTHIC SANDWORT is a dwarf, tufted, sub-glabrous annual with many erect flowering stems 1-2 in. (2-5 cm.) high, growing from a slender taproot. It is found only on bare places on the limestone of Ingleborough, Yorks. Leaves 5 mm. long, ovate-lanceolate, acute, one-veined, sessile and ciliate at the base. Flowers 10 mm. diam., in three-flowered cymes; pedicels short, glabrous; sepals lanceolate-acuminate, one-veined, glabrous; petals white, one and a half times the length of sepals; styles 3. Capsule constricted at top, with 6 short, recurved teeth, longer than sepals; seed 1·0 × 0·8 mm., subdiscoid, papillate, brown.

Mid June—early Sept. (Horton in Ribblesdale, Yorkshire.)
A. pistil. B. capsule. C. seed. D. leaf and node.

SPERGULARIA J. et C. Presl. Small herbs with leaves with scaly stipules and pink flowers. Sepals 5, free; petals 5, entire; stamens 5-10; styles 3; capsule opening by three valves.

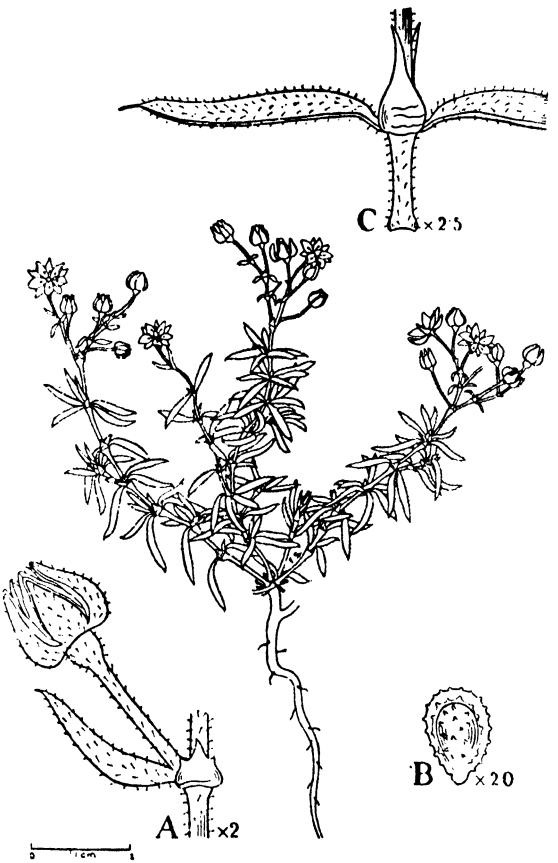
352. SPERGULARIA RUBRA (Pers.) J. et C. Presl. The RED SANDWORT SPURREY is a slender, much-branched, diffuse annual or biennial with many procumbent, hairy stems 2-6 in. (5-15 cm.) long, growing from a thick rootstock. It is a common calcifuge plant in bare sandy places throughout the British Isles. Leaves 7-8 mm. long, hairy, awned; stipules lanceolate, acuminate. Flowers 3-5 mm. diam., numerous, always in dichotomous cymes, all bracteate; sepals shorter than pedicels and the capsule; petals pink, equalling sepals. Capsule 4 mm. long; seed 0·5 mm., half ovoid, with few tubercles, wingless, brownish.

Mid May—early Oct. (Walton-on-Trent, Derbyshire.)
A. petal. B. pistil. C. capsule. D. seed. E. node and stipule.



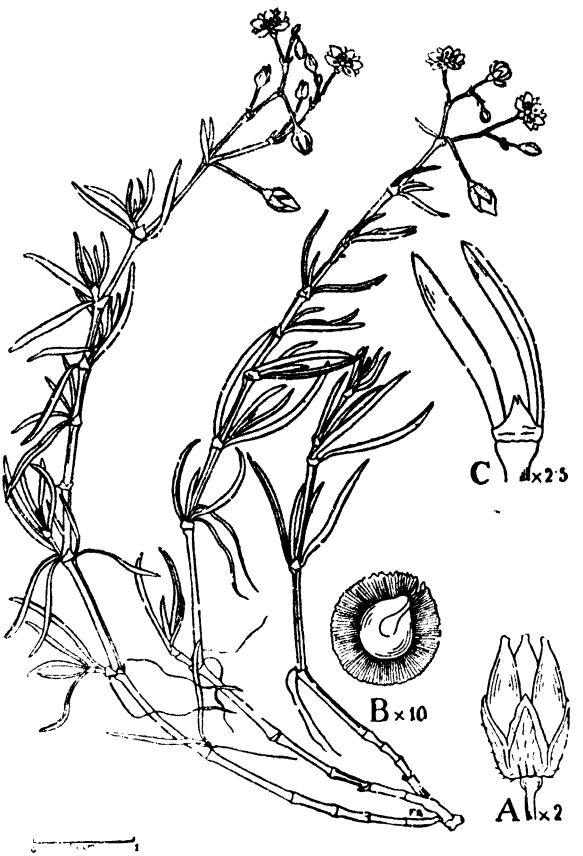
353. SPERGULARIA BOCCONI (Scheele) Aschers et Græbn. This DENSE-FLOWERED RED SANDWORT SPURREY is a rather slender perennial with many, much-branched, diffuse, glandular stems 2-9 in. (5-23 cm.) long. It is a very rare plant of waste places near the sea, chiefly in the S.W. of England. Leaves 12-15 mm. long, glandular, awned; stipules broadly triangular. Flowers 2 mm. diam., upper without bracts, in cymes which are at first dichotomous and later elongated and unilateral; sepals about as long as pedicels and a little longer than capsule, densely glandular; petals pink, about as long as sepals. Capsule 2·4 mm. long; seed 0·5 mm., cuneoid, with few tubercles, wingless, brownish.

Mid June—mid Sept. (Par Harbour, Cornwall.)
A. capsule. B. seed. C. leaf and stipule.



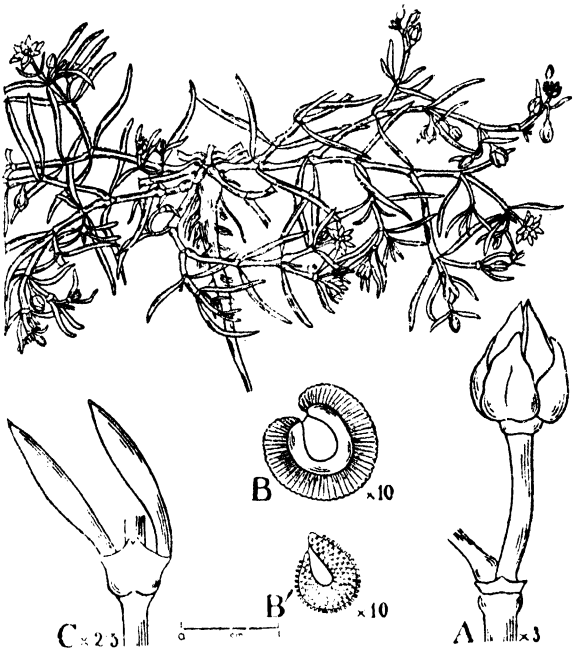
354. SPERGULARIA RUPICOLA Lebel ex Le Jolis. This ROCK SANDWORT SPURREY is a much-branched, diffuse perennial with many erect-ascending branches 4-8 in. (10-20 cm.) long, growing from a thick perennial rootstock. It is an infrequent plant, though at times common on sea cliffs and rocks around the British coast. Leaves fascicled, 15-20 mm. long, glandular, mucronate; stipules long, triangular, acute. Flowers 8-10 mm. diam., few, in regular cymes; sepals glandular, about the length of the capsule and less than half the length of the pedicel; petals pink or white, exceeding sepals; seed 0·8 mm. long, pyriform, with few tubercles, wingless, brown.

Mid June—early Sept. (Freshwater, Isle of Wight.)
A. fruit and pedicel. B. seed. C. leaf and stipule.



355. SPERGULARIA MEDIA (L.) C. Presl (*S. marginata* Kittel). The SEASIDE SANDWORT SPURREY is a stout, diffuse perennial with many decumbent, little-branched, flowering shoots 6-10 in. (15-25 cm.) long, growing from a stout, branched rootstock. It is a rather common plant of the drier parts of salt marshes all around the British coast. Leaves glabrous, fleshy, bluntish; stipules broad, triangular. Flowers 9-12 mm. diam., few, in regular cymes; sepals glabrous or hairy, half as long as large capsule, which is much shorter than the pedicel; petals white or pink, exceeding sepals. Capsule 10 mm. long, ovoid; seed 1·5 mm., discoid, with a broad, scarious wing.

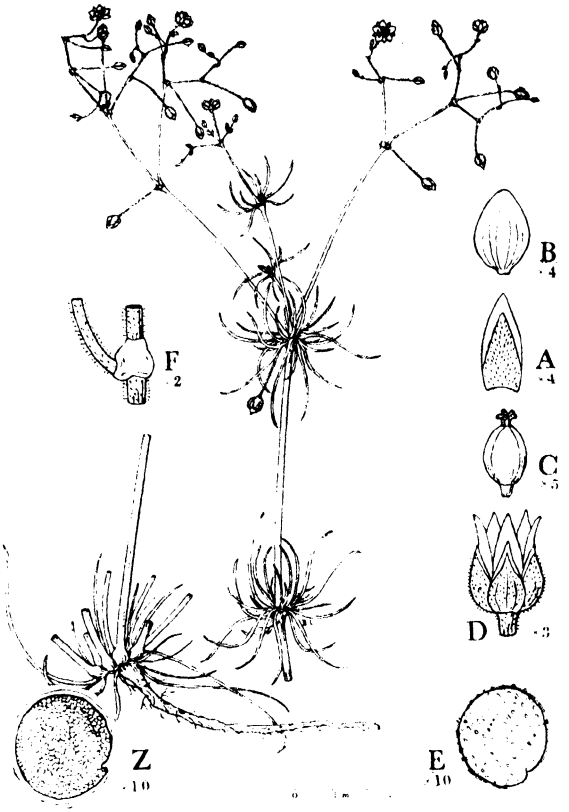
Early June—late Aug. (Burnham-on-Crouch, Essex.)
A. capsule. B. seed. C. leaves and stipule.



356. SPERGULARIA MARINA (L.) Griseb (*S. salina* Presl). This SALTMARSH SANDWORT SPURREY is a rather stout, diffuse, much-branched annual with many spreading or prostrate branches 2-6 in. (5-15 cm.) long, growing from a stout tap root. It is a rather common plant of salt marshes and also found rarely inland. Leaves 15-20 mm. long, glabrous, fleshy, somewhat pointed; stipules broad, triangular. Flowers 6-8 mm. diam., few, in irregular, unilateral cymes; sepals glabrous, two-thirds to three-quarters length of capsule, which is about one-quarter as long as pedicel; petals red; seed 1·0-1·5 mm., either with a thickened, acutely tubercled border or, more rarely, with a scarious wing, discoid.

Early June—late Aug. (Poole Harbour, Dorset.)

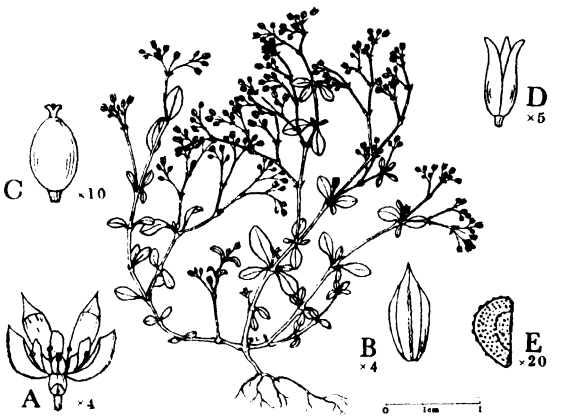
A. capsule and pedicel. B. winged, B′. bordered seed. C. leaves and stipule.



SPERGULA L. Annual herbs with whorled leaves which have scaly, deciduous stipules. Sepals 5, free; petals 5, entire; stamens 5-10; styles 5; capsule opening by 5 valves.

357. SPERGULA ARVENSIS L. The COMMON SPURREY is a viscid or hairy annual with erect, sparsely branched stems 3-12 in. (8-30 cm.) high, which is a common calcifuge weed of cornfields on light soils throughout the British Isles. Leaves 10-30 mm. long, linear-subulate, glandular, viscid; stipules small, scaly. Flowers 7-8 mm. diam., in much-branched, dichotomous cymes; sepals glandular, ovate, obtuse; petals ovate, white, a little longer than sepals. Capsule broadly ovoid, longer than sepals; valves 5; seed 1·2 mm., rounded, subglobose, subcompressed; either brownish-black with a narrow wing and club-like papillæ (var. *vulgaris* Bœnn) or dull black with a definite wing and minute tubercles (var. *sativa* Bœnn). (*S. vernalis* Willd., with 5 stamens and a broadly-winged seed, has been found in Sussex.)

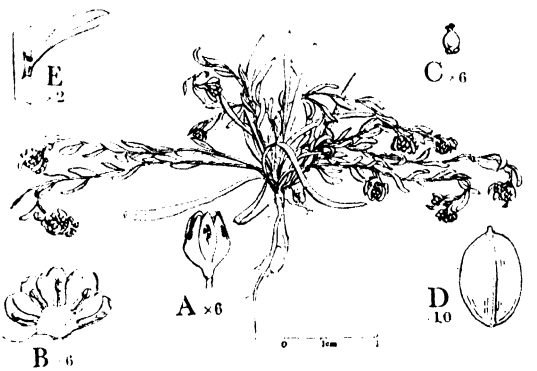
Early May—late Sept. (Bramcote, Nottingham.)
A. sepal. B. petal. C. pistil. D. capsule. E. seed of var. *vulgaris*. F. leaf and node. Z. seed of var. *sativa*.



POLYCARPON L. Green, glabrous, dwarf annuals with whorled, flat, stipulate leaves; sepals 5; petals 5, minute; stamens 3-5; capsule with 3 valves.

358. POLYCARPON TETRAPHYLLUM (L.) L. The FOUR-LEAVED ALL-SEED is a much-branched spreading or prostrate annual, 3-4 in. (8-10 cm.) long, found only in sandy places from Cornwall to Dorset. Leaves 8-14 mm. long, ovate, upper in a whorl of 4, with scarious stipules. Flowers 4 mm. diam., in much-branched cymes; sepals glabrous, hooded; petals minute, white; capsule 2 mm. long, equalling sepals; seed 0·5 × 0·25 mm., cuneoid, covered with fine tubercles, whitish.

Mid June—early Sept. (Hort. ex Cornwall.)
A. flower. B. sepal. C. pistil. D. capsule. E. seed.

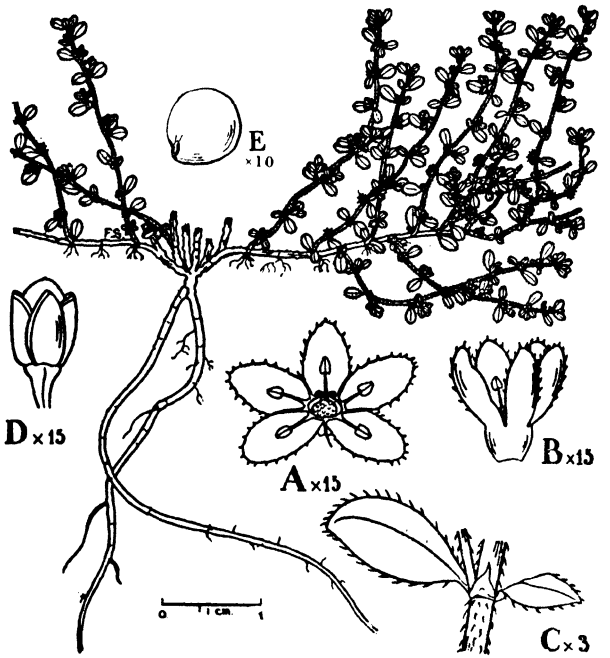


CORRIGIOLA L. Small, diffuse annuals or perennials with alternate, stipulate leaves and dense clusters of flowers; sepals 5, united below; petals 5, ovate; stamens 5; ovary one-celled; stigmas 3; fruit a trigonous nut.

359. CORRIGIOLA LITTORALIS L. The STRAPWORT is a small, glaucous annual with many procumbent stems 1-10 in. (2-25 cm.) long, growing from a central rosette of leaves. It occurs on the sandy margins of pools in two places in S.W. England. Leaves linear, obtuse, broadest at apex, entire, glaucous, somewhat fleshy; stipules minute, scarious, truncate. Flowers 1·5 mm. diam., in dense terminal and axillary clusters; sepals erect in fruit, ovate-lanceolate; petals white or tipped with red, nearly as long as sepals; styles 3, short, sessile. Nut 2·5 × 1·5 mm., trigonous, ovoid, green.

Mid July—late Aug. (Slapton, Devon.)

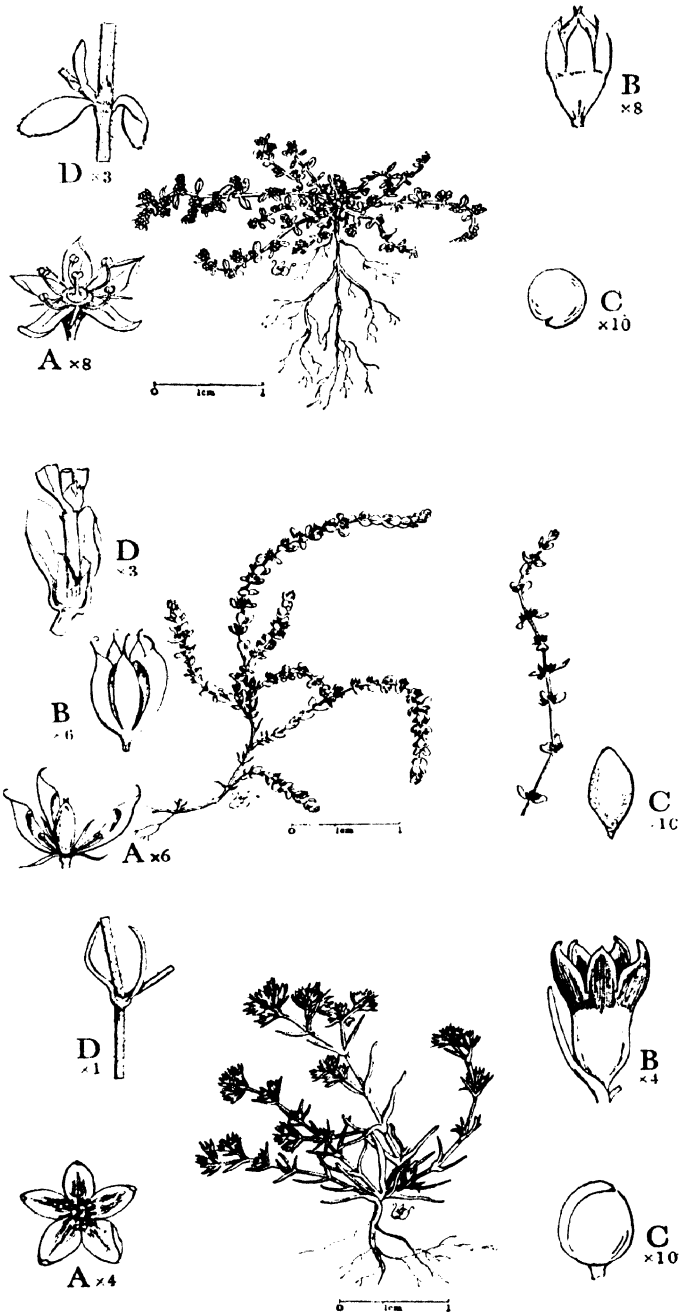
A. flower. B. calyx, corolla and stamens opened. C. ovary. D. nut. E. leaf and node.



HERNIARIA L. Small diffuse, green annuals or perennials with opposite, stipulate leaves and dense clusters of small flowers; sepals 5, united below as a cup; petals 5, linear, stamens 5; ovary one-celled, one-seeded; fruit a one-seeded capsule.

360. HERNIARIA CILIOLATA Melderis (*H. ciliata* Bab. This HAIRY RUPTUREWORT is a diffuse perennial with rather woody stems and prostrate, rooting shoots 3-10 in. (8-25 cm.) long, from which grow ascending branches 1-3 in. (2-7 cm.) long. It occurs only on sandy soil in the neighbourhood of the Lizard Point, Cornwall. Leaves 6 mm. long, ovate, obtuse, entire, ciliate; stipules triangular. Flowers 1·7 mm. diam., in small, axillary, roundish clusters on the ascending stems; sepals green, glabrous except for the ciliate margins and a bristle at the apex; petals minute, filiform; stigmas 2, divergent. Capsule obtuse with straight sides; seed 1·2 × 0·8 mm., lenticular, smooth, with prominent radicle, shining, black.

Mid July—late Aug. (Lizard, Cornwall.)
A. open flower. B. flower (side view). C. leaves and node.
D. capsule. E. seed.


D ×3
A ×8
B ×8
C ×10
0 1cm 1
D ×3
B ×6
A ×6
C ×10
0 1cm 1
D ×1
A ×4
B ×4
C ×10
0 1cm 1

361. HERNIARA GLABRA L. This GLABROUS RUPTURE WORT is a small glabrous annual or perhaps perennial, with diffuse or prostrate stems 2-9 in. (5-23 cm.) long, growing from a central root. It grows rarely in sandy fields in E. England and Cumberland. Leaves ovate-spathulate, obtuse, margin entire and somewhat ciliate, blade green, glabrous; stipules triangular, scarious. Flowers 2 mm. diam., in dense, axillary and terminal spicate clusters; sepals lanceolate, acute, erect in fruit, glabrous, or perhaps ciliate on margin; petals linear, green, rather shorter than sepals, style 1, stigmas 2. Capsule ovoid, obtuse, hardly exceeding the sepals; seed 1·2 × 0·8 mm., subglobular, smooth, shining, black, radicle obvious.

Mid July—mid Aug. (Rauceby, Lincolnshire.)
A. flower. B. capsule and calyx. C. seed. D. leaves and node.

ILLECEBRUM L. A small, spreading herb with opposite, exstipulate leaves and small flowers; sepals 5; petals 5, linear; ovary one-celled, with a single ovule.

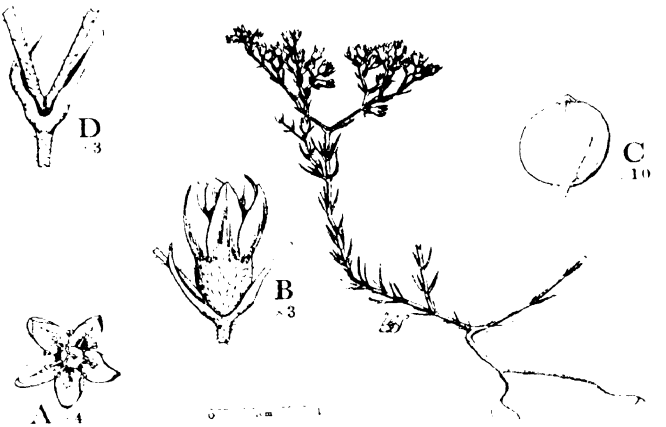
362. ILLECEBRUM VERTICILLATUM L. This small, spreading plant, sometimes called KNOTGRASS, occurs rarely in moist, sandy places on acid soils in several parts of S. England. Leaves ovate, entire, stalked, glabrous; stipules ovate, scarious. Flowers 1·5 mm. diam., in axillary clusters; sepals white, boat-like, with an awn just below the mucronate apex; styles 2, very short; stigmas 2. Capsule 1·2 × 0·5 mm., ovoid, one-seeded, enclosed by the persistent, erect sepals, opening below by 5 valves; seed 1·2 × 0·5 mm., ovoid, shining, almost smooth, brown.

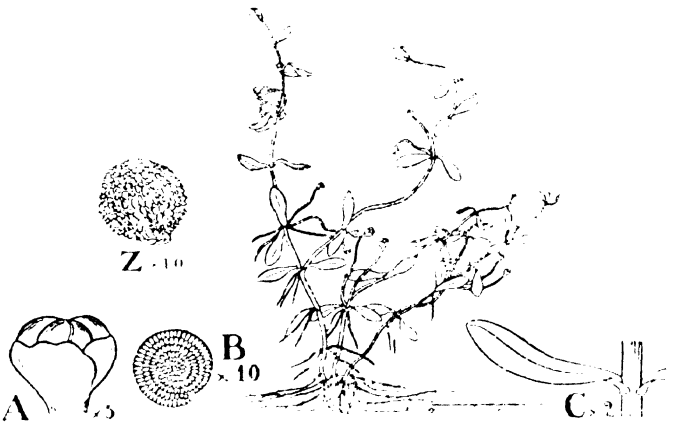
Late July—mid Sept. (New Forest, Hampshire.)
A. flower. B. sepals. C. seed. D. stipule.

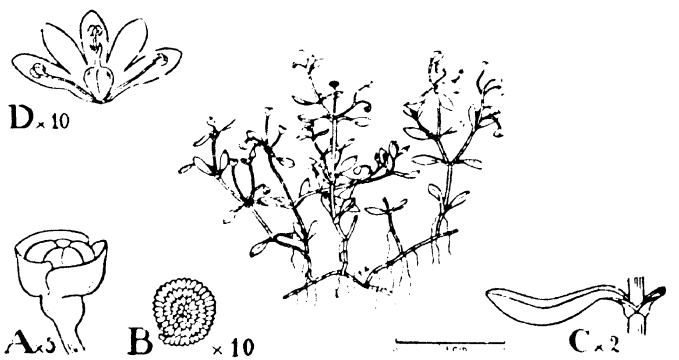
SCLERANTHUS L. Small, diffuse, green annuals or perennials with opposite, connate, stipulate leaves and small flowers; sepals 5, united in a tube; petals absent; stamens 1-10; ovary one-celled, one- or rarely two-seeded.

363. SCLERANTHUS ANNUUS L. The ANNUAL KNAWEL is a diffuse, herbaceous annual with much-branched, decumbent or erect, glabrous or hairy stem 1-8 in. (2-20 cm.) high, which is a common weed of dry, sandy, open land throughout the British Isles. Leaves linear, acute, connate at the base. Flowers 4 mm. diam., in rather dense, dichotomous cymes; sepals green, triangular-acute, with a very narrow, scarious margin; styles 2, short, stigmas 2. Capsule enclosed within the fruit formed of the glabrous, urceolate, ten-furrowed woody calyx tube; seed 1·0 × 0·7 mm., lenticular, smooth, light brown, radicle prominent.

Mid June—late Sept. (Asheldam, Essex.)
A. flower, apical view. B. fruit. C. seed. D. node.


D
×3
B
×3
C
×10
A


Z ×10
A
B
×10
C


D×10
A×3
B
×10
C×2

364. SCLERANTHUS PERENNIS L. The PERENNIAL KNAWEL is a diffuse perennial with a much-branched, woody, somewhat reddish stem 3-12 in. (8-30 cm.) long. It occurs in a few dry, sandy, open places in E. Anglia and Radnorshire. Leaves linear, acute, ciliate and connate at the base. Flowers 4 mm. diam., in short, dense, dichotomous cymes; sepals triangular, obtuse, greenish, with a broad white margin, incurved in fruit; styles 2, short; stigmas 2. Capsule enclosed within the somewhat hairy, urceolate, ten-ribbed calyx tube; seed 1·0 mm. diam., lenticular, smooth, light brown, radicle not prominent.

Late June—mid Sept. (Lakenheath, Suffolk.)
A. flower, apical view. B. fruit. C. seed. D. node.

MONTIA L. Dwarf green, glabrous annuals with minute flowers; sepals 2; petals 5, united; stamens 3; stigmas 3; capsule globose, three-seeded.

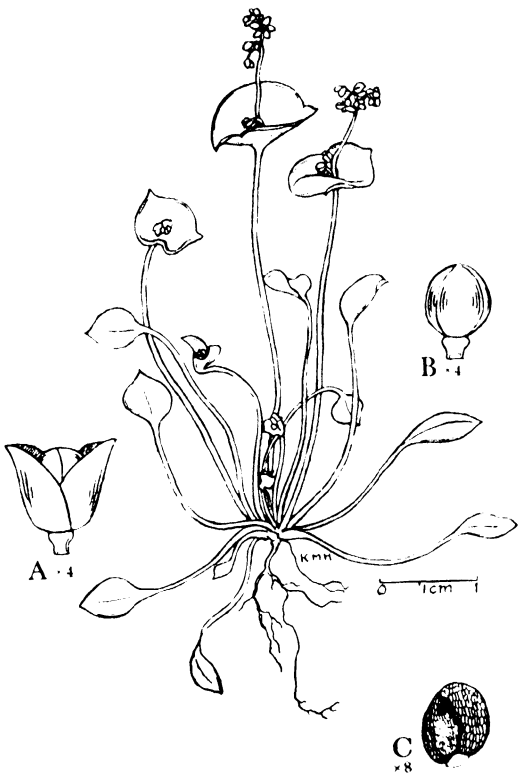
Includes a single comprehensive species of which the most marked species are:

365. MONTIA FONTANA L. This NORTHERN WATER BLINKS is a straggling annual with numerous weak, decumbent and rooting, leafy stems with rather long nodes, 1-4 in. (2-10 cm.) high. This is the form most frequently found in N. Britain. Leaves opposite, lanceolate, free at the base. Flowers 2 mm. diam., axillary; sepals 2, truncate; petals 5, white, little longer than sepals. Capsule three-lobed, globose, exceeding sepals; seed 1·3 × 0·8 mm., globular, reticulate or obscurely tubercled, brown.

Mid May—late Aug. (Arisaig, Inverness.)
A. capsule. B. seed. C. leaves. Z. seed of *M. intermedia*.
(*M. intermedia* Beeby differs from the above in the seed which is tuberculate on the margin and honeycombed in centre.)

366. MONTIA VERNA Neck. This SOUTHERN WATER BLINKS is usually a rather straggling annual with numerous weak, sub-decumbent and rooting, leafy stems 1-4 in. (2-10 cm.) high, with short nodes. This form is most frequently found in S. Britain. Leaves opposite, lanceolate, united at base. Flowers 2 mm. diam., axillary; sepals 2, truncate; petals 5, white, little longer than sepals. Capsule three-lobed, globose, equalling sepals; seed 1·2 × 0·6 mm., narrowly ovoid, covered with many acute tubercles, dull black.

Mid May—late Aug. (Hook Common, Hampshire.)
A. capsule. B. seed. C. leaf and node. D. flower.



CLAYTONIA L. Succulent herbs with entire leaves and regular flowers. Sepals 2; petals 5, free, equal; stamens 5; capsule globose, three-valved, three-seeded.

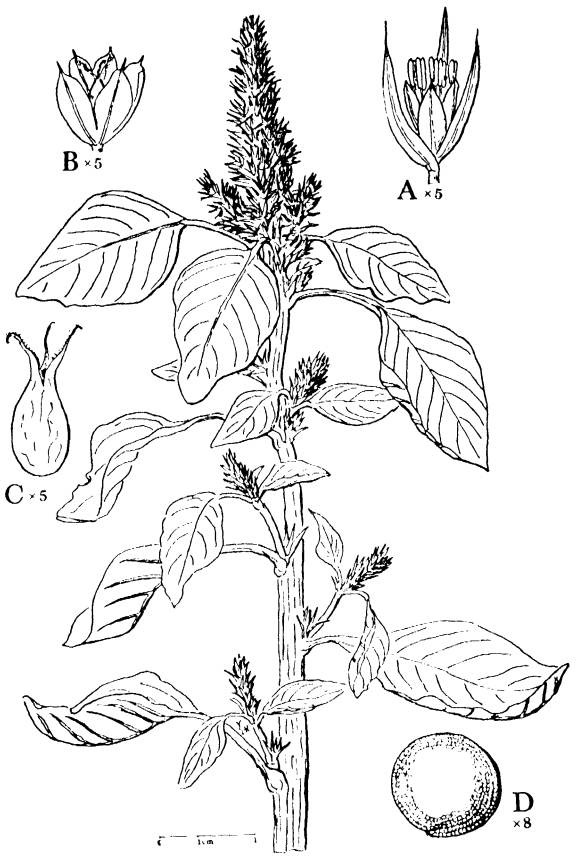
367. CLAYTONIA (MONTIA) PERFOLIATA Donn. This PERFOLIATE CLAYTONIA is a succulent annual with numerous erect flowering stems 6-9 in. (15-23 cm.) long. It is naturalized on light sandy soils in many places in lowland Britain, northwards to Aberdeen. Leaves all thick, succulent, veinless, light green; root leaves rhomboidal, stalked; stem leaves perfoliate, one on each flowering stem. Flowers 6 mm. diam., in short cymes; sepals 2, broadly ovate; petals 5, white, entire, slightly longer than sepals. Capsule globular, shorter than sepals; seed 1·5 × 1·0 mm., ovoid, shining, netted, black.

Late April—early July. (Hilton, Derbyshire.)
A. calyx. B. capsule. C. seed.

368. CLAYTONIA (MONTIA) ALSINOIDES Sims. This PINK CLAYTONIA is a succulent annual with few, ascending, flowering stems 9-12 in. (23-30 cm.) high. It is naturalized in many shady places on sandy soil, especially in W. and N. Britain to Inverness. Leaves all succulent, green; lower rhomboidal, acute; stem leaves 2, ovate, opposite, sessile, but not connate. Flowers 20 mm. diam., in long-stalked cymes; sepals broadly ovate; petals pink or white, bifid, twice as long as sepals. Capsule ovoid, acute, much shorter than sepals; seed 2·5 × 2·0 mm., ovoid, striate, shining, black.

Early May—mid July. (Cullen, Banffshire.)

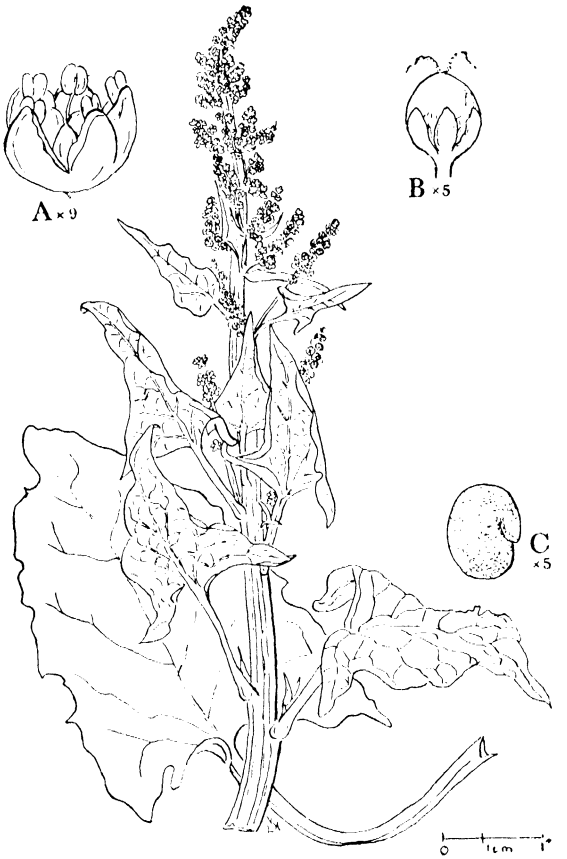
A. capsule and sepal. B. seed.



AMARANTHUS L. Rather small to rather large, usually annual herbs, with simple, exstipulate leaves and the inflorescence a dense spike. Flowers monœcious; perianth 3-5 lobed; stamens 3-5; ovary superior, one-celled; stigmas 2-3; fruit one-seeded.

369. AMARANTHUS RETROFLEXUS L. The AMARANTHUS is a rather stout, little-branched, leafy annual with hairy stems 6-24 in. (15-60 cm.) high, which is often found as a casual in cultivated ground, but it is not permanent. It is apparently introduced with other seeds. Leaves ovate, oblong, apiculate, margin entire or wavy. Flowers 2 mm. diam., forming a much-branched, very dense spicate inflorescence, leafless in the upper part; perianth lobes green, usually 5, spathulate, acuminate, equalling or shorter than the stiff, acuminate bracteoles. Fruit 1·5 mm., long, suborbicular, compressed, with 3 persistent stigmas; seed 2 mm., lenticular, honeycombed, shining, black. (Other species occur as casuals.) Mid Aug.—late Sept. (Shimpling, Suffolk.)

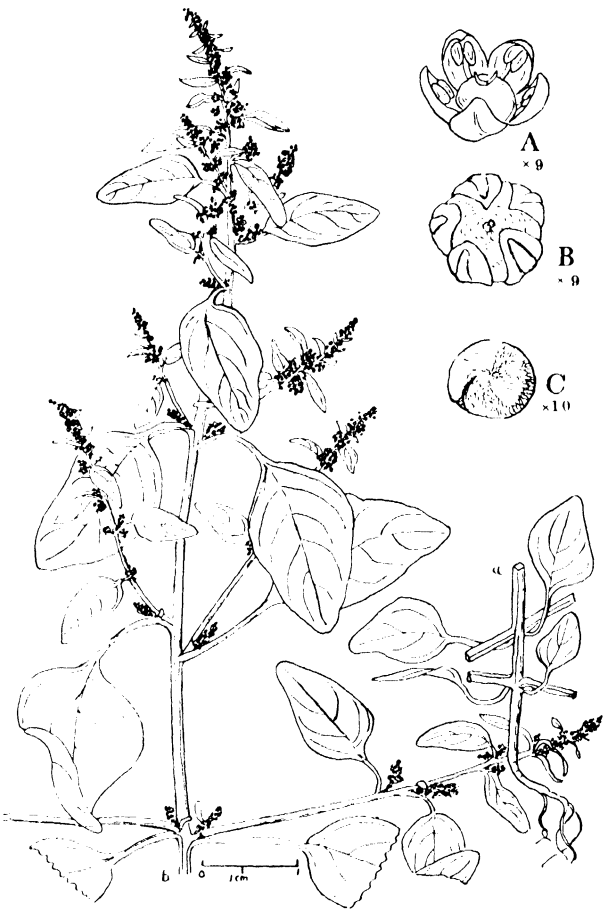
A. male flower. B. female. C. capsule. D. seed.



CHENOPODIUM L. Slender to rather stout annuals or perennials with flowers grouped in ± spherical heads; perianth lobes 5; stamens usually 5; ovary superior, one-celled, one-seeded; stigmas 2. (A number of species other than the following occur as casuals on rubbish dumps.)

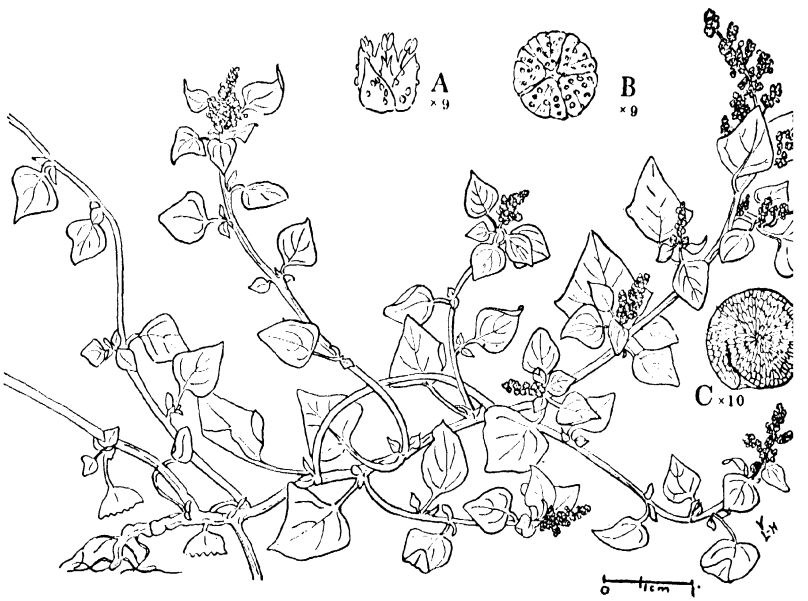
370. CHENOPODIUM BONUS-HENRICUS L. The ALL-GOOD or GOOD KING HENRY is a rather robust perennial with many erect or straggling stems 9-20 in. (23-50 cm.) high, growing from a thick, woody stock. It is found commonly near farm buildings, on roadsides and waste places near habitations. Leaves mealy when young, broadly hastate, subacute to subobtuse, margins wavy. Flowers 2 mm. diam., in a terminal, elongated, dense and leafless panicle; perianth five-lobed, lobes not covering the seed; seed vertical, 2·5 × 2·0 mm., ovoid, finely rugose, black.

Early June—mid May. (Startforth, N. Yorkshire.)
A. flower. B. fruit with perianth. C. seed.



371. CHENOPODIUM POLYSPERMUM L. This MANY-SEEDED GOOSEFOOT is a rather slender, decumbent or erect, much-branched annual 4-15 in. (10-38 cm.) long. It occurs rather commonly in arable fields and waste places throughout England and Wales except the north-west. Leaves bright or reddish-green, hardly mealy, ovate, entire, rather long-stalked. Flowers 2 mm. diam., clusters in long, dense or rather lax terminal and lateral, leafy panicles; perianth green, 5-lobed; lobes ridged on the back, not covering the ripe fruit; seed horizontal, 1·0 mm. diam., lenticular, with wavy reticulations or pits, black.

Mid July—late Sept. (Ashorne, Warwickshire.)
A. flower. B. fruit with perianth. C. seed.

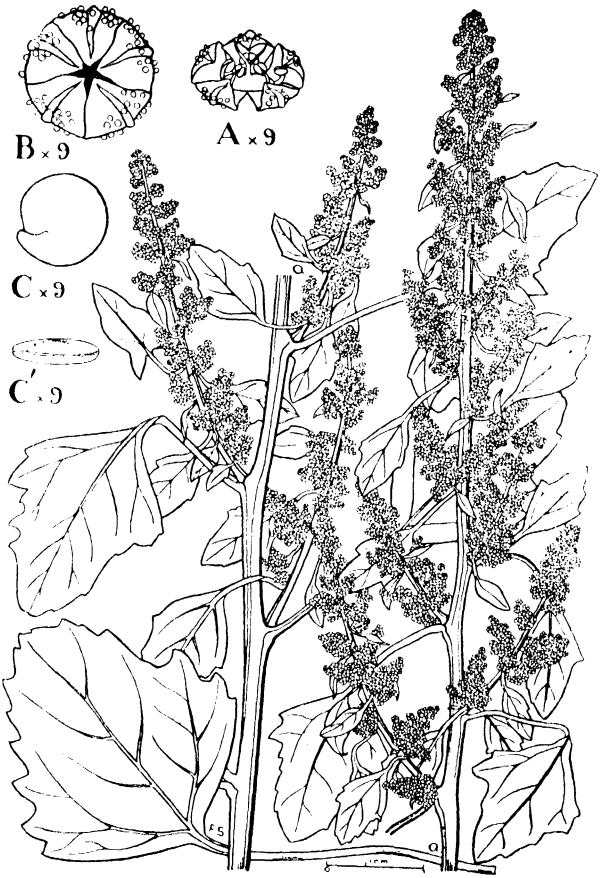


372. CHENOPODIUM VULVARIA L. The STINKING GOOSEFOOT is a rather stout annual with much-branched, prostrate or ascending stems 2-15 in. (5-38 cm.) long, and an odour of stale fish. It occurs, though rarely, on shingle at the landward end of salt marshes in S.E. England. Leave ovate or rhomboid, mealy on both sides, apex acute, base truncate or cuneate, margin entire. Flowers 1·2 mm. diam., clusters in short, terminal and axillary, leafless panicles; perianth grey-green, mealy, ovate, not keeled; lobes not covering the ripe fruit; seed horizontal, 1·2 mm. diam., lenticular, with a radial, reticulate marking, grey.

Late July—early Sept. (Romney, Kent.)
A. flower. B. fruit. C. seed.

373. CHENOPODIUM ALBUM L. The WHITE GOOSEFOOT is a stout to slender, erect, much-branched, very variable annual 6-30 in. (15-75 cm.) high, which occurs abundantly in arable ground and waste places throughout the British Isles. Leaves dull green, mealy; lower ovate-deltoid to lanceolate, apex acute or subobtuse, base cuneate, margin with short, blunt teeth directed outwards. Flowers 2 mm. diam., the dense clusters forming rather close and long, usually leafless spikes or cymes; perianth five-lobed, lobes green and somewhat mealy, triangular, with a white border and keeled on back, covering the seed; seed horizontal, about 1·5 mm. diam., lenticular, with fine radiating striations, black.

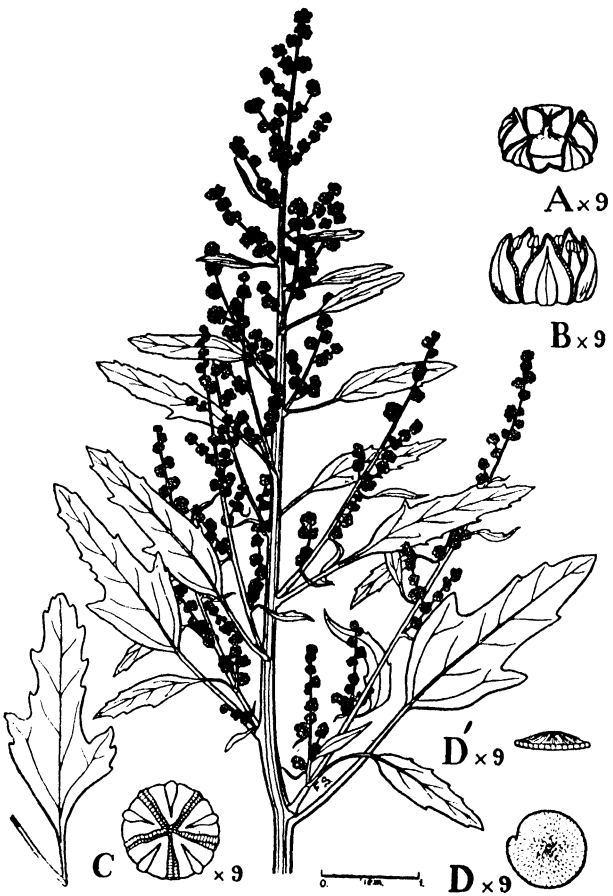
Late July—mid Sept. (Bramcote, Nottinghamshire.)
A. flower. B. fruiting perianth. C. seed.



374. CHENOPODIUM OPULIFOLIUM Schrad. ex Koch and Zig. This BROAD-LEAVED GOOSEFOOT is a stout, erect or decumbent, much-branched, variable annual, 12-30 in. (30-75 cm.) high. It is an introduced plant which occurs rather infrequently in waste places, mostly in the south of England. All leaves glaucous, mealy beneath, nearly as broad as long and somewhat rhomboidal, with obtuse apex, cuneate base and margin with a few, subacute, short teeth, lower part often entire. Flowers 2 mm. diam., the close, dense clusters forming terminal and lateral leafless panicles; perianth five-lobed, lobes green, mealy, without a hyaline margin and keeled on the back; seed horizontal, 1·0-1·5 mm. diam., lenticular, almost smooth or with reticulate markings which are hardly visible, black.

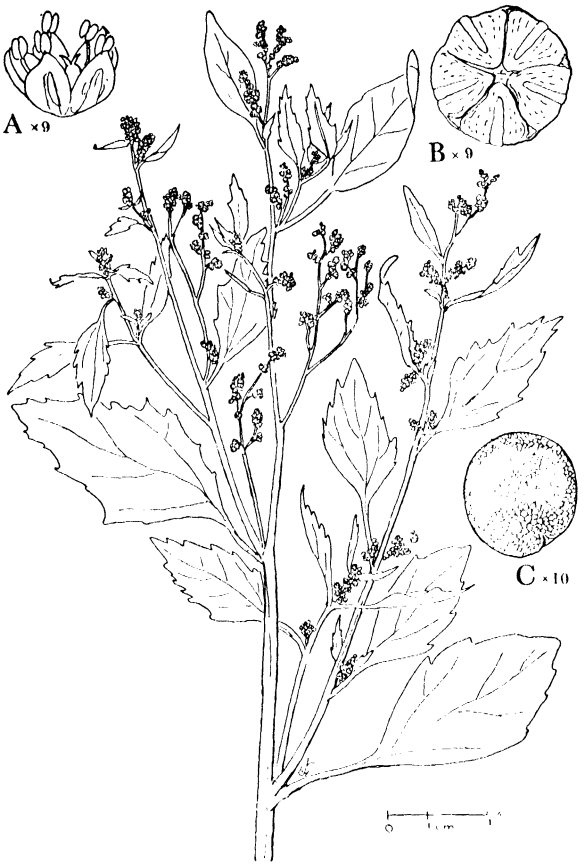
Early Aug.—mid Oct. (Avonmouth, Gloucester.)

A. flower. B. fruiting perianth. C, C′. seed (top and side views).



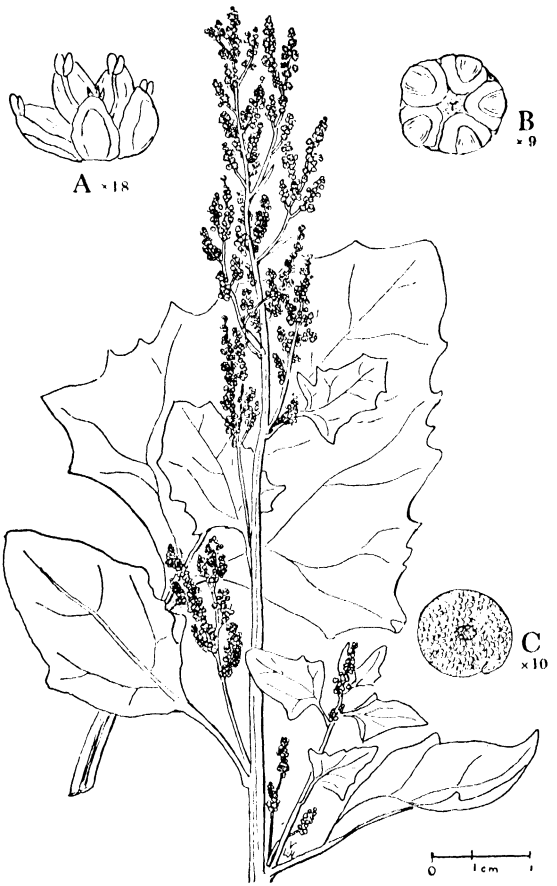
375. CHENOPODIUM FICIFOLIUM Sm. This FIG-LEAVED GOOSEFOOT is a stout, erect, much-branched annual, 6-30 in. (15-75 cm.) high, which occurs uncommonly in waste places and rich arable land in S.E. and central England. Lower leaves lanceolate; apex subobtuse; base cuneate; margin with few rounded teeth and one principal lobe on each side directed towards the apex; upper leaves linear. Flowers 1·5-1·7 mm. diam., the rather dense clusters rather distant and forming terminal or lateral leafless cymes; perianth five-lobed, lobes green with a white hyaline margin and keeled on the back, covering the seed; seed horizontal, 0·8-1·0 diam., lenticular, with fine radial tubercles on its surface, grey.

Late July—mid Sept. (Ware Park, Hertfordshire.)
A, B. flowers. C. fruiting perianth. D, D′. seed, top and side views.



376. CHENOPODIUM MURALE L. The NETTLE-LEAVED GOOSEFOOT is a stout, erect, much-branched, hardly mealy annual 6-30 in. (15-75 cm.) high, which occurs here and there in waste places and arable fields and on dunes in lowland England. Upper leaves linear-lanceolate, toothed, lower rhomboid or triangular with many coarse, blunt and irregular teeth in the upper part and almost entire towards the truncate or cuneate base; apex rounded. Flowers 1·8-2·0 mm. diam., in rather dense clusters, forming much-branched terminal and lateral, spreading panicles or cymes; perianth five-lobed, green, lobes without a hyaline margin, keeled on the back and covering the seed; seed horizontal, 1·2-1·5 mm. diam., lenticular, finely reticulate, black.

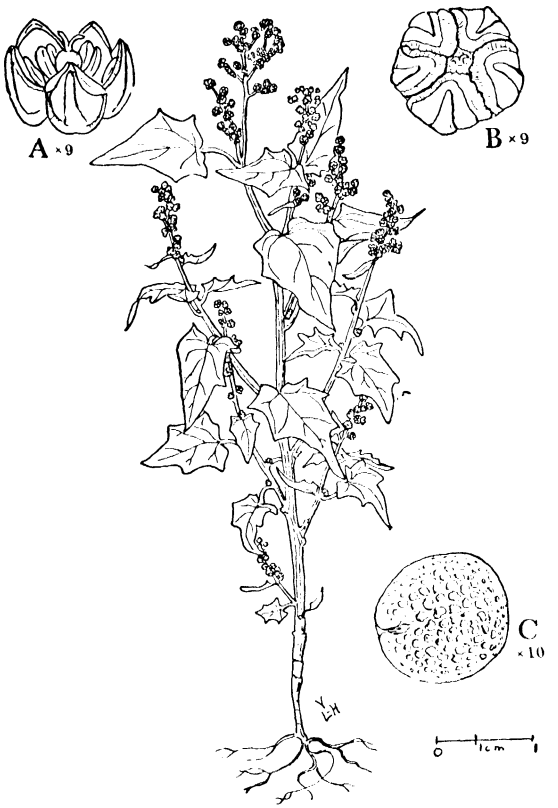
Late July—early Oct. (Catton, Thirsk.)
A. flower. B. fruiting perianth. C. seed.



377. CHENOPODIUM URBICUM L. The UPRIGHT GOOSEFOOT is a rather stout, glabrous, erect, little-branched annual 6-24 in. (15-60 cm.) high, which occurs here and there rather rarely, in waste places and rich arable land in lowland England. All leaves triangular to rhomboid; lower with few, large, rounded, rather long and often hooked teeth, apex subacute, base truncate or cuneate. Flowers 1·5 mm. diam., the rather lax clusters forming short, erect, leafless panicles; perianth five-lobed, green, with a very narrow margin and no keel, scarcely covering the seed; seed horizontal, 1·2 mm. diam., lenticular, with a rather radial honeycomb, black.

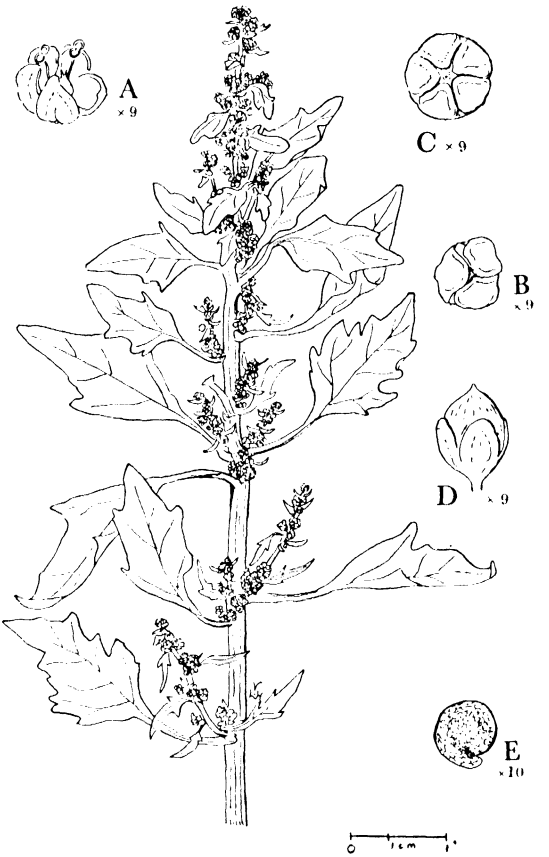
Late July—early Oct. (Arne, Dorset.)

A. flower. B. fruiting perianth. C. seed.



378. CHENOPODIUM HYBRIDUM L. The MAPLE-LEAVED GOOSEFOOT is a rather slender, little-branched, scarcely mealy, erect annual 6-20 in. (15-50 cm.) high. It occurs rather rarely here and there in the southern half of England northwards to Norfolk and Shropshire. All leaves triangular-rhomboid; lower with a few, very large, acute teeth, apex acute to acuminate, base truncate or cordate. Flowers 2 mm. diam., the rather lax clusters forming short, leafless cymes with spreading branches; perianth five-lobed, lobes with a narrow hyaline margin, green, somewhat keeled, almost covering the seed; seed horizontal, 1·7 mm. diam., lenticular, with large, irregular, radially arranged pits, black.

Late July—Late Sept. (Hort. Worthing, Sussex.)
A. flower. B. fruiting perianth. C. seed.



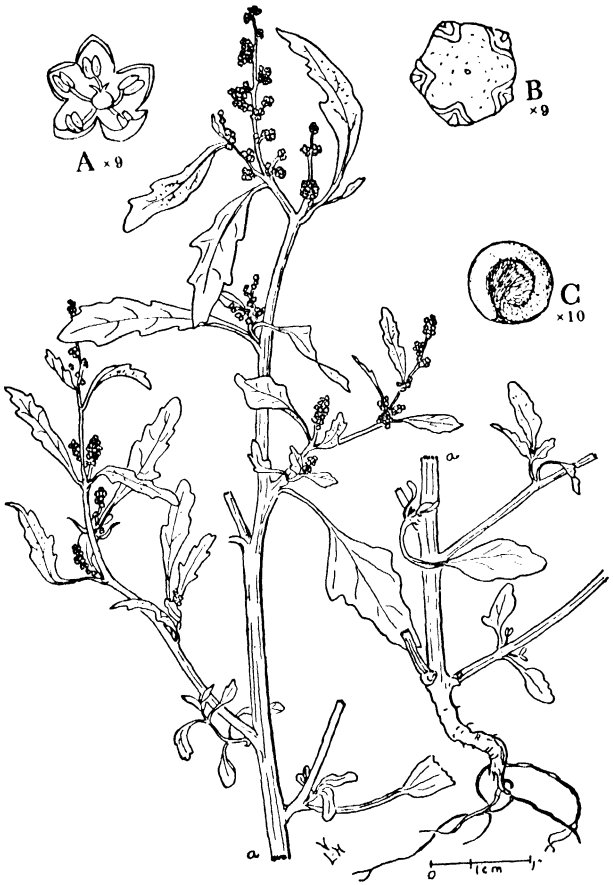
379. CHENOPODIUM RUBRUM L. The RED GOOSEFOOT is a rather stout, erect, glabrous or glaucous annual 6-20 in. (15-50 cm.) high, which grows abundantly in rich wasteland in lowland Britain and especially near the sea in England. Leaves glabrous, shining, rhomboidal; lower with several large, irregular, upward directed, acute teeth, apex acute to acuminate, base cuneate. Flowers 1·5 mm. diam., the small, dense clusters forming short terminal and axillary, ± erect, leafy panicles; perianth of terminal flowers five-lobed, of lateral flowers two- to four-lobed, reddish, without a hyaline border and with scarcely any keel, not covering the seed; seed vertical, 0·6-0·8 mm., lenticular, with faint reticulations, black.

Late July—mid Oct. (Shimpling, Suffolk.)

A. terminal flower. B. lateral flower. C. fruiting perianth of terminal flower, D. of lateral flower. E. seed.

380. CHENOPODIUM BOTRYODES Sm. This SEASIDE RED GOOSEFOOT is a glaucous or glabrous, erect, branched, succulent annual, 1-12 in. (3-30 cm.) high, with long side branches, which is found, rarely, in damp, sandy places near the sea in S. and E. England. Lower leaves rhomboidal or hastate, apex acute, base cuneate, margin with a single large basal tooth on each side and sometimes one or two other smaller ones; upper leaves linear. Flowers 1·2 mm. diam., the small, dense, distant clusters forming lax terminal and lateral panicles, which are leafless at the top; perianth of terminal flowers five-cleft, of lateral four-cleft; lobes connate, red, without a hyaline border and with a keel in upper part, not covering the seed; seed vertical, 0·6-0·8 mm. diam., lenticular, keeled at edge with a hardly visible, faint reticulation on its surface, black.

Mid July—mid Sept. (Hayling Island, Hampshire.)
A. terminal flower. A′. lateral flower. B. seed, vertical, and B′ lateral views.



381. CHENOPODIUM GLAUCUM L. The OAK-LEAVED GOOSEFOOT is a rather slender, prostrate, straggling or erect annual with stem 4-12 in. (10-30 cm.) long, found uncommonly in bare places on organically enriched soils through south-eastern, eastern and north-eastern England. Leaves linear, mealy below, glabrous above, lanceolate, obtuse, tapering gradually into a rather long petiole, margins wavy or with few, obtuse teeth. Flowers 1·5 mm. diam., clusters in a long, narrow, lax terminal or lateral panicle; perianth of top flower five-lobed, of lower flowers four-lobed; lobes margined and keeled, glabrous, not covering the ripe fruit; seed 1·0 mm. diam., horizontal, lenticular, with a rather faint reticulation, minutely pitted, black.

Late June—mid Sept. (Thirsk, Yorkshire.)

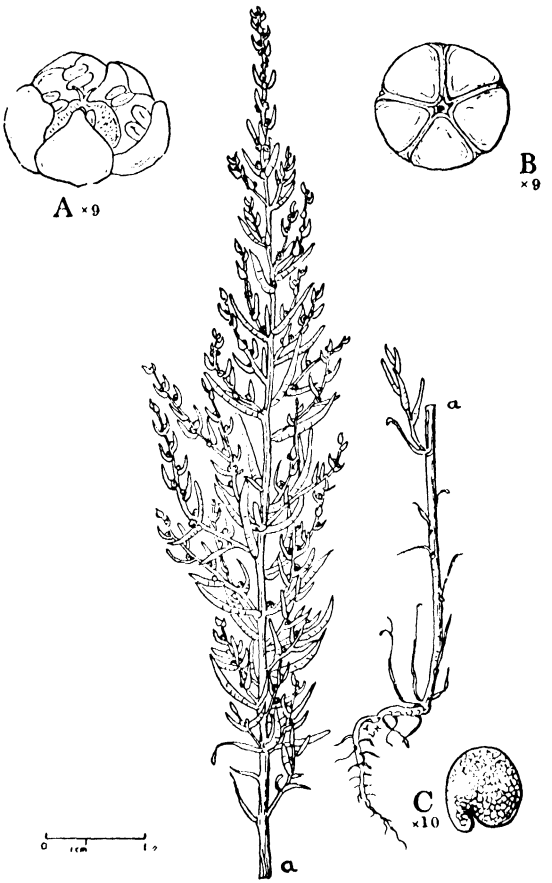
A. flower. B. fruit and perianth. C. seed.

BETA L. Stout to rather stout, leafy perennial herbs with hermaphrodite flowers in groups on a spike-like inflorescence. Perianth lobes 5, thickening as the fruit ripens; stamens 5; ovary half-inferior; fruit adhering in groups, 1-seeded.

382. BETA MARITIMA L. The SEA BEET is a green, usually much-branched, stout perennial with thick, woody, ribbed stem 12-40 in. (30-100 cm.) high, growing from a conical, swollen rootstock. It is abundant on sea-shores around all the coast of the British Isles. Lower leaves bright green, shining, ovate, obtuse, truncate, with a winged petiole, margin undulate, entire. Flowers 3-4 mm. diam., in distant clusters of about 3-4 on a long, shortly-branched inflorescence; perianth lobes triangular, keeled, green. Fruit about 5 mm. diam., several adhering together; seed 2·5 × 2·0 mm., ovoid, radicle very prominent, with open network, grey.

Early July—mid Sept. (Burnham-on-Crouch, Essex.)

A. flower. B. fruiting perianth. C. seed.



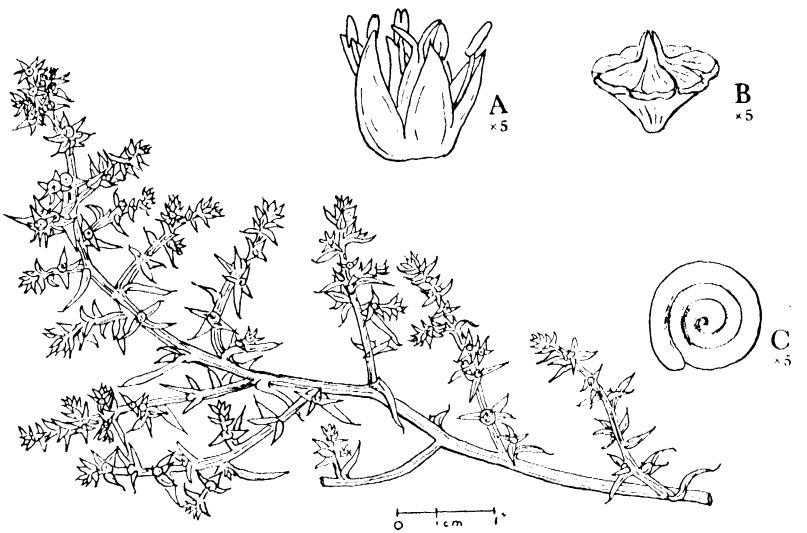
SUÆDA Forsk. ex Scop. Small to rather stout annuals or perennials with succulent, terete leaves. Flowers inconspicuous and hermaphrodite, solitary in the leaf axils; perianth five-lobed, simple; stamens 5. styles 2-3; fruit a one-seeded nut.

383. SUÆDA MARITIMA (L.) Dumort. The ANNUAL SEA-BLITE is a small, erect or prostrate, glaucous or reddish annual 1-12 in. (2-30 cm.) high, which is abundant on salt marshes and muddy seashores throughout the British Isles though rare in E. Scotland. Leaves 2-25 mm. long, acute or subobtuse, internodes rather long. Flowers 2·5 mm. diam., in axillary clusters of 1-3 flowers; perianth green or reddish; stigmas 2; seed horizontal, 1·0 × 1·0 mm., globular, except for the prominent radicle-sheath, finely netted, shining, black.

Late July—late Sept. (Burnham-on-Crouch, Essex.)
A. flower. B. fruiting perianth. C. seed.

384. SUÆDA FRUTICOSA Forsk. The SHRUBBY SEA-BLITE is a small, densely branched shrub 18-40 in. (45-100 cm.) high, which grows plentifully along the south-eastern sea coast of England in shingly places from Lincolnshire to Dorset, though rare at the S. and E. ends. Leaves 5-18 mm. long, obtuse, internodes very short. Flowers 3 mm. diam., reddish-green, in small, axillary clusters of 1-3 flowers; perianth usually reddish; stigmas 3; seed vertical, 1·7 × 1·5 mm., ovoid except for the prominent radicle-sheath, smooth, shining, black.

Early July—late Sept. (Steeple Stone, Essex.)
A. flower. B. fruiting perianth. C. seed.



SALSOLA L. Rather stout perennial herbs with small, rounded leaves with a terminal spine. Flowers inconspicuous and hermaphrodite in small clusters in the axils of the leaves; perianth five-lobed with a terminal appendage; stamens 5; ovary one-celled; fruit a one-seeded nut.

385. SALSOLA KALI L. The PRICKLY SALTWORT is a somewhat woody perennial with much-branched, prostrate stems 6-18 in. (15-45 cm.) long. It grows commonly in sand and shingle on the seashore all around the coast of the British Isles. Leaves 15-20 mm. long, grey-green, thick and succulent, semi-circular in cross-section, with a terminal spine. Flowers 3·5 mm. diam., solitary in the axils of the leaves, subtended by two to three bracts; perianth five-cleft, lobes triangular, acute, with an upturned apex, not keeled nor bordered, completely covering the fruit; seed 3 mm. diam., lenticular with a spiral coil, smooth, grey.

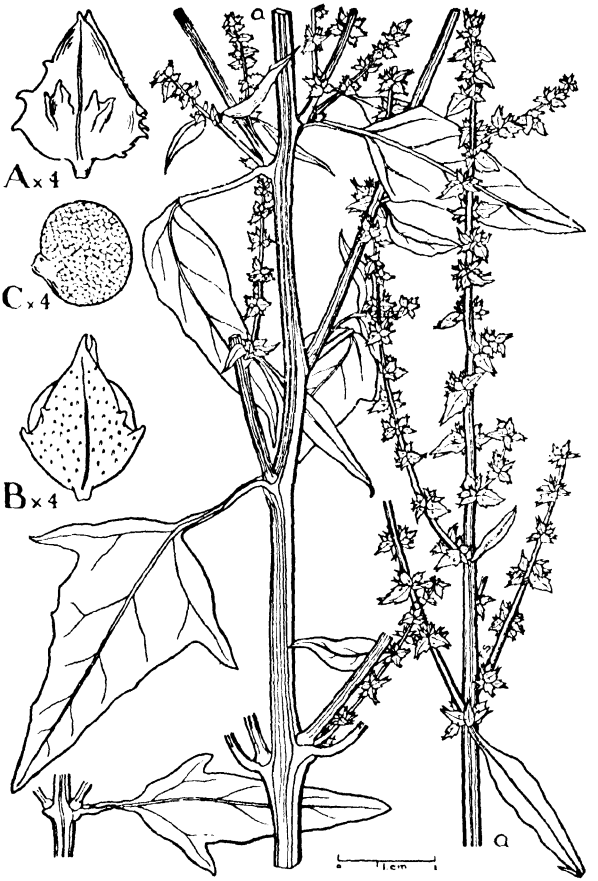
Mid July—early Sept. (Lowestoft, Suffolk.)
A. flower. B. fruiting perianth. C. seed.

ATRIPLEX L. Annual herbs or woody perennials with simple leaves and inconspicuous, unisexual flowers. Perianth lobes of male flowers usually 5; female flowers without perianth, but enclosed by two persistent bracteoles; stamens 5; stigmas 2; ovary one-seeded; fruit a nut.

386. ATRIPLEX LITTORALIS L. This NARROW-LEAVED ORACHE is a much-branched, somewhat mealy annual, 12-30 in. (30-75 cm.) high, which grows commonly on the seashore and in the neighbourhood of salt marshes all around the coast of the British Isles. Leaves all narrow, linear-lanceolate, acute, entire or somewhat toothed. Flowers 2 mm. diam., in clusters which are usually close together and forming a long, thin, much-branched, almost leafless inflorescence. Bracteoles 3·0 × 3·5 mm., rhomboidal, strongly muricate, green or somewhat mealy; lobes united for some distance; seed 1·7 mm. diam., much smaller than the bracteoles, lenticular, finely striate, black.

Late July—mid Aug. (Burnham-on-Crouch, Essex.)

A. fruiting bracteoles. B. bracteole and nut. C. seed.



387. ATRIPLEX PATULA L. The SPREADING ORACHE is a much-branched, glabrous, very variable annual 12-30 in. (30-75 cm.) high, which grows abundantly in arable land and waste places throughout the British Isles Lower leaves triangular, lanceolate, acute, base cuneate and often with two basal lobes directed upwards, margin undulate; upper leaves lanceolate, cuneate, entire. Flowers 2 mm. diam., in clusters which are usually distinct and form a long, thin, branched, almost leafless inflorescence. Perianth lobes about 4 × 6 mm., usually cuneate or subtruncate at the base, slightly toothed or entire, smooth or somewhat muricate, deep green, lobes united for some distance; seed 3·5 mm. diam., almost as large as bracteoles, lenticular, netted, black.

Late July—mid Aug. (Pinner, Middlesex.)

A, B. fruiting bracteoles. C. seed

388. ATRIPLEX HASTATA L. The SPEAR-LEAVED ORACHE is a branched, glabrous or somewhat mealy, erect or spreading, very variable annual, 12-30 in. (30-75 cm.) high, which grows abundantly in waste places and on the seashore throughout lowland Britain. Lower leaves broadly triangular or hastate, acute, base truncate, with the lowest teeth directed outwards, margin entire or irregularly serrate; only the uppermost leaves lanceolate, entire. Flowers 1·5-1·7 mm. diam., in clusters which are usually close and form a long, rather thin, branched, almost leafless inflorescence; bracteoles about 6 × 4 mm., usually truncate but sometimes cuneate at the base, toothed and somewhat muricate, green; lobes united only at the base; seed about 3 mm., smaller than the bracteoles, lenticular, striate, black.

Late July—early Sept. (Arnside, Lancashire.)

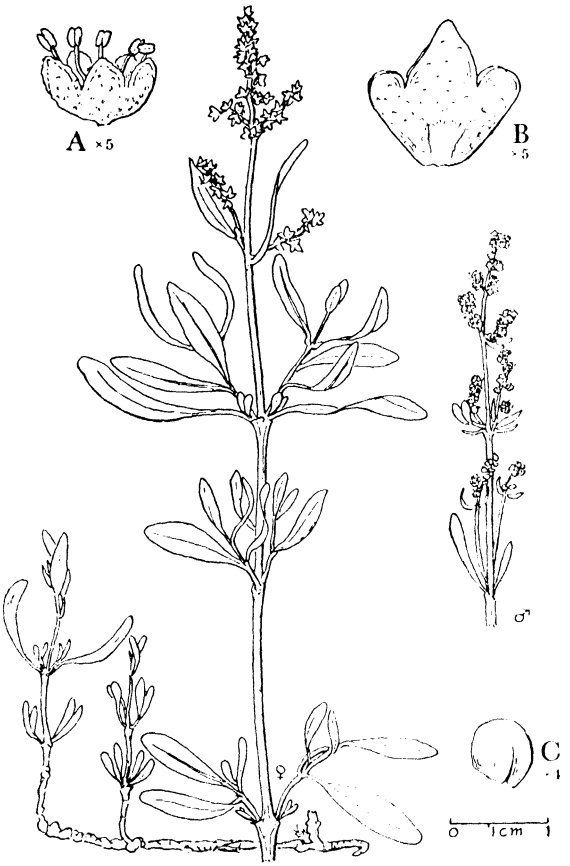
A. fruiting bracteoles. B. bracteole and nut. C. seed.

389. ATRIPLEX GLABRIUSCULA Edmonst. (incl. *A. babingtonii* Woods). The PROSTRATE SEA ORACHE is a much-branched, prostrate, spreading annual, with stems 12-18 in. (30-45 cm.) long. It is found on the seashore and in salt marshes rather commonly around the coasts of Britain. Lower leaves broadly triangular, subacute, often with two basal lobes pointing outwards, ± dentate; upper leaves similar but narrower. Flowers 2·0-2·2 mm. diam., clusters of flowers rather distant, forming a short, leafy inflorescence; bracteoles about 5·0 × 5·5 mm., rhomboidal, cuneate at base, serrate on the margin, tubercled at base, grey-green, lobes united only at base; seed 2·5 mm. diam., lenticular, much smaller than the bracteoles, crenate at margin.

Late July—mid Sept. (Kilnathort, Ayrshire.)
A. fruiting bracteoles. B. perianth and nut. C. seed.

390. ATRIPLEX LACINIATA L. (*A. sabulosa* Rouy.). The FROSTED ORACHE is a mealy, prostrate annual with branched, reddish stems 6-9 in. (15-22 cm.) long, which grows, rather rarely, on sandy and gravelly sea-shores along all the British coasts. Leaves rhomboid to ovate, sinuate, apex obtuse, base cuneate. Flowers 2 mm. diam., in small axillary clusters; fruiting bracteoles of female flowers 6-7 mm. long, slightly toothed, mealy and becoming hardened in the lower part; seed 3 mm. diam., lenticular, winged, finely striate, grey.

Early Aug.—mid Sept. (Deganwy, Caernarvon.)
A. male flower. B. fruiting bracts. C. seed.

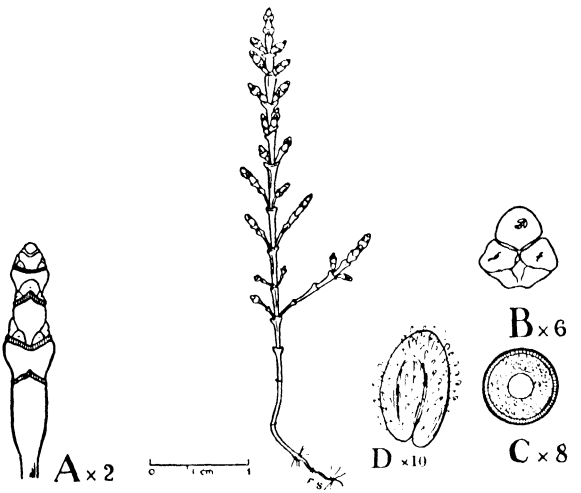


391. ATRIPLEX (HALIMIONE) PORTULACOIDES L. The SEA PURSLANE is a very mealy, somewhat shrubby perennial with numerous decumbent flowering stems 6-18 in. (15-45 cm.) long, growing from a shortly-creeping rhizome. It is usually the dominant plant on muddy salt marshes all around the British coasts, abundant in England and Wales, uncommon in Scotland and here and there in Ireland. Leaves opposite, grey, mealy, ovate, obtuse, entire. Flowers 1·0 mm. diam., in small clusters which are usually very close and form a rather dense, short, terminal panicle; male regular with 5 obtuse perianth lobes, subsessile; female with bracteoles 5·0 × 5·5 mm., rhomboid, with 3 subequal, blunt teeth, muricate or tuberculate, mealy, lobes joined as far as the lateral teeth; seed about 2 mm. diam., lenticular, smooth, radicle prominent.

Late July—early Oct. (Burnham-on-Crouch, Essex.)
A. male flower. B. female perianth. C. seed.

392. ATRIPLEX (HALIMIONE) PEDUNCULATA L. The ANNUAL SEA PURSLANE is a mealy annual with a branched, erect stem 1-6 in. (2-15 cm.) high, which occurs very rarely in salt marshes in a very few places on the coasts of S.E. and E. England. Leaves alternate, silvery, ovate-obtuse or apiculate, entire. Flowers 1·0 mm. diam., on long pedicels in lax cymes in the axils of the upper leaves; male regular with 5 obtuse perianth lobes; female with bracteoles 2 × 3 mm., triangular, with 3 teeth, the outer recurved and much larger than the central one; seed 1·0 × 0·7 mm., lenticular, with a prominent radicle.

Late July—mid Sept. (Pegwell Bay, Kent.)



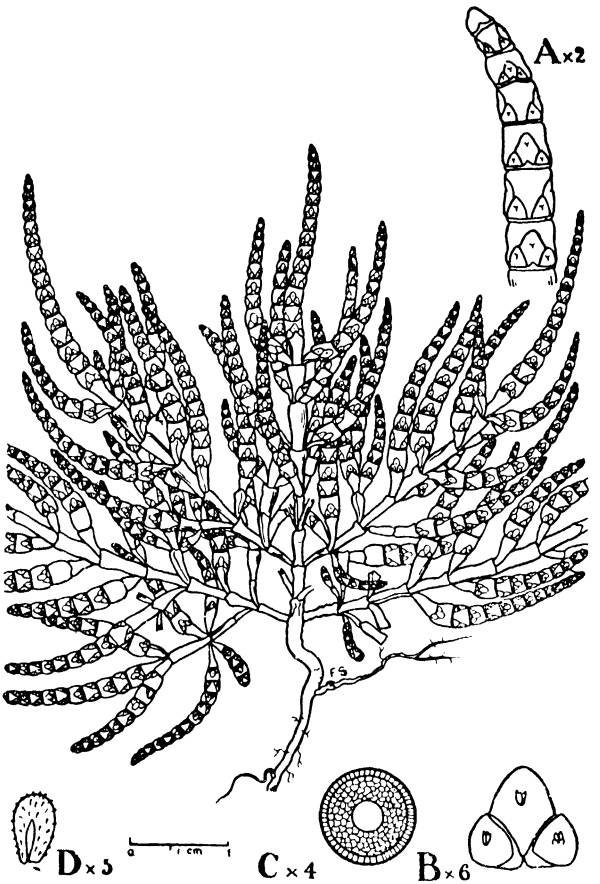
SALICORNIA L. Herbs with succulent, jointed stems and minute leaves. Flowers sunken in the stem at the upper internodes, usually in threes or ones. Perianth flat, with a minute 3-4 toothed opening; stamens 1-2; stigmas 2-3. Fruit a nut enclosed in the succulent perianth.

(This is a very critical genus and the limits of the species and subspecies have not yet been properly determined.)

393. SALICORNIA GRACILLIMA (Townsend) Moss. The SMALLER GLASSWORT is a little-branched, succulent, erect annual 1-4 in. (2·5-10·0 cm.) high, with the secondary branches very short and few, spreading and parallel. It occurs, sometimes in abundance, in the drier parts of salt marshes in S. and E. England. Flowering branches short, obtuse, with 2-4 fertile segments; the terminal one about 10 mm. long with wavy outline, usually greenish. Flowers in threes, central flower largest, not separating the outer ones; seed 1·5 × 1·0 mm., ovoid, covered with hooked hairs, grey.

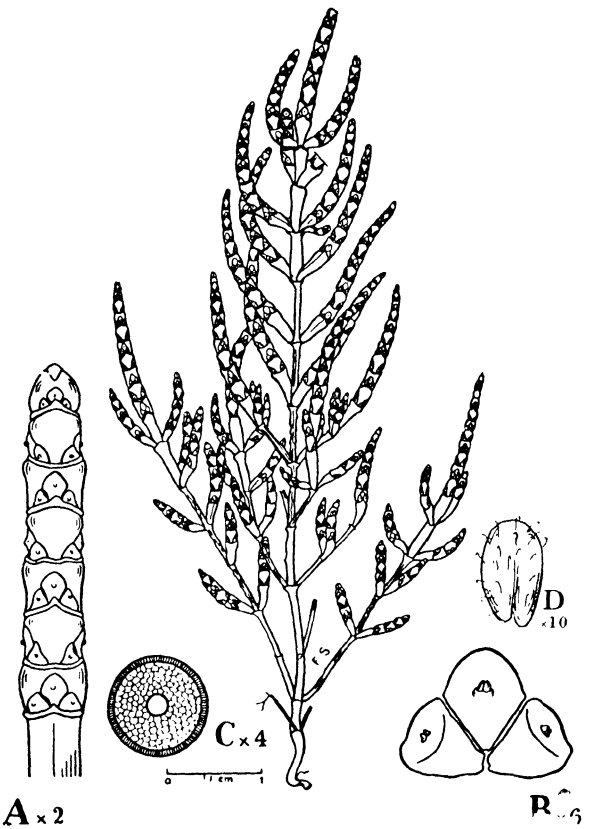
Early Aug.—mid Sept. (Blakeney, Norfolk.)

A. flowering branch. B. flowers. C. stem t.s. D. seed.



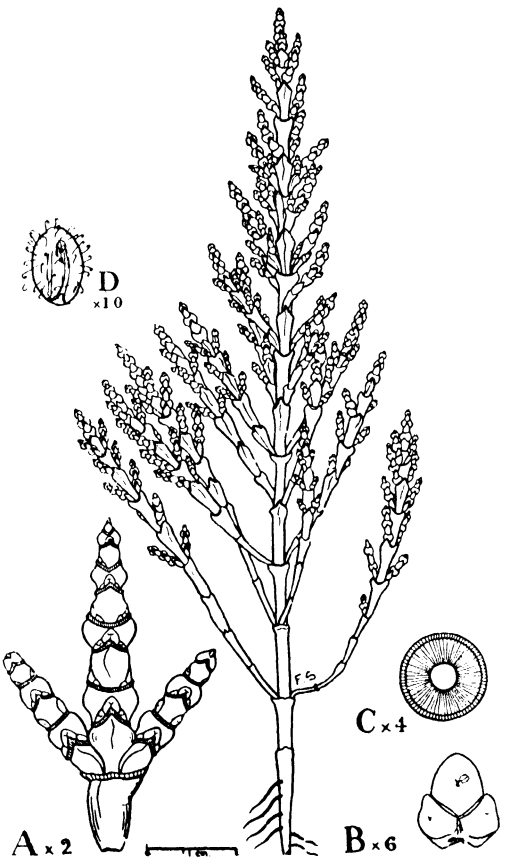
394. SALICORNIA DOLICHOSTACHYA Moss. This BUSHY GLASSWORT or SAMPHIRE is a very bushy, succulent, erect annual 4-6 in. (10-15 cm.) high, with many erect, secondary branches, all of about equal size. It is rather common in salt marshes in S. and E. Britain. Flowering branches green, long, obtuse, with 15-30 squarish fertile segments, four branches sometimes arising at the same node; flowers in threes, central flower largest, just separating the outer ones; seed 0·8 × 0·5 mm., ovoid, covered with coiled hairs, grey.

Early Aug.—mid Sept. (Hayling Island, Hampshire.)
A. flowering branch. B. flowers. C. stem t.s. D. seed.



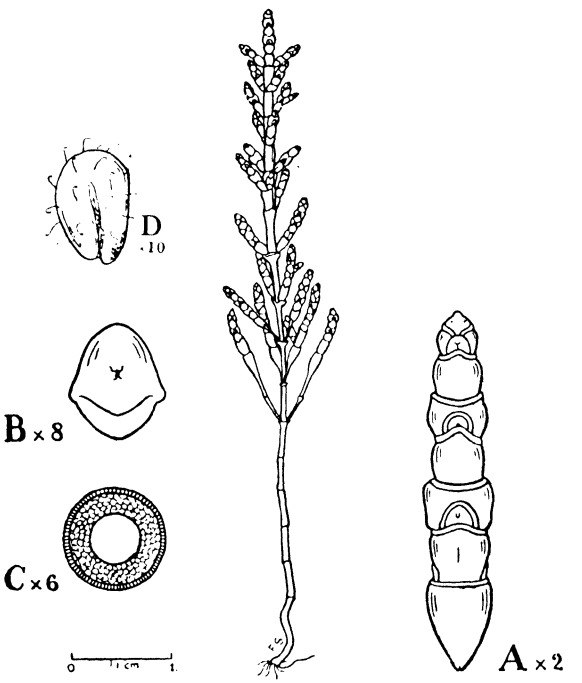
395. SALICORNIA EUROPÆA L. (*S. stricta* Dum.). This COMMON GLASSWORT is a somewhat branched, succulent, erect annual 2-6 in. (5-15 cm.) high, with the secondary branches shorter than the main branch and not overtopping it. It is very common in muddy salt marshes around all the coast of Britain. Flowering branches long, obtuse, with 5-16 squarish, fertile segments, terminal one about 20 mm. long, outline almost entire. Flowers in threes, central flower largest, not separating the outer ones; seed 1·2 × 0·8 mm., covered with coiled hairs, grey.

Early Aug.—mid Sept. (Hayling Island, Hampshire.)
A. flowering branch. B. flowers. C. stem t.s. D. seed.



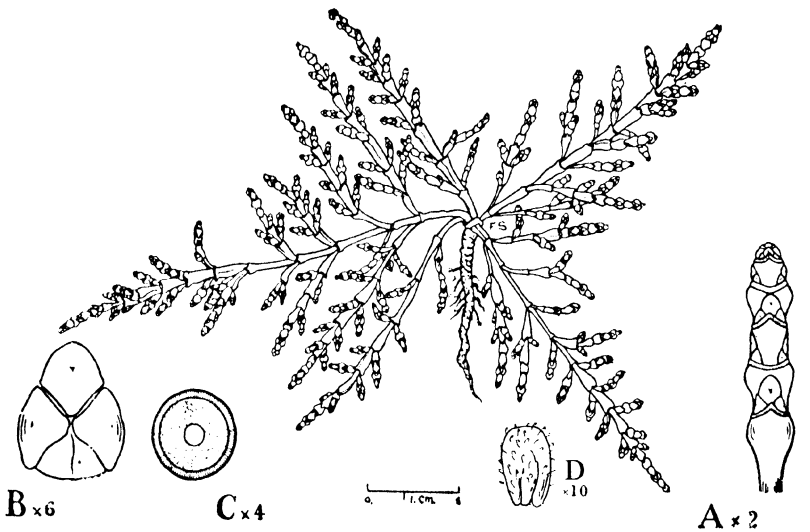
396. SALICORNIA RAMOSISSIMA Woods. This MUCH BRANCHED GLASSWORT is a somewhat branched, succulent, erect annual 2-6 in. (5-15 cm.) high, the secondary branches being much shorter than the main branch, and just overtopping it. It is very common in muddy salt marshes around all the coasts of Great Britain. Flowering branches rather short, acute, with wavy outline, usually reddish, fertile segments about 6, the terminal one about 15 mm. long. Flowers in threes, central flower largest, not separating the outer ones; seed 1·0 × 0·7 mm., ovoid, covered with coiled hairs, grey.

Early Aug.—late Sept. (Hayling Island, Hampshire.)
A. flowering branch. B. flowers. C. stem t.s. D. seed.



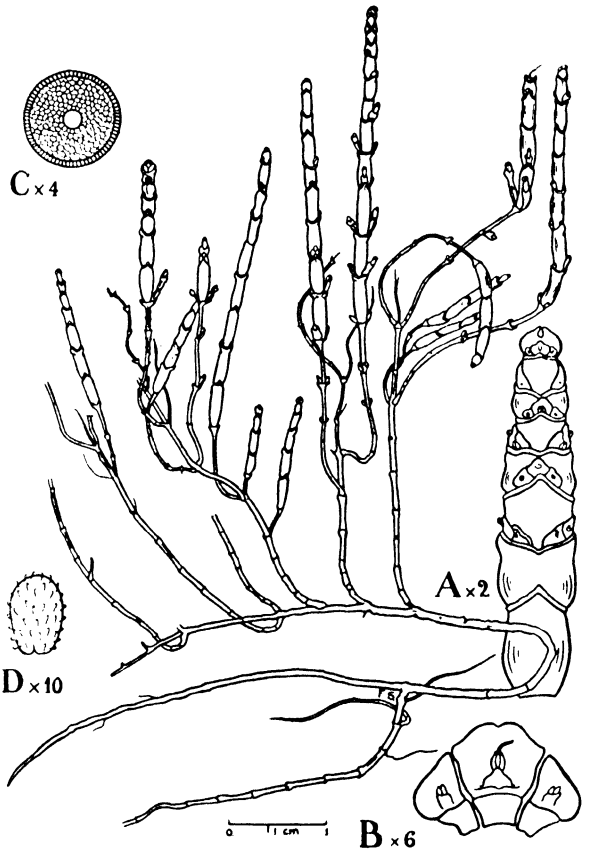
397. SALICORNIA DISARTICULATA Moss. This FRAGMENTING GLASSWORT is a small, succulent, erect annual 4-6 in. (10-15 cm.) high, with numerous or few, small and ascending branches. It is a rather rare plant on the drier parts of salt marshes in S.E. and S. England. Flowering branches short, obtuse, with 3-5 oval, tapering, fertile segments, the segments freely breaking up before the seeds ripen and the terminal one 6 mm. long with a wavy outline, often yellowish-green with pink tips. Flowers solitary; seed 1·5 × 1·0 mm., ovoid, covered with hooked hairs, grey.

Early Aug.—mid Sept. (Blakeney Point, Norfolk.)
A. flowering branch. B. flower. C. stem t.s. D. seed.



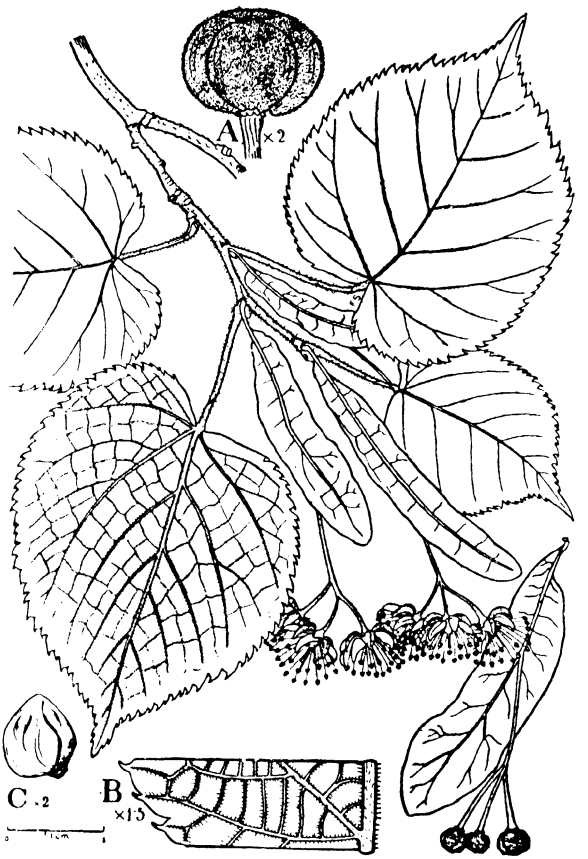
398. SALICORNIA APPRESSA Dum. The PROCUMBENT GLASSWORT is a very variable, succulent, prostrate annual with numerous branches 1-6 in. (2-15 cm.) long, making an acute angle with the main stem in var. *appressa* and *smithiana*, and a right angle in var. *prostrata*. It is scattered over Britain and is rather common in salt marshes in E. and S. England. Flowering branches short, obtuse (var. *smithiana* Moss) or acute (var. *appressa* Dum.) with 2-6 oval, tapering, fertile segments, the terminal one about 10 mm. long with a wavy outline, usually reddish. Flowers in threes, central flowers much larger than and not separating the outer ones; seed 0·8 × 0·15 mm., ovoid, covered with coiled hairs, grey.

Early Aug.—mid Sept. (Hayling Island, Hampshire.)
A. flowering branch. B. flowers. C. stem t.s. D. seed.



399. SALICORNIA PERENNIS Mill. This PERENNIAL GLASSWORT is a small plant, thin and woody at base and succulent above, with many stems 4-9 in. (8-22 cm.) high, growing erect from a creeping and branched, woody, slender stock. It occurs, sometimes abundantly, on the drier parts of salt marshes in S. England. Flowering branches obtuse, green and becoming yellowish, with 3-8 fertile segments; flowers in threes, nearly equal, central flower separating the outer ones; seed 1·0 × 0·7 mm., nearly globular, covered with curved hairs, grey.

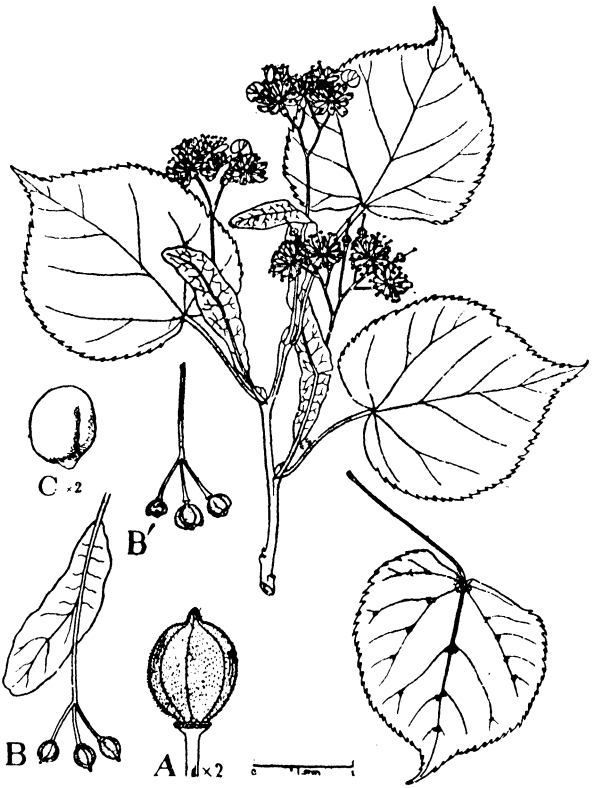
Early Aug.—mid Sept. (Hurst Castle, Hampshire.)
A. flowering branch. B. flowers. C. stem t.s. D. seed.



TILIA L. Deciduous trees with alternate leaves and sweetly-scented flowers. Inflorescence axillary with a decussate bract. Sepals and petals 5; stamens many, free; fruit a hard, globose capsule.

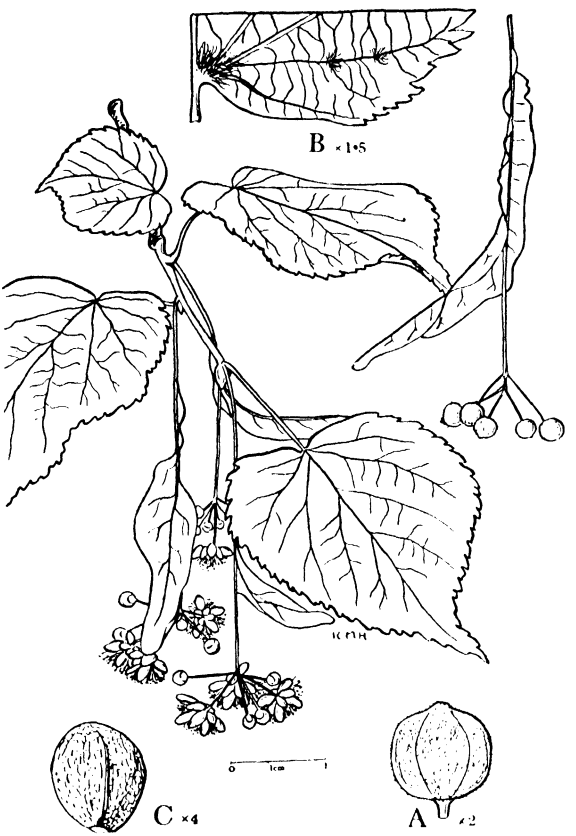
400. TILIA PLATYPHYLLOS Scop. The LARGE-LEAVED LIME is a spreading tree up to 90 ft. (30 m.), often planted, but possibly native in woods on calcareous soil in the Severn and Wye Valleys and Derbyshire. Young twigs pubescent. Leaves large, 8 mm. long, asymmetrically cordate, acuminate, irregularly toothed, pubescent beneath. Flowers 15-18 mm. diam., in pendulous, three-flowered cymes; sepals and petals lanceolate, acute, pale yellow. Fruits 9 × 10 mm., sub-spherical, woody, densely pubescent, ribbed; seed 3 mm., ovoid, pointed, faintly striate.

Late June—late July. (Malvern, Worcestershire.)
A. fruit. B. lower leaf surface. C. seed.



401. TILIA CORDATA Mill. The SMALL-LEAVED LIME is a rather large, spreading tree up to 80 ft. (27 m.) high. It is sometimes planted, but native in woods on basic soils in England and Wales, northwards to Durham and Westmorland. Young twigs downy at first, afterwards glabrous. Leaves rather small, 60 mm. long, symmetrically or asymmetrically cordate, finely toothed, shining and glabrous except for tufts of hairs on the underside in the axils of the veins. Flowers 10-12 mm. diam., in erect or spreading 5-7 flowered cymes; sepals and petals narrow, lanceolate, acute, pale yellow. Fruits 8 × 6 mm., brittle, globose to ellipsoid, usually apiculate, unribbed; seed 1·6 mm., ovoid, faintly netted, brown.

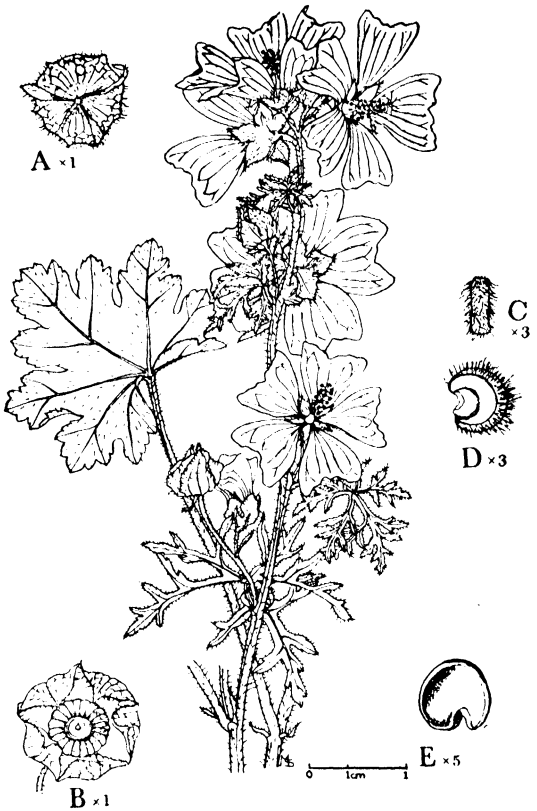
Early—late July. (Shrawley Wood, Worcestershire.)
A. capsule. B., B′. winged fruit. C. seed.



402. TILIA EUROPÆA L. THE COMMON LIME is a frequently planted tree, up to 90 ft. (30 m.) high, with spreading branches. Twigs smooth. Leaves large, symmetrically cordate, ovate, acuminate, toothed, smooth except for tufts of hairs on under side in the axils of the veins. Flowers 15 mm. diam., in pendulous 3-5 flowered cymes, scented; sepals lanceolate, 5; petals pale yellow-green. Fruits 7-8 mm., spherical, woody, slightly ribbed, downy; seed 3 mm., globular, faintly striate, brown.

Early—late July. (Ashbourne, Derbyshire.)
A. fruit. B. portion of leaf. C. seed.

(This is considered to be *T. cordata* × *platyphyllos*.)

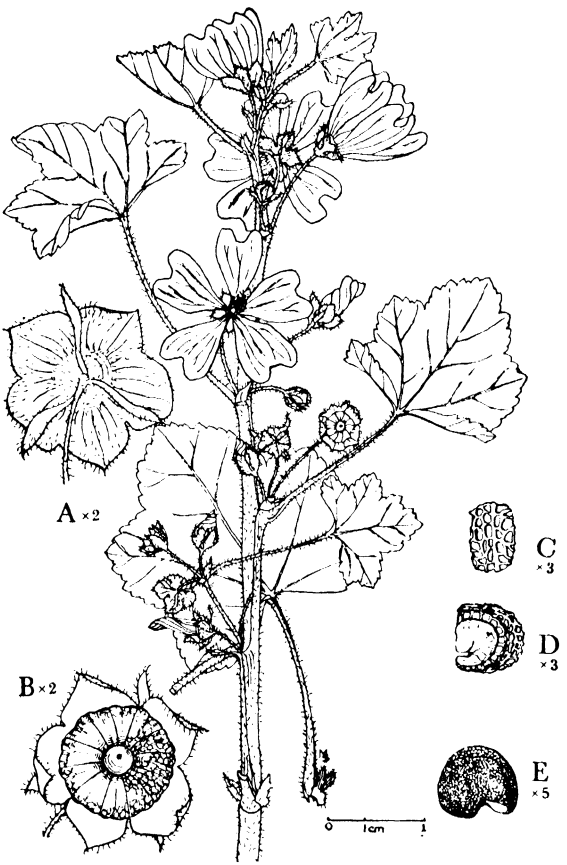


MALVA L. Herbs with showy flowers. Bracts under the calyx 3, free, narrow. Sepals and petals 5; fruit composed of several cuneiform carpels, discoid.

403. MALVA MOSCHATA L. The MUSK MALLOW is an erect perennial with many hairy, simple stems 12-20 in. (30-50 cm.) high, growing from a thick, branching stock. It is common on grassy banks in Britain except in the north. Lower leaves palmate, lobed, sinus wide; upper palmatisect, segments linear, rather hairy. Bracts under the flowers free, linear-spathulate. Flowers 50 mm. diam.; calyx inflated and connivent over the fruit; sepals long, triangular, a third as long as corolla; petals red or white, truncate or irregularly notched. Carpels covered with many long hairs on back, smooth on side and unwinged; seed 2·0 × 2·5 mm., ovoid, faintly marked, compressed, dark brown; radicle obvious.

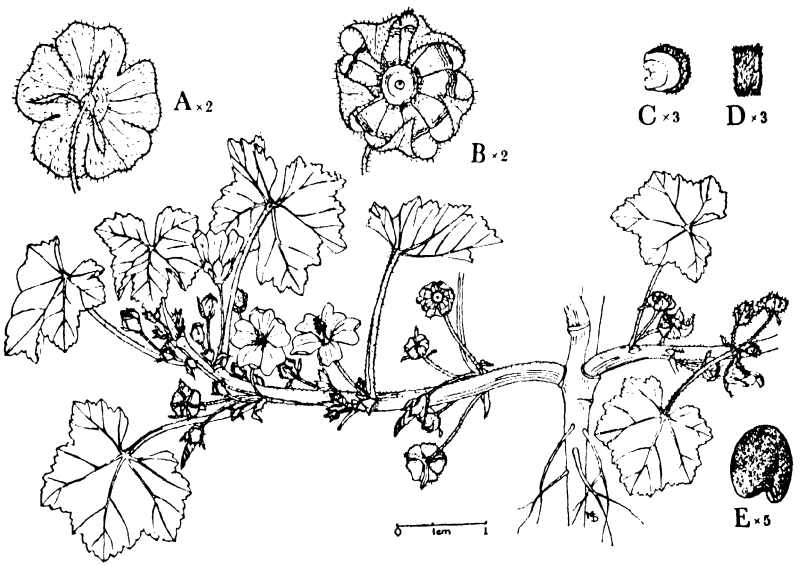
Mid June—late Sept. (Alford, Lincolnshire.)

A. calyx and bracts. B. calyx and fruit. C. carpel, dorsal, and D. lateral view. E. seed.



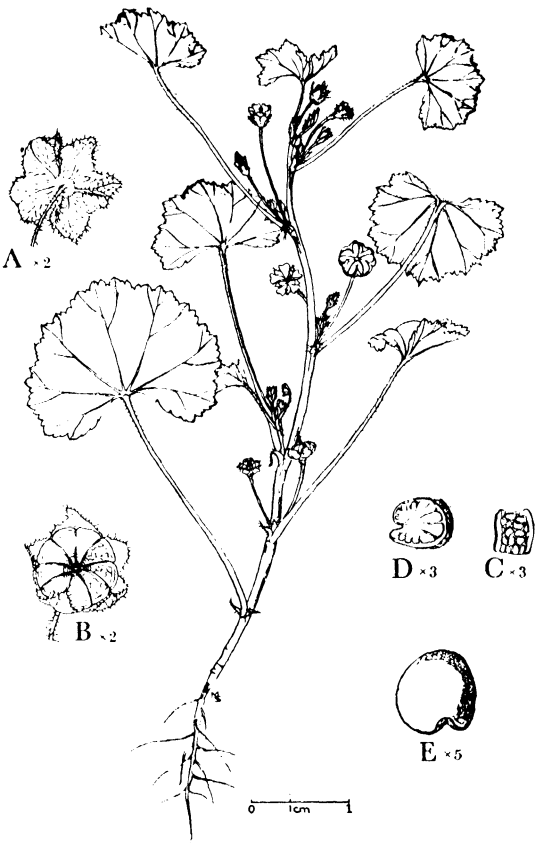
404. MALVA SYLVESTRIS L. The COMMON MALLOW is an erect, much-branched, rather hairy perennial 12-30 in. (30-80 cm.) high, abundant in hedges and waste places in England and becoming scarce northwards. Leaves orbicular-cordate, moderately 5-7 lobed. Bracts under the flowers free, linear. Flowers 50 mm. diam., calyx curved over the fruit; sepals triangular, hairy, one-quarter as long as corolla; petals red, spathulate, deeply notched. Carpels glabrous, deeply honeycombed on back, winged on lateral edge and smooth on side; seed 2·5 × 3·0 mm., reniform, distinctly reticulate, dark brown; radicle obvious.

Mid June—late Sept. (Alford, Lincolnshire.)
A. calyx and bracts. B. calyx and fruit. C. carpel, dorsal, and D. lateral view. E. seed.



405. MALVA NEGLECTA Wallr. (*M. rotundifolia* auct.). The COMMON DWARF MALLOW is a decumbent or procumbent, somewhat downy annual, with stems 6-10 in. (15-25 cm.) long, spreading from the rootstock. It is common in England and becomes rare northwards. Leaves rather tomentose, orbicular cordate, with shallow lobes. Bracts under the flower narrow, spathulate. Flowers 10-15 mm. diam.; calyx partially spread over fruit; sepals ovate, triangular, hairy, half as long as corolla; petals pale bluish-pink, obcordate. Carpels smooth and covered with short hairs on the back, smooth on side and unwinged; seed about 1·7 mm. long, ovoid and distinctly reticulate, dark brown; radicle obvious.

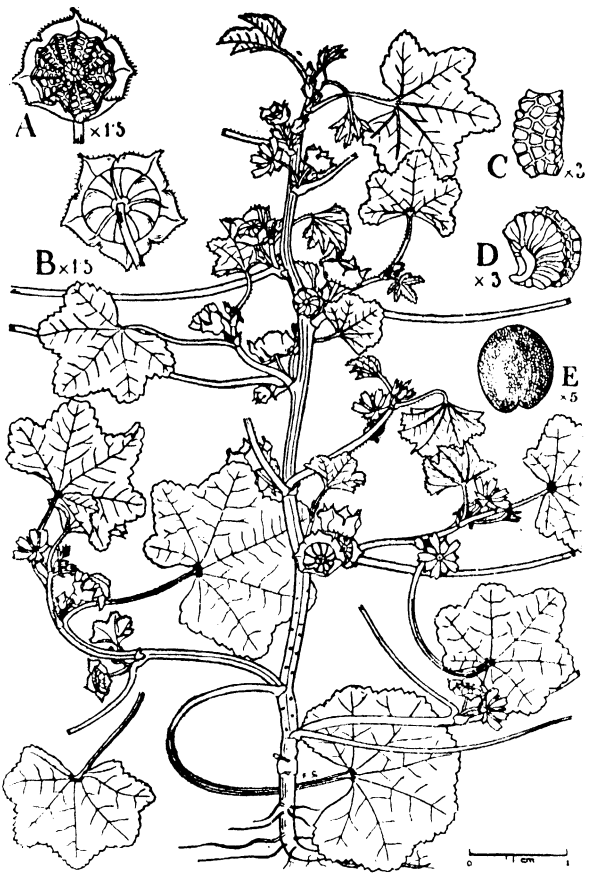
Mid June—early Sept. (Barton Ferry, Nottinghamshire.)
A. calyx and bracts. B. calyx and fruit. C. carpel lateral, and D. dorsal view. E. seed.



406. MALVA PUSILLA Sm. (*M. borealis* Wallr.) This NORTHERN DWARF MALLOW is an erect, little-branched, slightly hairy annual 6-9 in. (15-23 cm.) high, which is sometimes found as an adventive in waste places. Lower leaves orbicular-cordate, toothed; upper ones somewhat lobed. Bracts under the flower linear, ciliate. Flowers 5-7 mm. diam.; calyx curved over fruit, sepals broadly triangular, hairy, acute, equalling the corolla; petals pink, obovate, notched. Carpels thinly hairy, reticulate on back, striate on side; keel smooth; seed about 2 mm. long, ovate, faintly marked, brown; radicle obvious.

Mid July—late Sept. (Hort. ex Worthing, Sussex.)

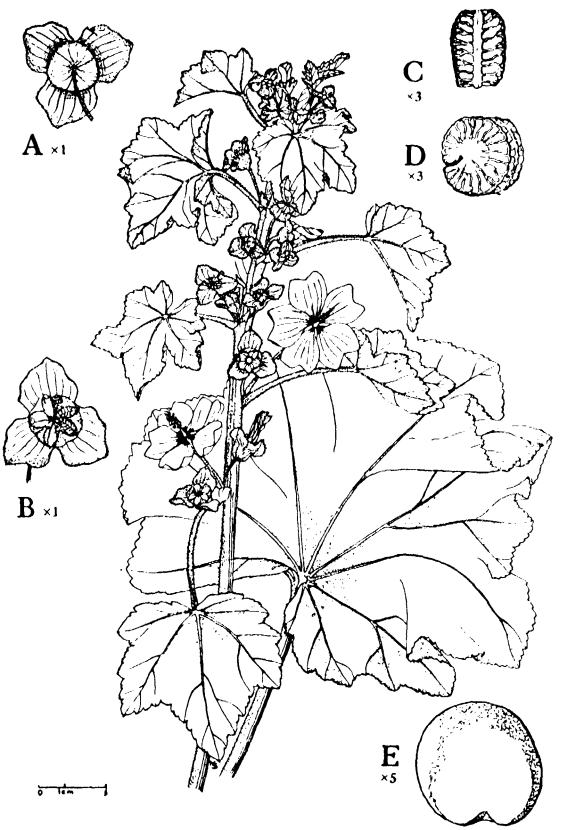
A. calyx and bracts. B. calyx and fruit. C. carpel, dorsal, and D. lateral surface. E. seed.



407. MALVA PARVIFLORA L. This SMALL-FLOWERED MALLOW is an erect, much-branched, glabrous annual about 12 in. (30 cm.) high, often found as an adventive in waste places. Lower leaves orbicular, reniform, all with shallow, rounded lobes and teeth. Bracts under the flowers narrow, linear. Flowers 10-15 mm. diam.; calyx erect in fruit; sepals broadly triangular, acuminate, almost equalling corolla, ciliate; petals red, narrowly lanceolate, notched. Carpels glabrous, deeply honeycombed on back with a wavy keel, somewhat striate on side; seed about 2 mm. long, ovoid and faintly reticulate, brown; radicle obvious.

Mid Aug.—late Sept. (Royston, Hertford.)

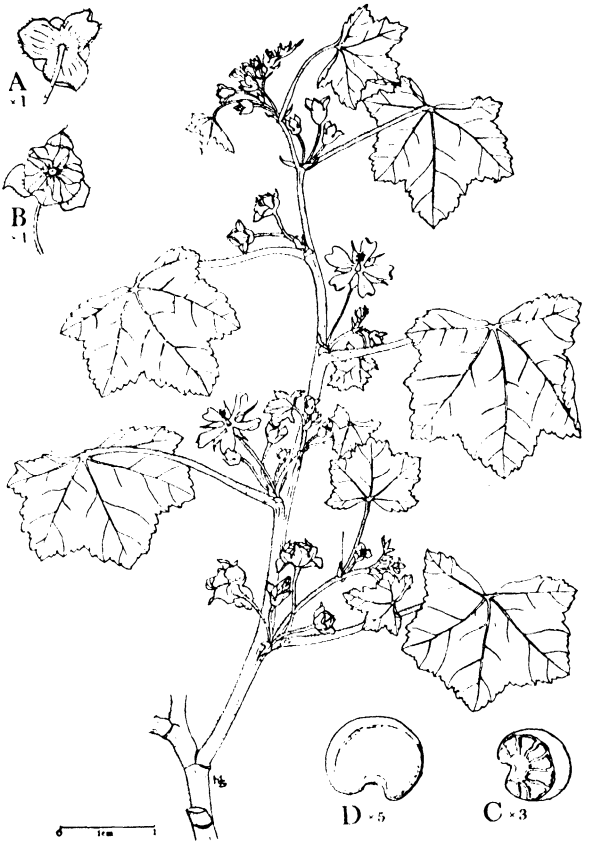
A. fruit. B. calyx and bracts. C. carpel, dorsal, and D. lateral surface. E. seed.



LAVATERA L. Herbs or undershrubs with showy flowers. Bracts under the calyx 3, united at the base.

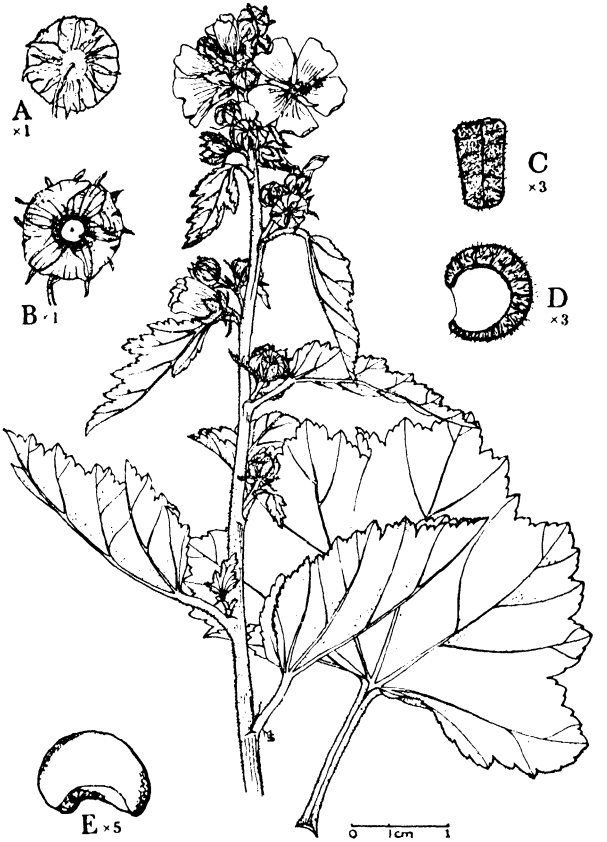
408. LAVATERA ARBOREA L. The TREE MALLOW is a branched, woody, softly tomentose plant up to 72 in. (180 cm.) high. It occurs uncommonly on sandy sea shores and cliffs in the S. of England. All leaves orbicular, reniform, tomentose; bracts 3, large, orbicular. Flowers 30-35 mm. diam.; calyx curved over but not covering fruit; sepals broadly ovate, half as long as corolla; petals crimson with a dark base. Carpels glabrous, transversely wrinkled on back and on margin of lateral side; seed 3·5 mm. long, discoid, almost smooth, brown, radicle not obvious.

Late June—late July. (Whitstable, Kent.)
A. bracts. B. fruit and calyx. C. carpel, dorsal, and D. lateral view. E. seed.



409. LAVATERA CRETICA L. This SMALL TREE MALLOW is a little-branched, erect, somewhat hairy annual 12-48 in. (50-150 cm.) high, which is naturalized near Penzance and the Scilly Isles. Leaves semi-orbicular with shallow lobes and wide, basal sinus; bracts under the flowers united at base, broadly ovate, hispid. Flowers 20 mm. diam., in axillary clusters or panicles; calyx curved over the fruit; sepals broadly ovate, as long as the corolla, not enlarging in fruit; petals red, narrow, oblanceolate, bifid, with a dark base, somewhat exceeding sepals. Carpels glabrous, ridged on the side; seed 2·5 × 2·0 mm., reniform, almost smooth, brown, radicle obvious.

Mid June—early Aug. (Hort, ex Scilly Isles.)
A. bracts. B. fruit and calyx. C. carpel, lateral view. D. seed.

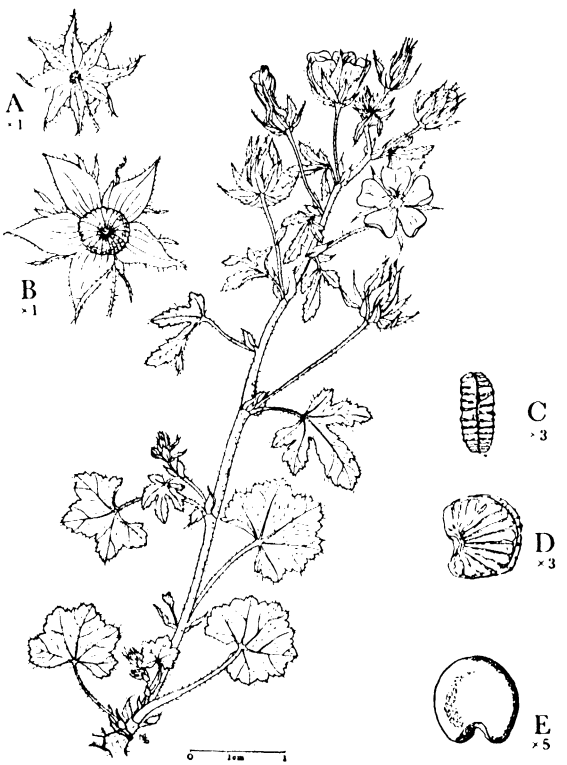


ALTHÆA L. Herbs with regular showy flowers. Bracts under the calyx 6 or more; sepals and petals 5.

410. ALTHÆA OFFICINALIS L. The MARSH MALLOW is a stout, softly tomentose perennial with many stout, unbranched stems 12-60 in. (30-150 cm.) high, growing from a woody rootstock. It occurs uncommonly in marshland dykes and wet places in the S. and E. of England. Lower leaves orbicular-reniform, with shallow lobes and teeth; upper leaves lanceolate, acute; bracts lanceolate. Flowers 25-28 mm. diam., many in a terminal cyme; calyx curved over, but not covering fruit; sepals triangular, acute, half as long as petals; petals pink, obovate, notched. Carpels downy, faintly wrinkled on back, and margin of side; seed 2 × 3 mm., reniform, almost smooth, brown.

Mid June—late Aug. (Skegness, Lincolnshire.)

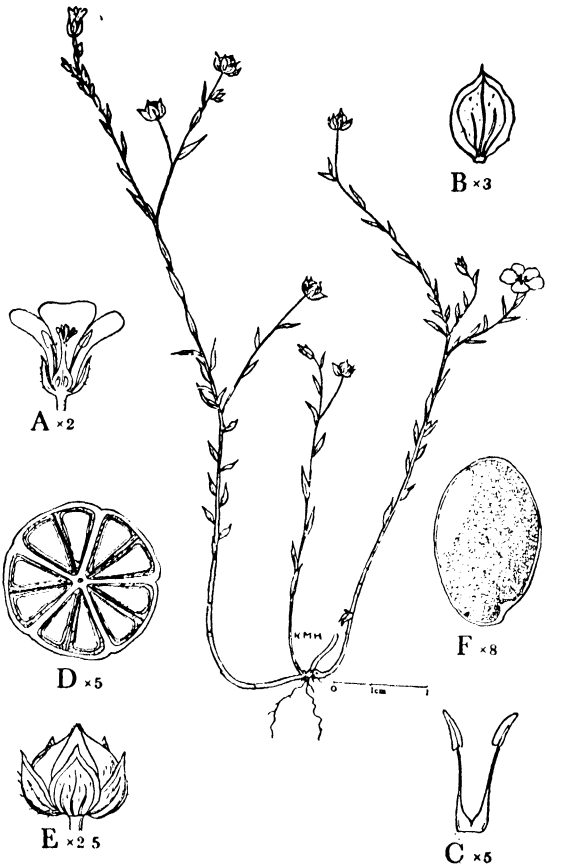
A. calyx and bracts. B. fruit and calyx. C. carpel, dorsal, and D. lateral view. E. seed.



411. ALTHÆA HIRSUTA L. This HAIRY MALLOW is a hairy or hispid annual with several ascending stems 1-6 in. (3-15 cm.) high, growing from the base. It is found very rarely in chalky arable fields in Kent and Somerset. Lower leaves reniform; upper trifid, deeply lobed, all hairy; bracts under the flower 6-10, linear lanceolate, acute, hairy, united at base. Flowers 20 mm. diam., sepals triangular, acute, equalling petals, calyx conical in fruit; petals pink. Carpels glabrous, ridged on back and side; seed 2 mm. long, ovoid, slightly roughened, black.

Mid July—mid Aug. (Cobham, Kent.)

A. calyx and bracts. B. fruit and calyx. C. carpel, dorsal, and D. lateral view. E. seed.

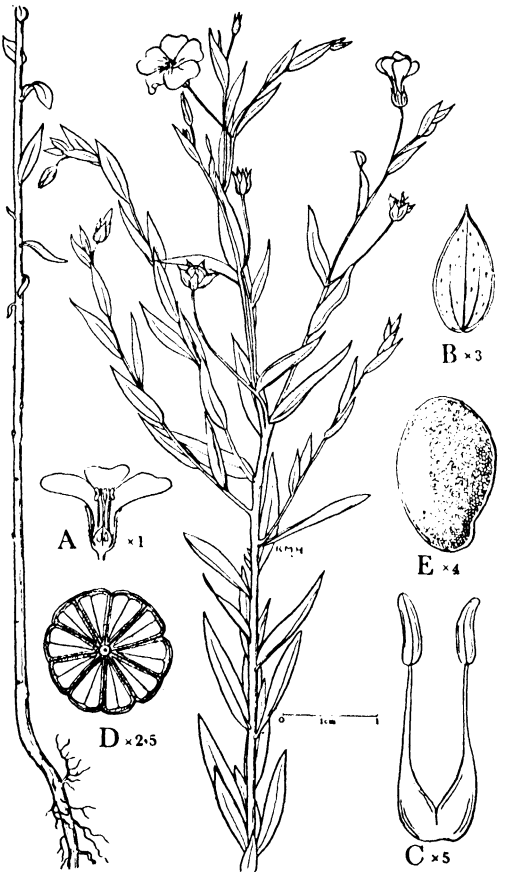


LINUM L. Herbs with entire exstipulate leaves and regular flowers. Sepals 5, entire; petals 5; stamens 5; styles 5. Capsule five-celled, but apparently ten-celled due to a lobe in the cell wall.

412. LINUM BIENNE Mill. (*L. angustifolium* Huds.). The NARROW-LEAVED FLAX is a glabrous perennial with a few decumbent stems 6-12 in. (15-30 cm.) long, growing from a slender rootstock. It is a rare plant of calcareous places in England, S. of the Tees and Ribble. Leaves small, linear, alternate, sessile. Flowers 10-12 mm. diam., long-stalked and solitary; sepals all alike, ovate, ciliate, three-veined, bordered, acute; petals pale blue, pointed; staminoides absent. Capsule 4 × 5 mm. subglobose; seed 2·5 × 2·0 mm., large, oval, flat, with a distinct margin and very fine network, light brown.

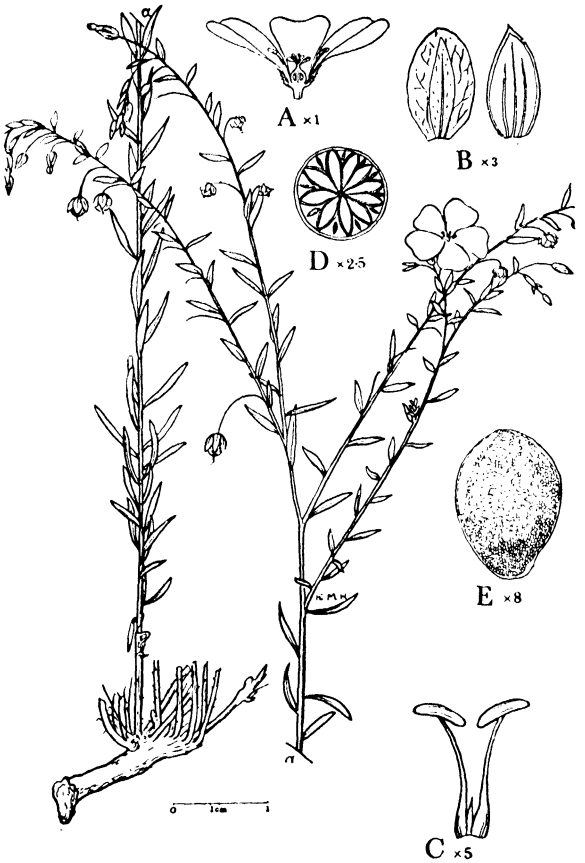
Mid June—late Aug. (Berry Head, Devon.)

A. flower l.s. B. sepal. C. stamens. D. ovary t.s. E. capsule. F. seed.



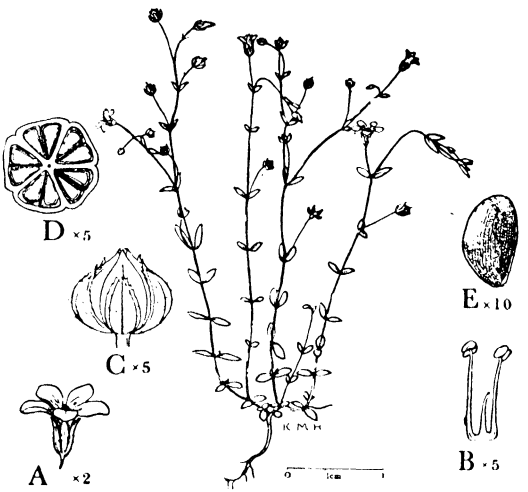
413. LINUM USITATISSIMUM L. The COMMON FLAX is a glabrous annual with a strong, wiry stem 9-24 in. (23-60 cm.) high, branched somewhat in the upper part. It is usually seen on field borders as an escape from cultivation. Leaves 30 mm. long, lanceolate, entire, alternate, sessile, glabrous and shining. Flowers 17-20 mm. diam., solitary in the axils of upper leaves; sepals ovate, acute, three-veined; petals bright blue, emarginate; staminoides absent. Capsule 8 mm., globose; seed 5 × 3 mm., large, ovate, flattened, shining, finely netted, brown.

Late June—mid July. (Beccles, Suffolk.)
A. flower l.s. B. sepal. C. stamens. D. ovary t.s. E. seed.



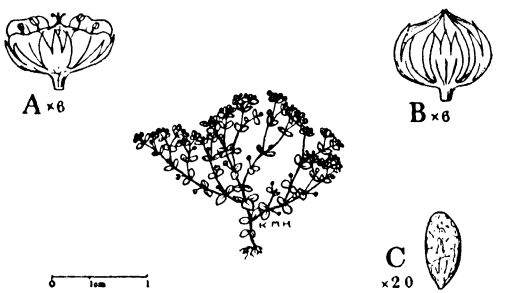
414. LINUM ANGLICUM Mill. (*L. perenne* auct.). The PERENNIAL FLAX is a glabrous perennial with many wiry, leafy stems, 9-20 in. (23-50 cm.) high, branched above, growing from a long, thick rootstock. It is a rare plant of chalk and limestone waste and bare places in E. England. Leaves 10-12 mm. long, linear, entire, alternate, sessile, glabrous. Flowers 20 mm. diam., long-stalked, solitary; outer sepals ovate, acute, three-veined; inner ovate, obtuse, with a broad, scarious, entire margin, hairy; petals rich blue, obovate; staminode one-eighth to one-quarter length of stamens. Capsule 5-6 mm., globular, rather longer than sepals; seed 2·2 × 2·0 mm., obovate, flat, shining, with very slight network, light brown.

Early June—late July. (Cherry Hinton, Cambridge.)
A. flower l.s. B. sepals. C. stamens. D. ovary t.s. E. seed.



415. LINUM CATHARTICUM L. The PURGING FLAX is a small, slender annual with a simple or branched stem 1-5 in. (3-12 cm.) high. It grows abundantly in dry pastures throughout the British Isles. Leaves 5-6 mm. long, ovate, opposite. Flowers 4-5 mm., in a lax, axillary cyme; sepals narrow, pointed, hairy, serrate; petals white, staminode half the length of stamens. Capsule globose, pointed; seed 1·2 × 0·7 mm., oval, flat, shiny, netted, pale brown.

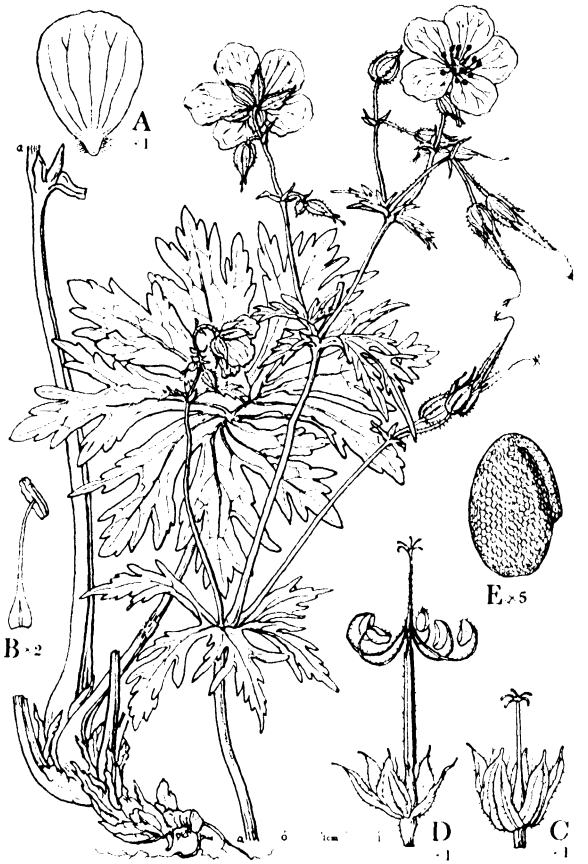
Late May—late Sept. (Ashbourne, Derbyshire.)
A. flower. B. stamens. C. capsule. D. ovary t.s. E. seed.



RADIOLA Roth. A minute annual herb with entire, opposite leaves and inconspicuous flowers. Sepals 4, deeply trifid, united below; petals 4; stamens 4; styles 4.

416. RADIOLA LINOIDES Roth. The FLAX-LEAVED ALL-SEED is a much-branched annual 1-2 in. (2-5 cm.) high, which is found at times abundantly, in bare, wet sandy places here and there throughout the British Isles. Flowers 2 mm. diam., in terminal clusters; sepals deeply trifid; petals notched, equalling the sepals, white; seed 0·5 × 0·2 mm., ellipsoid, flattened, netted, brown.

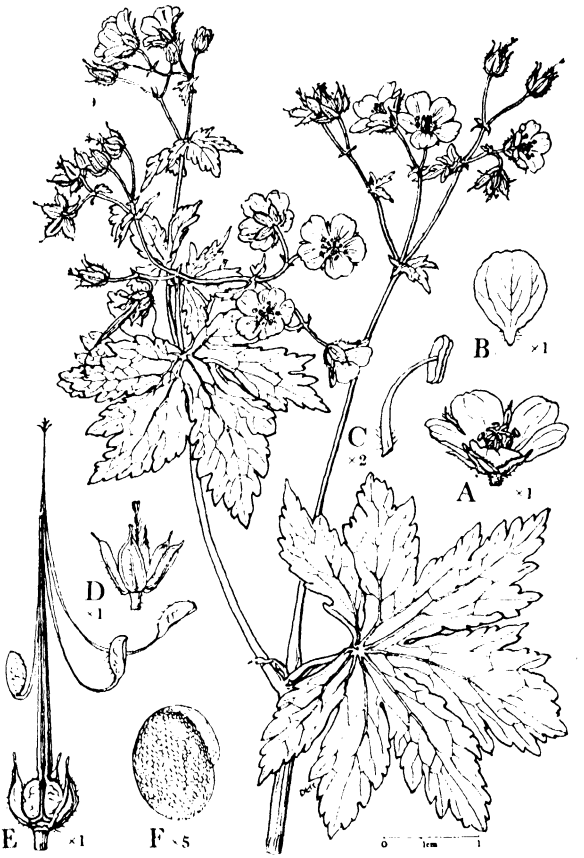
Mid July—mid Sept. (New Forest, Hampshire.)
A. flower. B. capsule. C. seed.



GERANIUM L. Annual or perennial herbs with red, blue or white flowers. Venation of leaves palmate; flowers regular, sepals and petals free, 5; stamens 10; carpels beaked, rounded at top, the beak ultimately recurved.

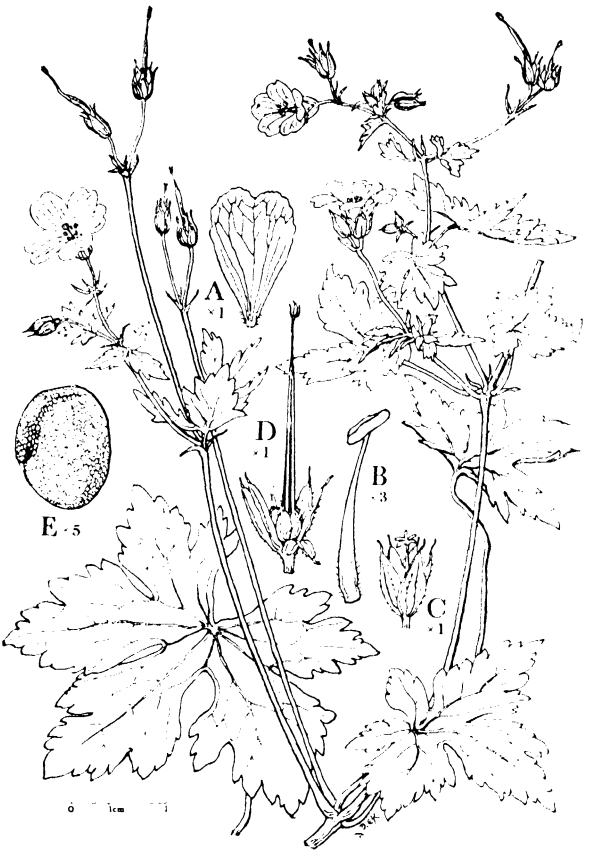
417. GERANIUM PRATENSE L. The MEADOW CRANE'S BILL is a stout perennial with many leafy stems growing from a thick rootstock. It is often abundant in damp pastures and roadsides on basic soils, especially in England. Stem covered with short, appressed hairs. Leaves palmate; lower with 11-7 narrow, acute, deeply-toothed and divided lobes. Flowers in pairs, 25-35 mm. diam., peduncles rather long; sepals mucronate, hairy, erect in fruit; petals entire, blue, ciliate on the edge at the base; carpels hairy, smooth; seed 4·0 × 2·5 mm., ovoid, netted and pitted, brown.

Early June—early Aug. (Manton, Rutland.)
A. petal. B. stamen. C. calyx. D. fruit. E. seed.



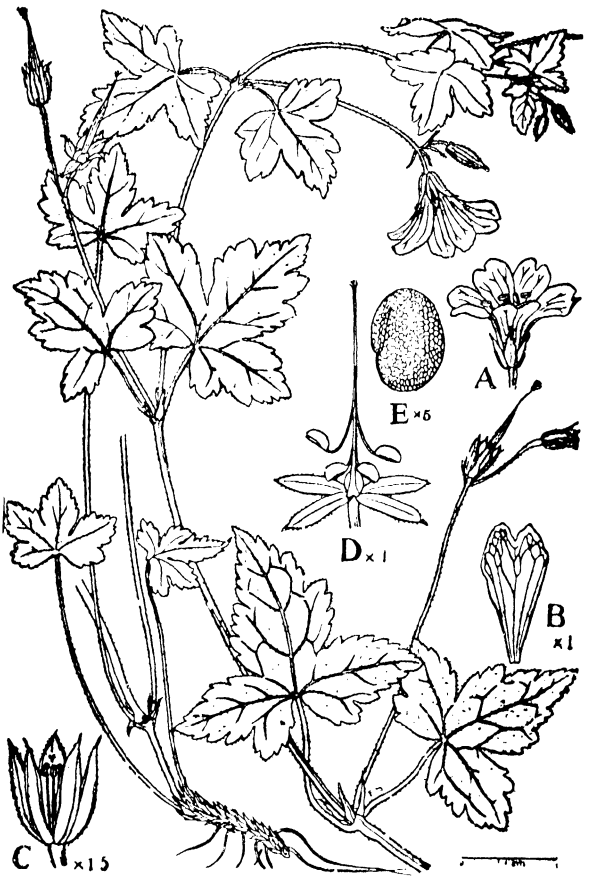
418. GERANIUM SYLVATICUM L. The WOOD CRANE'S BILL is a rather slender perennial with a few, erect, branched, glabrous stems 9-18 in. (23-45 cm.) high, growing from a woody stock. It is a rather common plant in woods and damp places northwards from Caernarvon and Derbyshire. Stem erect, glabrous. Leaves glabrous, palmate, with 5-7 lanceolate, acute, sharply-toothed lobes. Flowers in pairs, 15-20 mm. diam.; peduncles long; sepals shortly-awned, hairy, erect in fruit; petals entire, or slightly notched, mauve to somewhat purple; carpels hairy, slightly wrinkled, glabrous; seed 3 × 3 mm., ovoid, netted, brown.

Late May—early July. (Buckden, Yorkshire.)
A. flower. B. petal. C. stamen. D. calyx. E. fruit. F. seed.



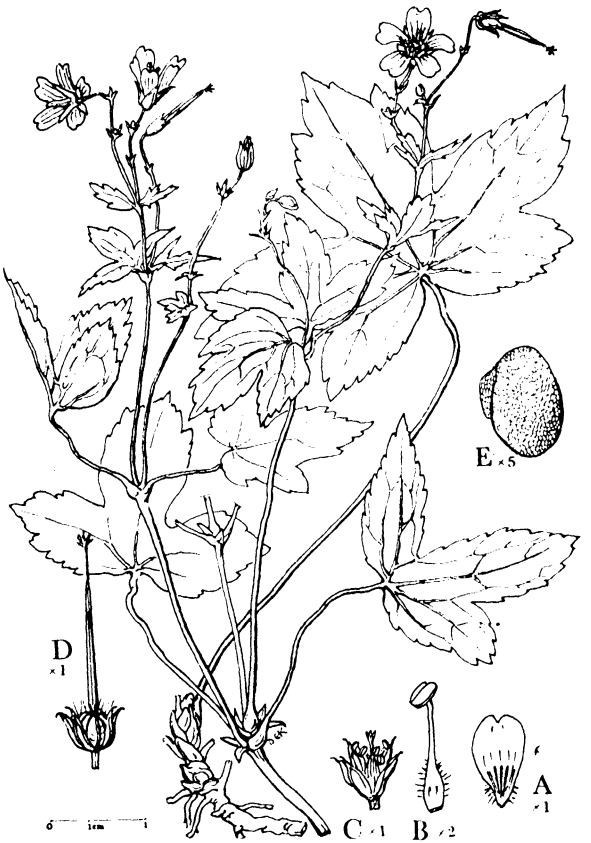
419. GERANIUM ENDRESSII Gay. This LARGE PINK CRANE'S BILL is a rather stout perennial with many glabrous stems 9-20 in. (23-50 cm.) high, growing erect from a woody stock. It is an introduced plant, found in woods in S. England. Leaves palmate; lower with 5 broadly lanceolate, acute, toothed lobes; upper three-lobed. Flowers in pairs, 18-30 mm. diam., on rather long peduncles; sepals lanceolate, awned, with few hairs; petals pink with deeper tinted veins, bifid; carpels smooth, glabrous; seed 3·0 × 2·5 mm. ovoid, netted and pitted, brown.

Early July—early Sept. (Worthing, Sussex.)
A. petal. B. stamen. C. calyx. D. fruit. E. seed.



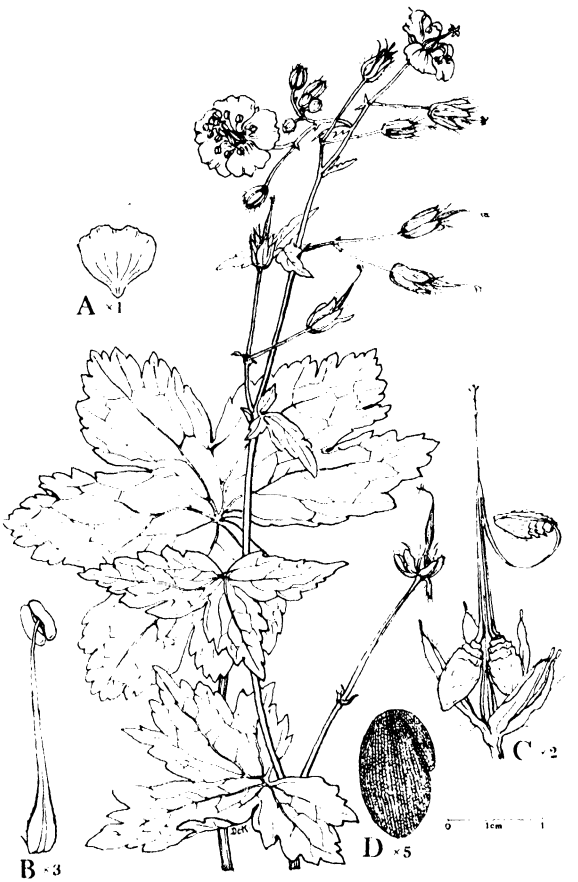
420. GERANIUM VERSICOLOR L. This STRIATED CRANE'S BILL is a rather slender, perennial with several erect, little-branched stems 9-20 in. (23-50 cm.) high, growing from a rather scaly, slender rootstock. It is found naturalized in several parts of S. England, although rather rare. Stem sparsely covered with horizontal hairs. Leaves with the main lobes broadly lanceolate, with short, round teeth. Flowers in pairs, 15-20 mm. diam., on rather long peduncles; sepals lanceolate, awned, downy; petals mauve with violet veins, bifid; carpels smooth, downy; seed 3 × 2 mm., ovoid, netted, brown.

Mid June—mid Aug. (Devon.)
A. flower. B. petal. C. calyx. D. fruit. E. seed.



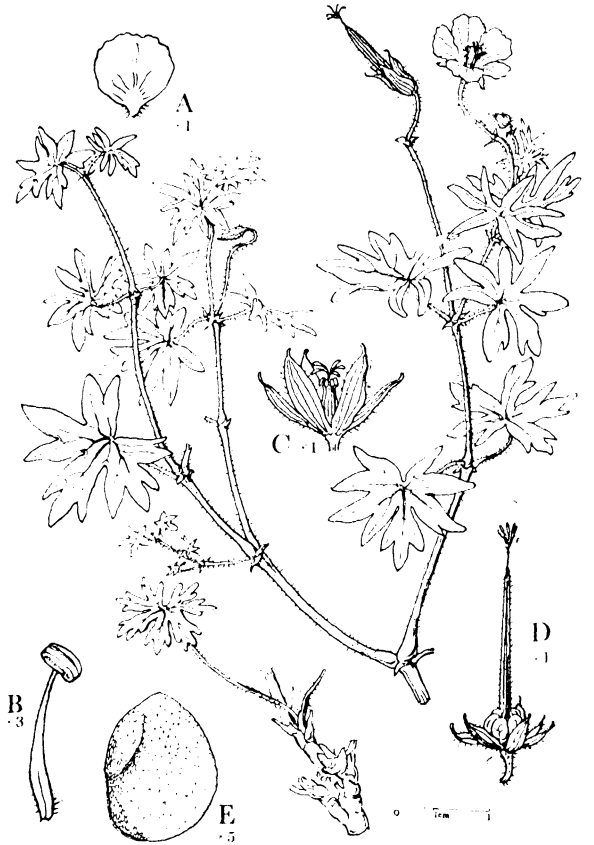
421. GERANIUM NODOSUM L. This KNOTTED CRANE'S BILL is a straggling perennial with sub-erect, glabrous, branched stems, 12-15 in. (30-38 cm.) high, growing from a rather fleshy rootstock. It is naturalized in hedge banks and woods in several places in Britain. Leaves with two small lateral lobes and three larger inner ones spreading at right angles, teeth small, acute. Flowers in pairs, 15-20 mm. diam. on long peduncles; sepals lanceolate, awned, glabrous; petals crimson, notched; carpels smooth, hairy; seed 3 × 2 mm., ovoid, netted, dark brown.

Mid June—early Sept. (Hort. ex Kilburn, Yorkshire.)
A. petal. B. stamen. C. calyx. D. fruit. E. seed.



422. GERANIUM PHÆUM. The DUSKY CRANE'S BILL is a stout, erect perennial with many stems 9-20 in. (23-50 cm.) high, growing erect from a woody stock. It is an uncommon plant of damp, shady places, especially in England and Scotland. Stem erect, glabrous. Lower leaves with 5 or 7 shallow, ovate, toothed lobes; upper leaves three-lobed, glabrous. Flowers in pairs, 15-25 mm. diam. on rather long peduncles; sepals awned, with few long hairs, erect in fruit; petals dark purple or white, crenulate, entire, spreading or sometimes reflexed; carpels hairy, with prominent transverse ridges; seed 4 × 2 mm., ellipsoid, finely netted, dark brown.

Mid May—late Aug. (Upper Wasdale, Cumberland.)
A. petal. B. stamen. C. fruit. D. seed.



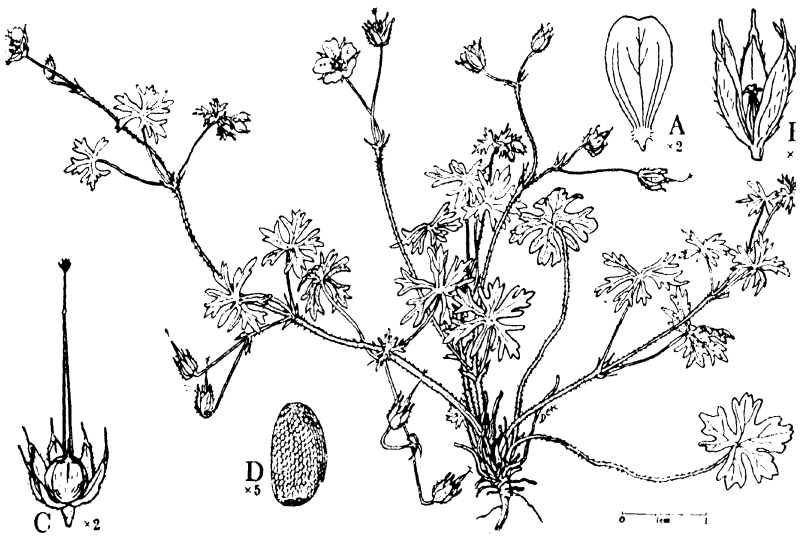
423. GERANIUM SANGUINEUM L. The BLOODY CRANE'S BILL is a rather stout, diffuse perennial with several little branched stems 12-18 in. (30-45 cm.) long, growing from a thick, woody rootstock. It is found, often abundantly, in calcareous pastures and on sandhills throughout Britain except in the southeast. Stem covered with horizontal hairs. Leaves 20-60 mm. diam., orbicular in outline, lobes long, narrow, linear. Flowers solitary, 20-25 mm. diam., peduncles rather short; sepals lanceolate, pointed, hairy; petals blood-red, entire; carpels glabrous, almost smooth; seed 4 × 3 mm., broadly ovoid, netted and pitted, brown.

Mid June to mid Aug. (Seascale, Cumberland.)
A. petal. B. stamen. C. calyx. D. fruit. E. seed.

424. GERANIUM PYRENAICUM Burm. fil. The MOUNTAIN CRANE'S BILL is a rather slender perennial, with straggling, but erect, hairy stems 9-20 in. (23-50 cm.) high, growing from a fleshy, erect stock. It is found on banks and hedgerows, at times abundantly, in several parts of England and S. Scotland. Lower leaves sub-orbicular, with 7 broad, truncate, bluntly-toothed lobes; upper with 2-5 narrower lobes, rather hairy. Flowers in pairs, 10-15 mm. diam. on rather long peduncles; sepals acute, hairy at top, erect in fruit; petals pale mauve, deeply bifid; carpels slightly hairy, smooth; seed 2 × 1 mm., ellipsoid, smooth, brown.

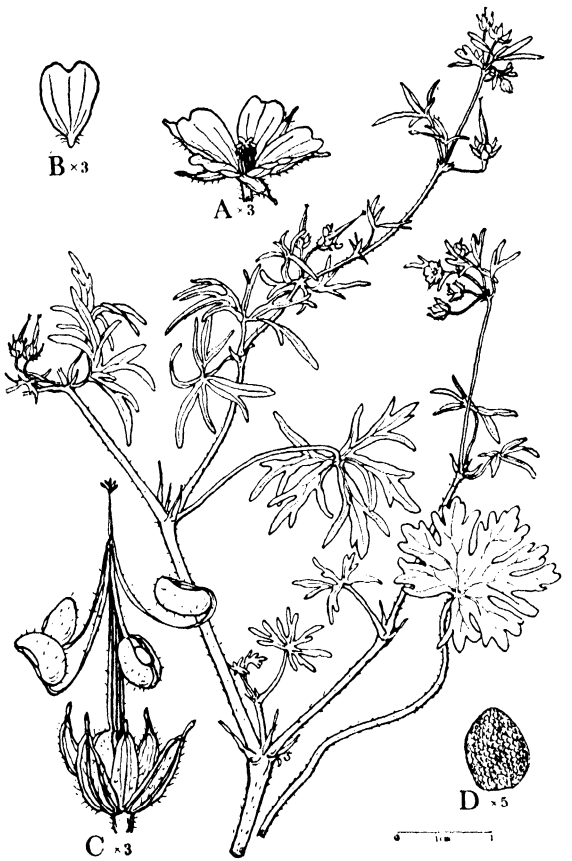
Early June—mid Aug. (Woburn, Bedfordshire.)

A. petal. B. stamen. C. calyx. D. fruit. E. seed, ventral and lateral views.



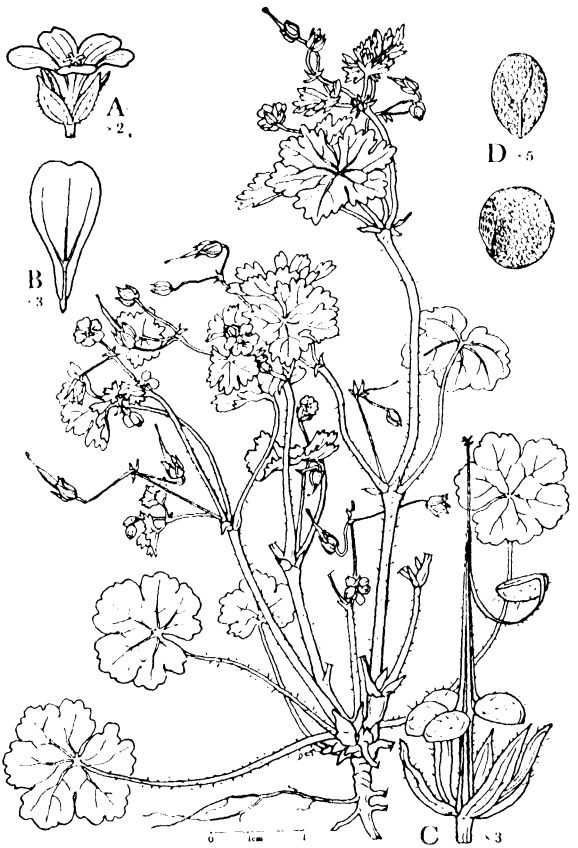
425. GERANIUM COLUMBINUM L. The LONG-STALKED CRANE'S BILL is a somewhat glandular, hairy or glabrous annual with decumbent or erect, branched stems 4-18 in. (10-45 cm.) long. It is a plant of dry gravel and limestone fields, infrequent, though at times abundant, in England, and rare in Scotland. Leaves hairy; lower palmate, with 5-7 rather deep, broad and sub-acutely toothed lobes; upper with linear lobes. Flowers in pairs, 8-10 mm. diam., on long peduncles; sepals awned, hairy, spreading in fruit; petals pink or red, about as long as the sepals, notched; carpels not wrinkled, but with a few adpressed hairs; seed 3·0 × 1·6 mm., ovoid, honeycombed, dark brown.

Early June—late July. (Manifold Valley, Staffordshire.)
A. petal. B. calyx. C. fruit. D. seed.



426. GERANIUM DISSECTUM L. The CUT-LEAVED CRANE'S BILL is a rather hairy annual, with erect or decumbent, branched stems 4-18 in. (10-45 cm.) high. It is a common cornfield weed, but it is also found in rocky, limestone places throughout the British Isles. Lower leaves sub-orbicular, with 7 narrow, lanceolate, deeply and acutely-toothed lobes; upper with long, linear lobes. Flowers in pairs, 5-10 mm. diam. on short peduncles; sepals mucronate, hairy, spreading in fruit; petals red, about as long as the sepals, slightly bifid; carpels hairy, smooth; seed 2·0 × 1·6 mm., sub-spherical, honeycombed, dark brown.

Early June—mid Aug. (Bethersden, Kent.)
A. flower. B. petal. C. fruit. D. seed.



427. GERANIUM ROTUNDIFOLIUM L. The ROUND-LEAVED CRANE'S BILL is a glandular hairy annual, with erect or ascending branched stems 6-15 in. (15-38 cm.) high. It is an uncommon plant of walls and waste places in S. England and Ireland. Stems erect or ascending, hairy and glandular. Leaves orbicular; lower with 5-7 very shallow, crenate lobes; upper with rather deeper lobes and more acute teeth. Flowers in pairs, 7-10 mm. diam., on short peduncles; sepals pointed, glandular and hairy; petals mauve slightly exceeding sepals, emarginate; carpels with few hairs, smooth; seed 2 × 2 mm., nearly spherical, honeycombed, dark brown.

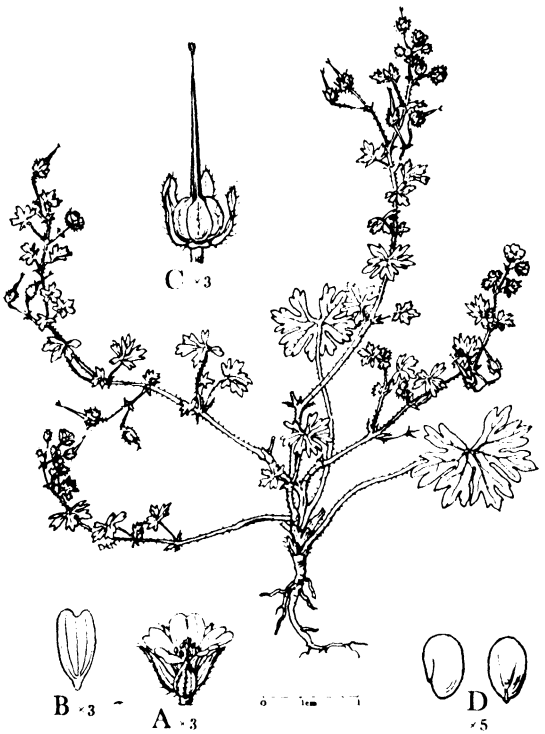
Late May—late Aug. (Larling, Suffolk.)

A. flower. B. petal. C. fruit. D. seed, ventral and lateral views.

428. GERANIUM MOLLE L. The DOVE'S FOOT CRANE'S BILL is a much-branched annual with several decumbent stems 2-6 in. (5-15 cm.) high, growing from a loose rosette of hairy leaves. It is a common plant in waste places, especially on poor dry soils throughout the British Isles. Stems with soft, spreading hairs. Leaves soft-haired, sub-orbicular, with 7 broad, rather shallow and truncate, bluntly-toothed lobes. Flowers in pairs, 4-8 mm. diam., on short peduncles; sepals rounded, hairy; petals mauve, no longer than the sepals, deeply bifid; carpels with a few transverse wrinkles, glabrous; seed 1·5 × 1·2 mm., ovoid, smooth, brown.

Mid May—mid Sept. (Drakelow, Derbyshire.)

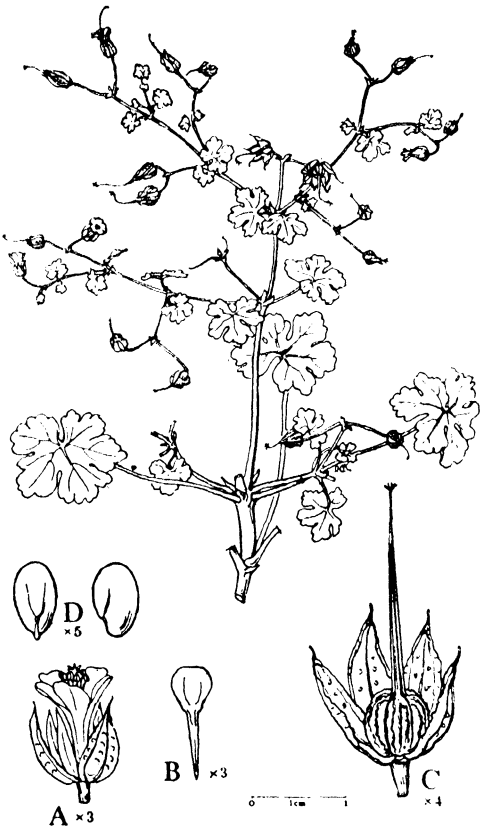
A. flower. B. petal. C. fruit. D. seed, lateral and ventral views.



429. GERANIUM PUSILLUM L. This SMALL-FLOWERED CRANE'S BILL is a much-branched annual with several decumbent or erect, hairy stems growing from a loose rosette of leaves. It grows in waste places, especially on poor soils, chiefly in England. Leaves soft-haired, sub-orbicular in outline, with 7 rather narrow, deep and acutely-toothed lobes. Flowers in pairs, 4-8 mm. diam., on short peduncles; sepals with a distinct point, hairy; petals mauve, no longer than the sepals, notched; carpels not wrinkled, but with adpressed hairs; seed 1·5 × 1·0 mm., ovoid, smooth, glabrous, brown.

Mid May—mid Sept. (Corton, Suffolk.)

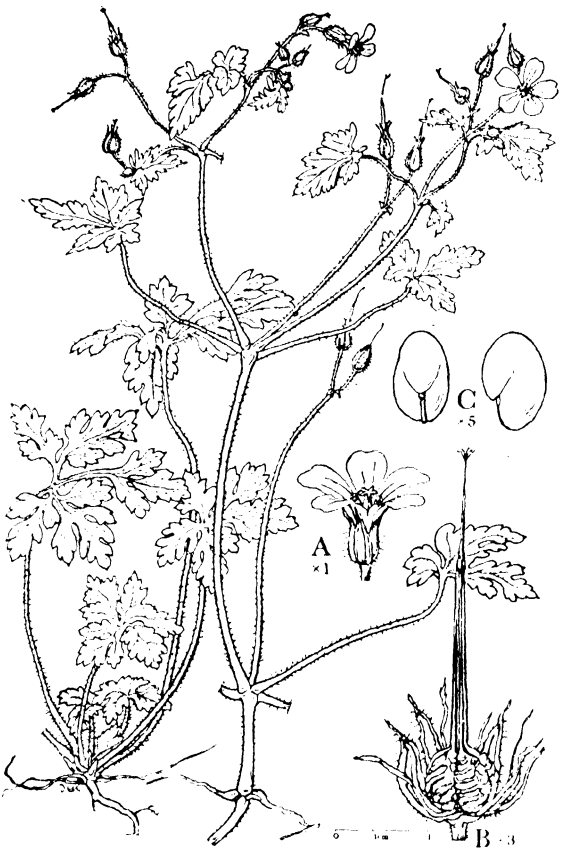
A. flower. B. petal. C. fruit. D. seed, lateral and ventral views.



430. GERANIUM LUCIDUM L. The SHINING CRANE'S BILL is a smooth, shining, much-branched annual 4-18 in. (10-45 cm.) high, which is found rather uncommonly in woods and hedge-banks, chiefly in calcareous districts throughout the British Isles. Stem diffuse, shining, reddish; leaves glabrous, shining, all orbicular, with 5 very broad, rather shallow and bluntly-toothed lobes. Flowers in pairs, 3-6 mm., on rather short peduncles; calyx pyramidal, inflated; sepals pointed, transversely wrinkled, glabrous; petals red, exceeding sepals, spathulate, entire; carpels with three keels, netted, glandular, hairy at apex; seed 2·0 × 1·6 mm., ovoid, smooth, brown.

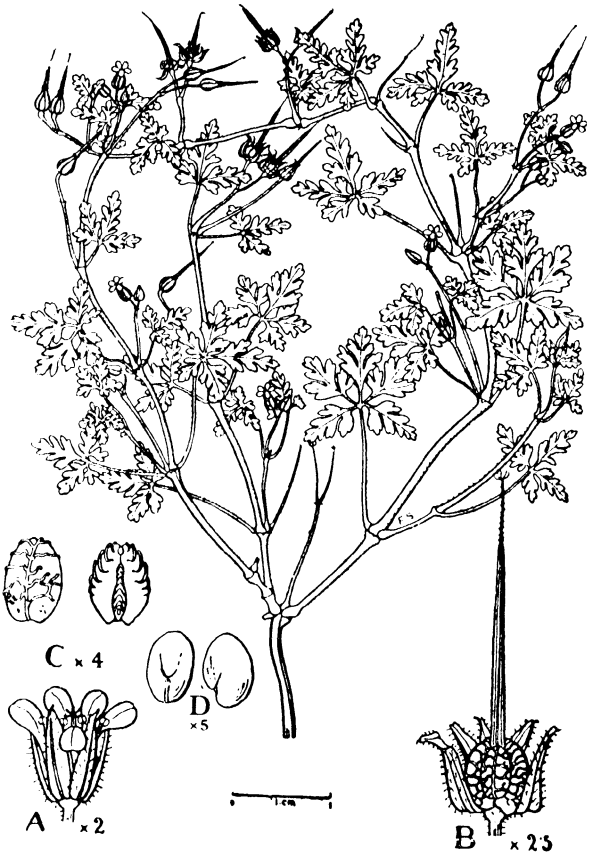
Early May—late Aug. (Buckden, Yorkshire.)

A. flower. B. petal. C. fruit. D. seed, ventral and lateral views.



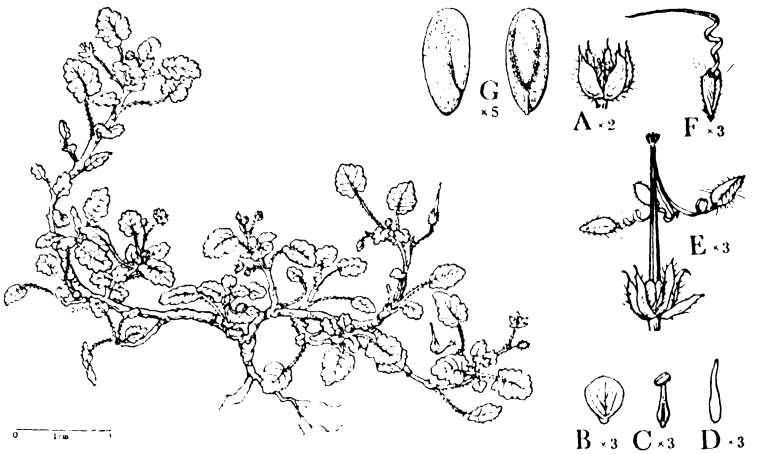
431. GERANIUM ROBERTIANUM L. The HERB ROBERT is a small, unpleasantly scented, hairy annual 4-9 in. (10-23 cm.) high, which is common in shady places throughout the British Isles. Stem erect, little branched, hairy. Leaves hairy, lower with 5-7 cuneiform, deeply and acutely-toothed lobes. Flowers in pairs, 15-20 mm. diam.; sepals mucronate or long awned, hairy and glandular, erect in fruit; petals dark red, much longer than sepals, almost entire; carpels transversely wrinkled; seed 2·5 × 1·7 mm., ovoid, smooth, brown.

Early June—mid Sept. (Pendeford, Staffordshire.)
A. flower. B. fruit. C. seed, ventral and lateral views.



432. GERANIUM PURPUREUM Vill. This SMALL HERB ROBERT is a small, slightly scented, hairy annual 5-10 in. (13-25 cm.) high. It occurs rarely on hedge-banks and shingle, particularly near the sea in S. and S.W. England and Ireland. Stem erect, hairy. Leaves hairy, with 5-7 lanceolate, deeply and rather obtusely cut lobes. Flowers in pairs, 5 mm.; sepals pointed, glandular and hairy, erect in fruit; petals not twice as long as sepals, dark red, entire; carpels transversely wrinkled only in upper part; seed 2·0 × 1·2 mm., ovoid, smooth, brown.

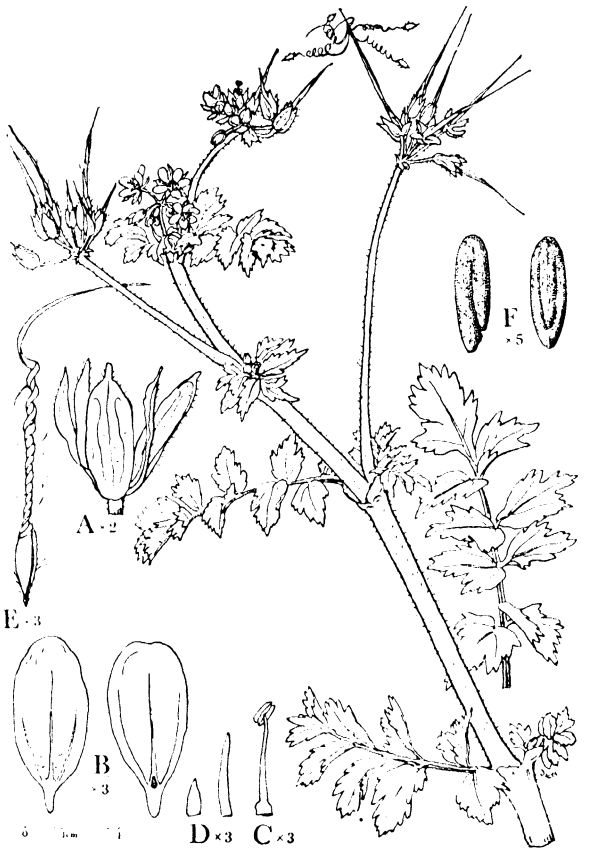
Early June—early Sept. (Hurst Castle, Hampshire.)
A. flower. B. fruit. C. single carpel, two views. D. seed, ventral and lateral views.



ERODIUM L'Hérit. Annual or biennial herbs with red or white flowers. Venation of leaves pinnate; flowers regular or slightly irregular; stamens 5, staminodes 5; carpel with apical pit, the beak ultimately spirally twisted.

433. ERODIUM MARITIMUM (L.) L'Hérit. The SEA STORK'S BILL is a small prostrate annual with branched, hairy, flowering stems 3-12 in. (8-30 cm.) long. It is found, at times abundantly, in sandy places near the sea shore in England and S. Ireland. Leaves ovate-cordate, bluntly toothed, hairy; stipules ovate. Peduncles 1-2 flowered; flowers 4-5 mm. diam.; petals pale red, equal, obovate; filament slightly and gradually dilated; furrow below carpel pit evident; seed 2·5 × 0·9 mm., cylindrical, netted, brown.

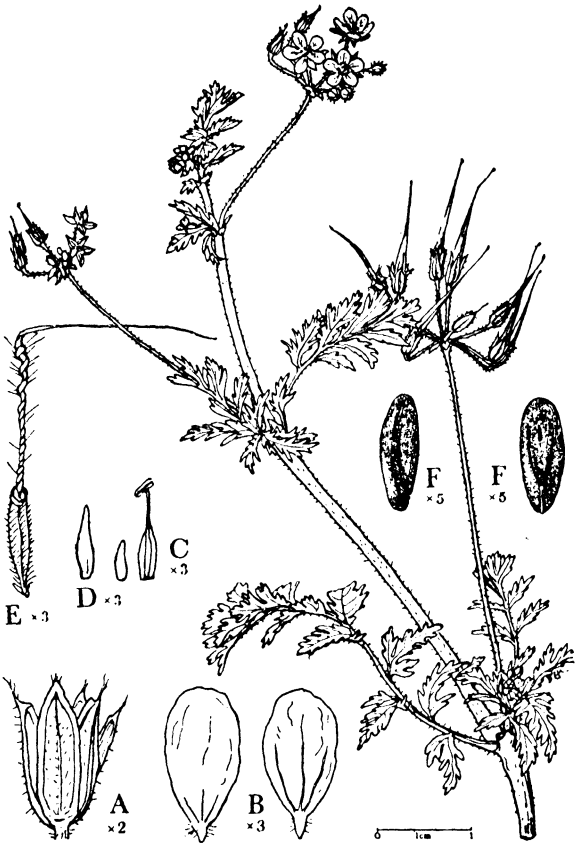
Mid May—early Oct. (Winscombe, Somerset.)
A. calyx. B. petal. C. stamen. D. staminode. E, F. fruit. G. seed, lateral and ventral views.



434. ERODIUM MOSCHATUM (L.) L'Hérit. The MUSK STORK'S BILL is a hairy annual with stout, branched, diffuse, flowering stems 6-20 in. (15-50 cm.) long, growing from a loose, central rosette. It is a rare plant of waste places in southern Britain and Ireland. Leaves hairy, pinnate, with 11-13 rather shallowly and acutely toothed, ovate lobes; stipules obtuse. Peduncles 5-20 flowered; flowers 10-12 mm. diam.; petals red, almost equal; filament enlarged at the base only; furrow below carpel pit obvious; seed 3 × 1 mm., cylindrical, netted in regular lines, brown.

Early June—mid Sept. (Rostrevor, Ireland.)

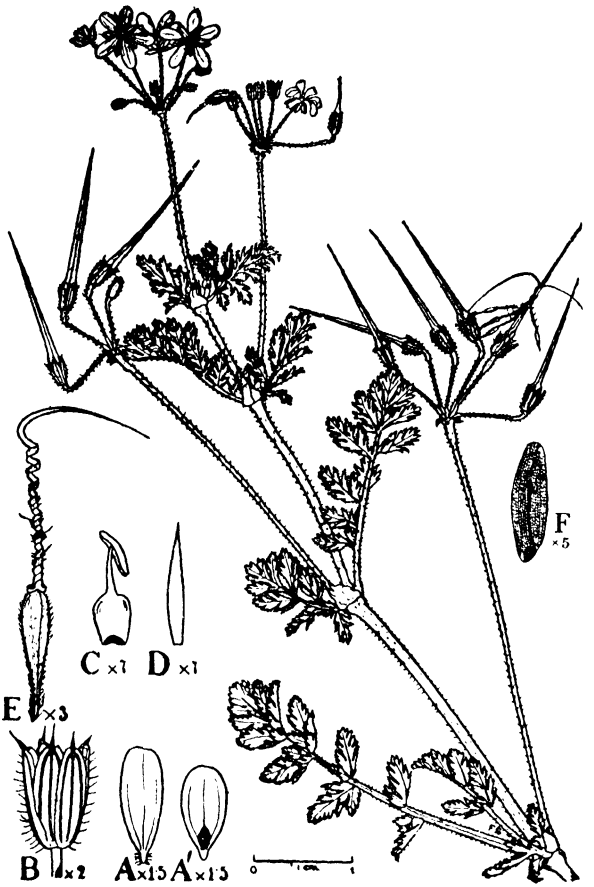
A. calyx. B. petals. C. stamen. D. staminodes. E. fruit. F. seed, lateral and ventral views.



435. ERODIUM CICUTARIUM (L.) L'Hérit. The COMMON STORK'S BILL is a very variable hairy annual with procumbent or diffuse, branched stems 2-15 in. (5-38 cm.) long, growing from a loose central rosette. It is a very common plant, especially on sandy soils, throughout lowland Britain. Leaves pinnate, with 13-17 deeply irregularly and acutely toothed, lanceolate lobes; stipules acute. Peduncles many-flowered; flowers 10 mm. diam.; sepals acute, hairy, apex fringed with hairs; petals pink or white, all alike, unspotted, a little longer than sepals; filament dilated gradually in the lower half; furrow below apical pit of carpel conspicuous; seed 3 × 1 mm., cylindrical, netted in regular, parallel lines, brown.

Early June—mid Sept. (Brandon, Suffolk.)

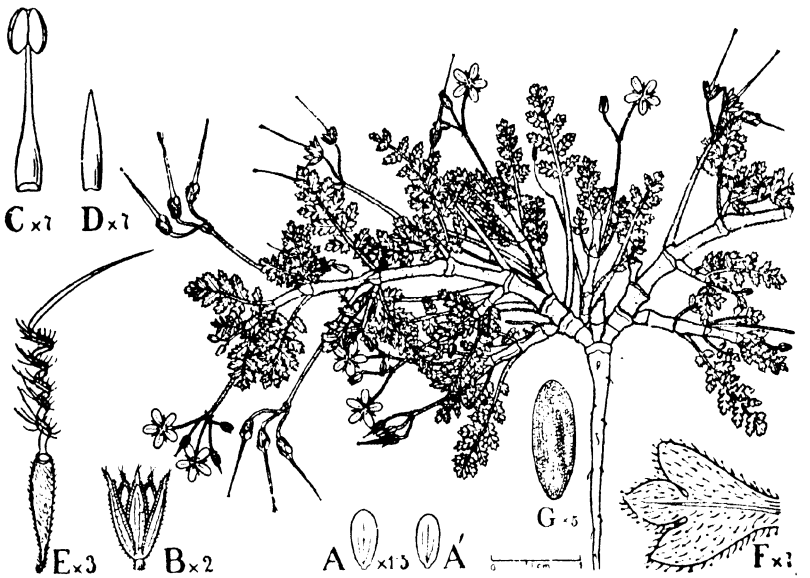
A. calyx. B. petals. C. stamen D. staminodes. E. fruit. F. seed, lateral and ventral views.



436. ERODIUM PIMPINELLIFOLIUM (With.) Sibth. This SPOTTED STORK'S BILL is a hairy annual with rather stout, branched, diffuse, flowering stems 6-20 in. (15-50 cm.) long, growing from a loose central rosette. It is a rather common plant of sandy soils in lowland Britain. Leaves pinnate with 13-17 deeply, irregularly, and acutely toothed, lanceolate lobes; stipules acute. Peduncles 5-20 flowered; flowers 10-12 mm.; petals red or white, very unequal, the two smaller having a spot at the base; filament dilated suddenly in the lower half; furrow below the carpel pit conspicuous; seed 3 × 1 mm., cylindrical, netted in regular lines, brown.

Early June—mid Sept. (Byfleet, Surrey.)

A petals. B. calyx. C. stamen. D. staminode E. fruit. F. seed.



437. ERODIUM LEBELII Jord. This LEBEL'S STORK'S BILL is a robust, glandular and hairy annual with prostrate, leafy, flowering stems 3-10 in. (8-25 cm.) long, growing from a loose, central rosette. It is a rather rare plant of sandhills and the sea coast of S.W. England. Stems prostrate, ascending, with many hairs and sessile glands. Leaves pinnate, leaflets with acute but not deeply cut segments. Peduncles 3-6 flowered; flowers 12 mm. diam.; petals pink or white, unequal; filaments dilated gradually in the lower half; furrow below conspicuous carpel pit shallow; seed 3 × 1 mm., cylindrical, netted in regular lines, brown.

Mid July—late Sept. (West Bay, Dorset.)

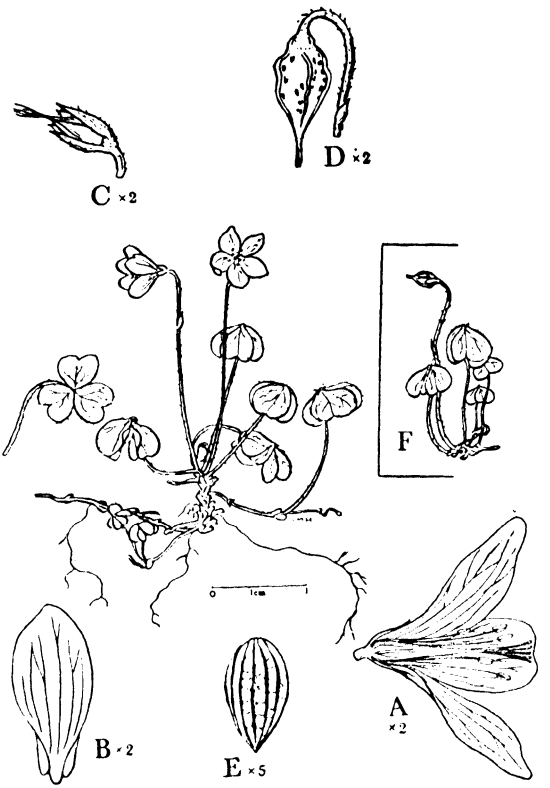
A. A′. petals. B. calyx. C. stamen. D. staminode. E. fruit. F. leaf segment. G. seed.

(*E. glutinosum* Dum. is similar to the above, but more densely glandular and with no furrow below the carpel pit.)

438. ERODIUM NEGLECTUM Baker and Salm. This VISCID STORK'S BILL is a small or robust, densely glandular and hairy annual with many straggling, leafy, much-branched, flowering stems 3-12 in. (8-25 cm.) long, growing from a loose, central rosette. It is rather a rare plant of sandhills on the English sea coast. Stems straggling, densely viscid, glandular. Leaves pinnate, leaflets with obtuse and rather deeply cut segments. Peduncles 3-6 flowered; flowers 10 mm.; petals pink or white, subequal; filaments dilated suddenly in the lower half; furrow below the small carpel-pit absent; seed 3 × 1 mm., cylindrical, netted in regular lines, brown.

Mid July—mid Sept. (Broad Sands, Devon.)

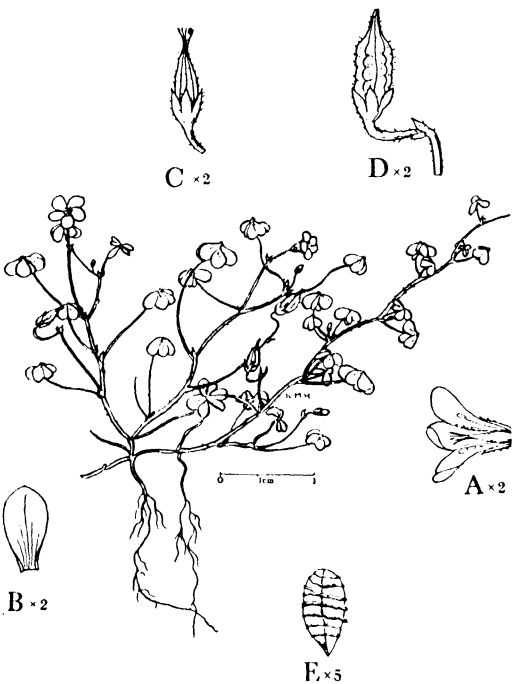
A. A′. petals. B. calyx. C. stamen. D. staminode. E. fruit. F. leaf segment. G. seed.



OXALIS L. Slender annuals or perennials with ternate leaves; leaflets obcordate; flowers regular; stamens 10, 5 outer ones shorter; fruit a five-celled, explosive capsule.

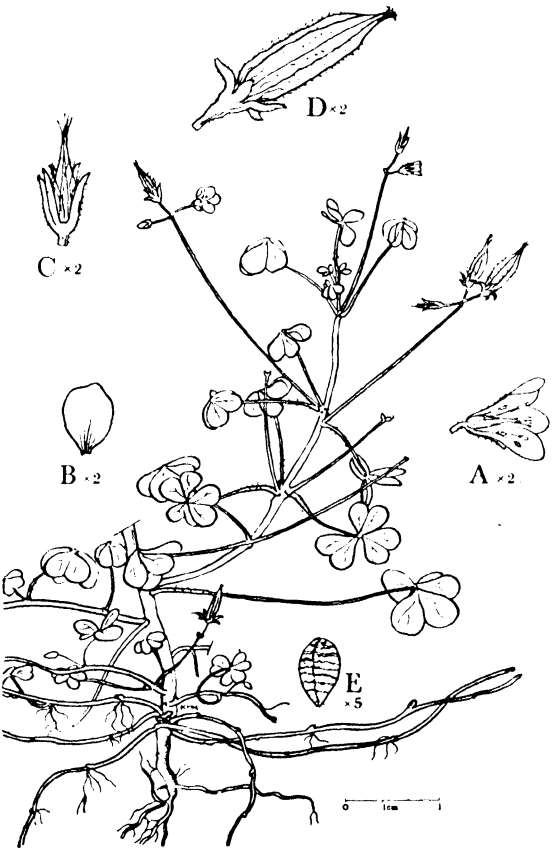
439. OXALIS ACETOSELLA L. The WOOD SORREL is a slender perennial with leaves and flowering stems 2-4 in. (5-10 cm.) long, growing erect from a creeping, toothed rhizome. It is an abundant plant of woods and shady places throughout the British Isles. Leaves ternate, light green, glabrous. Flowers 7-8 mm. diam., solitary; sepals lanceolate, acute, hairy; petals white with purple veins, much exceeding the calyx. Capsule 7 × 4 mm., ovoid, acute, glabrous, at length recurved downwards; seed 3·0 × 1·7 mm., ribbed vertically, yellow.

Late May—early July. (Ashbourne, Derbyshire.)
A. flower l.s. B. petal. C. pistil and calyx (one sepal removed).
D. capsule. E. seed. F. fruiting plant.



440. OXALIS CORNICULATA L. This CURVED YELLOW WOOD SORREL is a rather slender, much-branched, decumbent annual with a fibrous root. It is a garden escape naturalized in several places. Peduncles short, two-flowered; flowers 6-7 mm. diam., subsolitary; peduncles shorter than the leaves; petals ovate, yellow; capsule 8 × 3 mm., cylindrical, pointed, pedicels recurved, with capsule directed upwards; seed 2 × 1 mm., ovoid, with transverse ribs, brown.

Late July—mid Sept. (Hort., Worthing.)
A. flower l.s. B. petal. C. pistil. D. capsule. E. seed.



441. OXALIS EUROPÆA Jord. The YELLOW WOOD SORREL is a rather slender, little-branched, spreading, stoloniferous biennial 6-10 in. (15-25 cm.) high. It is common in gardens and is naturalized in a few places in England. Peduncles long, 2-8 flowered; flowers 6-7 mm. diam., 2-6 in a small umbel; peduncles longer than the leaves; petals yellow, ovate; capsule 16 × 4 mm., cylindrical, pointed, hairy; pedicels straight, erect; seed 1·7 × 1·0 mm., obovoid, trigonous, transversely ribbed, brown.

Mid July—mid Sept. (Pulborough, Sussex.)
A. flower l.s. B. petal. C. pistil. D. capsule. E. seed.

(Many other species occur as strays from gardens, notably *O. articulata* Sav., with rather large, red flowers, and *O. stricta*, similar to the above but without stolons.)

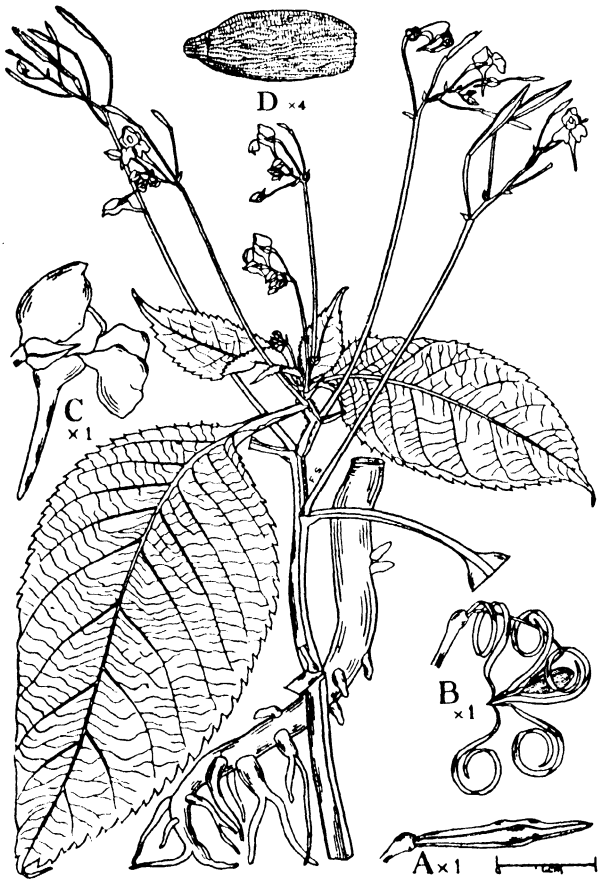
IMPATIENS L. Showy annuals with a decumbent, rooting stock and simple, ovate leaves; flowers irregular; sepals 3, lower spurred; petals 5, 4 united in twos; stamens 5; fruit a many-seeded pod with 5 elastic valves.

442. IMPATIENS NOLI-TANGERE L. The YELLOW BALSAM or TOUCH-ME-NOT is a rather robust, branched, glabrous annual 12-24 in. (30-60 cm.) high. It is a rare plant of damp woodlands in mountainous districts of N. England. Leaves alternate, ovate, coarsely serrate. Flowers 40 mm. long, 15-20 mm. diam.; sepals and petals yellow, spotted with orange, spur of lower sepal conical, closely recurved; seed 5·0 × 2·5 mm., oval, compressed, net veined, radicle basal.

Late July—early Sept. (High Wray, Westmorland.)
A. capsule. B. seed

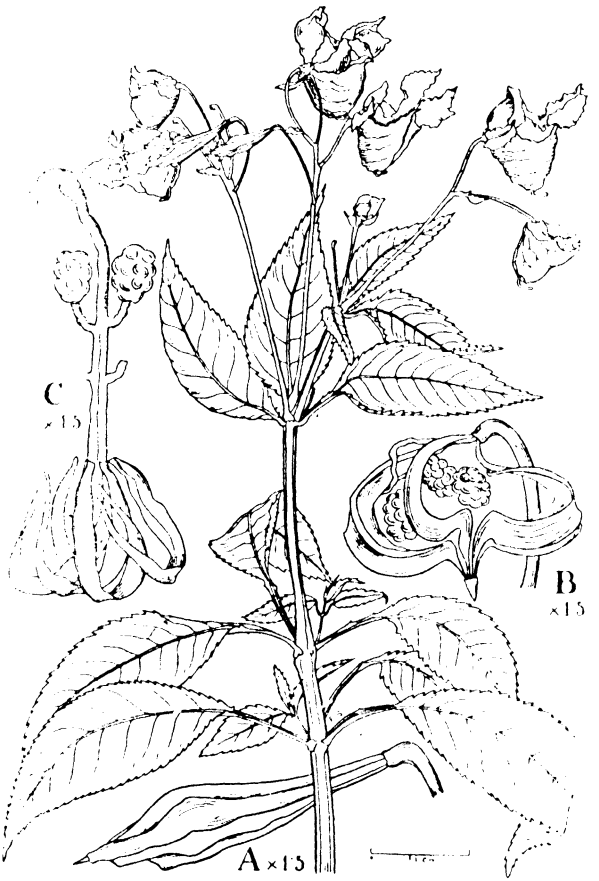
443. IMPATIENS CAPENSIS Meerburgh (*I. fulva* Nutt.). This ORANGE BALSAM is a rather slender, branched, glabrous annual 12-20 in. (30-50 cm) high. It is of American origin and naturalized along English rivers and other wet places. Leaves alternate, ovate, acute, coarsely serrate. Flowers 18-20 mm. long, 10-12 mm diam., lateral, axillary; sepals small, ovate; petals orange, spotted with red, spur subulate, closely incurved. Capsule 4 mm. long, two-seeded; seed 4·5 × 2·0 mm., ovoid, with 3 raised ribs, dark brown, radicle basal.

Early Aug.—late Sept. (Papplewick, Nottingham.)
A. flower. B. capsule. C. seed.



444. IMPATIENS PARVIFLORA DC. This SMALL BALSAM is a slender, diffuse, green-stemmed, branched, glabrous annual 6-18 in. (15-45 cm.) high. It is of Russian origin and is naturalized along several rivers in England and Wales and in waste places. Leaves alternate, ovate, acute, serrate. Flowers 12-15 mm. long, 8-10 mm. diam., in axillary cymes; sepals and petals pale yellow, spur of lower sepal straight; seed 6·0 × 2·5 mm., ovoid, striate, dark brown.

Early Aug.—late Sept. (Hoddesdon, Hertfordshire.)
A. capsule. B. capsule dehisced. C. flower. D. seed.



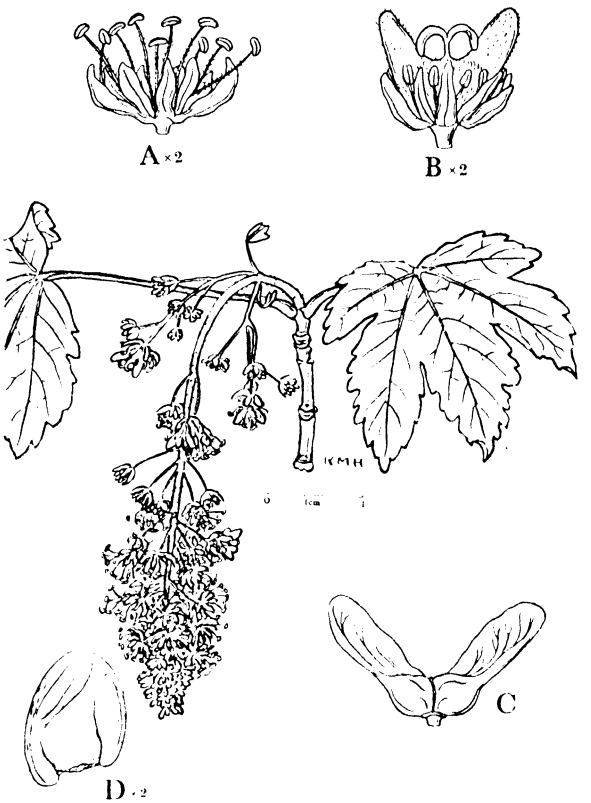
445. IMPATIENS GLANDULIFERA Royle. This INDIAN BALSAM is a robust, red-stemmed, branched annual 12-50 in. (30-125 cm.) high. It is a native of India and abundantly naturalized in the mud banks of many British rivers. Leaves opposite, or in threes, lanceolate, acuminate, finely serrate. Flowers 30-40 mm. long, 20-25 mm. diam.; sepals and petals pink or white, spotted with red, spur of lower sepal very small, recurved; seed 4 mm., spherical, warted or wrinkled, black.

Early Aug.—mid Oct. (Kirkstall, Leeds.)
A. fruit. B, C. fruit dehiscing, with seeds.

ACER L. Trees or shrubs with simple leaves and racemes of greenish flowers; sepals 5; petals about 5 or wanting (more numerous in the staminate flowers); stamens about 8, inserted on a disc below the ovary; carpels usually with a wing one side only.

446. ACER CAMPESTRE L. The MAPLE is a small tree or shrub 8-40 ft. (3-14 m.) high, which is common in woods and hedges, mainly on basic soils, in England. Leaves palmate, lobes broad, obtuse, margin almost entire. Flowers 8-9 mm. diam., of two kinds, staminate and perfect, in rather few-flowered, erect racemes; sepals sub-obtuse linear-lanceolate, hairy, reddish and green; stamens 8. Winged fruit diverging at over 135 degrees; seed 8 × 7 mm., ovate, flattened, veined, black.

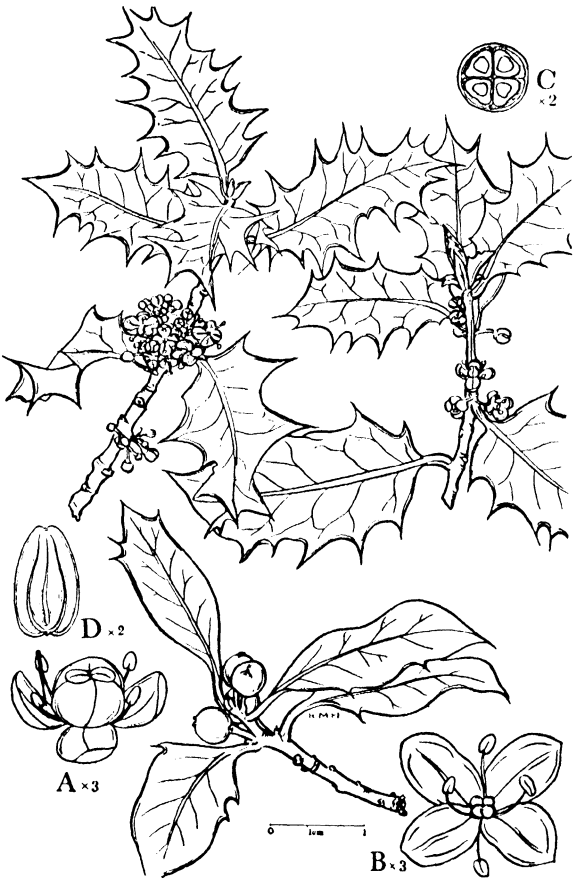
Early—late May. (Ashbourne, Derbyshire.)
A. staminate flower. B. perfect flower. C. fruit. D. seed.



447. ACER PSEUDOPLATANUS L. The SYCAMORE is a frequently planted deciduous tree up to 90 ft. (30 m.) high. Leaves palmate, unequally toothed, lobes acute. Flowers of two kinds numerous, in pendulous racemes; staminate, 10 mm. diam.; perfect, 8 mm. diam.; sepals and petals green; stamens 10, filaments hairy; ovary tomentose. Winged fruits diverging at about 90 degrees; seed 8 × 6 mm., ovate, flattened, greenish-black.

Early—late May. (Ashbourne, Derbyshire.)
A. staminate flower. B. perfect flower. C. fruit. D. seed.

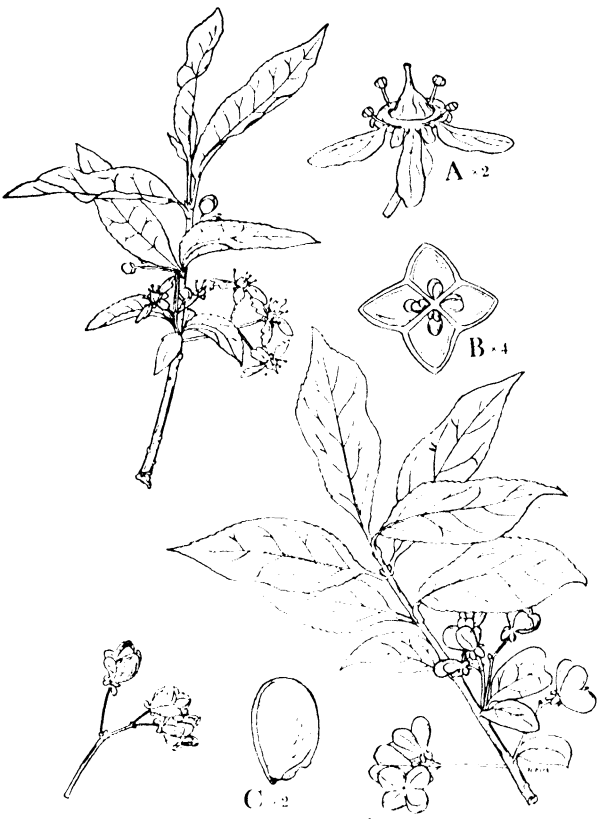
(*A. platanoides* L. is a similar, rarely planted tree with erect racemes of flowers appearing just before the leaves.)



ILEX L. Shrubs or small trees, usually with diœcious or bisexual flowers; sepals 4; corolla regular, 4-fid; stamens 4, alternate with petals; fruit a 4-celled, 4-seeded drupe.

448. ILEX AQUIFOLIUM L. The HOLLY is a well-known, common shrub 9-42 ft. (3-14 m.) high, which grows in woods and hedges throughout the British Isles. Leaves ovate, glossy, coriaceous, evergreen, margin spiny, or sometimes entire. Flowers 6-8 mm. diam., in axillary clusters; petals white; berries 10 mm., globular, scarlet or rarely yellow; seed 8 × 4 mm., elongated, ellipsoid, vertically ribbed, yellow.

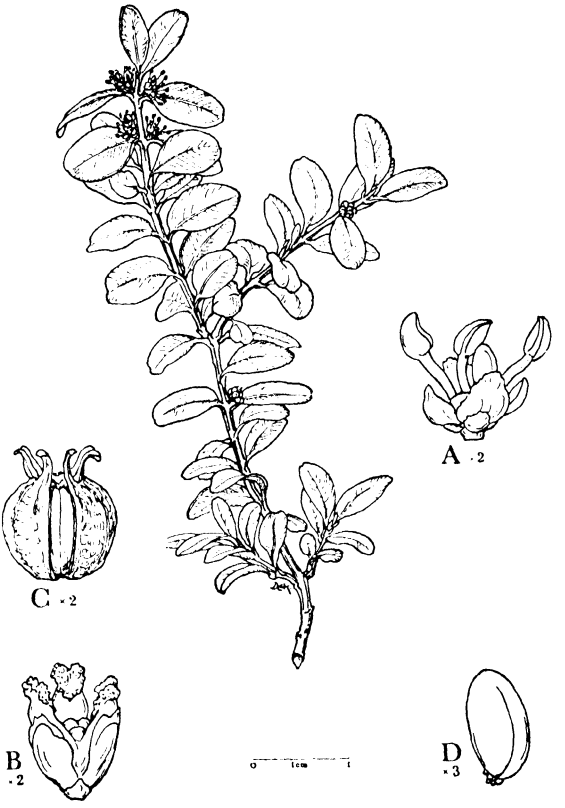
Early—late May. (Bradley Wood, Derbyshire.)
A. perfect flower. B. male flower. C. ovary t.s. D. seed.



EUONYMUS L. Shrubs with opposite leaves and small flowers; sepals 4; corolla regular, petals 4-5, inserted on margin of a disc around the ovary; fruit a three- to four-celled capsule with one seed in each cell.

449. EUONYMUS EUROPÆUS L. The SPINDLE TREE or BURNING BUSH is an uncommon shrub found mainly on calcareous soils in woods and scrub throughout England, Wales and Ireland. Twigs green; leaves deciduous, lanceolate, acute, finely serrate. Flowers 12-14 mm. diam., perfect, in stalked, dichotomous cymes or clusters; petals light green. Fruits pale red, opening to display the orange seed-covering; seed 7 × 5 mm., ovoid, almost smooth, irregularly bordered, yellow.

Mid May—mid June. (Dovedale, Derbyshire.)
A. flower. B. ovary t.s. C. seed.

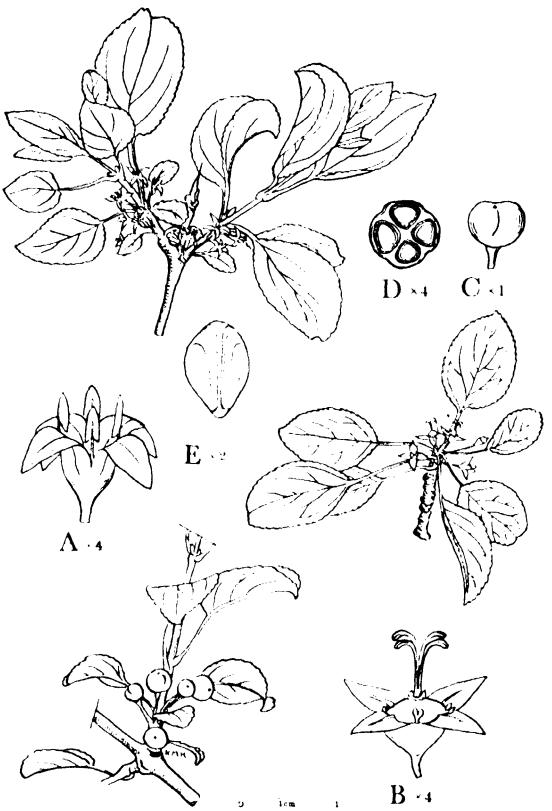


BUXUS L. Shrubs or small trees with simple, exstipulate leaves and inconspicuous, green, monœcious flowers. Perianth segments 4 or sometimes more, spreading, almost free; stamens 4; ovary of three two-seeded cells, styles 3, thick.

450. BUXUS SEMPERVIRENS L. The Box is a small, much-branched evergreen shrub with many thick, hard branches, up to 20 ft. (7 m.) high. It occurs as a native plant in woods and downs on the Oolite Limestone of the southern part of England and is often planted elsewhere. Leaves small, subsessile, roundly ovate-obtuse, entire, thick, evergreen, shining. Flowers 6 mm. diam., in axillary clusters in the upper leaves; perianth greenish-yellow, four-lobed; male flower with 4 exserted stamens and sometimes a rudimentary ovary; female single, in the apex of a cluster of several male flowers, 6 mm. diam.; styles prominent, large. Fruit a woody capsule, two-valved, each valve with 2 recurved horns; seed 5 × 3 mm., ovoid, smooth, shining, black, with vertical furrow.

Early April—late May. (Blythburgh, Suffolk.)

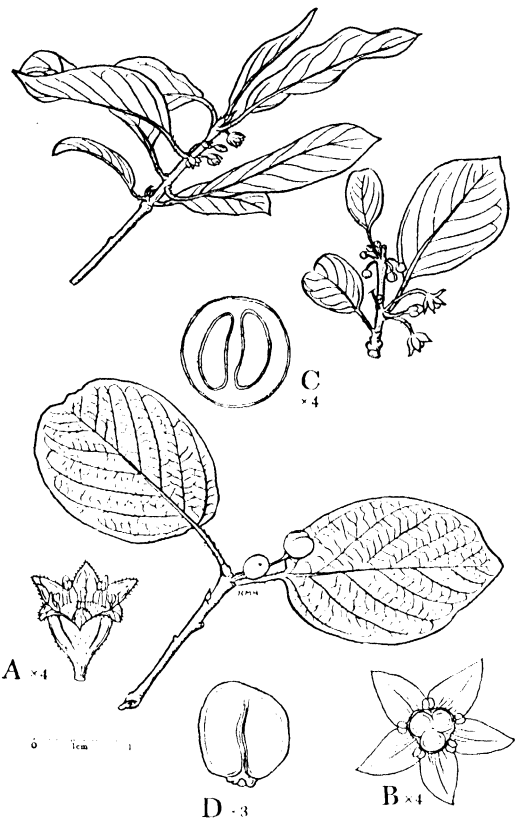
A. male flower. B. female flower. C. capsule. D. seed.



RHAMNUS L. Shrubs with simple leaves and small, perfect or unisexual flowers. Sepals 4; petals minute or wanting; stamens 4, opposite sepals and inserted on the margin of calyx tube; fruit a four-celled, four-seeded berry.

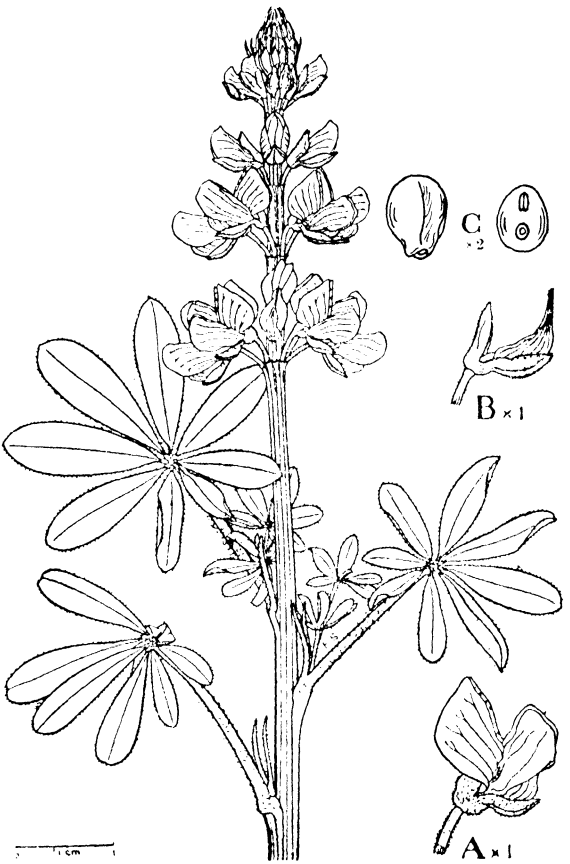
451. RHAMNUS CATHARTICUS L. The BUCKTHORN is a thorny shrub 12-20 ft. (4-6 m.) high, which is abundant in hedges and thickets in some parts of England and Wales, usually on a basic soil; very rare in Scotland. Leaves deciduous, ovate, acute, serrate. Flowers 5 mm. diam., in dense clusters, diœcious; sepals yellow green; berries about 7 mm. diam., dark purple; seed 7 × 4 mm., ovoid, smooth, with a central furrow, yellow.

Mid May—late June. (Alresford, Hampshire.)
A. male flower. B. female flower. C. berry. D. ovary t.s. E. seed.



452. RHAMNUS FRANGULA L. = F. ALNUS Mill. The BLACK ALDER or ALDER BUCKTHORN is a thornless shrub 12-20 ft. (4-6 m.) high, abundant in places in England and Wales in woods and thickets, preferring a wet and peaty soil. Leaves deciduous obovate, obtuse, serrate. Flowers 4-5 mm. diam., in lax clusters, perfect; sepals and petals greenish; styles single, carpels three, but only two seeds develop; berries about 8 mm. diam., red-purple; seed 3·5 mm., globose, smooth, with a central furrow, brown.

Late May—early July. (Brockenhurst, Hampshire.)
A, B. flower. C. ovary t.s. D. seed.

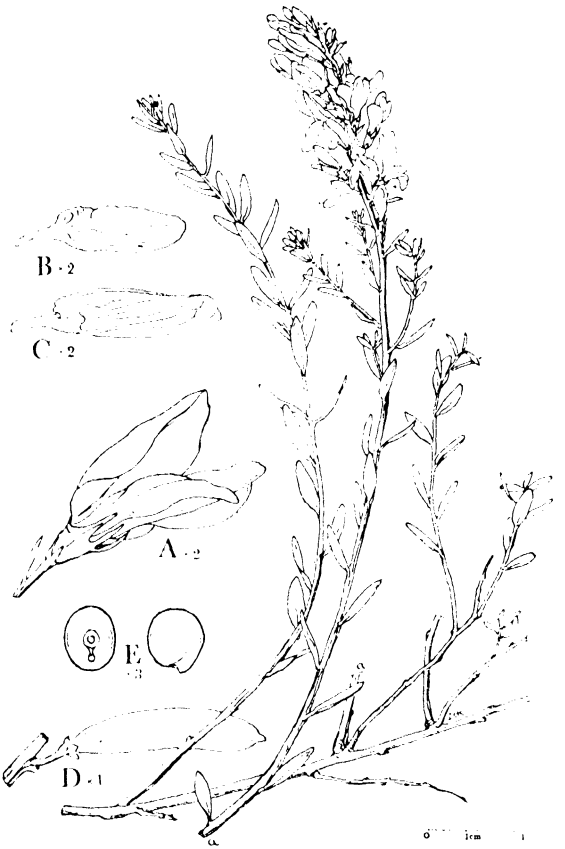


LUPINUS L. Herbaceous or woody plants with digitate leaves and racemes of conspicuous flowers. Calyx two-lipped; stamens monadelphous; pod many-seeded, flat.

453. LUPINUS NOOTKATENSIS Donn. This WILD LUPIN is a softly pubescent, erect biennial or perennial 12-24 in. (30-60 mm.) high, which is naturalized on river shingles in north and central Scotland. Leaves with 6-8 narrow, elliptic, pointed lobes. Flowers 15-20 mm. long, whorled in racemes 100 mm. tall; bracts exceeding flower buds, corolla usually blue. Pods 30 mm. long, silky; seed 5 × 4 mm., discoid, smooth, black.

Late May—early July. (Aberfeldy, Perthshire.)
A. flower. B. calyx and stamens. C. seed, two views.

(*Lupinus arboreus* Sims, the Shrubby Tree Lupin, with yellow or white flowers, is semi-naturalized on sandhills in various parts of England.)

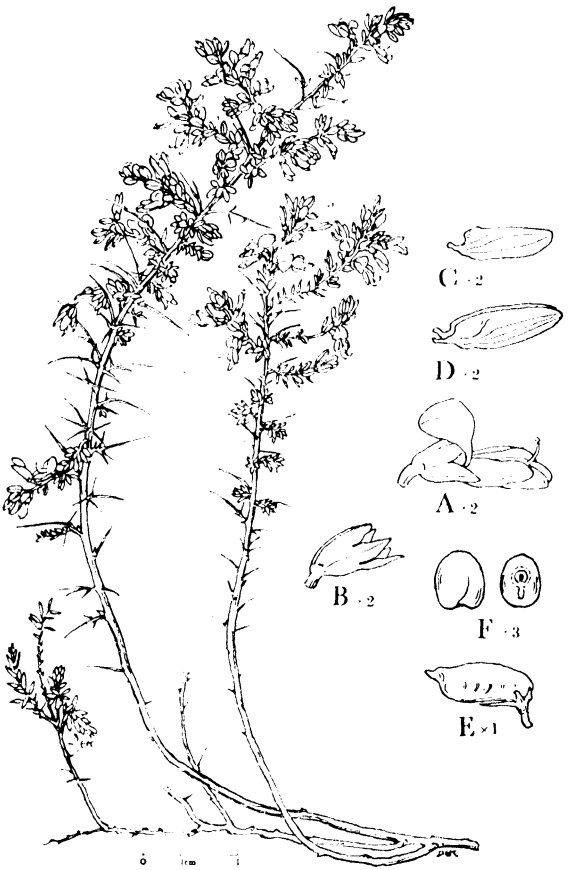


GENISTA L. Shrubby plants with yellow flowers and simple leaves. Calyx two-lipped; upper bifid, lower trifid; stamens monodelphous Pod flat, several-seeded.

454. GENISTA TINCTORIA L. The DYER'S GREENWEED is a small, decumbent shrub, with many erect, thornless branches 12-18 in. (30-45 cm.) high. It is found commonly in dry pastures, usually on a basic soil in England and south Scotland. Leaves 10-12 mm. long, narrow, lanceolate, pointed, glabrous, entire. Flowers 15-20 mm. long, in short, dense racemes; calyx glabrous, teeth very unequal; petals bright yellow. Pod 25-30 mm. long, glabrous, flat; seed about 2·5 mm., nearly spherical, shining, brown.

Mid June—mid Sept. (Sandybrook, Derbyshire.)

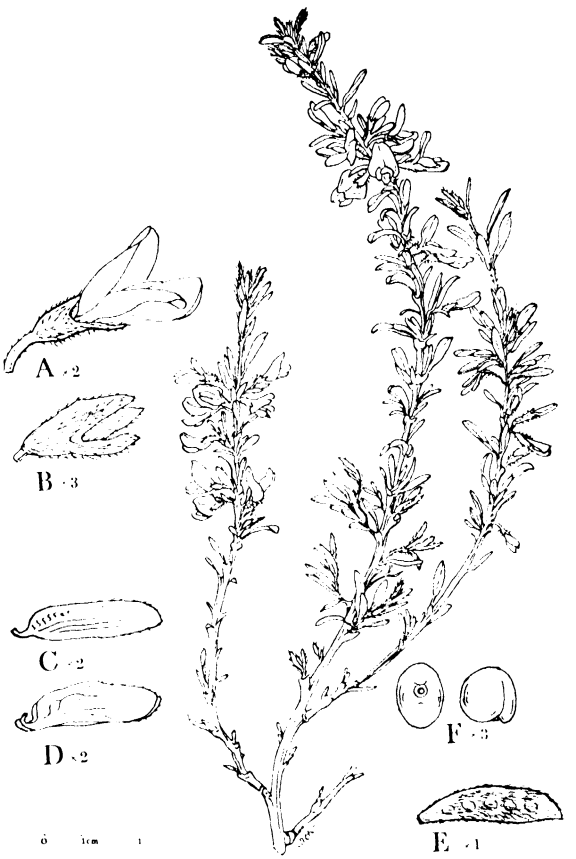
A. flower. B. wings. C. keel. D. pod. E. seed, ventral and lateral views.



455. GENISTA ANGLICA L. The NEEDLE WHIN is a small, spreading, loosely branched, thorny, glabrous shrub, about 12 in. (30 cm.) high, and found commonly on heaths and moors on acid soils in Great Britain but not in Ireland. Leaves 3-4 mm., small, ovate, entire, glabrous. Flowers 10-12 mm. long, in short, loose racemes; calyx glabrous, teeth sub-equal; petals pale yellow. Pod 12-15 mm. long, glabrous, inflated; seed about 2 mm., sub-globose, flattened, truncate, shining, black.

Mid May—late June. (Brockenhurst, Hampshire.)

A. flower. B. calyx. C. wing. D. keel. E. pod. F. seed, lateral and ventral views.



456. GENISTA PILOSA L. The HAIRY GREENWEED is a small, hairy, prostrate shrub about 12 in. (30 cm.) high, with stiff, erect, thornless branches. It is found very rarely in dry, sandy places in S. and W. Britain. Leaves 4 mm. long, small, lanceolate, silky on under-surface. Flowers 10-15 mm. long, racemose; calyx silky, teeth unequal; petals bright yellow, pubescent. Pod 15-20 mm. long, silky, flat; seed 2-3 mm., ovoid, truncate, shining, olive-black.

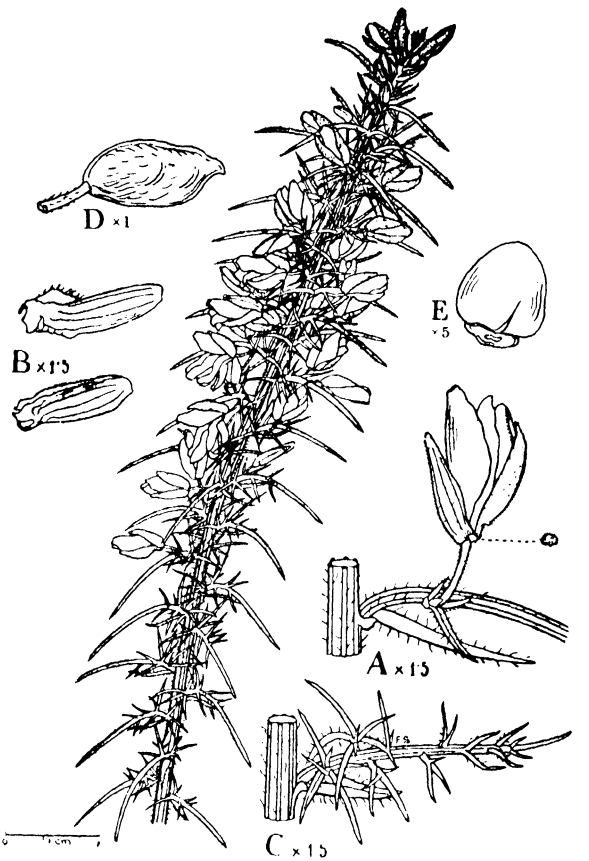
Mid May—early June. (Ashdown Forest, Sussex.)
A. flower. B. calyx. C. wing. D. keel. E. pod. F. seed, lateral and ventral view.

ULEX L. Very spiny shrubs with yellow flowers; trifoliate leaves on young plants only. Calyx bipartite with minute teeth; stamens monodelphous; pod many-seeded.

457. ULEX EUROPÆUS L. The COMMON GORSE, FURZE or WHIN is a large, erect and spreading, spiny shrub up to 36 in. (90 cm.) high, abundant in dry places and on heaths throughout the British Isles. Spines rigid, furrowed. Flowers 15-20 mm. long, solitary in the axils of the leaves, forming an irregular, spiny raceme; sepals greenish yellow, hairy, teeth converging; petals bright yellow, wings longer than keel; bract at base of flower ovate, obvious. Pod 20-25 mm. long, hairy, terete; seed about 3 mm. diam., almost spherical, shining, deep brown.

Late Jan.—mid June. (Ashford, Kent.)

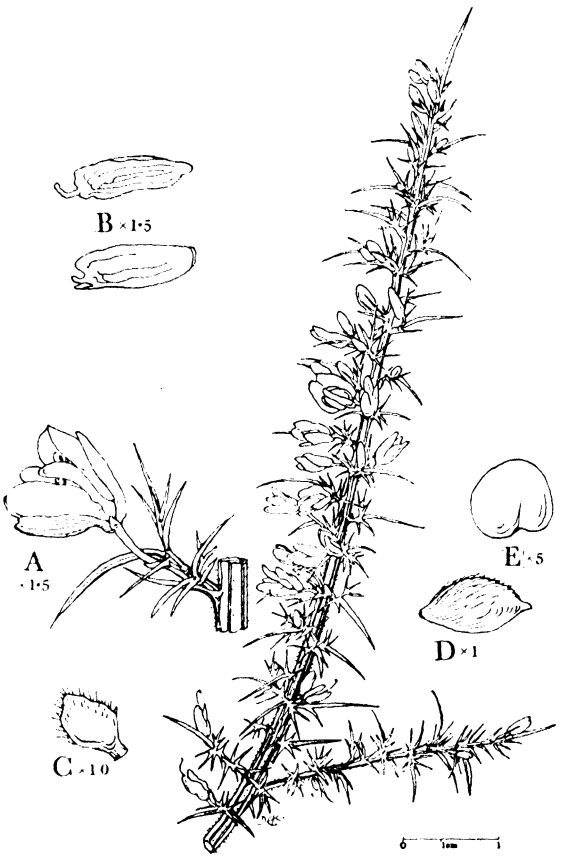
A. flower. B. wing and keel. C. pod. D. seed, lateral and ventral views.



458. ULEX GALLII Planch. The AUTUMN FURZE is a spreading, erect or ascending, spiny shrub about 24 in. (60 cm.) high, found commonly in dry places and on heaths, particularly in west and central Britain. Spines rigid, striate. Flowers 15-20 mm. long, solitary in the axils of the leaves but forming a regular, spiny raceme; sepals greenish yellow, teeth converging, finely downy; petals deep yellow, wing longer than keel; bract at base of flower minute, rounded. Pods 20-25 mm. long, hairy, terete; seed 3 mm., almost spherical, shining, deep brown.

Mid Aug.—late Oct. (near Bristol.)

A. flower. B. wing and keel. C. spiny branch. D. pod. E. seed.



459. ULEX MINOR Roth. (*U. nanus* T. F. Forst.). The DWARF FURZE is a prostrate or ascending, spiny shrub about 12 in. (30 cm.) high, found infrequently in dry places and on heaths, particularly in the south and east of England, and very rarely in Scotland. Spines weak, striate. Flowers 8-12 mm. long, solitary in the axils of the leaves, but forming a long, dense, spiny raceme; sepals yellowish green, almost glabrous, teeth diverging; petals lemon yellow, wings shorter than keel; bract at base of flower small, ovate. Pods 10-15 mm. long, oval, silky, terete; seed about 3 mm., nearly spherical, olive-brown, shining.

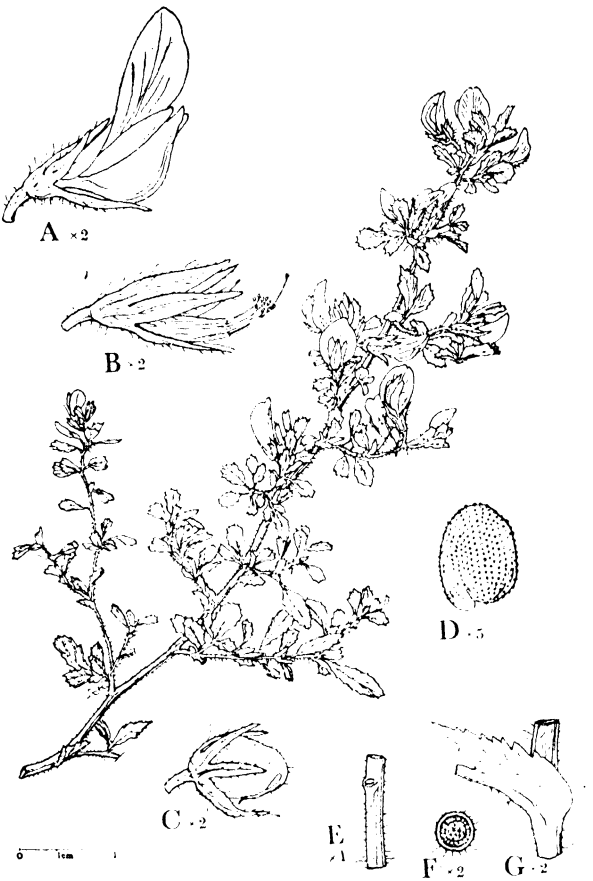
Mid Aug.—late Oct. (New Forest, Hampshire.)
A. flower. B. wings and keel. C. bract. D. pod. E. seed.

CYTISUS L. Spineless shrubs with ternate, trifoliate, or simple leaves. Calyx bipartite, with minute teeth; stamens monadelphous; pod flat, many-seeded.

460. CYTISUS (SAROTHAMNUS) SCOPARIUS L. The COMMON BROOM is a large, erect, spineless shrub up to 72 in. (180 cm.) high, found commonly in dry places throughout the British Isles. Leaves ternate, or simple; leaflets 8-10 mm. long, narrow, entire. Flowers 30-50 mm. long, solitary or in pairs in the axils of the leaves, forming an irregular raceme; sepals yellow-green, glabrous; petals deep yellow; style spiral; pod 25-50 mm. long, flat, hairy on edge; seed 4 mm., rounded, lenticular, compressed, shining, yellow-brown.

Mid May—late June. (Bramcote, Nottingham.)

A. calyx, stamens and style. B. pod. C. seed, lateral and ventral views.

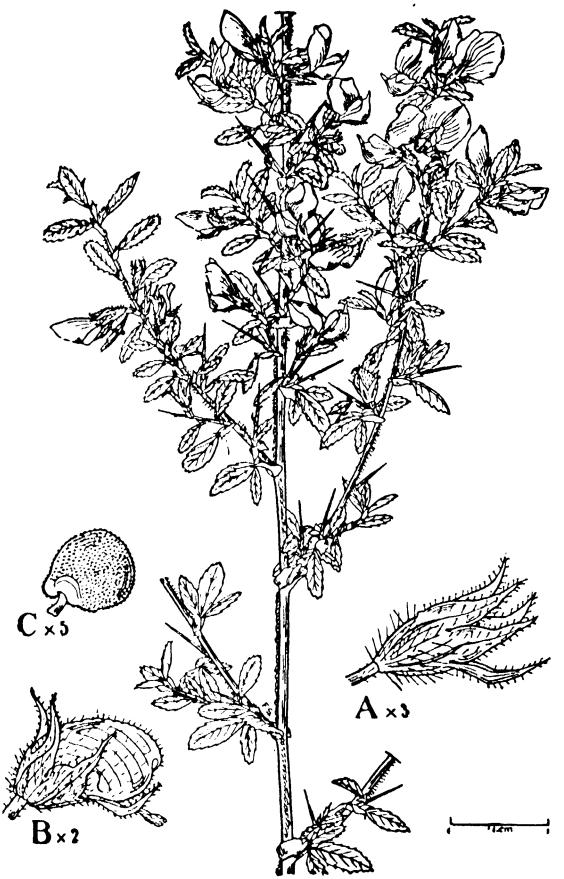


ONONIS L. Spiny or spineless herbs or undershrubs with ternate leaves; calyx with 5 narrow segments; stamens monadelphous; pod straight, few-seeded.

461. ONONIS REPENS L. The COMMON REST-HARROW is a hairy, usually spineless, prostrate, stoloniferous plant about 12 in. (30 cm.) long, and found commonly on poor, dry soils throughout the British Isles. Stem usually hairy all round; spines absent except in var. *horrida* Lange. Leaflets 12-14 mm. long, obovate, unevenly serrate. Flowers 12-14 mm. long, axillary, solitary; calyx conical, teeth long, linear, acute, subequal; corolla pink, wings longer than the keel. Pod about 6 mm. long, ovate, hairy, 2-5 seeded; seed 2 mm., subglobular, tuberculate, brown, radicle obvious.

Late June—mid Sept. (Oxton, Nottinghamshire.)

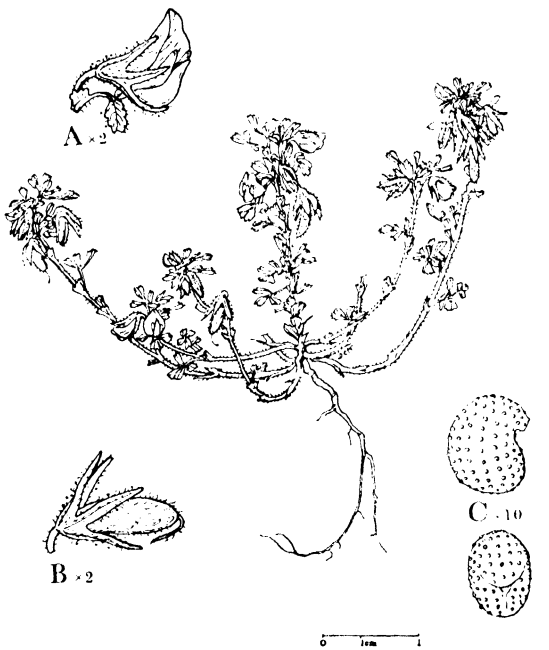
A. flower. B. stamens, style and calyx. C. pod. D. seed. E. stem. F. stem t.s. G. stipule.



462. ONONIS SPINOSA L. The SPINY REST-HARROW is a hairy, usually spiny, erect, branched, not stoloniferous perennial, about 12 in. (30 cm.) high, found commonly in poor pastures on heavy soils throughout the British Isles. Stem with two lines of hairs; spines present except in var. *mitis* L. Leaflets 10-12 mm. long, lanceolate, finely serrate, Flowers 12-14 mm. long, axillary, solitary; calyx conical, teeth narrow, acute, not much longer than tube, subequal; corolla pink, wings shorter than the keel. Pod about 10 mm. long, ovate, hairy, exceeding calyx, 2-3 seeded; seed 2·5 mm., sub-globular, tuberculate, brown.

Late June—mid Sept. (Wendy, Hertfordshire.)
A. calyx. B. pod. C. seed.

(Hybrids between this and the last are recorded.)



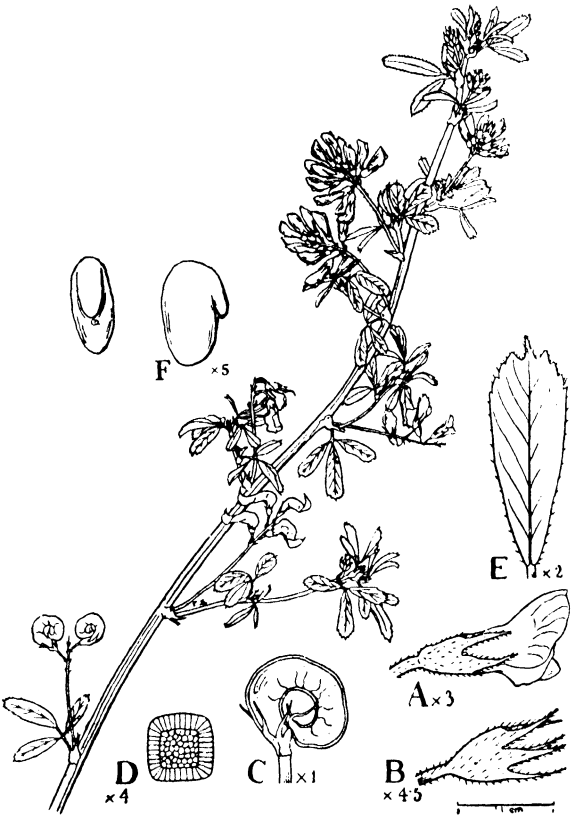
463. ONONIS RECLINATA L. The SMALL REST-HARROW is a hairy and glandular, sub-erect, branched annual, about 6 in. (15 cm.) high, found very rarely in sandy places near the sea in S. Devon and S. Wales. Stems hairy, viscid all round, spines absent; leaflets 10-12 mm. long, obovate, serrate at apex. Flowers 8-10 mm. long, axillary, solitary; calyx conical, teeth narrow, acute, longer than tube, sub-equal; corolla pink, wings equalling keel. Pod about 12 mm. long, cylindrical, hairy, drooping or reflexed when ripe, one and a half times as long as calyx, 3-4 seeded; seed 1·2 mm., globular, tubercles distant, brown, radicle obvious.

Mid May—late June. (Berry Head, Devon.)
A. flower. B. pod and calyx. C. seed, lateral and ventral views.

MEDICAGO L. Herbaceous plants with ternate leaves and flowers in short, dense racemes. Calyx five-toothed; stamens diadelphous, upper stamen free; pod many-seeded, curved or spirally twisted, indehiscent.

464. MEDICAGO FALCATA L. The YELLOW SICKLE MEDICK is a much-branched, erect or decumbent, rather diffuse perennial, 9-15 in. (23-38 cm.) tall, which is found abundantly on sandy heaths in E. Anglia and rarely in a few places in S. England. Leaflets 10-12 mm. long, cuneate, toothed at apex. Flowers 8 mm. long, 9-20, in short racemes; corolla deep yellow. Pods sickle-shaped, not forming a spiral, unarmed; seed 2·4 × 1·2 mm., elliptical, smooth, yellow, radicle prominent.

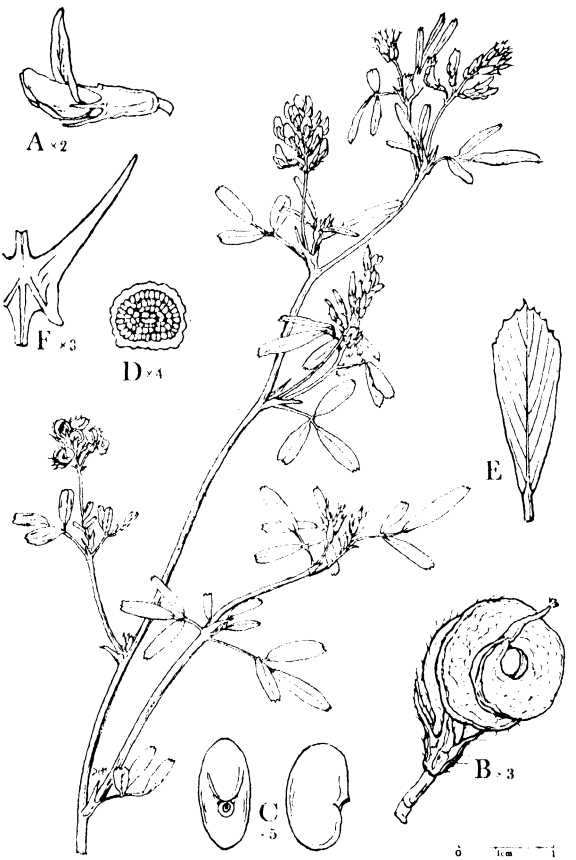
Mid June—mid Aug. (Thetford, Norfolk.)
A. flower. B. calyx. C. pod. D. stem t.s. E. leaflet, F. seed, lateral and ventral views.



465. MEDICAGO VARIA Martyn. (*M. sylvestris* Fr.). This HYBRID LUCERNE is a much-branched, straggling perennial 9-20 in. (18-50 cm.) tall, which is found in E. Anglia in the same districts as its parents (*M. sativa* and *M. falcata*) and S. England. Stem square, with large pith; leaflets 8-12 mm. long, cuneate, toothed at apex. Flowers 8 mm. long, 9-20, in a short raceme; calyx tube shorter than pedicel; corolla pale yellow, greenish or dingy purple. Pods 15 mm. diam., with at least one complete turn, unarmed; seed 2·5 × 1·2 mm., elliptical, smooth, yellow, radicle prominent.

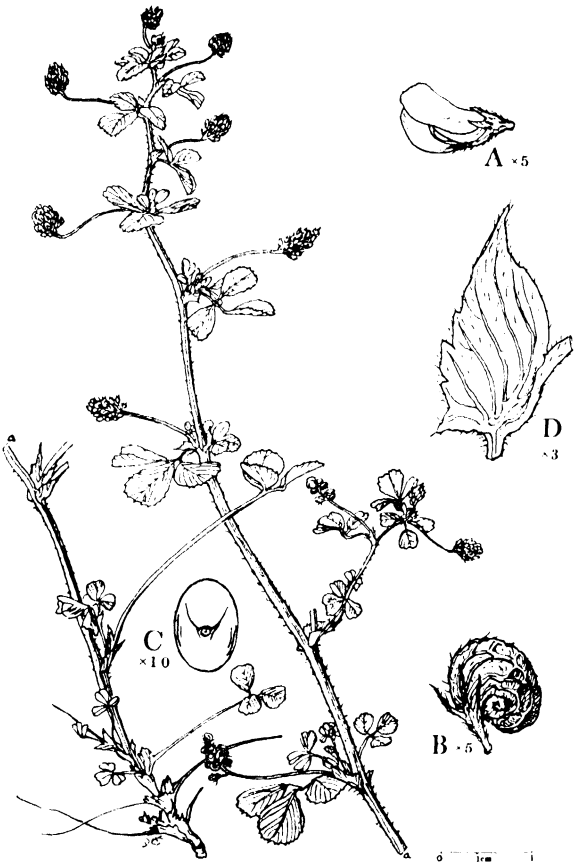
Mid June—early Aug. (Thetford, Norfolk.)

A. flower. B. calyx. C. pod. D. stem t.s. E. leaflet F. seed, ventral and lateral views.



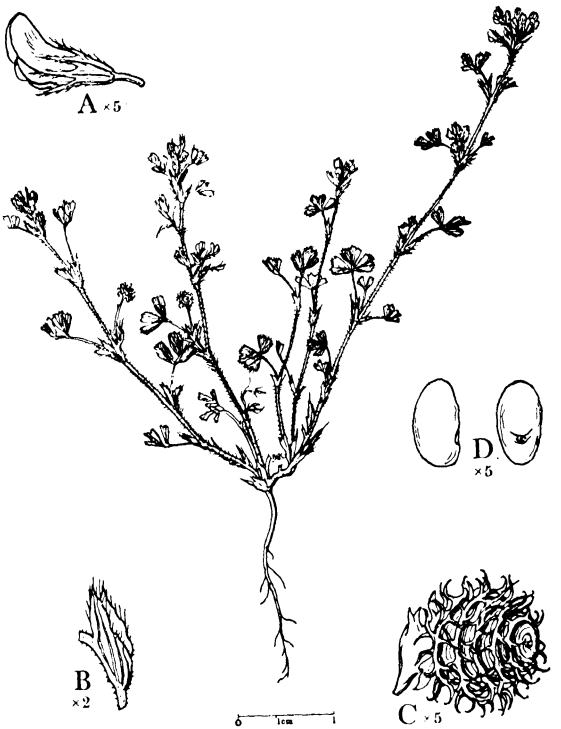
466. MEDICAGO SATIVA L. The LUCERNE or ALFALFA is a much-branched, erect, straggling, glabrous perennial 9-30 in. (18-75 cm.) tall, which is a much cultivated plant and is found in hedges, on railway banks and similar grassy places as a relic of cultivation throughout the British Isles. Stem solid. Leaflets up to 30 mm. long, truncate and toothed. Flowers 8 mm. long, 9-20, in a short raceme; calyx-tube longer than pedicel, teeth acuminate; corolla purple. Pods 15 mm. diam., with more than one turn, unarmed; seed 3·0 × 1·5 mm., elliptical, smooth, yellow, radicle prominent.

Mid June—early Aug. (Hampton in Arden, Warwickshire.)
A. flower. B. pod. C. seed, ventral and lateral views. D. stem t.s. E. leaflet. F. stipule.



467. MEDICAGO LUPULINA L. The BLACK MEDICK or TREFOIL is an erect or straggling, glabrous annual or biennial 3-15 in. (8-38 cm.) high, which is very common in grassy places throughout the British Isles. Leaflets 10-25 mm. long, ovate, apiculate, serrate at apex, green or rarely spotted; stipules lanceolate, acuminate, dentate, hairy. Racemes 10-30 flowered; flowers 3 mm. long; calyx hairy with 5 subequal, acute teeth; corolla yellow. Pod 2 mm. diam., reticulate, discoid or reniform, with only one turn, spineless; seed 2·5 × 1·5 mm., ovoid, smooth, yellow, radicle obvious.

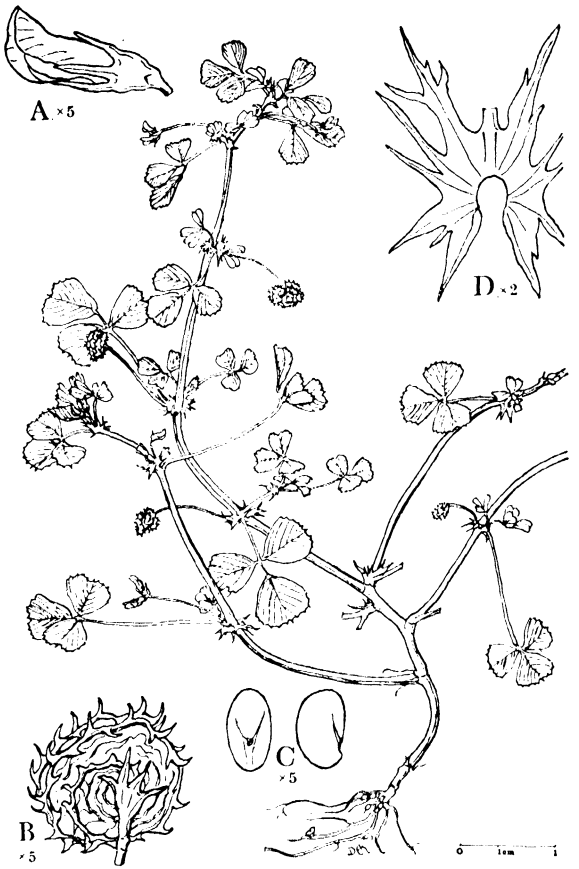
Mid May—mid Sept. (Rocester, Staffordshire.)
A. flower. B. pod. C. seed, ventral view. D. stipule.



468. MEDICAGO MINIMA (L.) Bartal. The LESSER BURR MEDICK is a small, erect or procumbent, pubescent plant 1-4 in. (3-10 cm.) high, found rarely on sandy heaths and in fields in S.E. England. Leaflets 3-4 mm. long., narrowly obovate, apiculate, denticulate; stipules lanceolate, acute, entire. Racemes 3-10 flowered; flowers 3 mm. long; calyx with 5 long, acuminate teeth; corolla bright yellow. Pod 4-5 mm. diam., subglobose in a spiral of 4 turns; keel with a double row of hooked spines; seed 2·3 × 1·0 mm. long, ovoid, smooth, yellow, radicle obvious.

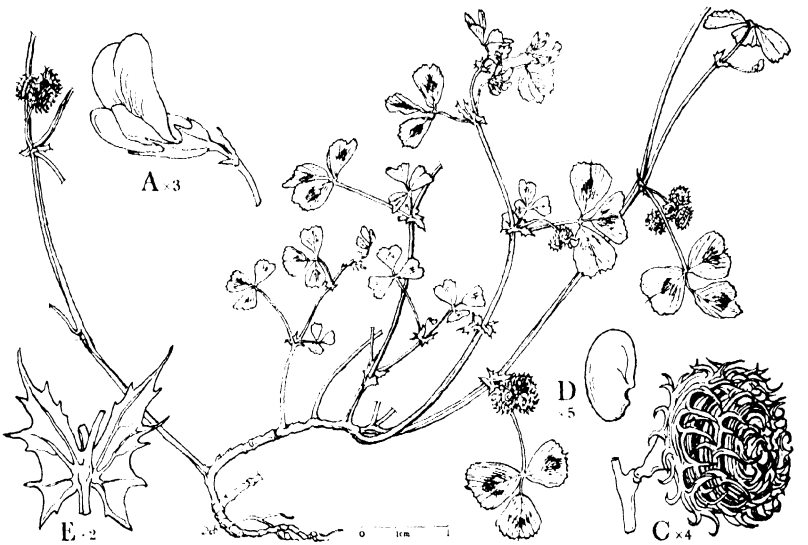
Mid May—early July. (Romney, Kent.)

A. flower. B. stipule. C. pod. D. seed, lateral and ventral views.



469. MEDICAGO POLYMORPHA L. (*M. denticulata* Willd.). The TOOTHED BURR MEDICK is a decumbent or straggling, almost glabrous plant 3-9 in. (8-23 cm.) high, growing in sandy and gravelly places in S. and E. England, especially near the sea. Leaflets 20-25 mm. long, obovate or obcordate, apiculate, dentate, uniformly green; stipules with long, acute teeth. Racemes 2-6 flowered; flowers 4·5 mm. long; calyx with 5 subequal, acute teeth; corolla bright yellow. Pod 4-6 mm. diam., discoid, strongly reticulate, with a spiral of 2-4 turns; keel with a double row of hooked bristles; seed 2·3 × 1·0 mm., ovoid, smooth, yellow, radicle prominent.

Mid May—late July. (Hengistbury Head, Hampshire.)
A. flower. B. pod. C. seed, ventral and lateral views. D. stipule.



470. MEDICAGO ARABICA (L.) Huds. (*M. maculata* Sibth). The SPOTTED BURR MEDICK is a decumbent or straggling, glabrous plant 6-20 in. (15-50 cm.) high, growing, though uncommonly, in grassland on light soils especially near the sea in England and Ireland. Leaflets 20-25 mm. long, obovate to obcordate, apiculate, dentate at apex, with central dark region; stipules half cordate, acute, toothed. Racemes 1-8 flowered; flowers 4 mm. long; calyx with 5 unequal acute teeth; corolla bright yellow. Pod 4-6 mm. diam., subglobose, faintly reticulate, with a spiral of 3-5 turns; keel with a double row of curved bristles; seed 2·0 × 0·5 mm., ovoid, yellow, smooth, radicle obvious.

Early May—mid Sept. (New Romney, Kent.)
A. flower. B. stipule. C. pod. D. seed, lateral view.

MELILOTUS L. Herbaceous plants with ternate leaves and flowers in elongated racemes. Stamens diadelphous, one free. Pod thick, small, ovoid, indehiscent, 1-3 seeded.

471. MELILOTUS ALTISSIMA Thuill. This COMMON TALL MELILOT is an erect, much-branched, stout, glabrous, scented biennial 8-48 in. (20-120 cm.) high. It is a very frequent plant in fields and waste places, mostly in England. Leaflets about 25 mm. long, stalked, lanceolate, toothed. Flowers 5 mm. long; calyx with 5 equal, acute teeth; corolla yellow, standard, wings and keel all of equal length. Pod 5-6 mm. long, pubescent, honeycombed, acute, black when ripe; seed 3 × 2 mm., reniform, smooth, yellow; radicle prominent.

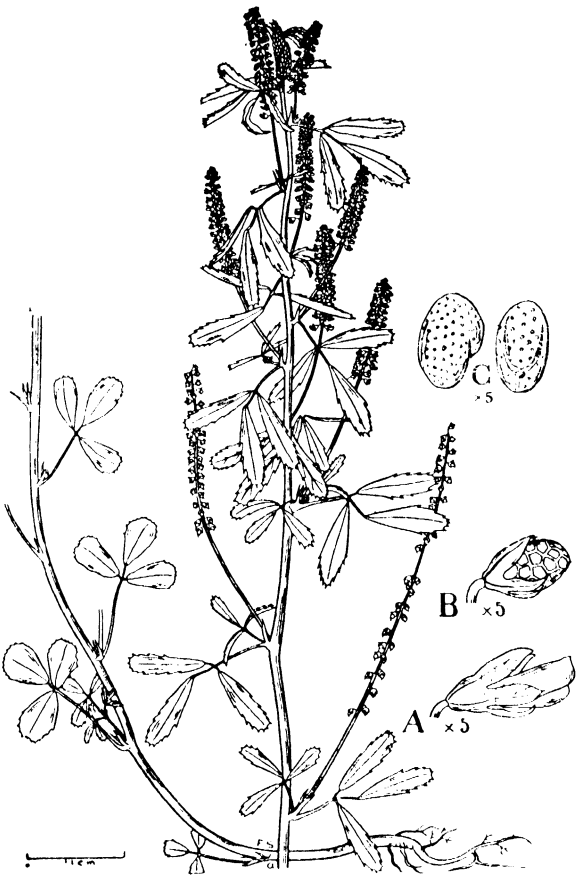
Early July—mid Sept. (Hockliffe, Bedfordshire.)
A. flower. B. pod. C. seed, lateral and ventral views.

472. MELILOTUS OFFICINALIS (L.) Lam. (*M. arvensis* Wallr.). This COMMON FIELD MELILOT is a much-branched, stout, glabrous, scented biennial with erect stems 12-36 in. (30-90 cm.) high. It is a rather common plant in fields and waste places in S. England. Leaflets 15-20 mm., stalked, lanceolate, toothed. Flowers 9 mm. long; calyx with 5 equal, acute teeth; corolla yellow, standard and wings equal, keel shorter. Pod 5-6 mm., glabrous, transversely wrinkled, acute, brown when ripe; seed 4 × 2 mm., reniform, smooth, yellow; radicle prominent.

Early July—mid Sept. (Bedford.)
A. flower. B. pod. C. seed.

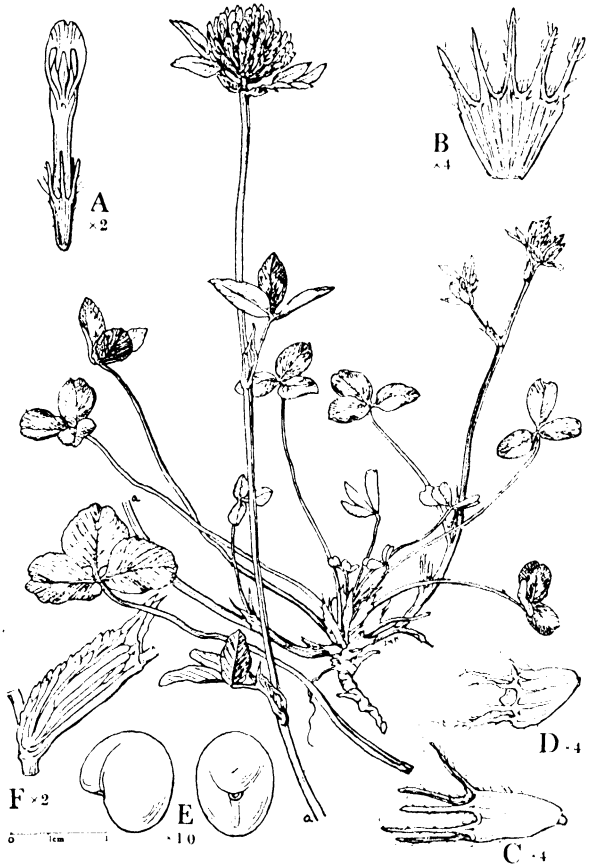
473. MELILOTUS ALBA Medic. The WHITE MELILOT is an erect, branched, rather slender, glabrous, scented biennial 12-36 in. (30-90 cm.) high. It occurs rather uncommonly in fields and waste places, particularly in S. England and Wales. Leaflets 6-20 mm. long, stalked, broadly to narrowly lanceolate, toothed. Flowers 8-10 mm. long; calyx with 5 subequal, acute, short teeth; corolla white, wings and keel subequal and shorter than standard. Pod 7-9 mm. long, glabrous, transversely wrinkled, acute, brown when ripe; seed 2·5 × 2·0 mm., reniform, smooth, yellow; radicle prominent.

Early July—late Sept. (Kempston, Bedfordshire.)
A. flower. B. pod. C. seed, lateral and ventral views.



474. MELILOTUS INDICA (L.) All. The SMALL MELILOT is an erect, branched, stout, glabrous, scentless annual 6-12 in. (15-30 cm.) high. It is an introduced plant, rather rare in waste places and fields, particularly in England. Leaflets 18-20 mm. long, stalked, broadly lanceolate, toothed. Flowers 2 mm. long; calyx with 5 subequal, lanceolate, teeth; corolla pale yellow, wings and keel subequal and shorter than standard. Pod 2-3 mm., glabrous, honeycombed, obtusely rounded, olive when ripe; seed 2·5 × 1·6 mm., ellipsoid, finely tubercled, chestnut; radicle obvious.

Late June—mid Sept. (Cheshunt, Hertfordshire.)
A. flower. B. pod. C. seed, lateral and ventral views.



TRIFOLIUM L. Small annual or perennial plants with leaves of three leaflets, and flowers in heads; stamens diadelphous; petals combined at base; pod mostly within the calyx tube, 1-4 seeded.

475. TRIFOLIUM PRATENSE L. The RED CLOVER is an erect or decumbent, somewhat hairy, branched perennial 6-18 in. (15-45 cm.) high. It is common everywhere in fields, roadsides and pastures throughout the British Isles. Leaflets obovate; stipules acuminate, rectangular, denticulate. Heads ovoid, dense, many-flowered; flowers 12-15 mm. long; calyx hairy, ten-veined, teeth bristle-like, ciliate; corolla pink or red, more than double the length of calyx. Pod one-seeded; seed 1·2 mm., almost spherical, smooth, yellow-brown; hilum 0·4 mm., conspicuous.

Early May—mid Sept. (Bethersden, Kent.)
A. flower. B. calyx opened. C. calyx. D. pod in calyx.
E. seed, lateral and ventral views. F. stipule.

476. TRIFOLIUM OCHROLEUCON Huds. The SULPHUR CLOVER is an erect or straggling, somewhat pubescent perennial with almost simple flowering stems 6-18 in. (15-45 cm.) high. It is a locally common plant on hedge banks and grassland on the basic soils of E. England. Hairs on stem spreading. Leaves on long stalks; leaflets lanceolate, emarginate, ciliate, but glabrous; stipules lanceolate, mucronate, ciliate, entire. Heads ovoid, dense, many-flowered; flowers 15 mm. long; calyx pubescent, ten-veined, teeth narrow, lowest longer than the others, acuminate, hairy; corolla pale yellow, double the length of calyx. Pods one-seeded, shorter than calyx tube; seed 2·0 × 1·5 mm., smooth, brown; hilum 0·5 mm.

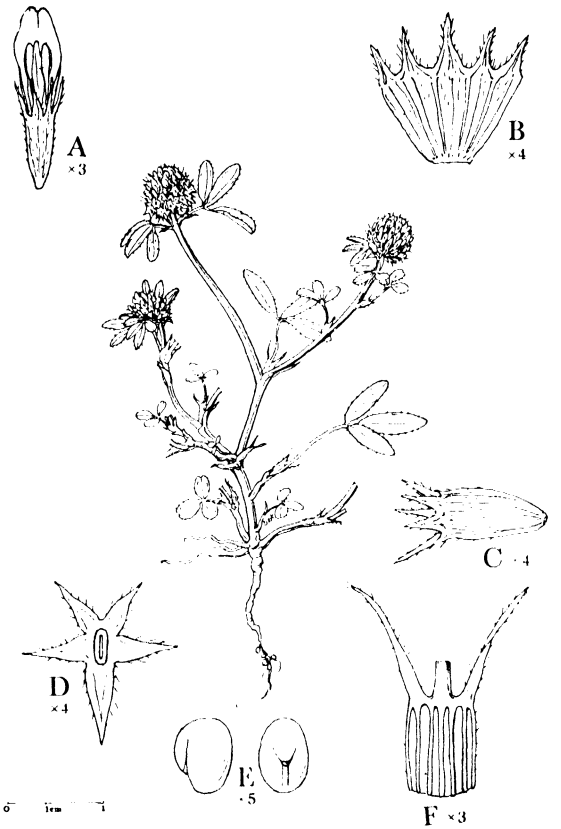
Mid June—mid July. (Hitcham, Suffolk.)

A. flower. B. calyx, side view. C. calyx, apical view. D. pod and calyx l.s. E. seed, lateral and ventral views. F. stipule.

477. TRIFOLIUM MEDIUM L. The ZIGZAG CLOVER is an erect or straggling, almost glabrous perennial with zigzag, almost simple stems 6-18 in. (15-45 cm.) high. It is a widely distributed plant, found in dry pastures and hedgerows throughout lowland Britain. Leaflets stalked, but upper almost sessile, ovate, denticulate; stipules linear, acute, ciliate, entire. Heads sub-globose, many-flowered; flowers 15 mm. long; calyx glabrous, ten-veined, teeth bristle-like, ciliate; corolla purple-red, more than double the length of calyx. Pod one-seeded, little longer than calyx tube; seed 1·5 mm., smooth, yellow-brown; hilum 0·7 mm.

Mid May—early Sept. (Charing, Kent.)

A. flower. B. calyx, apical view. C. calyx with pod, side view. D. seed, lateral and ventral veiws. E. stipule.



478. TRIFOLIUM SQUAMOSUM L. (T. maritimum Huds.) The TEASLE-HEADED CLOVER is an erect, somewhat branched and pubescent annual 4-10 in. (10-25 cm.) high. It is a rare plant of salt marshes and sandy places on the south and east coasts of England. Leaves shortly stalked; leaflets lanceolate and obtuse, ciliate but glabrous; stipules quadrate with a long, acute, sparsely hairy tip. Heads ovoid to conical, dense, many-flowered; flowers 6-10 mm. long; calyx hairy, ten-veined, teeth narrow, triangular, one longer than the others, spreading and rigid in fruit; corolla pink, double the length of calyx. Pod one-seeded, shorter than calyx tube; seed 5 mm., ovoid, smooth, brown; hilum 0·5 mm., conspicuous.

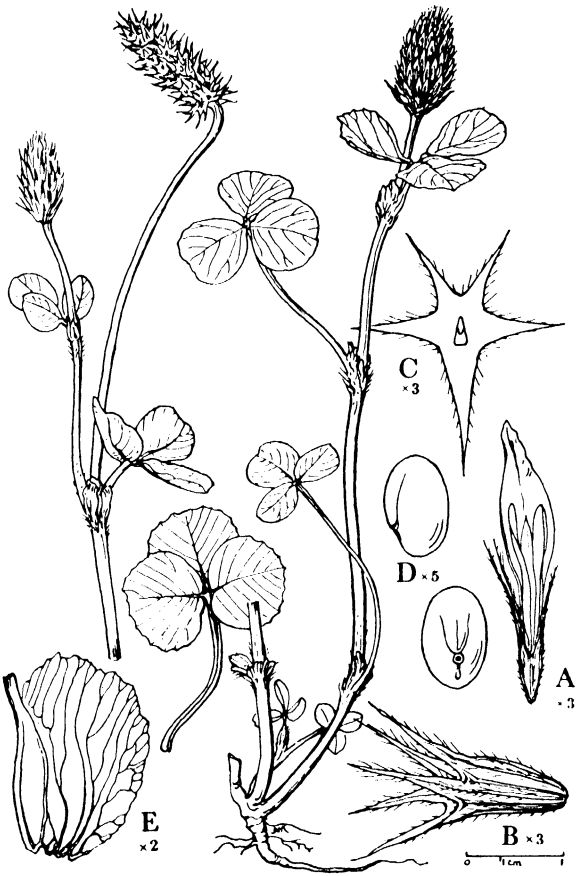
Mid May—late June. (Burnham-on-Sea, Somerset.)

A. flower. B. opened calyx. C. calyx, side view. D. calyx, front view. E. seed, lateral and ventral views. F. stipule.

479. TRIFOLIUM STELLATUM L. The STARRY CLOVER is a small, erect, hairy annual 4-12 in. (10-30 cm.) high, which has grown for many years on sandy soil near the sea in one place in Sussex. Hairs on stem spreading; leaves stalked; leaflets obcordate, entire, hairy; stipules orbicular, toothed, ciliate. Heads oval, loose, 8-20 flowered; flowers 15-20 mm. long; calyx densely hairy, ten-veined, the teeth equal, long-acuminate, spreading like a star in fruit; corolla pink, equalling calyx. Pod one-seeded, shorter than calyx tube; seed 2·5 × 2·0 mm., ovoid, smooth, brown; hilum 0·4 mm

Early—late June. (Hort. ex Shoreham, Sussex.)

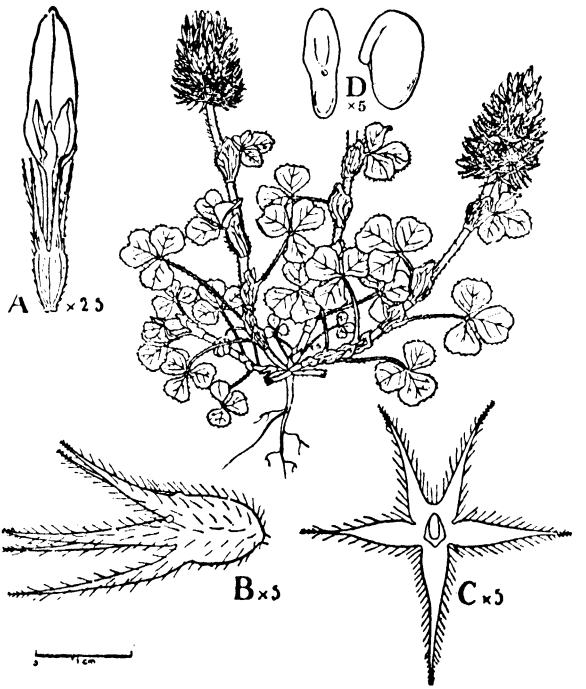
A. flower (side view). B. flower (front view). C. seed (lateral and ventral views). D. stipule.



480. TRIFOLIUM INCARNATUM L. The CRIMSON CLOVER is an erect, softly hairy annual with almost simple flowering stems 6-20 in. (15-50 cm.) high. It is usually a relic of cultivation, found on field borders and in waste places, mostly in England. Hairs on stem patent; leaves stalked but upper almost sessile; leaflets ovate orbicular, crenate, sparsely hairy; stipules orbicular, glabrous, net-veined. Heads oval to cylindrical, dense, many-flowered; flowers 12 × 5 mm.; calyx hairy, ten-veined, teeth narrow, acuminate, hairy, patent in fruit; corolla crimson, rather less than twice as long as calyx. Pods one-seeded, equalling calyx tube; seed 2·5 × 1·7 mm., ovoid, smooth, dark brown; hilum 0·5 mm.

Mid May—late July. (St. Ives, Cornwall.)

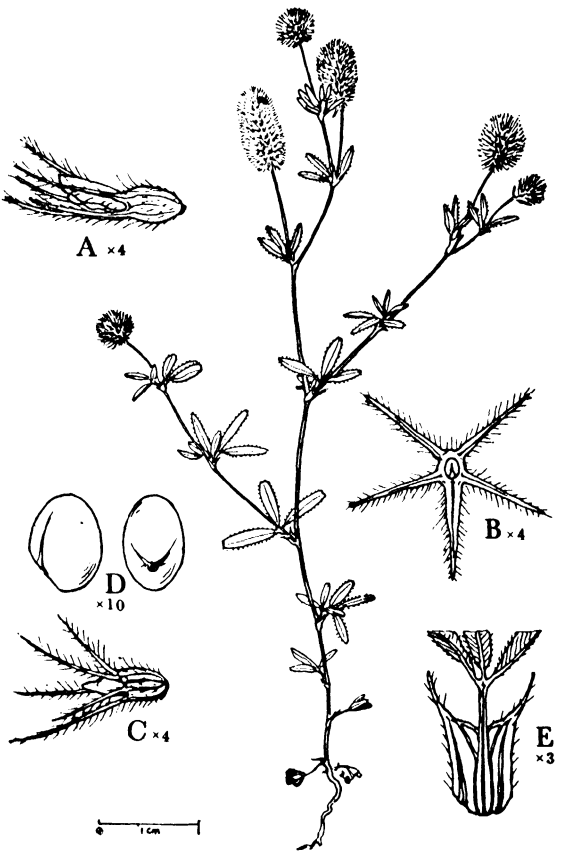
A. flower. B. calyx (side view). C. calyx (anterior view). D. seed (lateral and ventral views). E. stipule.



481. TRIFOLIUM MOLINERII Balb. This LONG-HEADED CLOVER is an erect, softly hairy annual with almost simple flowering stems 4-9 in. (10-23 cm.) high. It is found only on the Lizard Peninsular, Cornwall. Hairs on stem adpressed; lower leaves stalked, upper sessile; leaflets obcordate, serrate; stipules orbicular, glabrous. Heads elongate-conical, dense, many-flowered; flowers 12-16 mm. long; calyx hairy, ten-veined, teeth narrow, acuminate, patent in fruit, hairy; corolla white or pink, twice as long as calyx. Pod one-seeded; seed 2·5 × 1·7 mm., ovoid, smooth, dark brown; hilum 0·6 mm.

Early—late June. (Cadgewith, Cornwall.)

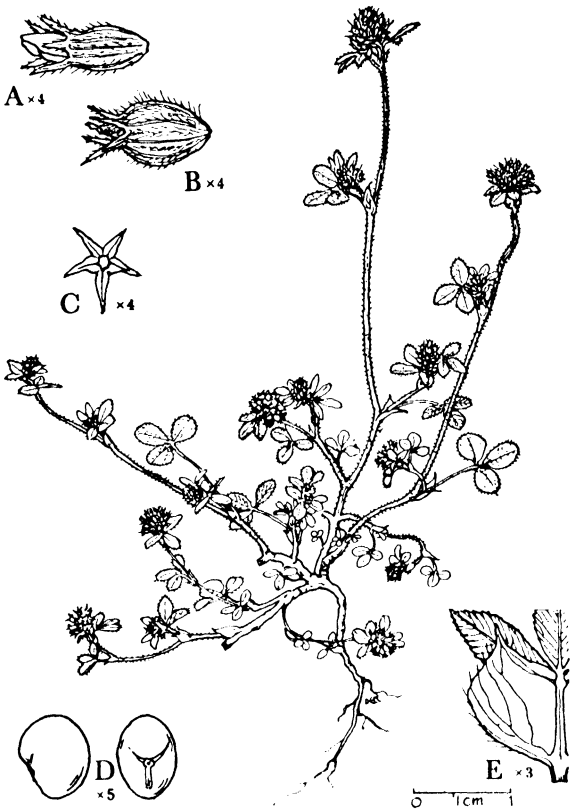
A. flower. B. calyx (side view). C. calyx (anterior view). D. seed (ventral and lateral views).



482. TRIFOLIUM ARVENSE L. The HARE'S FOOT CLOVER is a slender, erect or diffuse, branched, hairy annual 3-9 in. (8-23 cm.) high, which is found commonly in dry, sandy places in lowland Britain. Stems with soft, spreading hairs. Leaves softly hairy; leaflets lanceolate, obtuse, entire, ciliate; stipules quadrate with an acuminate point, ± hairy. Heads cylindrical, dense, many-flowered; flowers 6-7 mm. long; calyx very hairy, ten-veined, teeth long, setaceous, patent in fruit; corolla pink, two-thirds length of calyx. Pod one-seeded, exceeding calyx-tube; seed 1·2 × 0·8 mm., oval, smooth, greenish; hilum minute.

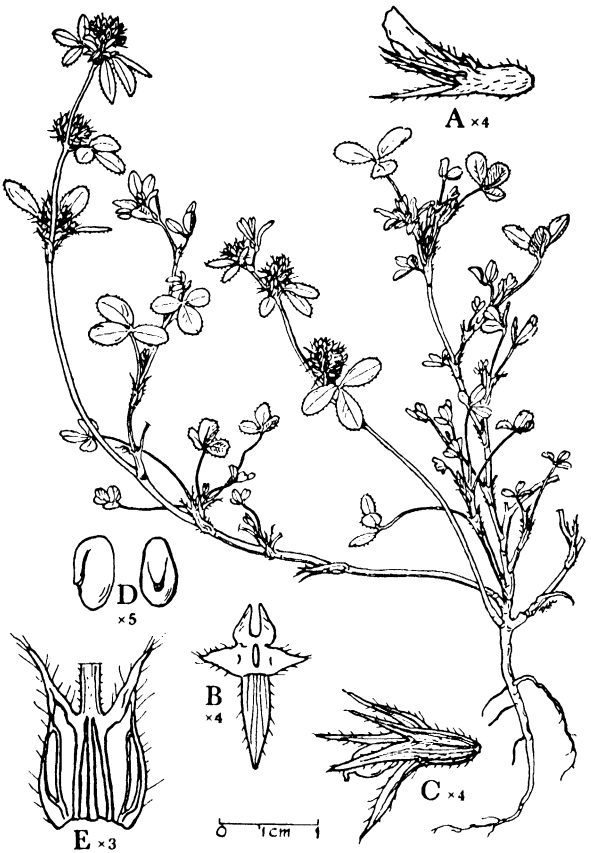
Mid June—late Aug. (nr. Kinver, Worcestershire.)

A. flower. B. calyx (anterior view). C. calyx and pod. D. seed (lateral and ventral views). E. stipule.



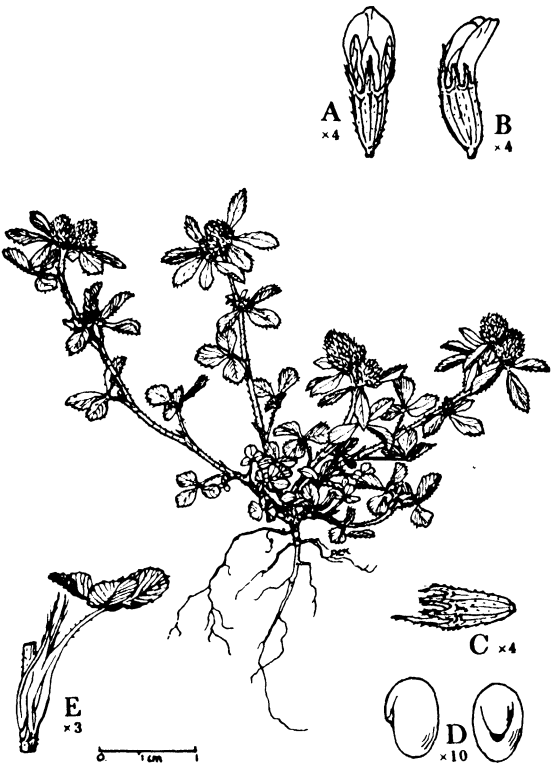
483. TRIFOLIUM STRIATUM L. The SOFT KOTTED CLOVER is a rather slender, procumbent or prostrate, softly hairy annual with many nearly simple stems 2-10 in. (5-25 cm.) long. It is locally common in dry, grassy and sandy places throughout lowland Britain. Stem with soft, spreading hairs. Leaves stalked, upper sessile; leaflets ovate, obtuse, hairy, entire; stipules semi-orbicular, with an acute point, netted, ciliate. Heads globose, not many-flowered; flowers 3-4 mm. long; calyx swollen in fruit, downy, teeth short, acuminate, erect in fruit; corolla pink, equalling calyx. Pod one-seeded, shorter than calyx tube; seed 2·0 × 1·5 mm., oval, smooth, yellow-brown; hilum 0·5 mm.

Mid May—late June. (Thrumpton Ferry, Derbyshire.)
A. flower. B. calyx and pod. C. calyx (anterior view). D. seed (lateral and ventral views). E. stipule.



484. TRIFOLIUM SCABRUM L. This ROUGH CLOVER is a rather stout, decumbent or prostrate, ± pubescent annual with many branched stems 2-12 in. (5-30 cm.) long. It is an uncommon plant found most frequently in sandy grassland near the sea here and there throughout lowland Britain. Leaves stalked, uppermost sessile; leaflets ovate, obtuse, entire, sub-glabrous; stipules half-ovate with an acuminate tip, ciliate. Heads spherical, not many-flowered, sessile in the leaf axils; flowers 3-4 mm. long; calyx with few hairs, ten-veined, the teeth acuminate, unequal, rigid and spreading in fruit; corolla white, equalling calyx. Pod one-seeded, exceeding calyx tube; seed 2 × 1 mm., elongated, brown; hilum minute.

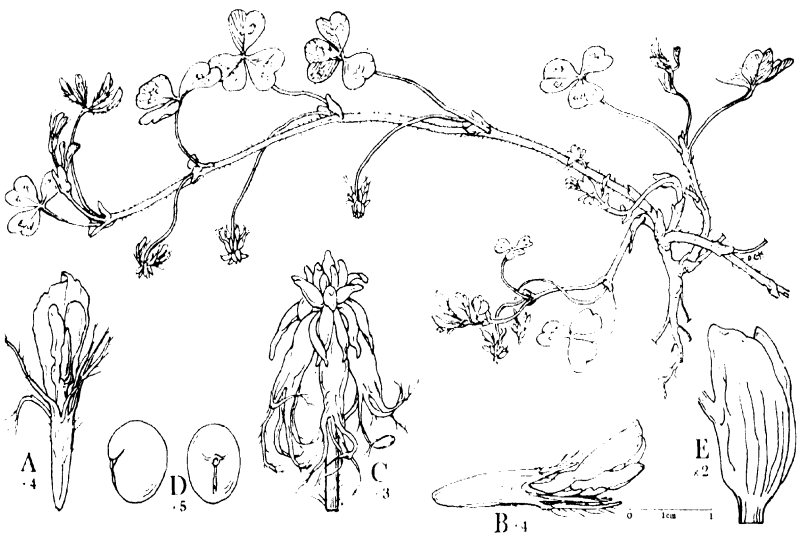
Late May—early July. (Perranporth, Cornwall.)
A. flower. B. calyx (front view). C. calyx and pod. D. seed (lateral and ventral views). E. stipule.



485. TRIFOLIUM BOCCONEI Savi. This BOCCONE'S CLOVER is a rather slender, decumbent or erect, somewhat pubescent annual, with a few little-branched flowering stems 2-6 in. (5-15 cm.) high. It grows in grassland only in the Lizard Peninsular, Cornwall. Leaves shortly stalked; leaflets ovate-oblong, subacute, serrate, hairy; stipules lanceolate, acuminate, entire. Heads conical, many-flowered, sessile and usually in terminal pairs; flowers 3-4 mm. long; calyx with few hairs, ten-veined, the teeth acute and one longer than the others, unaltered in fruit; corolla pink, nearly twice as long as calyx. Pod one-seeded; seed 1·0 × 0·7 mm., ovoid, smooth, yellow; hilum minute.

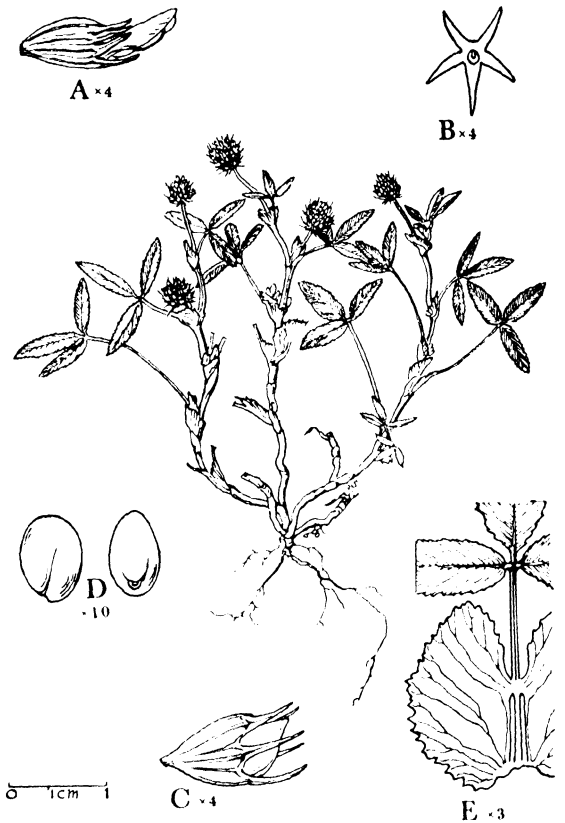
Mid June—mid July. (Lizard Peninsular, Cornwall.)

A. flower, front. B. side view. C. calyx. D. seed (lateral and ventral views). E. stipule.



486. TRIFOLIUM SUBTERRANEUM L. The SUBTERRANEAN CLOVER is a far-creeping, hairy, prostrate annual with branched, hairy stems 2-20 in. (5-50 cm.) long. It is locally common in dry, sandy places in England. Leaves obcordate, spotted, entire; stipules entire, glabrous. Heads 2-5 flowered; flowers 7-8 mm. long; calyx glabrous; teeth filiform, hairy; corolla pale yellow; pod one-seeded, bent downwards when ripe and covered with abortive calices, developed in the centre of the inflorescence; fruiting pedicels directed downwards; seed 2 mm., globose, smooth, black; hilum medium.

Mid May—late June. (Thrumpton, Nottingham.)
A. flower, ventral view. B. flower, side view. C. fruiting head. D. seed (lateral and ventral views). E. stipule.



487. TRIFOLIUM STRICTUM L. The SMALL CORNISH CLOVER is an erect, glabrous annual with a few almost simple flowering stems 2-6 in. (5-15 cm.) high. It is found only in grassy places in the Lizard Peninsular. Leaves long-stalked, narrowly lanceolate, acute, serrate, glabrous; stipules half-orbicular, glabrous, netted, toothed. Heads spherical, many-flowered, stalked, single, terminal and sublateral; flowers 4-5 mm. long; calyx glabrous, ten-veined, conical in fruit, teeth erect, linear; corolla white, a little less than twice as long as calyx. Pod one-seeded, exceeding the calyx tube; seed 1 × 0·8 mm., ovoid, smooth, yellow-brown; hilum minute.

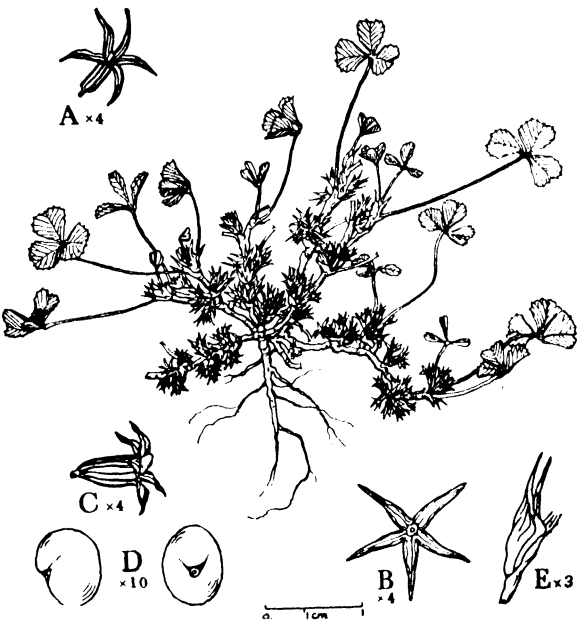
Early—late June. (Lizard Peninsular, Cornwall.)

A. flower. B. calyx (front view). C. calyx and pod. D. seed. (lateral and ventral views). E. stipule.

488. TRIFOLIUM GLOMERATUM L. The CLUSTERED CLOVER is a slender, prostrate, almost glabrous annual with several little-branched flowering stems 2-6 in. (5-15 cm.) long. It is a rare plant of gravelly places in S. England and E. Ireland. Leaves stalked; leaflets obovate, serrate, glabrous; stipules triangular, mucronate, glabrous; entire. Heads spherical, sessile, not many-flowered; flowers 4-5 mm. long; calyx glabrous, ten-veined, conical in fruit; teeth short, triangular, reflexed in fruit; corolla pink, twice as long as calyx. Pod two-seeded, shorter than calyx tube; seed 1·0 × 1·5 mm., almost spherical, smooth, yellow-brown; hilum 0·4 mm.

Early—late June. (Green Street Green, Kent.)

A. flower. B. calyx (anterior view). C. calyx with pod. D. seed (lateral and ventral views). E. stipule.



489. TRIFOLIUM SUFFOCATUM L. The SUFFOCATED CLOVER is a prostrate, glabrous annual with many simple flowering stems 1-6 in. (3-15 cm.) long, spreading from a central rosette. It is a rare plant of sandy and gravelly soils in southern England, especially near the sea. Leaves long-stalked; leaflets obovate, ± truncate, glabrous, toothed; stipules triangular, acuminate, entire, glabrous. Heads spherical, sessile, crowded, rather few-flowered; flowers 2-3 mm. long; calyx glabrous, ten-veined, cylindrical in fruit, teeth long, triangular, acute, recurved in fruit; corolla pink, shorter than calyx. Pod two-seeded, just exceeding calyx; seed 1·2-1·5 mm., almost spherical, smooth, yellow-brown; hilum minute.

Early—late June. (Sandwich, Kent.)

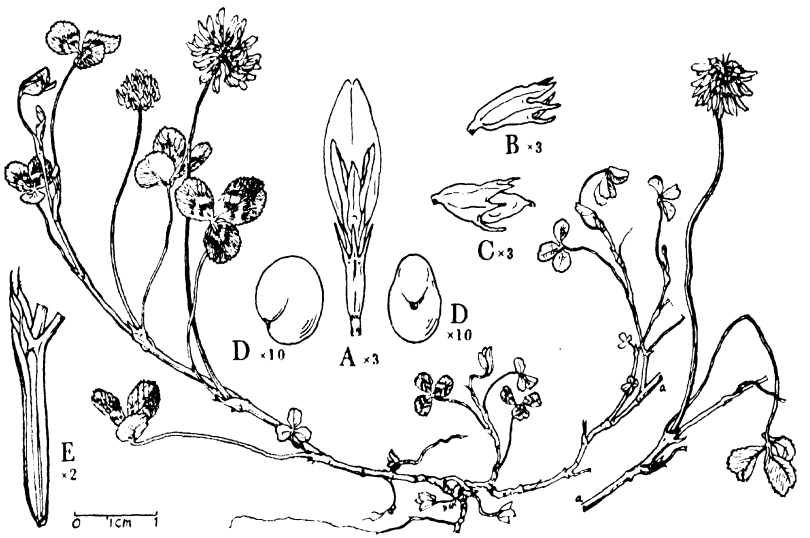
A. flower. B. calyx (anterior view). C. calyx with pod. D. seed (lateral and ventral views). E. stipule.

490. TRIFOLIUM HYBRIDUM L. The ALSIKE CLOVER is an erect or sometimes decumbent, glabrous perennial with several branched flowering stems 6-24 in. (15-60 cm.) high, which is frequently cultivated and found commonly on roadsides, field borders and in waste places in lowland Britain. Leaves stalked; leaflets roundly ovate, subobtuse, serrate, glabrous; stipules triangular, acute or acuminate, netted, glabrous. Heads globular, many-flowered, terminal on long stalks; flowers 8-10 mm. long, stalked, nodding in fruit; calyx glabrous, ten-veined, cylindrical in fruit, teeth erect, acuminate; corolla pink, nearly twice as long as calyx. Pod 2-4 seeded, twice as long as the calyx tube; seed 2·0-2·2 mm., roundly ovoid, smooth, brown; hilum minute.

Early June—mid Sept. (Kennet, Suffolk.)

A. flower. B. calyx. C. calyx and pod. D. seed (lateral and ventral views). E. stipule.

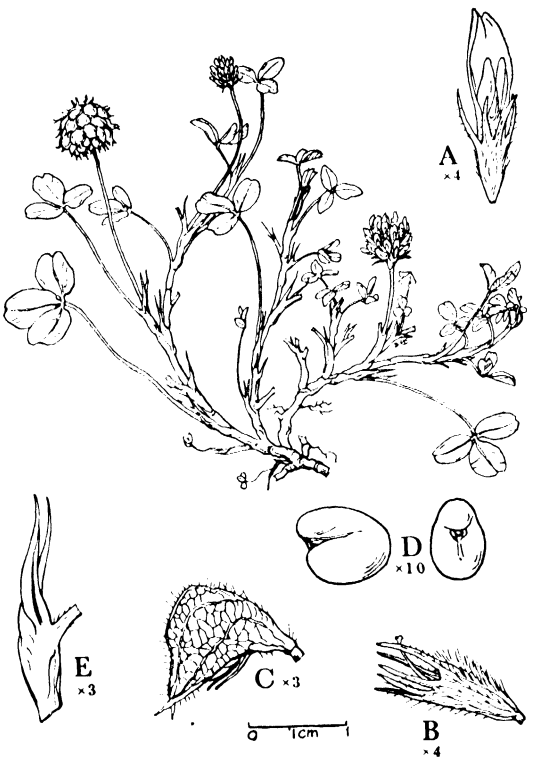
(*T. elegans* Savi is similar but has a hollow, decumbent stem and narrower stipules.)



491. TRIFOLIUM REPENS L. The WHITE CLOVER is a diffuse, glabrous perennial with flowers and leaves 6-9 in. (15-23 cm.) long, growing from a creeping and rooting main stem 9-12 in. (23-30 cm.) long. It is a common and widely distributed plant of meadows, waysides and waste ground throughout the British Isles. Leaves long-stalked; leaflets roundly ovate or obcordate, obtuse or emarginate; stipules oblong, acuminate, netted, glabrous. Heads globular, long-stalked, many-flowered; flowers 10 mm. long, stalked; calyx glabrous, five-veined, campanulate, teeth erect, triangular; corolla white, about thrice as long as calyx. Pod two-seeded, twice as long as calyx tube; seed 2·0-2·2 mm., roundly ovoid, smooth, yellow-brown; hilum minute.

Mid May—mid Sept. (Bethersden, Kent.)

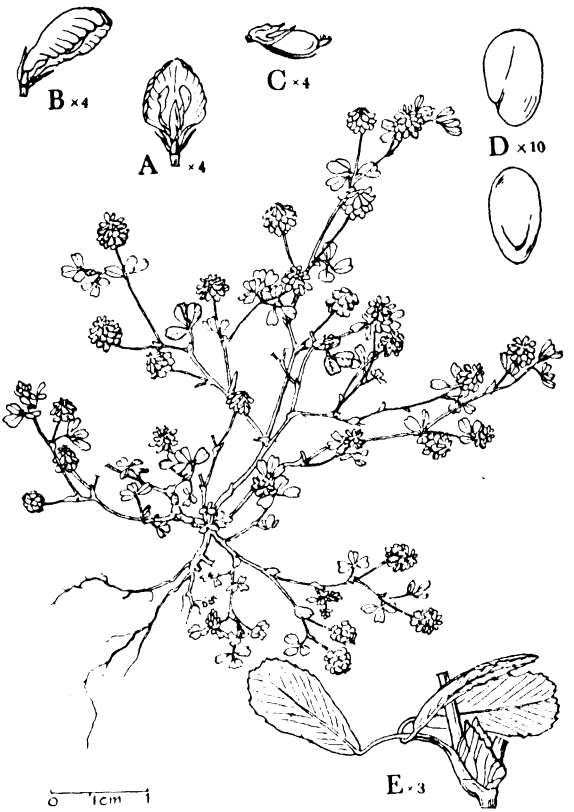
A. flower. B. calyx. C. calyx and pod. D. seed (lateral and ventral views). E. stipule.



492. TRIFOLIUM FRAGIFERUM L. The STRAWBERRY CLOVER is a diffuse, nearly glabrous perennial with flowers and leaves 4-8 in. (10-20 cm.) high, growing erect from a creeping stem 4-6 in. (10-15 cm.) long. It is a common plant of grassy places on clay soils throughout lowland Britain but rare elsewhere. Leaves stalked; leaflets obcordate, glabrous, entire; stipules linear-lanceolate, acute. Heads spherical, many-flowered, stalked, lateral; flowers 6-7 mm. long, sessile; calyx hairy, ten-veined, inflated in fruit, teeth erect, subulate; corolla pink, about twice as long as calyx. Pod one-seeded, hidden by inflated calyx; seed 1·0 × 0·7 mm., ovoid, sub-compressed, smooth, yellow-brown; hilum 1 mm.

Early July—mid Sept. (Rauceby, Lincolnshire.)
A. flower. B. calyx. C. calyx in fruit. D. seed (lateral and ventral views). E. stipule.

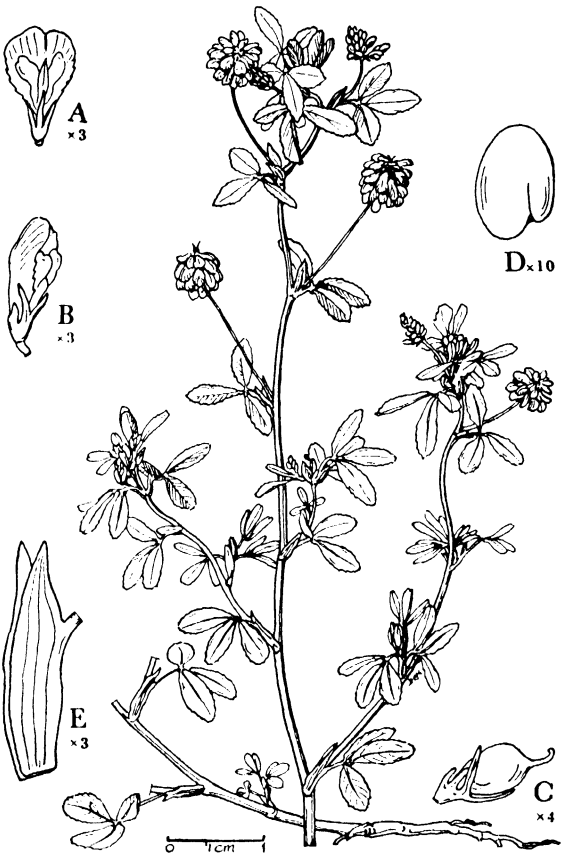
(*T. resupinatum* L. with calyx inflated in fruit and pink corolla with standard below the keel is a rare casual.)



493. TRIFOLIUM CAMPESTRE Schreb. The HOP TREFOIL is a rather stout, much-branched, glabrous, decumbent annual with stems 4-6 in. (10-15 cm.) long. It is a common plant in pastures and waysides throughout lowland Britain. Leaves on short stalks; stalk of terminal leaflet longer than lateral ones; leaflets obovate, truncate or emarginate, glabrous, toothed; stipules quadrangular, acute, toothed. Heads globular, 15 or more-flowered; flowers 3 mm. long; calyx glabrous, five-veined, teeth very unequal, linear; corolla yellow, standard dilated and covering pod. Pod 1-4 seeded, twice as long as calyx; seed 1·5 × 1·0 mm., ovoid, smooth, yellow; hilum minute.

Mid June—early Sept. (Ancaster, Lincolnshire.)

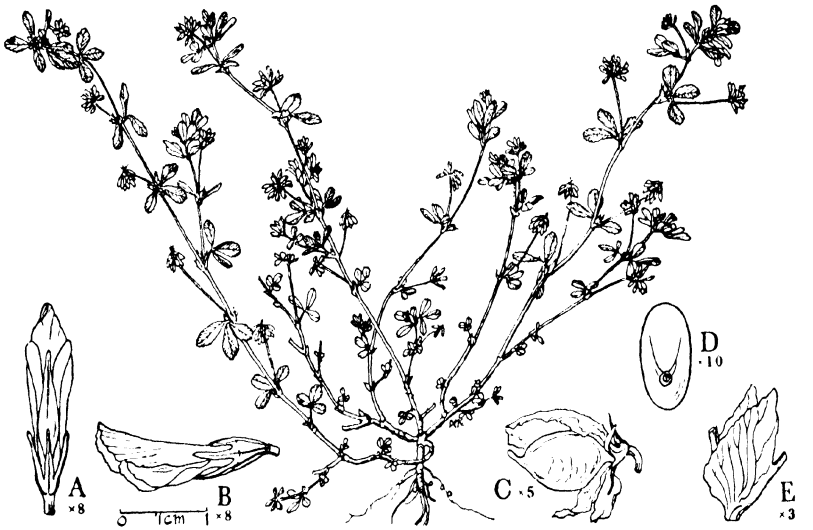
A. flower (front view). B. flower (side view). C. pod and calyx. D. seed (lateral and ventral views). E. stipule.



494. TRIFOLIUM AUREUM Poll. (*T. agrarium* auct.). This LARGE HOP TREFOIL is a stout, erect, nearly glabrous, branched annual 9-12 in. (23-30 cm.) high. It is sometimes cultivated and found naturalized in a few places, especially in Scotland. Leaves very shortly-stalked; all 3 leaflets with petioles equal, ovate-lanceolate, obtuse, glabrous, toothed; stipules lanceolate, acute, glabrous. Heads spherical to ovoid, 15 or more-flowered; flowers 3 mm. long; calyx glabrous, five-veined, teeth very unequal, linear; corolla yellow, standard dilated, covering pod. Pod one-seeded, twice as long as calyx tube; seed 2·0 × 1·8 mm., ovoid, smooth, yellow; hilum minute.

Mid June—early Aug. (St. Neots, Huntingdonshire.)

A. flower (front view), B. (side view). C. pod and calyx. D. seed. E. stipule.



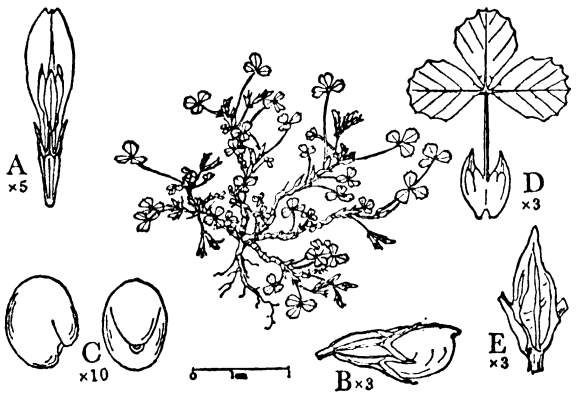
495. TRIFOLIUM DUBIUM Sibth. The LESSER YELLOW TREFOIL is a rather slender, much-branched, erect or decumbent, glabrous annual 4-8 in. (10-20 cm.) high. It is a very common plant in pastures and waysides throughout the British Isles. Leaves sessile or shortly stalked; petiole of terminal leaflet longer than the lateral ones; leaflets lanceolate, subobtuse, serrate, glabrous; stipules quadrangular, acute, toothed. Heads 10-20 flowered; pedicels medium about 20 mm. long, shorter than calyx tube; flowers 4 mm. long; calyx glabrous, teeth unequal, linear; corolla pale yellow, not striate, standard entire, folded over pod. Pod 1-4 seeded, much longer than calyx tube; seed 1·5 × 1·0 mm., ovoid, shining, yellow-brown; hilum minute.

Early June—mid Aug. (Snelston, Derbyshire.)

A. flower (front view), B. (side view). C. pod. D. seed (ventral view). E. stipule.

496. TRIFOLIUM MICRANTHUM Viv (*T. filiforme* L.). The SLENDER YELLOW TREFOIL is a slender, much-branched, decumbent, glabrous annual with stems 1-6 in. (3-15 cm.) long. It is an uncommon plant of dry, grassy places in England and Ireland. Leaves sessile or with short stalks; all 3 leaflets with equal petioles, obovate, truncate or obtuse, serrate at apex, glabrous; stipules broadly triangular, toothed. Heads 2-6 flowered; pedicels slender, exceeding calyx; flowers 3 mm.; calyx glabrous, tube five-veined, teeth unequal, linear; corolla pale yellow, not striate, standard notched, folded over pod. Pod 1-4 seeded, twice as long as calyx; seed 1·0 × 0·7 mm., ovoid, dull, brown; hilum 0·3 mm.

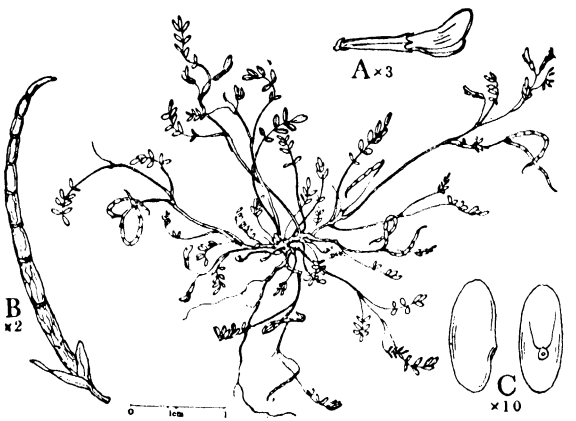
Mid June—early Aug. (Parlington, Warwickshire.)
A. flower. B. pod. C. seed (ventral and lateral views). D. stipule.



TRIGONELLA L. Herbs with ternate leaves and flowers in few-flowered heads. Stamens diadelphous, 1 free. Pod subcylindrical, dehiscent, exceeding calyx, few-seeded.

497. TRIGONELLA (TRIFOLIUM) ORNITHOPODIOIDES (L) DC. The BIRD'S FOOT FENUGREEK is a dwarf, prostrate, tufted perennial with many stems 1-5 in. (3-12 cm.) long. It is found, rather rarely, in sandy and gravelly places near the sea in England, S. Scotland and S.E Ireland. Leaflets obovate; stipules lanceolate, acuminate, glabrous, entire. Flower 5-6 mm. long., in pairs; calyx ten-veined, teeth equal; corolla cream, thrice as long as calyx. Pod 6 mm. long; seed 1·0 × 0·9 mm., ovoid, smooth, yellow; hilum minute.

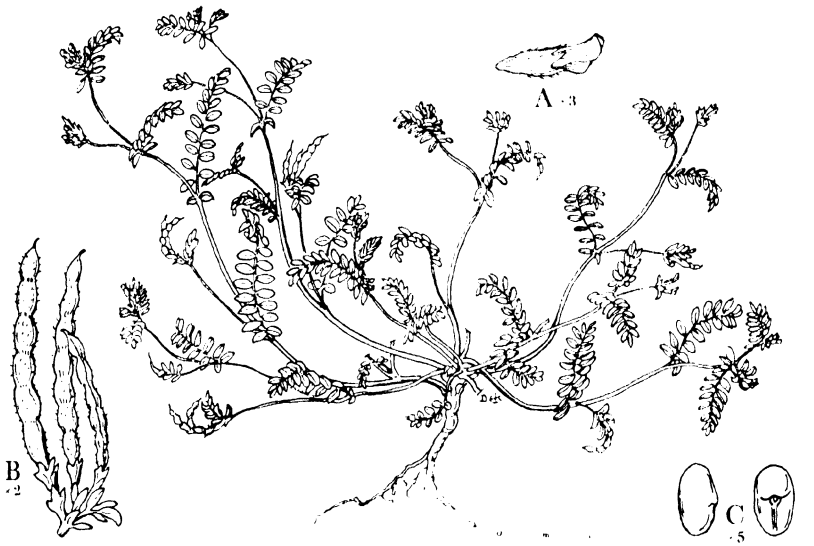
Mid June—mid July. (Lizard Peninsular, Cornwall.)
A. flower. B. pod. C. seed (lateral and ventral views). D. leaf. E. stipule.



ORNITHOPUS L. Herbs with pinnate leaves and flowers in few-flowered heads. Stamens diadelphous, 1 free. Pod cylindrical, splitting transversely into about 8 single-seeded fragments.

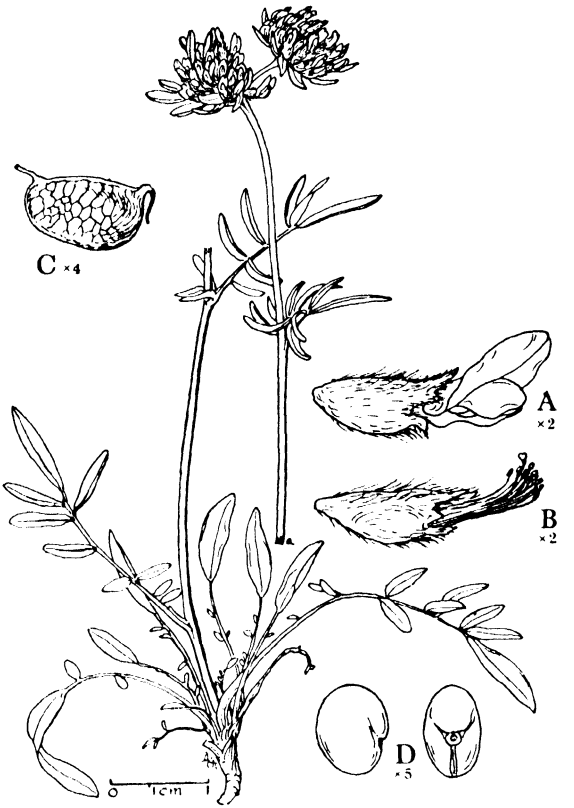
498. ORNITHOPUS PINNATUS (Mill.) Druce. The SLENDER BIRD'S FOOT is a dwarf, slender, glabrous, ± prostrate plant with stems 1-6 in. (2-15 cm.) long. It is found only in sandy places in the Scilly Isles. Leaflets 5-11, small, ovate; stipules leaf-like. Flowers 5-6 mm. long, in pairs; bracts absent; calyx tubular, teeth short; corolla pink. Pod 18-20 mm. long, slender, curved, fragments linear; seed 3 × 1 mm., sub-cylindrical, smooth, yellow; hilum minute.

Early May—early June. (Tresco, Scilly Isles.)
A. flower. B. pod. C. seed (ventral and lateral views).



499. ORNITHOPUS PERPUSILLUS L. The COMMON BIRD'S FOOT is a small, pubescent, prostrate or decumbent annual with leafy flowering stems 2-9 in. (5-23 cm.) long, growing from a central rootstock. It is a rather common plant in sandy and gravelly places throughout lowland Britain. Leaflets 11-21, small, ovate, entire. Flowers 4-5 mm. long, 2-5 together, with bracts below; calyx tubular, teeth short; corolla cream and pink. Pod 15-20 mm., stout, curved, hairy, fragments ovoid; seed 2 × 1 mm., ovoid, smooth, yellow; hilum 1 mm.

Mid May—mid Sept. (Hartlebury Common, Worcestershire.)
A. flower. B. pods. C. seed (lateral and ventral views).

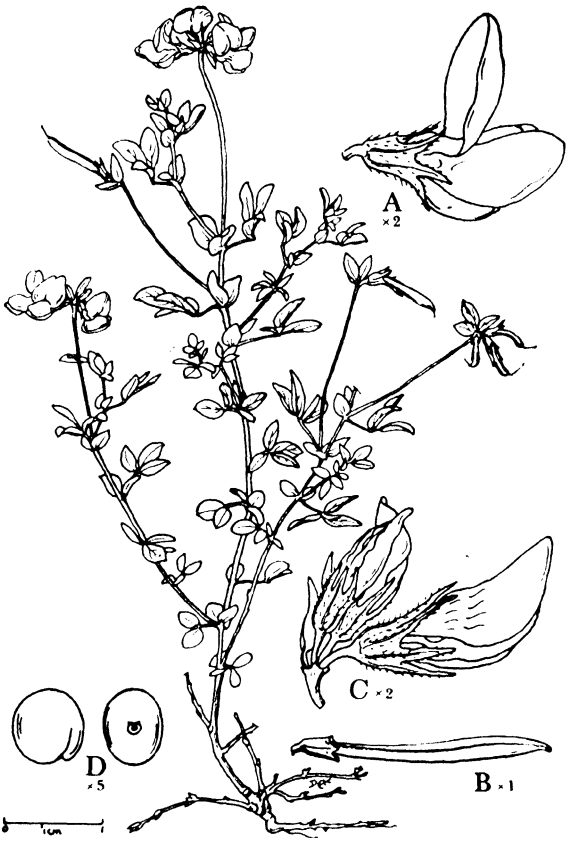


ANTHYLLIS L. Herbs with pinnate leaves and flowers in terminal heads. Calyx inflated, 5-toothed; stamens diadelphous, 1 free. Pod short, ovoid, 1-3 seeded.

500. ANTHYLLIS VULNERARIA L. The KIDNEY-VETCH or LADY'S FINGERS is a common, erect perennial about 9-12 in. (23-30 cm.) high, found chiefly in dry, calcareous grassland and on sea cliffs. Leaflets 11-15, the terminal one on the lower leaves broadly lanceolate, the remainder narrow; stipules small, linear. Flowers 12-15 mm. long, in lax heads, often two together; calyx hairy, pale green; corolla pale yellow (or red in var. *coccinea*) exceeding calyx. Pod 8 × 4 mm., ovoid, netted, 1-3 seeded; seed 2 × 1·8 mm., smooth, brown, radicle obvious; hilum 1 mm. long.

Mid June—mid Sept. (Bestwood, Nottinghamshire.)

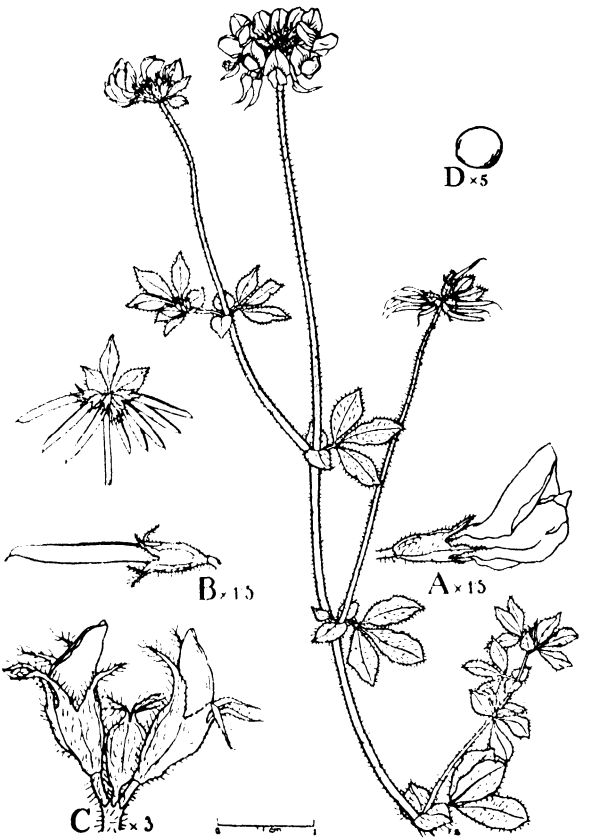
A. flower. B. stamens, style and calyx. C. pod. D. seed (lateral and ventral views).



LOTUS L. Herbaceous plants with ternate leaves. Leaflets apparently 5, the 2 lower being actually stipules. Flowers in umbels; calyx five-toothed, stamens diadelphous, 1 free; pod elongate, terete or winged, many-seeded.

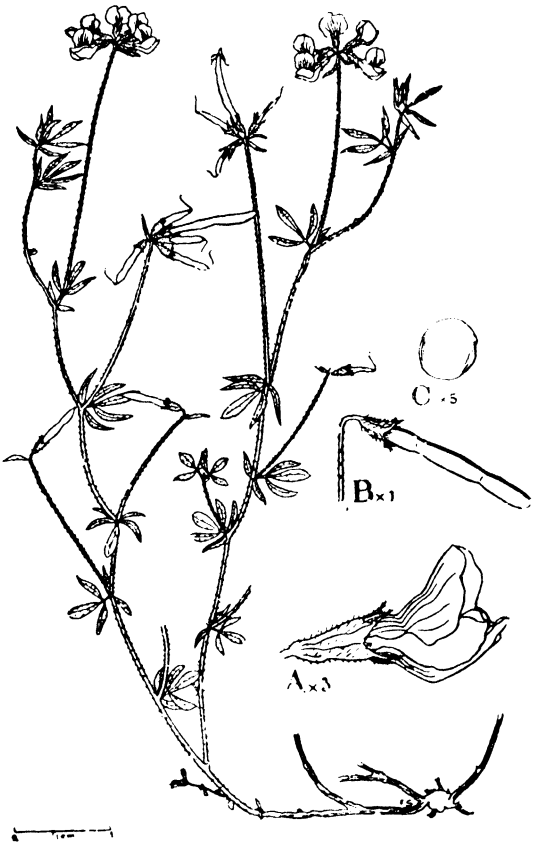
501. LOTUS CORNICULATUS L. The BIRD'S FOOT TREFOIL is a rather slender, ± glabrous perennial with ascending flowering stems 3-6 in. (8-15 cm.) high, growing from a decumbent stock 3-12 in. (8-30 cm.) long. It is a very common plant of grassy places and by the sea throughout the British Isles. Leaflets ovate; stipules ovate, glabrous. Heads 3-10 flowered; flowers 2·5-3·0 mm. long; calyx cylindrical, teeth erect or adpressed; petals yellow, often tinged with red. Pod 3 mm., many-seeded; seed 1·5 mm., globular, smooth, brown; hilum minute.

Early June—early Sept. (Rocester, Staffordshire.)
A. flower. B. pod. C. umbel of flowers. D. seed.



502. LOTUS ULIGINOSUS Schkuhr. The MARSH BIRD'S FOOT TREFOIL is a stout perennial with branched, erect or straggling stems 6-50 in. (15-125 cm.) long, growing from a slender, stoloniferous rootstock. It is a common plant of wet meadows throughout the British Isles, except the far north. Stems covered with spreading hairs or perhaps glabrous. Leaves broadly obovate; stipules ovate, entire, hairy. Heads 8-15 flowered; flowers 1·6 mm. long; calyx cylindrical, teeth a little shorter than tube, spreading in bud, two upper diverging in flower; petals deep yellow, often tinged with red. Pod 15-20 mm. long, many-seeded; seed 1 mm., globular, smooth, brown; hilum minute.

Late June—mid Aug. (Earlswood, Warwickshire.)
A. flower. B. pod. C. buds. D. seed.



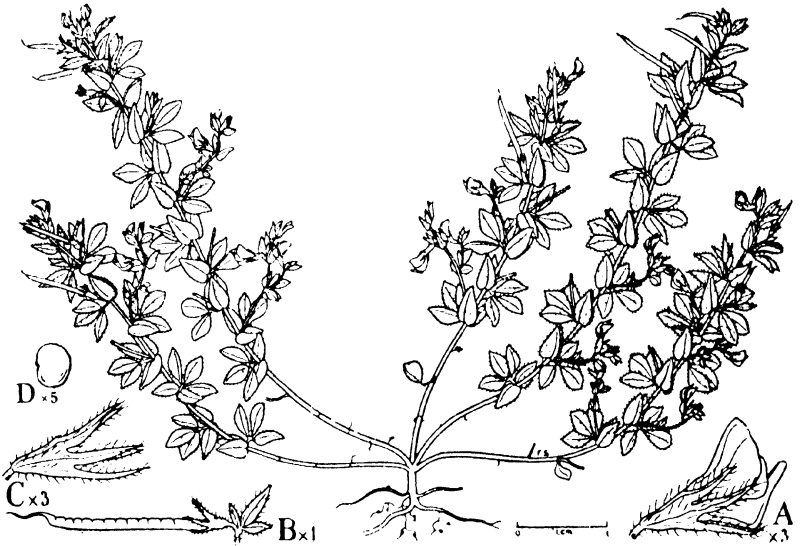
503. LOTUS TENUIS Waldst. and Kit. ex Willd. The SLENDER BIRD'S FOOT TREFOIL is a slender perennial with much-branched, erect or spreading stems 3-18 in. (8-45 cm.) high, growing from a decumbent base 2-6 in. (5-15 cm.) long. It is an uncommon plant of dry pastures and waysides in lowland Britain. Stems glabrous or rather hairy. Leaves narrow, lanceolate, entire; stipules linear lanceolate, entire, hairy. Heads 3-10 flowered; flowers 10 mm. long; calyx cylindrical, teeth short, adpressed in bud, 2 upper converging in flower; corolla pale yellow, turning blackish-green when dried. Pod 15-25 mm., many-seeded; seed 1·5 mm., globular, smooth, brown; hilum minute.

Mid June—late Aug. (Cambridge.)

A. flower. B. pod. C. seed.

504. LOTUS HISPIDUS Desf. ex DC. This DWARF HAIRY BIRD'S FOOT TREFOIL is a small, slender, thickly hairy annual with many prostrate or procumbent, leafy stems 3-6 in. (8-15 cm.) long, growing from the rootstock. It is a rare plant of the sea coast in southern England. Leaflets ovate, acute, entire; stipules leaf-like. Heads 2-4 flowered, much longer than the leaves; flowers 7 mm. long; calyx cylindrical, teeth equalling or exceeding the tube, adpressed in bud, two upper parallel; corolla full yellow. Pod 6-10 mm., smooth; seed 1·5 mm., globular, smooth, brown; hilum minute.

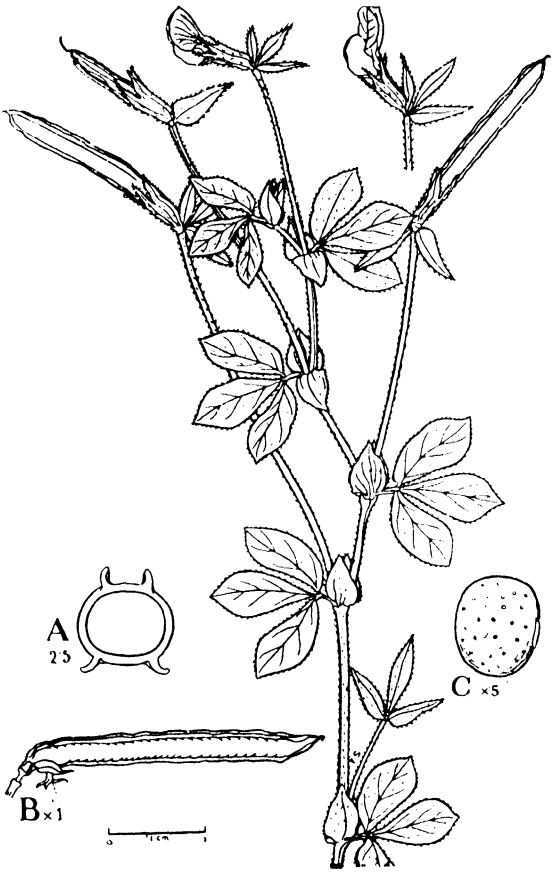
Early July—mid Aug. (Lizard Point, Cornwall.)
A. flower. B. calyx. C. pod. D. seed.



505. LOTUS ANGUSTISSIMUS L. This DWARF BIRD'S FOOT TREFOIL is a small, slender, rather hairy annual with many decumbent-erect, leafy stems 3-6 in. (8-15 cm.) long, growing from a central root-stock. It is a very rare plant of dry, grassy places near the sea in S. England. Leaflets ovate, acute, entire; stipules leaf-like. Heads 1-2 flowered, little longer than the leaves; flowers 7 mm. long; calyx triangular, teeth about equal to tube, adpressed in bud, upper 2 parallel; corolla full yellow. Pod 15-20 mm., smooth; seed 1 mm., globular, smooth, brown; hilum minute.

Early June—mid Aug. (Polperro, Cornwall.)

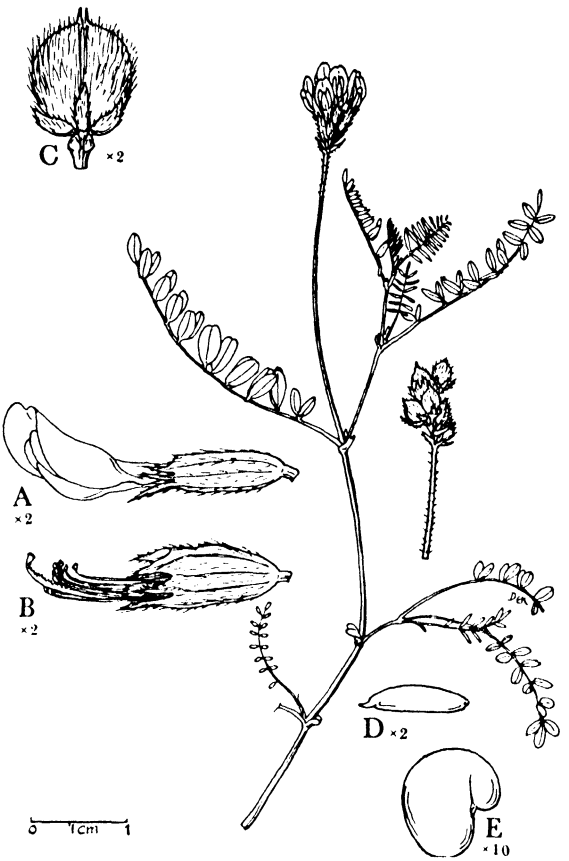
A. flower. B. pod. C. calyx. D. seed.



506. LOTUS (TETRAGONOLOBUS) SILIQUOSUS L. The Asparagus Pea is a much-branched, sparingly hairy, erect annual 3-9 in. (8-23 cm.) high, that is naturalized in three or four places in S. and E. England. Flowers 25-30 mm. long, solitary, bracteate, on long stalks; calyx tubular, teeth acute, shorter than tube; corolla yellow-orange. Pod 40 mm., terete, with four wings; seed 2·5 mm., globular with a few fine pits, brown; hilum short, oval; radicle minute.

Late July—mid Sept. (Bath.)
A. pod t.s. B. pod. C. seed.

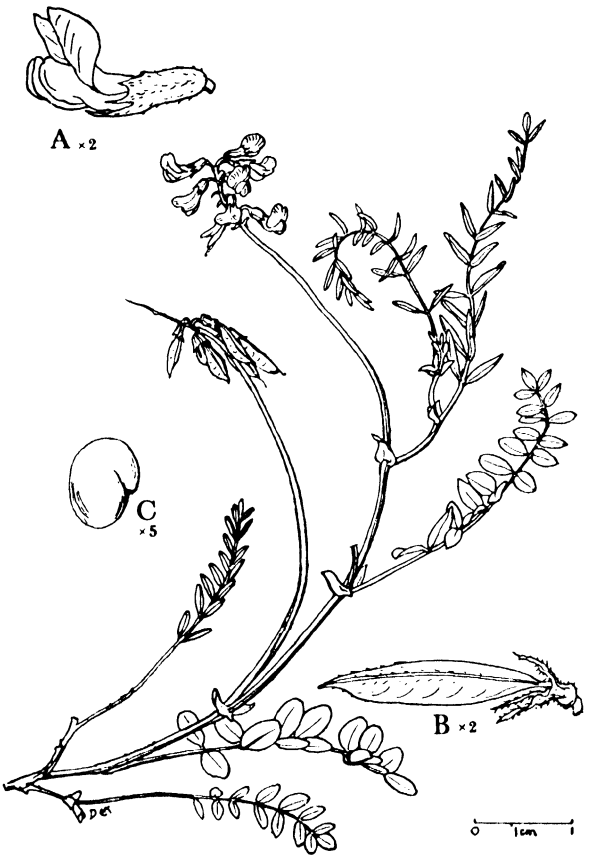
(Outcasts from gardens include the Goat's Rue [*Galega officinalis* L.] with pinnate leaves and many-flowered, long-stalked racemes of white or lilac flowers; *Robinia pseudacacia* L., a large tree with pendulous racemes of white or blue flowers and pinnate leaves; and *Colutea arborescens* L., the Bladder Senna, with inflated pods and yellow-orange, erect racemes.)



ASTRAGALUS L. Herbs with pinnate leaves and flowers in dense racemes. Stamens diadelphous, 1 free; keel of corolla blunt. Pod several-seeded, with a longitudinal division projecting from the side opposite to that which bears the seeds.

507. ASTRAGALUS DANICUS Retz. The PURPLE MILK VETCH is a slender, diffuse, little-branched perennial 5-9 in. (12-23 cm.) high, found in calcareous grassland chiefly in eastern Britain. Leaflets 15-25 mm. long., ovate-lanceolate, glabrous; stipules lanceolate, entire. Peduncles 30-80 mm. long, exceeding leaves, 5-10 flowered; flowers 15 mm. long; calyx cylindrical, hairy, teeth acute, sub-equal; petals mauve. Pod 7·5 mm. long, nearly globular, hairy, several-seeded; seed 3·0 × 1·7 mm., reniform, smooth, black; hilum minute.

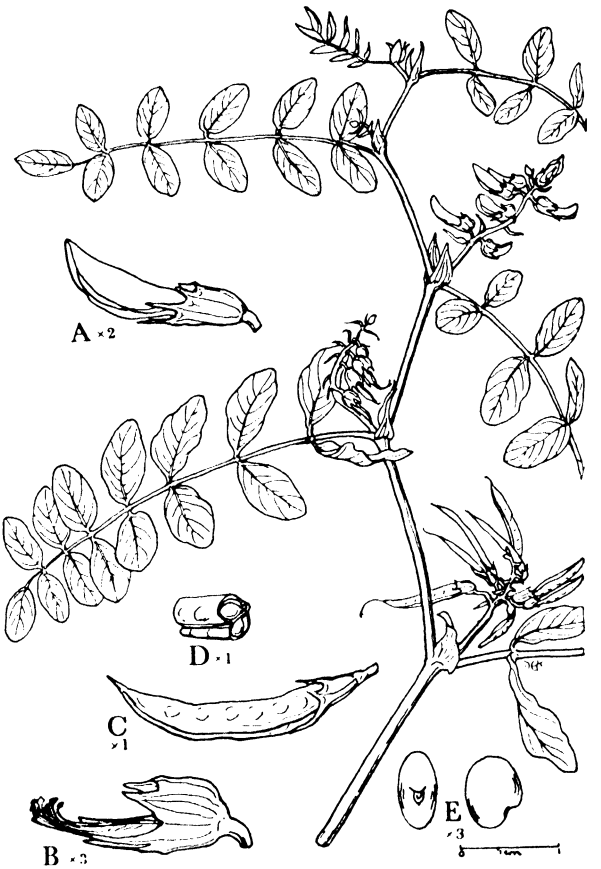
Late May—early July. (Barnack, Northamptonshire.)
A. flower. B. stamens, style and calyx. C. pod. D. keel. E. seed.



508. ASTRAGALUS ALPINUS L. The ALPINE MILK VETCH is a slender, diffuse, much-branched perennial 3-15 in. (7-38 cm.) long. It occurs very rarely on mountain cliffs in central Scotland. Leaflets 11-25 mm. long, ovate-lanceolate, glabrous; stipules triangular, entire. Peduncles 50-80 mm. long, exceeding leaves, 5-10 flowered; flowers 12 mm. long; calyx cylindrical, pilose; teeth long, acute, unequal; petals blue and purple. Pod 15-20 mm. long, straight, acuminate, many-seeded; seed 2·5 × 1·5 mm., ovoid, compressed, smooth, yellow; hilum small.

Early—late July. (Ben y Vrachi, Perthshire.)

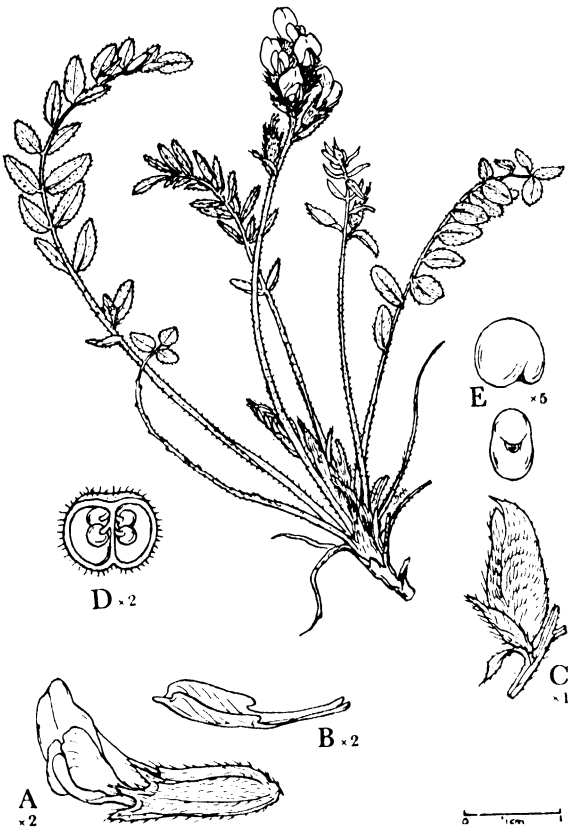
A. flower. B. pod. C. seed.



509. ASTRAGALUS GLYCYPHYLLOS L. The COMMON MILK VETCH or WILD LICORICE is a stout, erect or diffuse perennial, with many, almost simple stems 20-50 in. (50-125 cm.) high. It is an uncommon plant in grassy places and woodlands, particularly on basic soils, scattered throughout lowland England, Wales and Scotland. Leaflets 5-10 pairs, 25 mm. long, ovate, entire, glabrous, obtuse; stipules triangular, entire. Peduncles 80-100 mm., shorter than leaves, 5-20 flowered; flowers 10 mm. long; calyx campanulate, teeth triangular, acute, unequal; petals cream-yellow. Pod 20-30 mm. long, falcate, acuminate, many-seeded; seed 4·0 × 2·5 mm., ovoid, compressed, smooth, shining, yellow; hilum minute.

Mid June—mid Aug. (Bedford Purlieus, Northamptonshire.)

A. flower. B. stamens, style and calyx. C. pod. D. pod t.s. E. seed (ventral and lateral views).

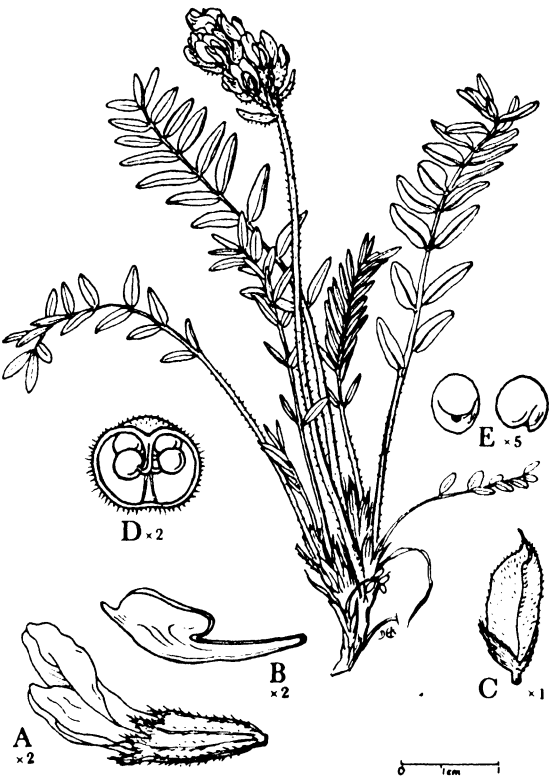


OXYTROPIS DC. Herbs with imparipinnate leaves and flowers in dense racemes; stamens diadelphous, 1 free; keel of corolla mucronate. Pod several seeded with a longitudinal division projecting from the same side as that which bears the seed.

510. OXYTROPIS HALLERI Bunge. (*O. uralensis* auct.). The PURPLE OXYTROPIS is a hairy perennial with leaves and flowering stems 3-5 in. (8-13 cm.) long, growing erect from a short stem 1-2 in. (3-5 cm.) long. It grows very rarely on alpine cliffs and rocky pastures in central Scotland. Leaflets 21-31, broadly lanceolate, hairy, entire. Peduncles rather shorter than the leaves, hairy, 6-10 flowered; flowers 15 mm. long; calyx five-veined, hairy; corolla purple. Pod about 20 mm. long, hairy, inflated, longer than calyx; seed 1·5-2·0 mm., globose, smooth, yellow-brown; radicle small, hilum minute.

Early—late July. (Ben y Vrachi, Perthshire.)

A. flower. B. keel. C. pod. D. pod t.s. E. seed (ventral and lateral views).



511. OXYTROPIS CAMPESTRIS (L.) DC. The YELLOW OXYTROPIS is a hairy, erect perennial with leaves and flowering stems 5-8 in. (12-20 cm.) long, growing from a short, erect stem 1-2 in. (3-5 cm.) long. It grows very rarely on a few mountain cliffs in Perth and Forfarshire. Leaflets 15-25, lanceolate, hairy, entire. Peduncles rather longer than the leaves, hairy, 6-10 flowered; flowers 15 mm. long; calyx five-veined, hairy; corolla yellow striped with purple. Pod about 20 mm. long (much exceeding calyx), hairy, inflated; seed 1·0 × 1·2 mm., globose, smooth, yellow-brown, radicle prominent, hilum minute.

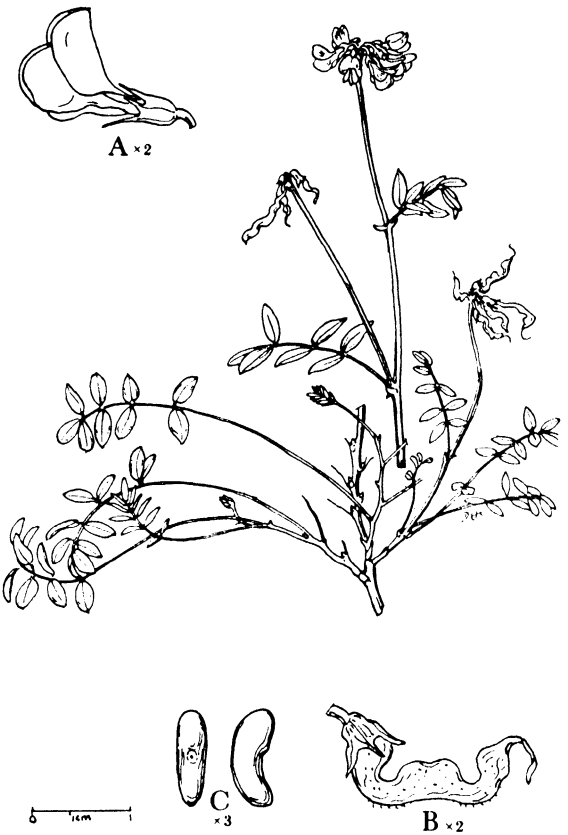
Early—late July. (Glen Dole, Forfarshire.)

A. flower. B. keel. C. pod. D. pod t.s. E. seed, ventral and lateral views.

CORONILLA L. Herbaceous plants with showy flowers, and leaves pinnate with terminal leaflet. Flowers in umbels. Calyx five-fid, teeth equal. Pod terete or angled, breaking up into cylindrical, one-seeded portions.

512. CORONILLA VARIA L. This PURPLE CORONILLA is a stout, much-branched, straggling, glabrous perennial 12-24 in. (30-60 cm.) high, which is naturalized in waste places and river banks in a few localities in England. Stems prostrate, ascending, much-branched. Leaflets 4-7 pairs, ovate-oblong, mucronate. Flowers 8 mm. long, in dense umbels; peduncles long; calyx conical, teeth small; petals white, marked with violet or pink. Pod 20 mm. long, narrow, cylindrical; seed 3 mm. long, cylindrical, smooth, yellow-brown; hilum 0·7 mm.

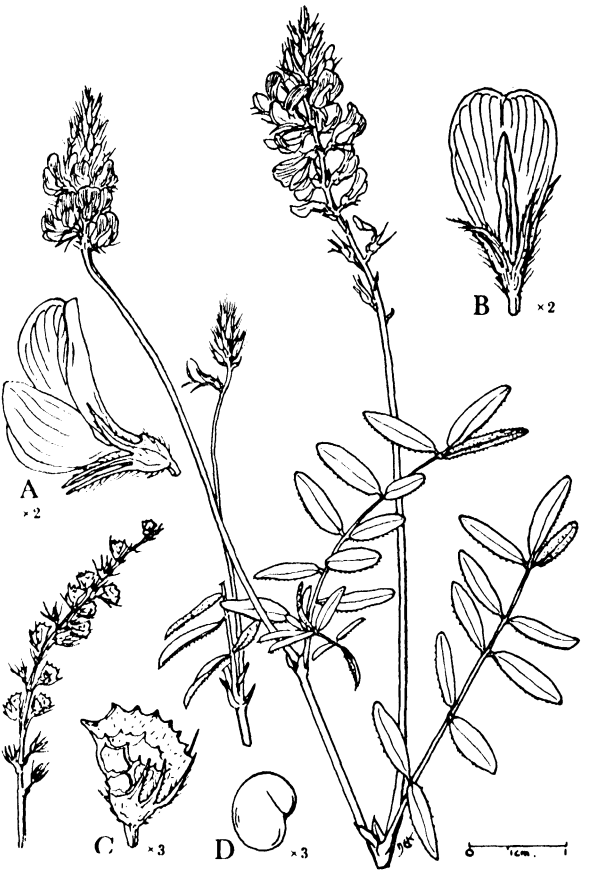
Late June—late July. (Bewdley, Worcestershire.)
A. flower. B. seed.



HIPPOCREPIS L. Herbaceous plants with pinnate leaves and a terminal leaflet; calyx five-toothed; stamens diadelphous, 1 free; pod zigzag, breaking transversely into one-seeded horseshoe-shaped portions.

513. HIPPOCREPIS COMOSA L. The HORSESHOE VETCH is a rather straggling, erect or decumbent, glabrous perennial with several flowering stems 6-10 in. (15-25 cm.) high, growing from a woody root-stock. It is found, rather frequently, in calcareous grassland and rocky places in the chalk and limestone districts of England and Wales. Leaves pinnate with 9-13 leaflets; leaflets lanceolate, acute, glabrous; stipules half-ovate, acute. Flowers 10 mm. long in many-flowered heads; calyx glabrous, teeth linear, subequal; corolla deep yellow. Pod 20-25 mm., flattened, wavy; seed 4 × 2 mm., cylindrical, curved, smooth, yellow; hilum minute.

Late May—late July. (Rodborough Common, Gloucester.)
A. flower. B. pod. C. seed, ventral and lateral views.

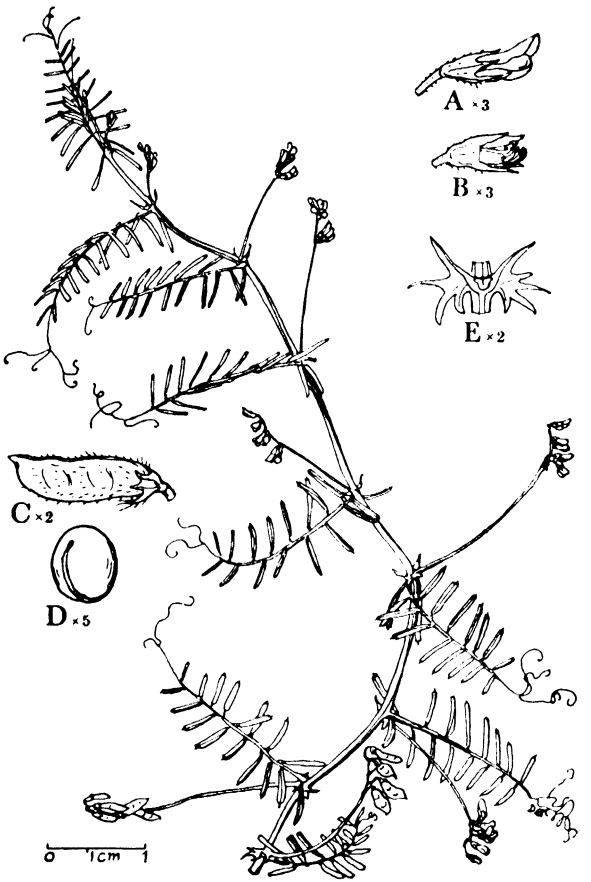


ONOBRYCHIS Mill. Herbaceous plants with pinnate leaves and a terminal leaflet; calyx five-toothed; stamens diadelphous, 1 free; pod one-seeded, hard, indehiscent and wrinkled.

514. ONOBRYCHIS VICIÆFOLIA Scop. The SAINFOIN is a stout, erect, somewhat pubescent perennial 6-18 in. (15-45 cm.) high. It often occurs as a relic of cultivation, but it is also abundant and possibly native in chalk pastures in the southern part of Britain. Leaves pinnate; leaflets 9-13, linear-lanceolate, hairy; stipules linear-lanceolate, acute. Racemes on long stalks, conical, many-flowered; flowers 12-15 mm. long; calyx hairy, teeth long, linear, exceeding tube; petals pink with darker veins. Pod about 4 mm., half circular, toothed and honeycombed; seed 4·0 × 3·5 mm., ovoid, smooth, little compressed, light brown.

Mid May—mid Aug. (Trimley, Suffolk.)

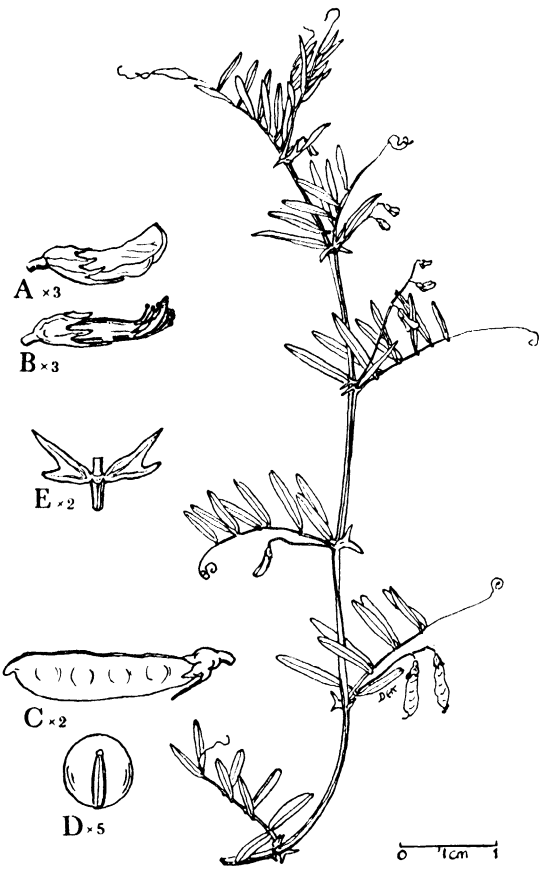
A. flower, side view, B. front view. C. pod. D. seed.



VICIA L. Climbing or straggling herbs. Leaves pinnate, without a terminal leaflet. Calyx five-toothed; stamens diadelphous, 1 free; style round, hairy all over or bearded on the underside. Pod dehiscent, several-seeded.

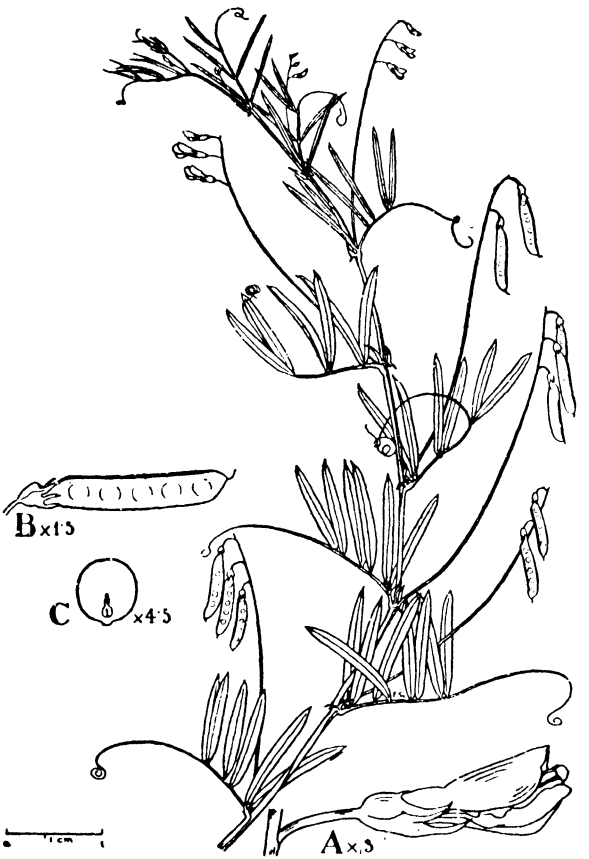
515. VICIA HIRSUTA (L.) Gray. The HAIRY TARE is a slender, often sparsely hairy annual with weak, climbing stems 6-12 in. (15-30 cm.) long. It is a common plant of cornfields and grassland in lowland Britain. Leaflets 6-8 pairs, linear, mucronate, 10-15 mm. long; stipule two-lobed, outer trifid, inner lanceolate; tendrils several. Peduncles long, 1-6 flowered; flowers 5 mm. long; calyx teeth narrow, acute, about equalling tube; petals pale mauve; style hairy all over. Pod 10 mm. long, two-seeded, hairy; seed 2 mm., globose, mottled, smooth; hilum 1 mm. long, linear. Early June—late July. (Bethersden, Kent.)

A. flower. B. stamens, style and part of calyx. C. pod. D. seed. E. stipule.



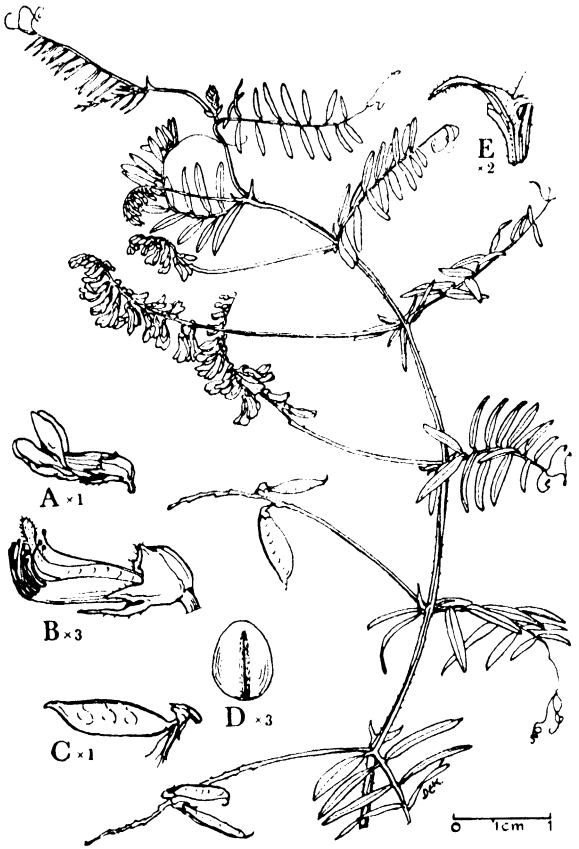
516. VICIA TETRASPERMA (L.) Schreb. The SLENDER TARE is a very slender, ± glabrous annual with weak, branched, climbing stems 9-20 in. (23-50 cm.) long. It is a common plant of cornfields and grassland throughout lowland England, Wales and Scotland, northwards to the Forth. Leaflets 4-6 pairs, linear, mucronate, 15-20 mm. long; stipule 2-lobed, lobes simple, tendrils single. Peduncles long, 1-2 flowered; flowers 5 mm. long; calyx teeth shorter than tube; petals pale mauve; style hairy all over. Pod four-seeded, smooth; seed 2 mm., globose, smooth, dark brown; hilum short, oblong, 0·3 mm.

Late June—mid Aug. (Hampton in Arden, Warwickshire.)
A. flower. B. stamens, style and calyx. C. pod. D. seed. E. stipule.



517. VICIA TENUISSIMA (Bieb.) Schinz and Thell. This GRACEFUL TARE is a very slender, glabrous annual with weak, branched climbing stems 9-20 in. (23-50 cm.) long. It is an uncommon plant found in cornfields and hedgerows in the southern half of England. Leaflets 3-4 pairs, 20-24 mm. long, narrow, acuminate; stipules two-lobed, lobes simple. Peduncles long, 1-4 flowered; flowers 8-10 mm. long; calyx teeth long, triangular; petals blue; style hairy all over. Pod 5-8 seeded, smooth; seed 2 mm., globose, smooth, mottled; hilum 0·5 mm., small, ovate.

Mid June—mid July. (Toft, Cambridge.)
A. flower. B. pod. C. seed.



518. VICIA CRACCA L. The TUFTED VETCH is a rather stout, somewhat pubescent perennial with weak climbing stems 12-48 in. (30-120 cm.) long. It is abundant in hedgerows and grassy places throughout the British Isles. Leaflets about 10 pairs, 10-25 mm. long, narrow, lanceolate; stipules two-lobed, lobes simple, tendrils several. Peduncles 20-100 mm. long, ten-flowered or more; flowers 15 mm. long; calyx gibbous, teeth triangular, short; petals deep mauve; style hairy all over but hairs longer below stigma. Pod 20 mm., 3-5 seeded, smooth; seed 3 mm., globose, smooth, dark brown; hilum 3 mm., extending nearly half-way round, linear.

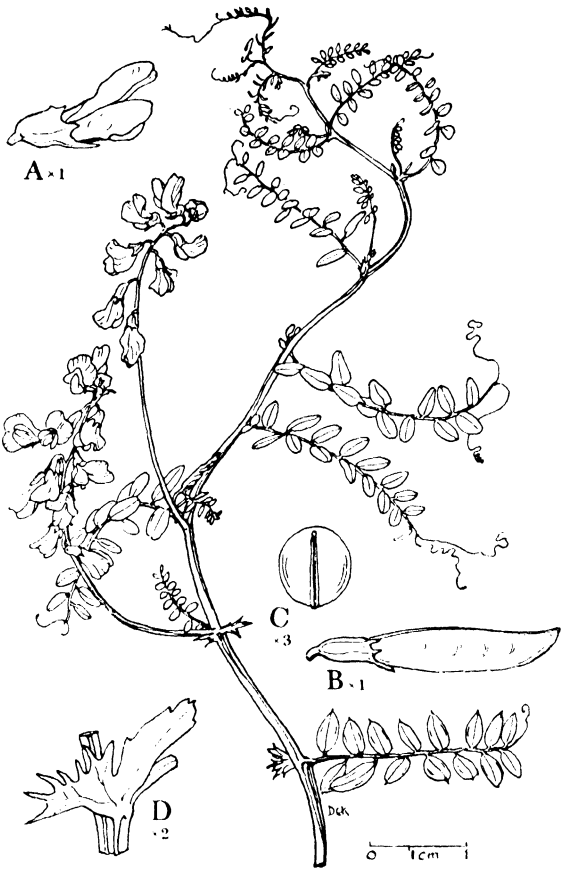
Mid June—mid Aug. (Bethersden, Kent.)

A. flower. B. stamens, style, and calyx. C. pod. D. seed. E. stipule.

519. VICIA OROBUS DC. The NORTHERN BITTERVETCH is a stout pubescent biennial with erect, little-branched stems 9-15 in. (23-38 cm.) high. It is a rare plant of rocky woods and waysides chiefly in northern and western Britain. Leaflets about 5-10 pairs, 10-20 mm. long, lanceolate, sub-acute; stipules 2, arrow-shaped and slightly toothed, tendrils none. Peduncles 40-60 mm. long, 8-15 flowered; flowers 12-15 mm. long; calyx gibbous, teeth triangular, short; petals cream-coloured with purple streaks; style hairy all round. Pod 20 mm., 5-8 seeded, smooth; seed about 3 mm., globose, smooth, dark brown; hilum 3 mm., extending to less than half-way, linear.

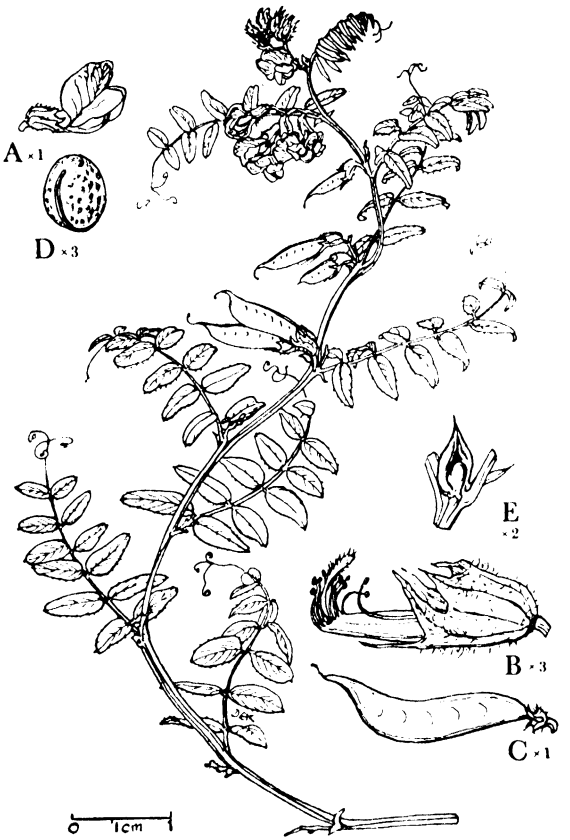
Mid June—mid July. (Dolgelley, Merioneth.)

A. flower. B. stamens, style, and calyx. C. pod. D. seed. E. stipule.



520. VICIA SYLVATICA L. The WOOD VETCH is a rather slender, glabrous, much-branched perennial with weak climbing stems 12-40 in. (30-100 cm.) long. It is an uncommon plant of shady places and cliffs on basic soil throughout the British Isles. Leaflets about 8 pairs, 12-17 mm. long, elliptic, mucronate; stipules falcate, deeply toothed; tendrils 1-3. Peduncles 200-250 mm. long, 6-10 flowered; flowers 12-14 mm. long; calyx gibbous, teeth small, blunt; petals cream with blue veins; style hairy all round. Pod 30 mm. long, 4-6 seeded, smooth; seed 3 mm., sub-globose, very finely granular, dark brown; hilum 3·5 mm., narrow.

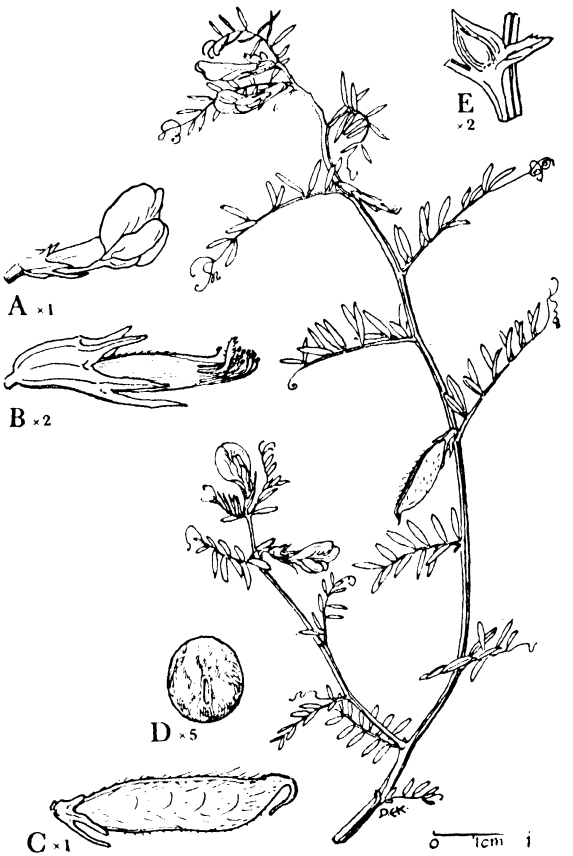
Mid June—mid July. (Little Ponton, Lincolnshire.)
A. flower. B. pod. C. seed. D. stipule.



521. VICIA SEPIUM L. The BUSH VETCH is a rather stout, almost glabrous, little-branched perennial with weak climbing or trailing stems 12-20 in. (30-50 cm.) long. It is a common plant of shady hedgerows and similar places throughout the British Isles. Leaflets about 6 pairs, 10-30 mm. long, mucronate, slightly hairy; stipules oval, entire or toothed; tendrils 1-3. Peduncles very short, 3-8 flowered; flowers 12-15 mm. long; calyx gibbous, teeth long, acute; petals reddish purple; style with a dense tuft of hairs on the upper side. Pod 4-6 seeded, smooth; seed 3 mm., sub-globose, smooth, mottled, dark brown; hilum narrow, extending half-way round the seed.

Mid May—early July. (Whitacre, Warwickshire.)

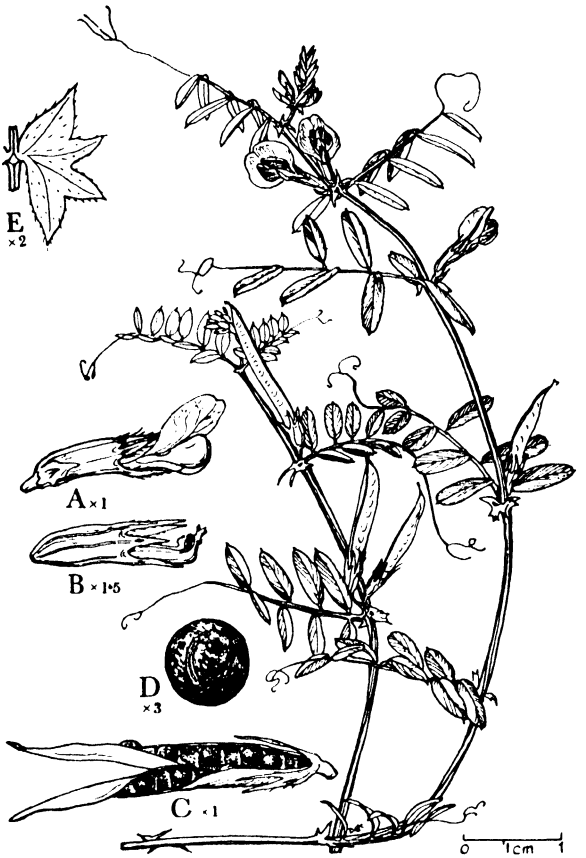
A. flower. B. stamens, style and calyx. C. pod. D. seed. E. stipule.



522. VICIA LUTEA L. The YELLOW VETCH is a rather slender, glabrous, tufted perennial with prostrate stems 6-20 in. (15-50 cm.) long. It grows rarely on shingle and grassy places near the sea northwards to southern Scotland, and in a few localities in Ireland. Leaflets about 6 pairs, 8-10 mm. long, linear-lanceolate, mucronate, glabrous; stipules bifid and toothed. Flowers 15 mm. long, solitary, sub-sessile in the axils of the upper leaves; calyx cylindrical, teeth long, acute; petals pale yellow; style hairy all over. Pod 4-6 seeded, hairy, with a long recurved tip; seed 2 mm., sub-globose, smooth, mottled, dark brown; hilum about 1 mm. long.

Mid June—mid July. (Shoreham, Sussex.)

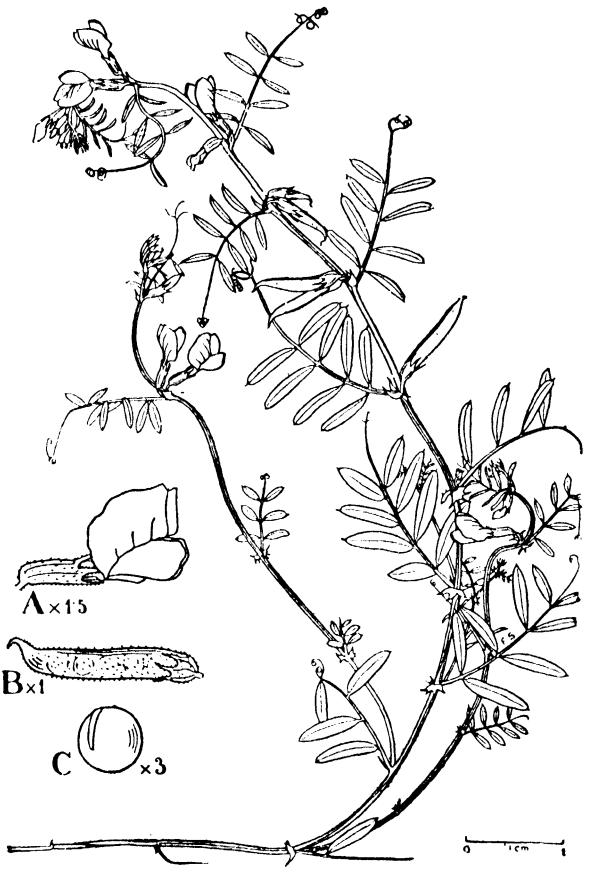
A. flower. B. stamens, style and corolla. C. pod. D. seed. E. stipule.



523. VICIA SATIVA L. The COMMON VETCH is a rather stout, sparsely hairy, trailing and climbing or suberect annual with simple flowering stems 9-20 in. (23-50 cm.) high, many varieties of which are cultivated. It is found on field borders where it is a relic of cultivation. Leaflets 4-6 pairs, 10-18 mm. long, broadly linear-lanceolate or elliptical, mucronate, glabrous; tendrils 1-3; stipules palmate, toothed. Flowers 25-30 mm. long, usually in pairs in the axils of the upper leaves, sub-sessile; calyx cylindrical, tube longer than teeth; petals purple and red, sides of standard reflexed; style hairy all over. Pod 40-50 mm., almost erect, 6-10 seeded, slightly hairy with an almost straight tip, with internal partitions and splitting the calyx; seed 3·5 mm., globose, smooth, dark brown or mottled; hilum 2 mm.

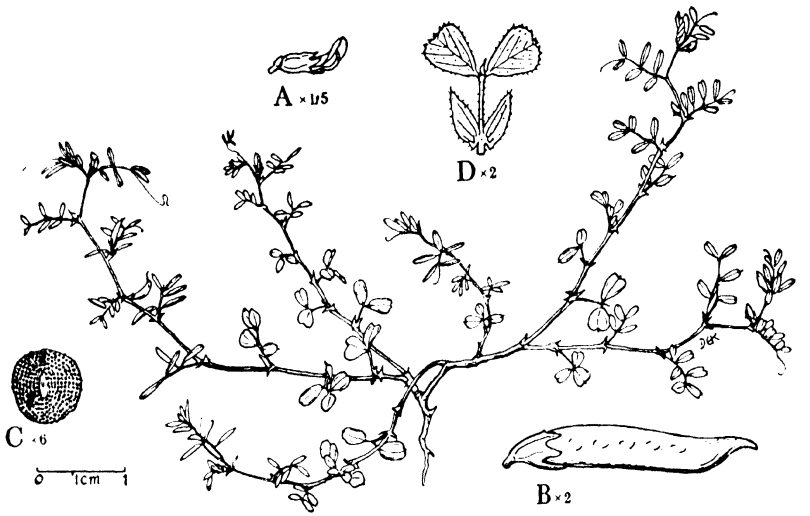
Early June—mid July. (Clifton, Nottingham.)

A. flower. B. stamens, style and calyx. C. pod. D. seed. E. stipule.



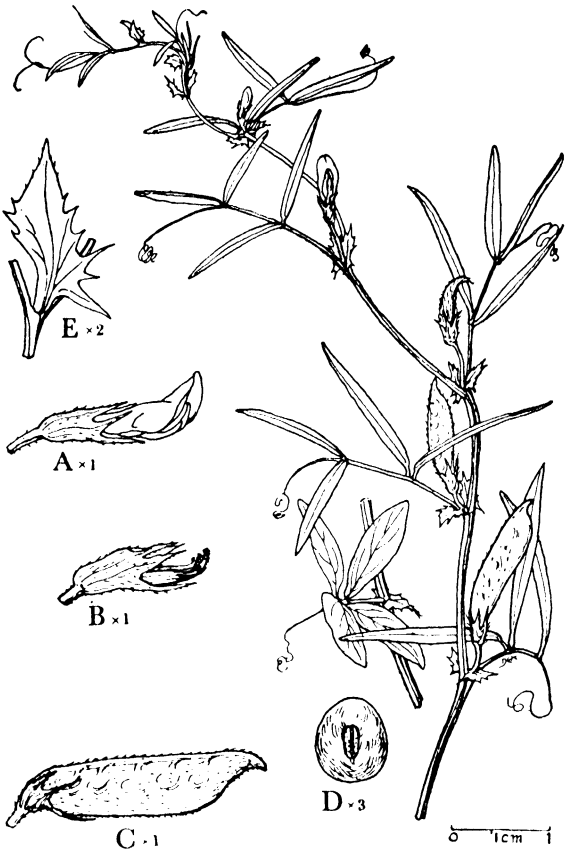
524. VICIA ANGUSTIFOLIA L. This NARROW-LEAVED VETCH is a rather slender, sparsely hairy, trailing or climbing annual or biennial with many simple flowering stems 6-15 in. (15-38 cm.) high, growing from a slender, creeping stock. It is very frequently found in hedgerows and dry, sandy places throughout the British Isles. Leaflets 4-6 pairs, 12-18 mm. long, linear-lanceolate, mucronate, glabrous; stipules palmate, toothed. Flowers 20 mm. long, solitary or in pairs in the axils of the upper leaves, sub-sessile; calyx cylindrical, tube longer than teeth; petals purple and red, sides of standard reflexed; style hairy all over. Pod patent, 2-6 seeded, slightly hairy with a slightly recurved tip, not splitting the calyx; without the partitions present in *V. sativa* L.; seed 2-4 mm., globose, smooth, dark brown; hilum 1·8 mm.

Mid May to late July. (W. Byfleet, Surrey.)
A. flower. B. pod. C. seed.



525. VICIA LATHYROIDES L. The SPRING VETCH is a slender, slightly hairy annual with numerous procumbent, little-branched stems 2-6 in. (5-15 cm.) long, growing from a central rootstock. It is an uncommon plant of dry, grassy places, scattered throughout lowland England, Wales and southern Scotland, particularly on a sandy soil. Leaflets 1-3 pairs, 5-9 mm., slightly hairy, upper linear-lanceolate, emarginate, mucronate, lower elliptical; stipules half-sagittate, entire. Flowers 5-7 mm. long, solitary and sessile in the axils of the upper leaves; calyx cylindrical, teeth equal, nearly as long as the tube; petals purple and red, sides of standard erect; style hairy all over. Pod 27 mm. long, 4-8 seeded, glabrous; seed 2 mm., globose, tuberculate, brown; hilum 0·4 mm. long.

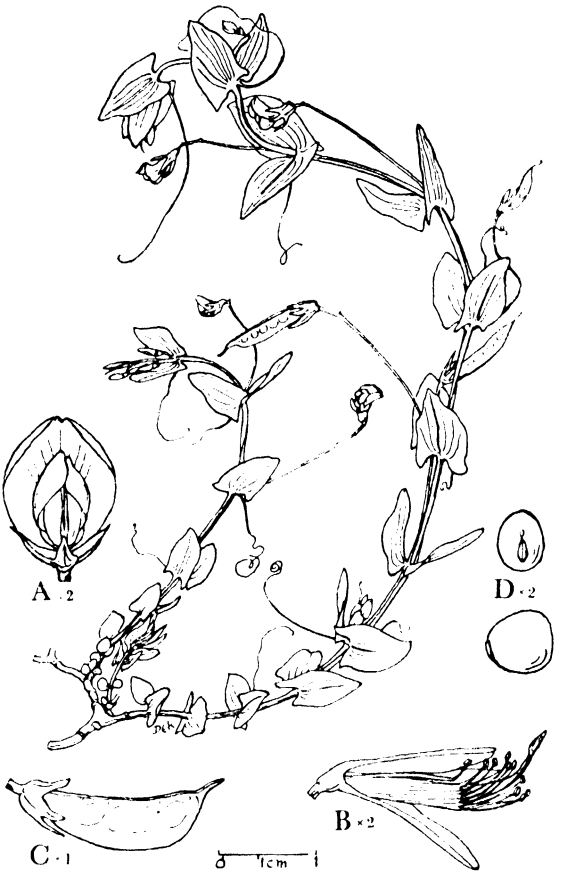
Mid April—mid June. (Hartlebury Common, Worcestershire.)
A. flower. B. pod. C. seed. D. stipule.



526. VICIA BITHYNICA (L.) L. The BITHYNIAN VETCH is a stout, glabrous, trailing or climbing perennial, with several simple leafy stems 12-25 in. (30-62 cm.) long, growing from a central stock. It is an uncommon plant of cliff, scrubland and hedges, mainly in S. and W. England and Wales, especially near the sea. Leaflets 2 pairs, 30-35 mm. long, upper linear, lower rather broader, glabrous; stipules half-hastate, toothed; tendrils 1-2. Peduncles 40-50 mm. long, 1-2 flowered; flowers 18-20 mm. long; calyx rather hairy, cylindrical, teeth narrow, acuminate, exceeding tube; petals reddish purple; style hairy all over. Pod 30 mm., 4-6 seeded, hairy, beaked; seed 3-4 mm., globose, smooth, dark brown; hilum short, 0·5 mm. long.

Mid May—late June. (Raynham, Kent.)

A. flower. B. stamens, style and calyx. C. pod. D. seed. E. stipule.

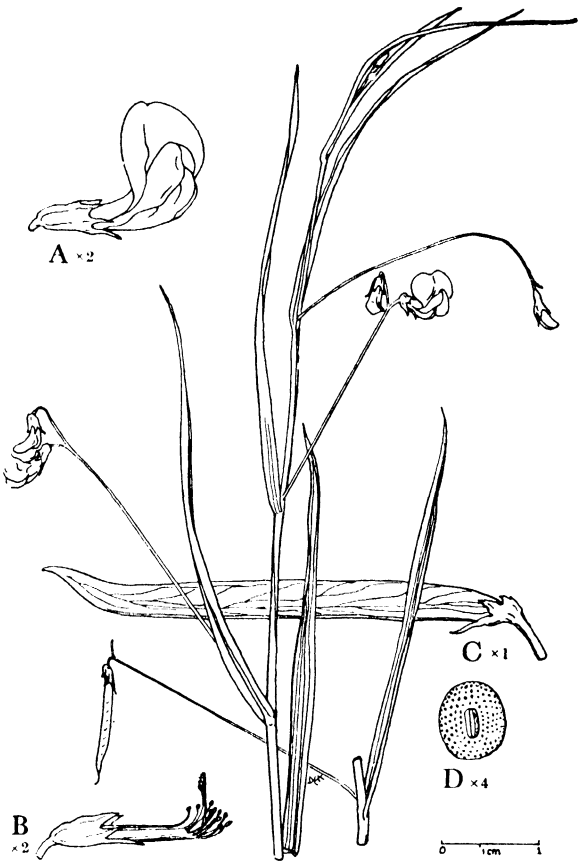


LATHYRUS L. Climbing or straggling herbs. Leaves pinnate without a terminal leaflet, the leaflets few or in certain cases, none; stamens diadelphous; style flattened, hairy only on the inner side; pod straight, many-seeded.

527. LATHYRUS APHACA L. The YELLOW VETCHLING is a weak, climbing, little-branched annual 12-40 in. (30-100 cm.) long, found rarely in cornfields and hedges in central and S. England. Leaves reduced to simple tendrils, but stipules 20-25 mm. long, sagittate, leaf-like. Peduncles about 30 mm. long, slender, one-flowered; flowers 10 mm. long; calyx campanulate, teeth subulate, subequal; corolla yellow. Pod about 25 mm., boat-shaped, smooth; seed 4 mm., globose, smooth, black; hilum 1·5 mm. ovate.

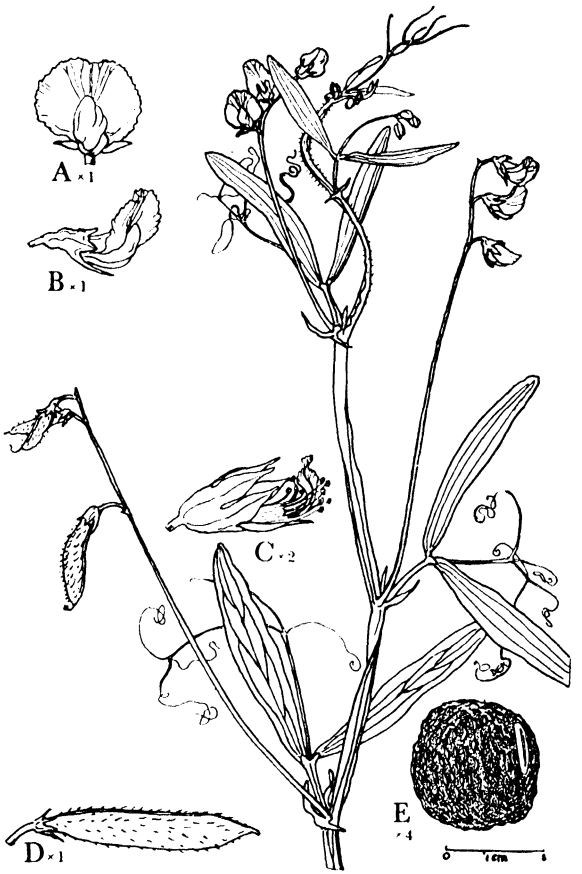
Mid June—late July. (Cherry Hinton, Cambridge.)

A. flower. B. stamens, style and calyx. C. pod. D. seed, ventral and lateral views.



528. LATHYRUS NISSOLIA L. The GRASS VETCHLING is a slender, glabrous, branched, ± erect annual, 12-30 in. (30-75 cm.) high. It is an uncommon plant, though frequent in some areas, of grassland in lowland England south of Cheshire and Yorkshire on heavy basic soils. Leaves reduced to linear, acute phyllodes up to 150 mm. long; tendrils 0. Peduncles 50-70 mm. long, 1-3 flowered; flowers 15-18 mm. long; calyx cylindrical, glabrous, one tooth longer than the others; petals crimson; style flat, downy on inner side. Pod 60 mm. long, netted; seed 2 mm., globose, finely tuberculate, brown; hilum 1·0 mm., small.

Mid May—late June. (Bethersden, Kent.)
A. flower. B. stamens, style and calyx. C. pod. D. seed.



529. LATHYRUS HIRSUTUS L. The HAIRY VETCHLING is a weak, spreading, much-branched annual, 12-18 in. (30-45 cm.) long, found rather frequently as a casual and possibly native in S.E. England. Leaflets 2, 40-50 mm. long, linear-lanceolate; tendrils branched; stipules lanceolate, acute. Peduncles longer than leaves, 1-3 flowered; flowers 10-12 mm. long; calyx campanulate, teeth subulate, one longer than the others; standard crimson, other petals blue; style winged. Pod 20-25 mm. long, hairy; seed 1·2 mm., globose, strongly tuberculate, dark brown; hilum 1·2 mm., ovate.

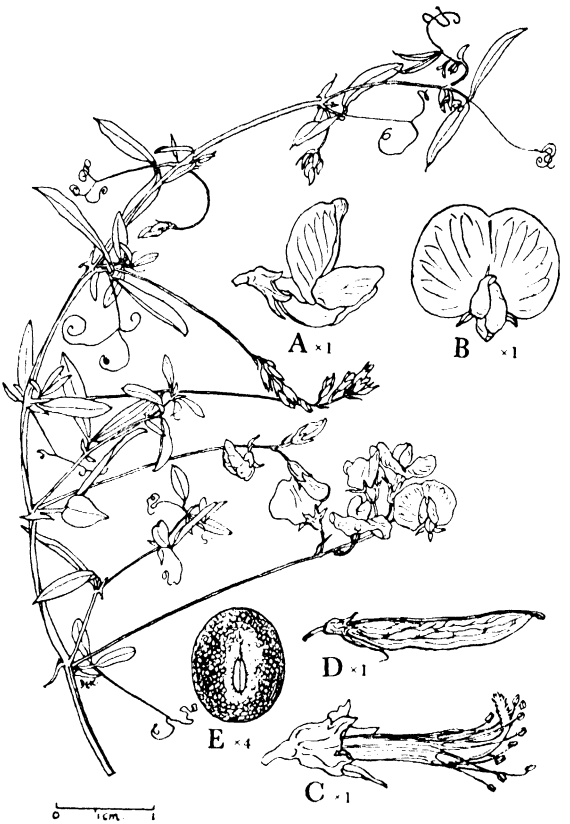
Mid June—mid July. (Tilbury, Essex.)

A. flower, front; B. side view. C. stamens, style and calyx. D. pod. E. seed.

530. LATHYRUS PRATENSIS L. The MEADOW VETCHLING is a diffuse, finely pubescent perennial with little-branched stems 12-15 in. (30-40 cm.) high, growing from a very slender, underground, creeping stock. It is found commonly in grassy places throughout Britain. Leaflets 2, 20-25 mm. long, linear-lanceolate; stipules lanceolate, acute; tendrils simple. Peduncles 100 mm., much longer than leaves, 4-10 flowered; flowers 12-15 mm. long; calyx hairy, gibbous, teeth subulate, one longer than the others; corolla yellow; style broadly winged. Pod about 60 mm. long, glabrous; seed 3 mm., globose, smooth, dark brown; hilum 1 mm., ovate.

Late June—late Aug. (Bethersden, Kent.)

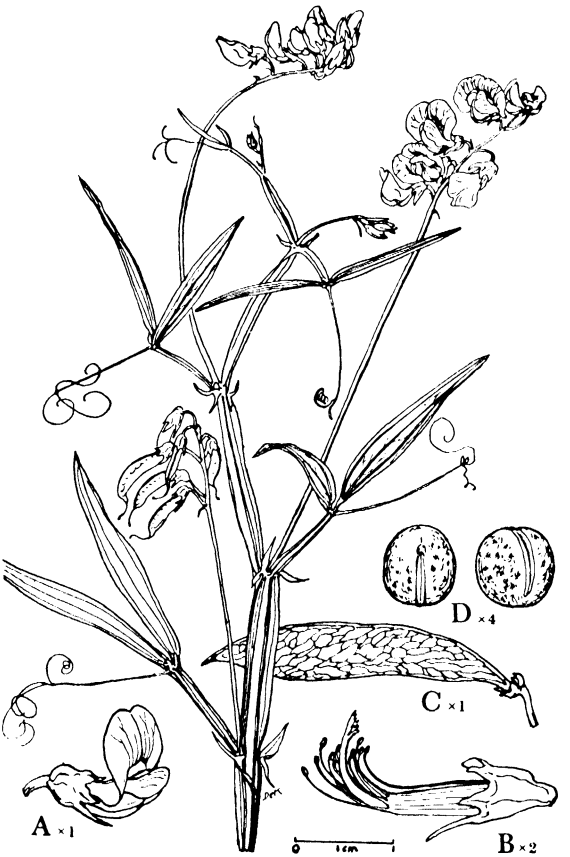
A. flower. B. stamens, style and calyx. C. pod. D. seed (two views).



531. LATHYRUS TUBEROSUS L. This TUBEROUS-ROOTED PEA is a weak, climbing, glabrous perennial with branched stems 20-50 in. (50-120 cm.) long, growing from a tuberous creeping stock. It is found in the cornfields of one district in N. Essex. Leaflets 2, 30 mm. long, lanceolate; stipules narrowly lanceolate, acute; tendrils branched. Peduncles much longer than leaves, 3-6 flowered; flowers 20 mm. long; calyx campanulate, teeth triangular, one longer than the others; petals pale blue, standard crimson. Pod about 50 mm. long, netted; seed 4 mm., globose, strongly tuberculate, dark brown; hilum 1·5 mm., oval.

Mid June—late July. (Hort. Devizes ex Fyfield, Essex.)

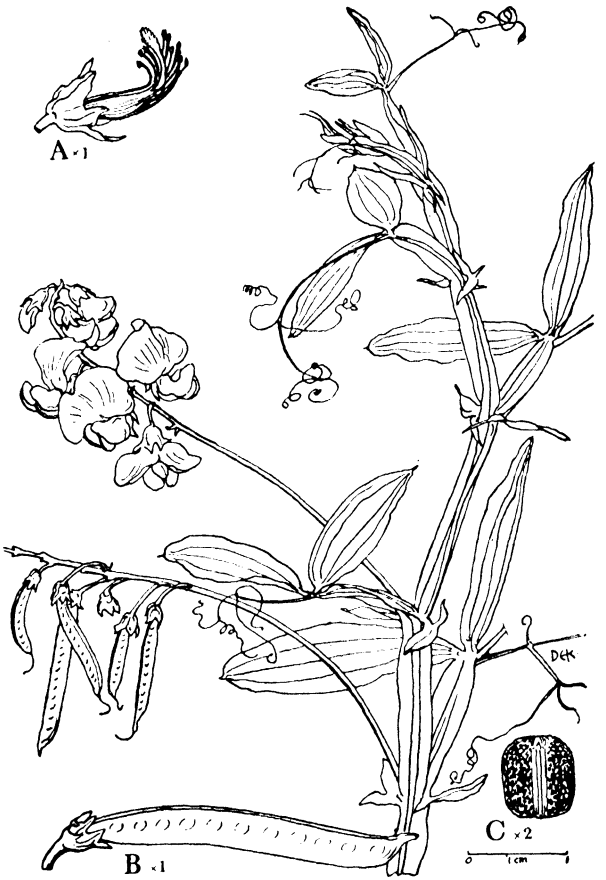
A. flower, side; B. front view. C. stamens, style and calyx. D. pod. E. seed.



532. LATHYRUS SYLVESTRIS L. The NARROW-LEAVED EVERLASTING PEA is a rather stout, glabrous, climbing perennial with several nearly simple winged stems 20-50 in. (50-125 cm.) long, growing from a rather stout, creeping, underground stock. It is found infrequently in hedges and woods in various parts of England and S. Scotland. Leaflets 2, 12-15 mm. long, linear-lanceolate; stipules linear, acute, bifid, basal portion small; tendrils branched. Peduncles much longer than leaves, 4-8 flowered; flowers 12-18 mm. long; calyx campanulate, teeth triangular, one longer than the others; corolla purple with greenish spots. Pod about 40 mm., netted; seed 5 mm., globose, smooth, mottled, dark brown; hilum 5-7 mm., linear.

Early July—mid Aug. (Broadwas, Worcestershire.)

A. flower. B. stamens, style and calyx. C. pod. D. seed (two views).



533. LATHYRUS LATIFOLIUS L. The EVERLASTING PEA is a stout, climbing, glabrous perennial with much-branched stems 50-75 in. (120-180 cm.) long, growing from a rather slender, underground, creeping stock. It is much grown in gardens, and is naturalized on railway banks and waste places. Leaflets 2, ovate, mucronate; stipules lanceolate, acute, bifid, lobes unequal, tendrils branched. Peduncles 120-150 mm., longer than leaves, 4-8 flowered; flowers 15-20 mm. long; calyx campanulate, teeth triangular, one longer than the others; corolla pink. Pod about 100 mm. long, glabrous; seed 6 mm., globose, smooth, mottled; hilum 6 mm., linear.

Mid July—late Aug. (Plumtree, Nottinghamshire.)
A. stamens, style and calyx. B. pod. C. seed.

534. LATHYRUS PALUSTRIS L. The MARSH PEA is a weak, climbing, little-branched perennial with annual stems up to 24 in. (60 cm.) long. It is found in lowland marshy places in England and Ireland. Leaflets 6, 30-35 mm. long, lanceolate; tendrils simple; stipules linear, acute, bifid. Peduncles not exceeding leaves, 4-6 flowered, flowers 16-20 mm. long; calyx gibbous, teeth triangular, unequal; corolla bluish purple. Pod about 30 mm. long, glabrous; seed 3 mm. diam., globose, smooth, brown; hilum 1·5 mm., long.

Mid June—late July. (Misson, Nottinghamshire.)
A. flower. B. calyx, stamens and style. C. pod. D. seed.

535. LATHYRUS JAPONICUS Willd. (*L. maritimus* Bigel.). The SEA PEA is a stout, glabrous perennial with simple, green, leafy, prostrate stems 9-12 in. (23-30 cm.) long, growing from a slender, white, creeping stock. It is found rarely on sea-shingle on the E. and S. coast of England and S.W. Ireland. Leaflets 8-12, 25-30 mm. long, ovate, fleshy; stipules large, ovate-acute; tendrils small, branched. Peduncles shorter than the leaves, 4-8 flowered; flowers 15-18 mm. long; calyx campanulate, teeth acute, one much longer than the others; corolla variegated, purple. Pod about 40 mm. long, faintly and obliquely netted, glabrous; seed 4 mm., globose, smooth, brown; hilum 7-10 mm. long.

Mid June—late July. (Dungeness, Kent.)
A. flower. B. stamens, style and calyx. C. pod. D. seed.

536. LATHYRUS MONTANUS (L.) Bernh. The BITTER VETCH is a rather slender, glabrous perennial with a single, little-branched, winged stem about 9 in. (23 cm.) high, growing from a creeping and tuberous rhizome. It occurs in woods and pastures all over the British Isles, but chiefly on non-calcareous soils in the north. Leaflets 4-8, linear-lanceolate, acute; stipules half-hastate, linear-lanceolate, acute; tendrils absent. Peduncles 35-45 mm., a little longer than leaves, 3-8 flowered; flowers 12-15 mm. long; calyx campanulate, teeth acute, unequal; corolla crimson. Pod about 40 mm. long, faintly netted, smooth; seed 3 mm., globose, mottled, dark brown; hilum 1·5 mm.

Mid May—late July. (Rostrevor, Ireland.)
A. flower. B. stamens, style and calyx. C. pod. D. seed.

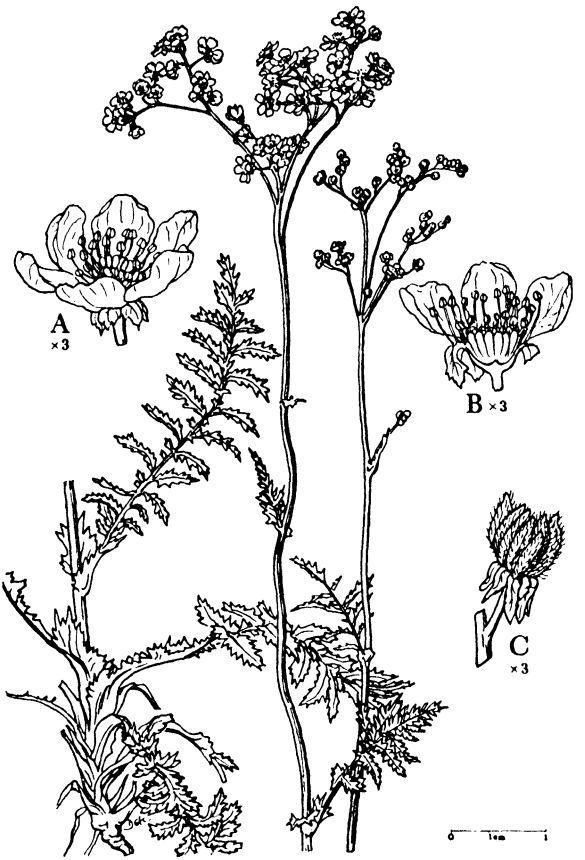
SPIRÆA L. Shrubs or herbs with simple or divided leaves. Calyx free; petals 5-6. Fruit a cluster of dry follicles or achenes.

537. SPIRÆA SALICIFOLIA L. The WILLOW-LEAVED SPIRÆA is a small shrub 36-72 in. (90-180 cm.) high, with numerous suckers. It is often planted as a hedge or in shrubberies, and has become abundantly naturalized, particularly in Wales. Leaves elliptical, oblong, ± dentate, acute. Flowers 5 mm. diam., in dense panicles; sepals 5, hairy, triangular; petals 5, pink; carpels 5, 6 mm. long, erect, ovate, acute, glabrous; seed 1·7 × 1·0 mm., elongate, lanceolate, netted, brown.

Mid June—early Aug. (Bala, Merioneth.)
A. flower. B. flower l.s. without petals. C. carpels. D. seed.

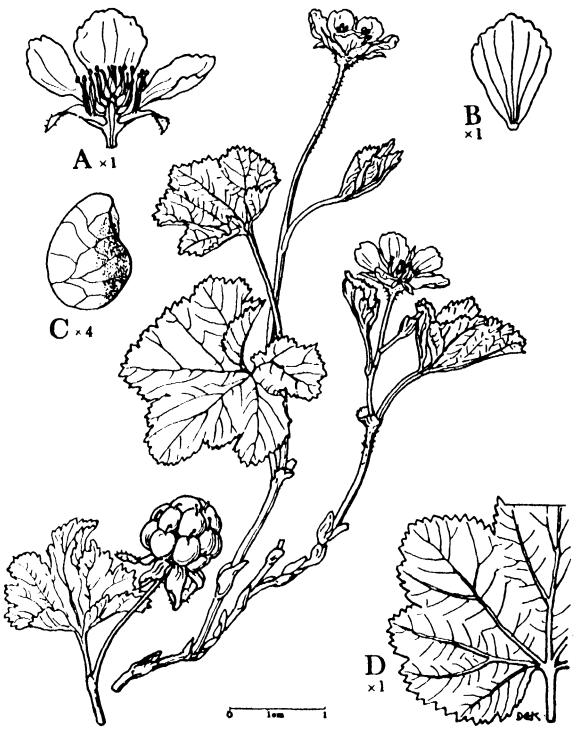
538. SPIRÆA (FILIPENDULA) ULMARIA L. The MEADOW SWEET is a stout, glabrous perennial with an erect, almost simple flowering stem 18-24 in. (45-60 cm.) high, growing from a stout, creeping rhizome. It is a very common plant of swamps, wet meadows and similar places throughout the British Isles. Leaves pinnate with 2-5 pairs of elliptical, acute, widely toothed, main leaflets and smaller ones in between; usually white on lower surface. Flowers 5-6 mm. diam., in dense cymes; sepals 5, triangular, ovate, reflexed, pubescent; petals usually 5, cream; carpels 3 mm. long, glabrous, twisted together in fruit; seed hardly ever developed.

Mid July—mid Sept. (Bethersden, Kent.)
A. flower B. flower l.s. C. head of carpels.



539. SPIRÆA FILIPENDULA L. = F. VULGARIS Mœnch. The DROPWORT is a rather slender, glabrous perennial with almost simple flowering stems 9-18 in. (23-45 cm.) long, growing erect from a rosette of leaves and a tuberous rootstock. It is a frequent plant of chalk and limestone grassland, chiefly in England and N. Wales. Leaves pinnate with 8-20 pairs of narrow, lanceolate, acute, deeply and finely toothed main leaflets, with rather smaller ones in between; green on both sides. Flowers 7-8 mm. diam., in rather lax cymes; sepals 6, triangular, ovate, reflexed after flowering, pubescent; petals usually 6, cream; carpels hairy, straight and erect in fruit; seeds rarely developed.

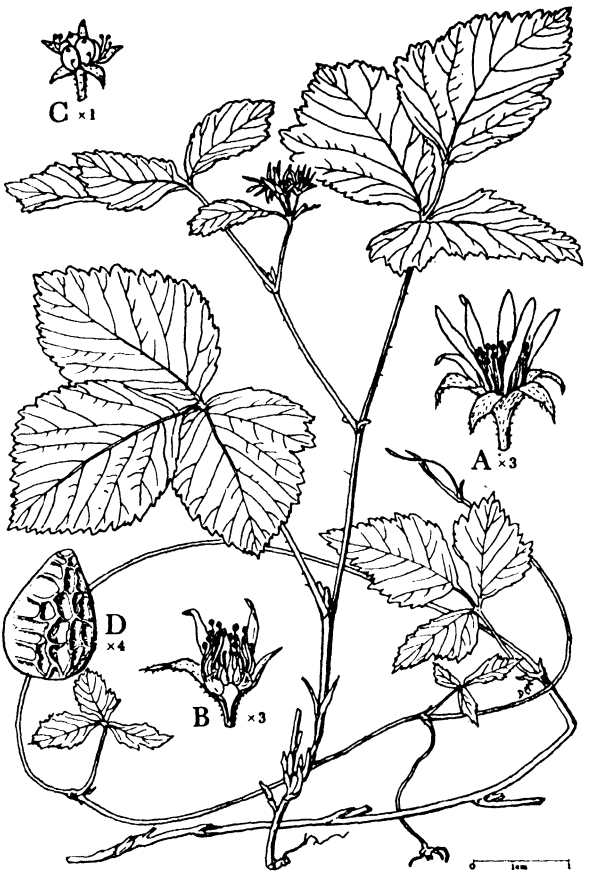
Mid June—late July. (Lambourn, Berkshire.)
A. flower. B. flower l.s. C. carpels.



RUBUS L. Trailing or erect shrubs with compound leaves or herbs with palmate leaves. Calyx free with no epicalyx; petals 5-6. Fruit a cluster of succulent, one-seeded drupes

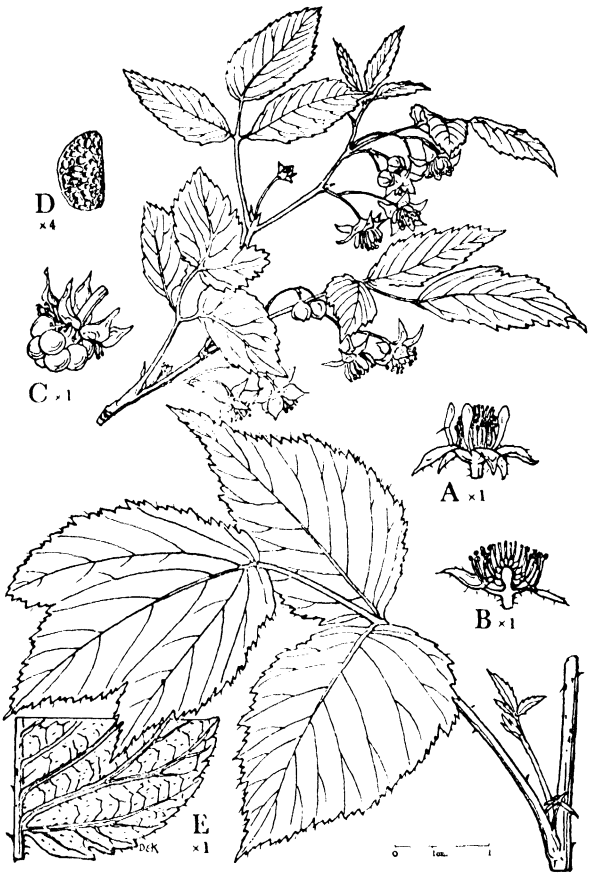
540. RUBUS CHAMÆMORUS L. The CLOUDBERRY is a dwarf, glabrous perennial with erect, annual, simple flowering stems 2-4 in. (5-10 cm.) high, growing from a long, creeping rhizome. It is found in peaty soils from 1,000 to about 3,000 ft. in the mountainous districts of Britain, but very rarely in Ireland. Leaves palmate, wrinkled. Flowers 25-30 mm. diam., solitary, terminal and sub-diœcious; sepals lanceolate, hairy; petals ovate, white, exceeding sepals. Fruit red to orange; drupelets 8-9 mm. diam., large; seed 4·0 × 2·5 mm., obovoid, pitted and netted, yellow.

Early June—mid July. (Teesdale, Co. Durham.)
A. flower l.s. B. petal. C. seed. D. portion of leaf.



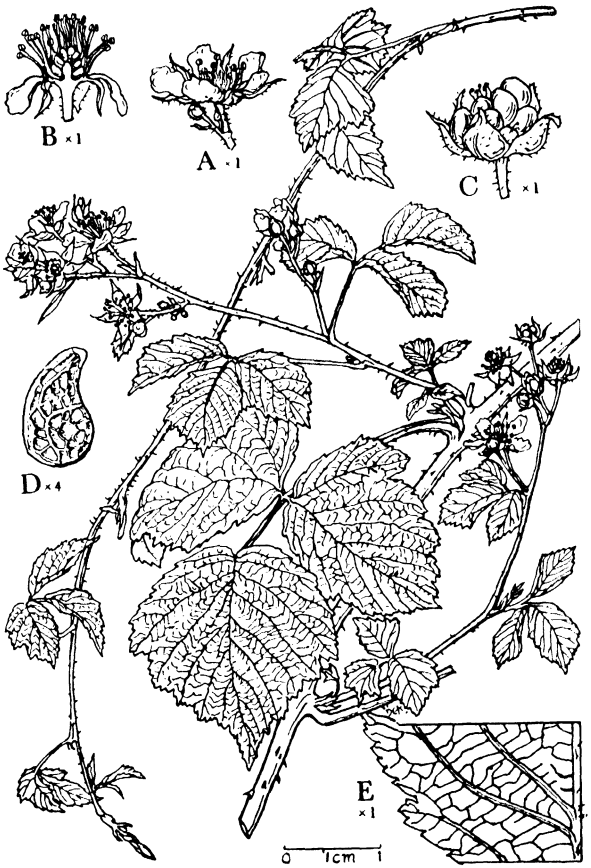
541. RUBUS SAXATILIS L. The STONE BRAMBLE is a far-creeping, stoloniferous plant with flowering stems 6-12 in. (15-30 cm.) high, growing erect from the prostrate stem. It is found in shady and rocky woods, especially in hilly districts of the British Isles. Stem with very small prickles. Leaves ternate with sessile lateral leaflets; stipules ovate. Flowers 8-10 mm., 3-8 in a simple umbel; sepals hairy, ovate, acute; petals narrow, almost linear, cream, 1·5 times the length of sepals. Fruit purple to red; drupes 5 mm. diam., few, medium; seed 4 × 3 mm., obovoid, deeply honeycombed.

Early June—early July. (Via Gellia, Derbyshire.)
A. flower. B. flower l.s. C. fruit. D. seed.



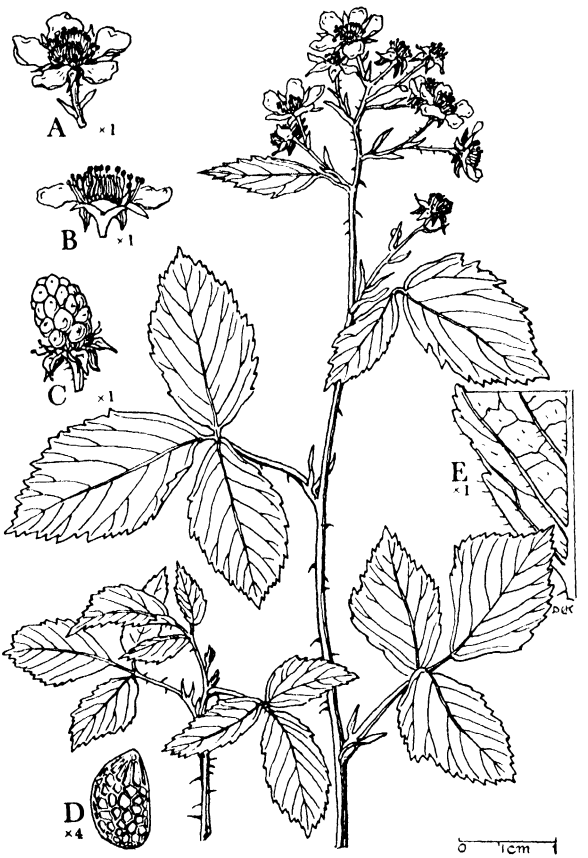
542. RUBUS IDÆUS L. The RASPBERRY is a small, stoloniferous plant with erect, woody branches 24-72 in. (60-180 cm.) high, which is found in woods and shady places over most of Britain, though rare in the south-west. Stems erect with many small, straight prickles. Leaves ternate with a long, stalked terminal, and 2 or 4 sessile, lateral leaflets, white and hairy underneath. Flowers 12 mm. diam., in small clusters, drooping; petals narrow, spathulate, white, erect, about equalling the spreading, slightly hairy, sepals. Fruit red; drupelets 7 mm. diam., few to several, medium; seed 2·5 × 1·5 mm., half-ovoid, deeply honey-combed.

Late May—mid July. (Bentley Common, Warwickshire.)
A. flower. B. flower l.s. C. fruit. D. seed. E. leaf (lower surface).



543. RUBUS CÆSIUS L. The DEWBERRY is a small, woody, prickly plant with trailing stems and many far-creeping runners up to 48 in. (120 cm.) long. It is found commonly in scrubland, sandhills and woods throughout the British Isles. Stems almost prostrate, with many small, weak prickles. Leaflets ternate, with a long-stalked terminal and 2 sessile lateral leaflets, wrinkled, usually sub-glabrous. Flowers 28-30 mm. diam., few, in short racemes, erect; petals large, wrinkled, white, spreading, about equalling the slightly hairy, spreading sepals. Fruit bluish-black; drupelets 9-10 mm. diam., few, large, acid; seed 4 × 2 mm., ± obovate, deeply honeycombed.

Late June—late July. (Cressbrook Dale, Derbyshire.)
A. flower. B. flower l.s. C. fruit. D. seed. E. leaf (lower surface).

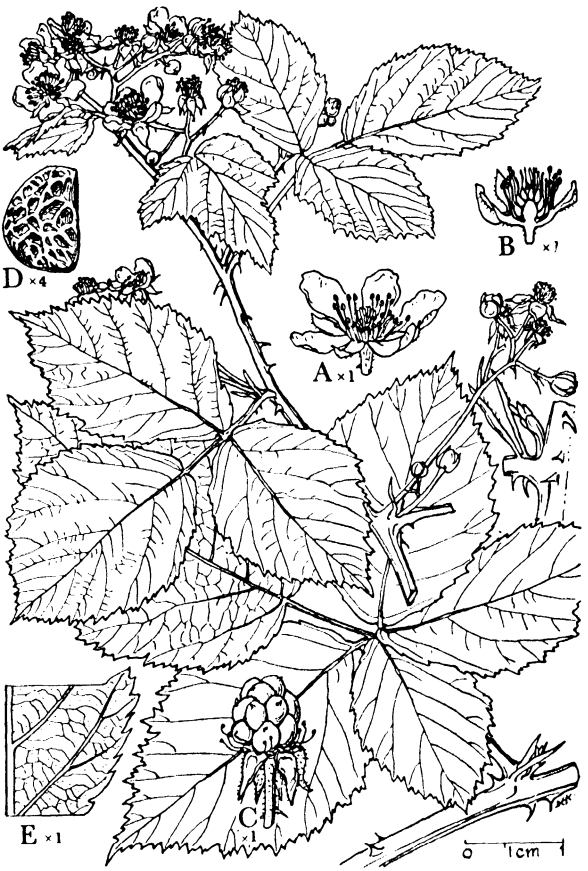


RUBUS FRUTICOSUS L. The bramble or blackberry is an extremely variable plant generally distributed and abundant throughout the British Isles. It is extremely polymorphic, and the following are common plants representative of the groups into which the plant is classified on the basis of the armature of the stem and the general shape of the leaves.

544. RUBUS PLICATUS Weihe and Nees § SUBERECTI P. J. Muell. Plants in this group have suberect stems, arching only near the apex and not rooting. Prickles confined to the angles all equal; pricklets, acicles and stalked glands absent. This species (the ERECT PLICATE BRAMBLE) has 5 large, ovate, plicate, acuminate and unequally serrate leaflets with subsessile base. Flowers 20 mm. diam.; sepals green, spreading; petals white or pink; filaments white; stamens about equalling greenish styles and black fruits; seed half-ovate, deeply honeycombed; drupes 3·0-3·5 mm.

Mid June—mid July. (Bagot Wood, Staffordshire.)

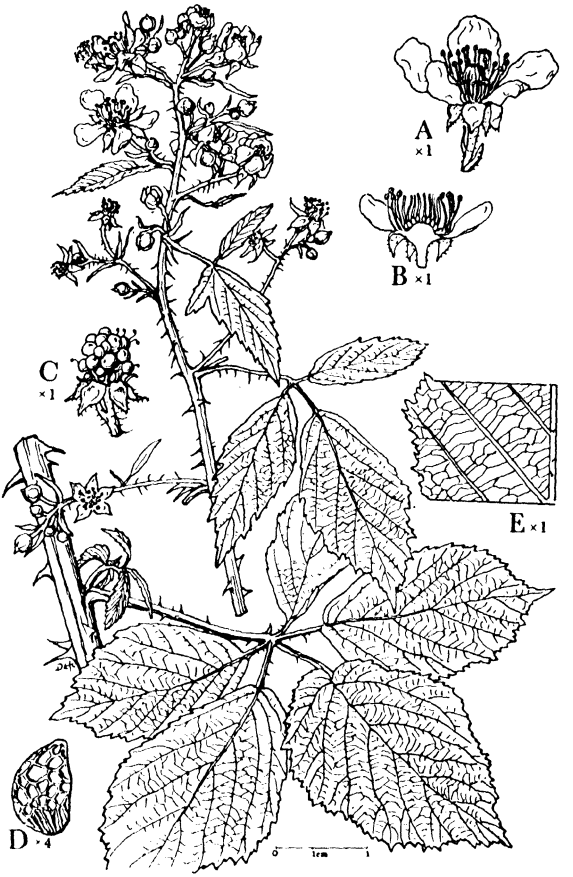
A. flower. B. flower l.s. C. fruit. D. seed. E. lower surface of leaf.



545. RUBUS SUBLUSTRIS E. Lees: § TRIVIALES P. J. Muell. Plants of this group have low, arching and rooting, terete stems; prickles scattered all round the stem; pricklets, stalked glands and acicles variable. Lateral leaflets sessile. This group seems to be intermediate between *R. cæsius* and *R. fruticosus* and has the large pruniose drupelets of the former. It is widespread. This species (the SHINING, HAZEL-LEAVED BRAMBLE) has 5 broadly ovate, acuminate, coarsely and doubly serrate, sessile, wrinkled, tomentose leaflets, the terminal almost cordate. Flowers 20-25 mm. diam.; sepals acute, reflexed; petals sub-orbicular, white, filaments white; styles green; drupes 3·5-4·0 mm.

Mid May—mid June. (Hanchurch, Staffordshire.)

A. flower. B. flowers l.s. without petals. C. fruit. D. seed. E. leaf (lower surface).



546. RUBUS LINDLEIANUS E. Lees § SYLVATICI P. J. Muell. Plants of this group have angled, glabrescent or hairy stems, arching and rooting at the end; prickles confined to the angles; pricklets, acicles and stalked glands absent. There are 75 sub-species in the group. This species (LINDLEY'S WOODLAND BRAMBLE) has 5 rather narrow, obovate, cuneate, long-stalked leaflets, glabrous above and pale-greyish and pubescent beneath. Flowers 25 mm. diam.; sepals acute, reflexed; petals sub-orbicular, white; filaments white; styles green; drupes 3·5-4·0 mm.

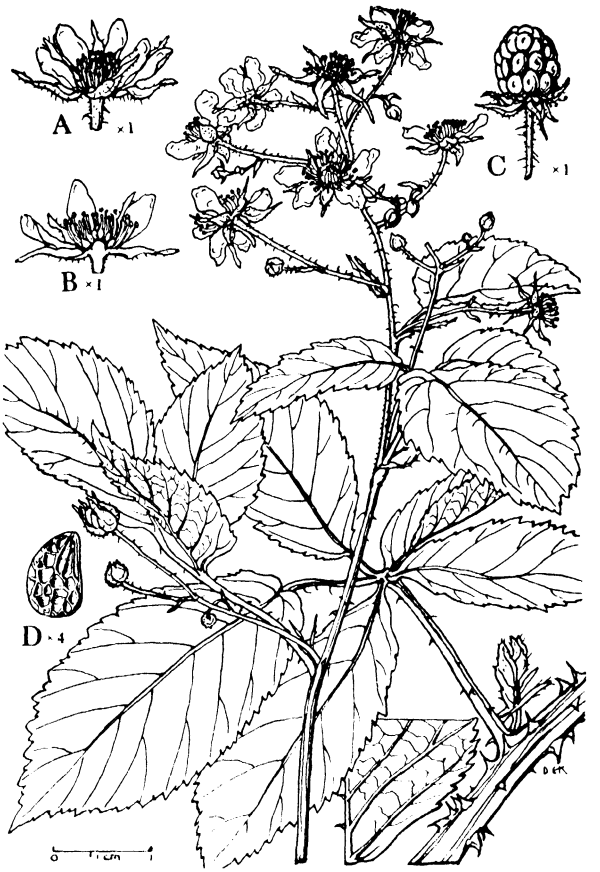
Mid May—mid June. (Hanchurch, Staffordshire.)

A. flower. B. flower l.s. without petals. C. fruit. D. seed. E. leaf (lower surface).

547. RUBUS ULMIFOLIUS Schott § DISCOLORES P. J. Muell. Plants of this group have angled and usually stellate, tomentose, strong, arching and rooting stems; prickles equal and confined to the angles; acicles, prickles and stalked glands absent. The leaflets are subcoriaceous and white beneath. This species (the ELM-LEAVED BRAMBLE), which is very common and widely distributed, has stellate-tomentose branches; 5 ovate-lanceolate, acuminate, stalked leaflets, glabrous above and white beneath. Flowers 20-25 mm. diam.; sepals grey, reflexed in fruit; petals pink, crumpled; stamens and styles usually pink; drupes 2 mm.

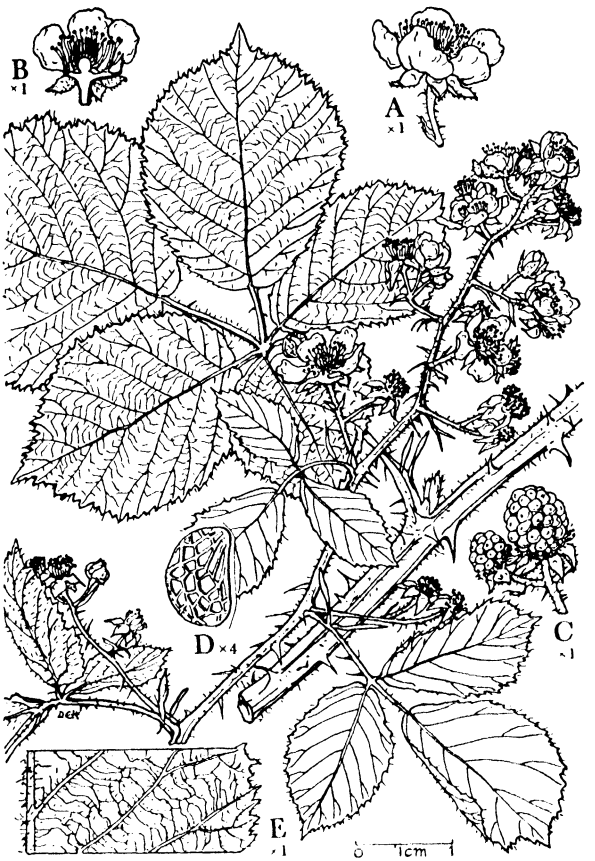
Mid July—mid Aug. (Bangor, Caernarvonshire.)

A. flower. B. flower l.s. C. fruit. D. seed. E. leaf (lower surface). F. stem.



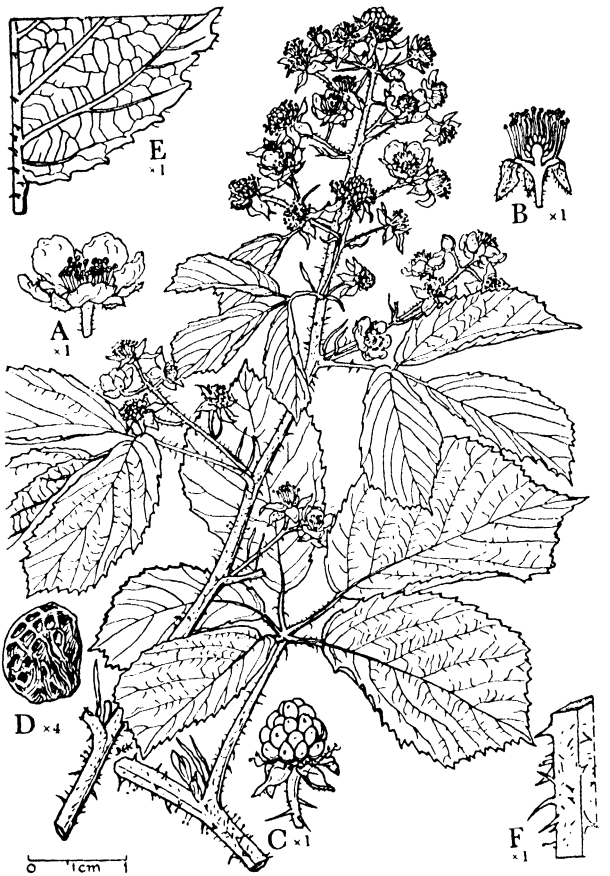
548. RUBUS SPRENGELII Weihe § SPRENGELIANI Focke. Plants of this group have rather weak, procumbent or arching stems rooting at the end, slightly angled, glabrescent or hairy; prickles confined to the angles; acicles absent and pricklets and stalked glands few or none. There are only 5 species in this group. This species (SPRENGEL'S SLENDER BRAMBLE), which is rather common, has 3 or 5 ovate, gradually acuminate, stalked leaflets moderately hairy and green on both sides. Flowers 16-20 mm. diam.; sepals grey, spreading or clasping the fruit; petals pink, crumpled; filaments pink; styles green; drupes 2 mm.

Early July—early Aug. (Meerbrook, Staffordshire.)
A. flower. B. flower l.s. C. fruit. D. seed.



549. RUBUS VESTITUS Weihe et Nees § VESTITI Focke. This group has strong, angled and usually hairy, arching and rooting stems; prickles equal, confined to the angles; pricklets, acicles and stalked glands present but few on stem, more frequent on panicle. There are about 30 species in the group. This species (the BROAD HAIRY-LEAVED BRAMBLE) is common and well distributed, and has an angled, hairy stem, 5 orbicular, shortly cuspidate, shortly stalked leaflets, thick and pilose above, densely tomentose beneath. Flowers 25-30 mm. diam.; sepals grey tomentose, usually reflexed; petals orbicular, rose-pink; filaments white or pink, long; styles green or pink; drupes 2·5 mm. diam.

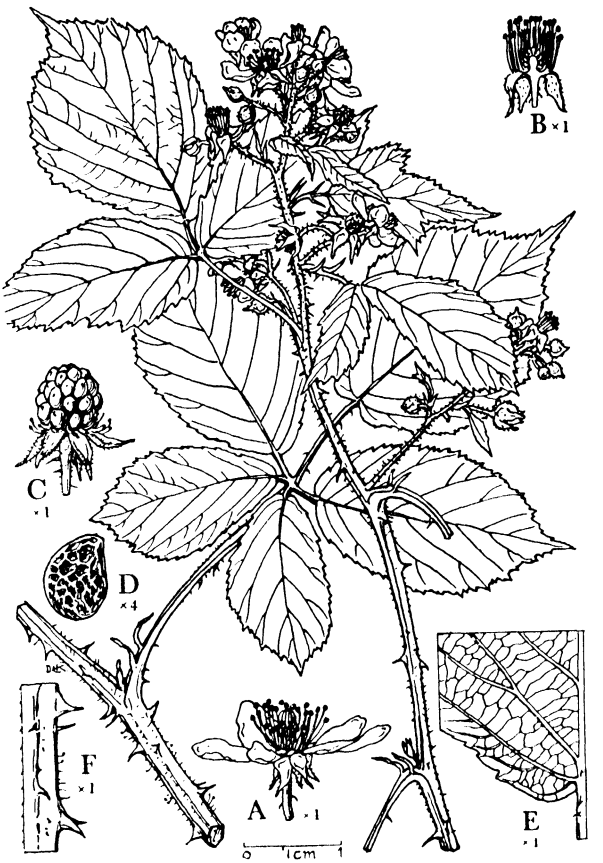
Early June—late July. (Abbots Bromley, Staffordshire.)
A. flower. B. flower l.s. C. fruit. D. seed. E. leaf (lower surface).



550. RUBUS DREJERI G. Jensen § MUCRONATI W. Wats. Plants of this group have low, arching and rooting, angled or terete stems; prickles confined to angles; pricklets, acicles and stalked glands all present, very unequal and few to many. There are about 10 species in the group. This species (the ROUND-LEAVED BRAMBLE) is mostly found in S. England and has 5 orbicular, cuspidate or abruptly acuminate, finely serrate, shortly stalked, finely pilose, green leaflets. Flowers 20 mm. diam.; sepals greenish, aciculate, clasping or weakly spreading; petals roundly oblong, pink; filaments pink; styles green; drupes 2 mm.

Mid June—late July. (Wimbledon, Surrey.)

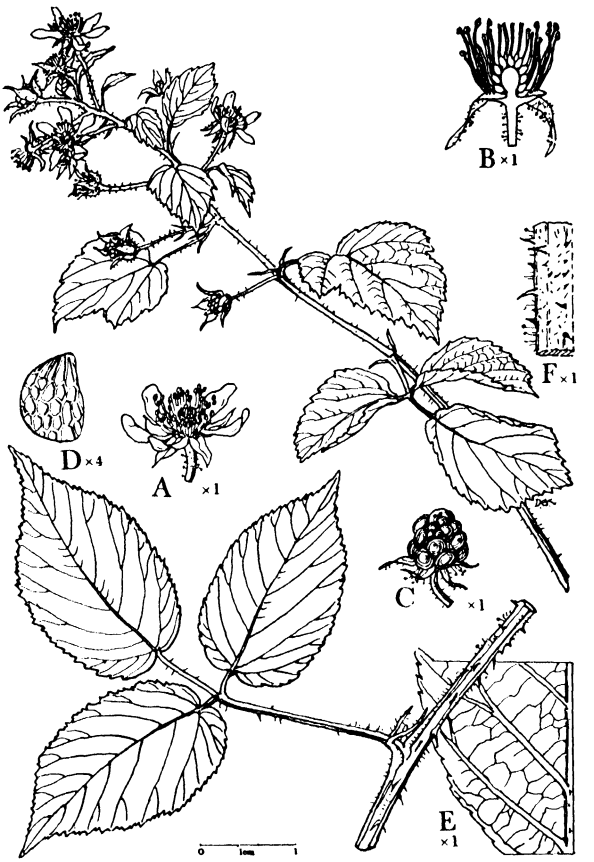
A. flower. B. flower without petals l.s. C. fruit. D. seed. E. leaf (lower surface).



551. RUBUS RADULA Weihe § RADULÆ Focke. Plants of this group have low, arching and rooting, angled or terete stems; prickles large, few, confined to stem angles; pricklets, stalked glands and acicles all present, but small and subequal. There are about 14 species in this fairly common and widespread group. This species (the SHORT-PRICKLED BRAMBLE) is common in most of England, and has 5 ovate, acuminate, coarsely serrate, shortly stalked leaflets, glabrous above, grey-tomentose below. Flowers 20 mm. diam.; sepals grey, hairy, reflexed, oblong; petals ovate, pink; filaments white; styles green; drupes 2·5 mm.

Mid June—mid July. (Wimbledon, Surrey.)

A. flower. B. flower without petals l.s. C. fruit. D. seed. E. lower leaf surface. F. portion of stem.



552. RUBUS SCABER Weihe § APICULATI Focke. Plants of this group have low, arching and rooting, angled, weak, terete stems; prickles few, unequal and confined to the stem angles; pricklets, acicles and stalked glands all present, rather unequal and numerous but not passing into the prickles. This species (the SCABRID BRAMBLE) is widely but sparsely spread over England, has a pubescent stem and 3-5 ovate-acuminate, sharply and evenly serrate, stalked leaflets, green and pilose below. Flowers 10-20 mm. diam.; sepals greenish-grey, spreading or reflexed; petals white, narrow, glabrous on margin; filaments white, about equal to the greenish styles; drupes 2·7-3·0 mm.

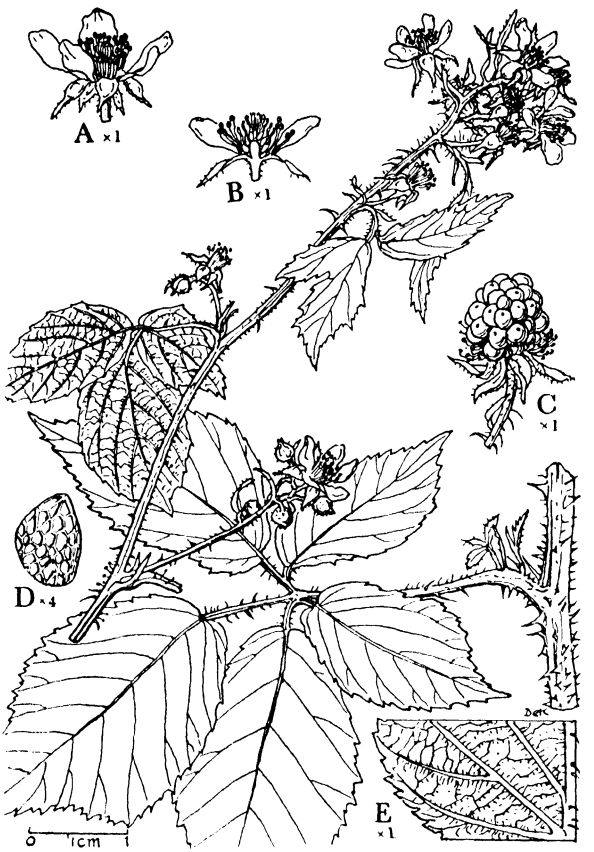
Early June—mid Aug. (Bromley, Kent.)

A. flower. B. flower l.s. without petals. C. fruit. D. seed. E. under surface of leaf.

553. RUBUS DISJUNCTUS Muell. and Lef. § GRANDIFOLII Focke. Plants of this group have low, arching and rooting, strong, angled stems; prickles numerous, rather unequal, not entirely confined to the stem-angles; pricklets, acicles and stalked glands all present, the two latter numerous, unequal, but not passing into prickles; inflorescence large, pyramidal. There are 18 species in this widespread group. This robust species (MOYLE'S LARGE-LEAVED BRAMBLE), which is scattered all over England, has a hairy stem and 3-5 ovate, acuminate, sharply toothed, shortly stalked, large, pilose leaflets. Flowers 25-30 mm. diam.; sepals acute, hairy, spreading or reflexed; petals narrow, usually pinkish; filaments white, long; styles red-based; drupes 3 mm.

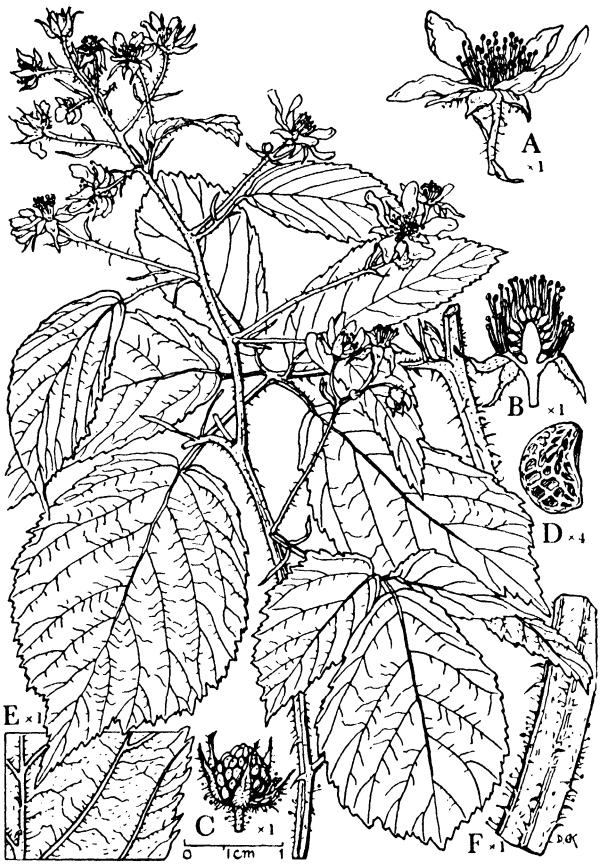
Early July—mid Aug. (Rudyard, Staffordshire.)

A. flower. B. flower l.s. without petals. C. fruit. D. seed. E. lower surface of leaf. F. portion of stem.



554. RUBUS DASYPHYLLUS Rogers § HYSTRICES Focke. This group has strong arching and rooting, terete or angled stems with numerous strong prickles scattered all round the stem and usually passing into acicles and stalked glands. It is a large group with about 20 species. This species (the MANY-PRICKLED BRAMBLE) is very common, and has 5-3 ovate, acuminate, coarsely and unequally serrate, shortly stalked, tough, green and softly hairy leaflets. Flowers 20 mm. diam.; sepals greenish, acuminate, spreading or reflexed; petals pink, ovate, pilose; filaments pink; styles red at base; drupes 2 mm.

Late June—late July. (Meerbrook, Staffordshire.)
A. flower. B. flower l.s. C. fruit. D. seed. E. leaf (lower surface).



555. RUBUS HIRTUS Waldstet and Kit. § EGLANDULOSI Wats. Plants of this group have weak, procumbent and rooting, terete stems with numerous, weak, very unequal prickles, scattered all round the stem and usually passing into acicles and stalked glands. It is a small group of about 13 species. This species (the HAIRY BRAMBLE), which is found mainly in woods in S.E. England, has a weak, hairy stem and 3-5 ovate-acuminate, unequally serrate, shortly stalked green leaflets, softly hairy beneath. Flowers 20-25 mm. diam.; sepals acuminate, green, erect after flowering; petals oblong, ovate, white; filaments white, about as long as greenish styles; drupes 3 mm.

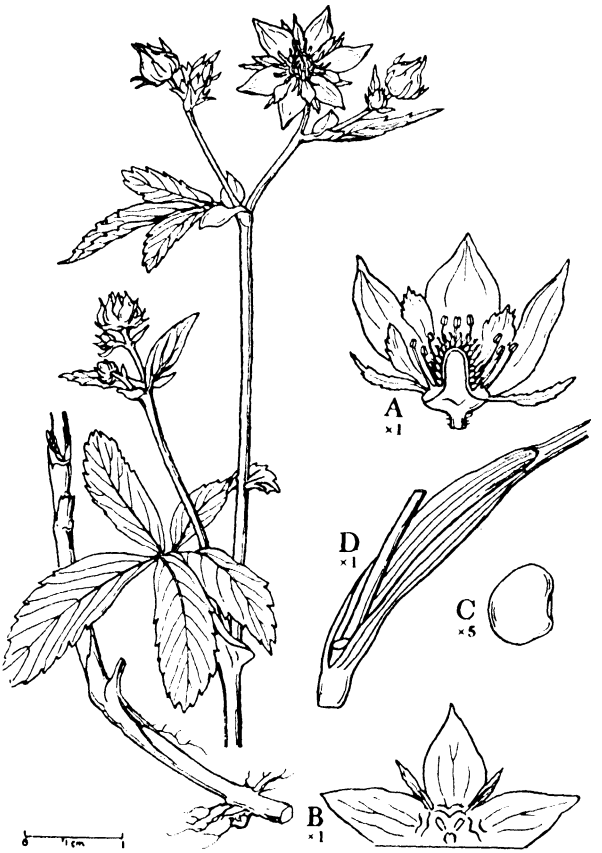
Early—late June. (Wimbledon, Surrey.)

A. flower. B. flower l.s. C. fruit. D. seed. E. portion of leaf. F. portion of stem.

POTENTILLA L. Herbaceous or woody, erect or prostrate plants with ternate or pinnate leaves. Flowers perfect; sepals 4 or 5; epicalyx present. Receptacle dry, more or less conical, bearing numerous, unawned achenes.

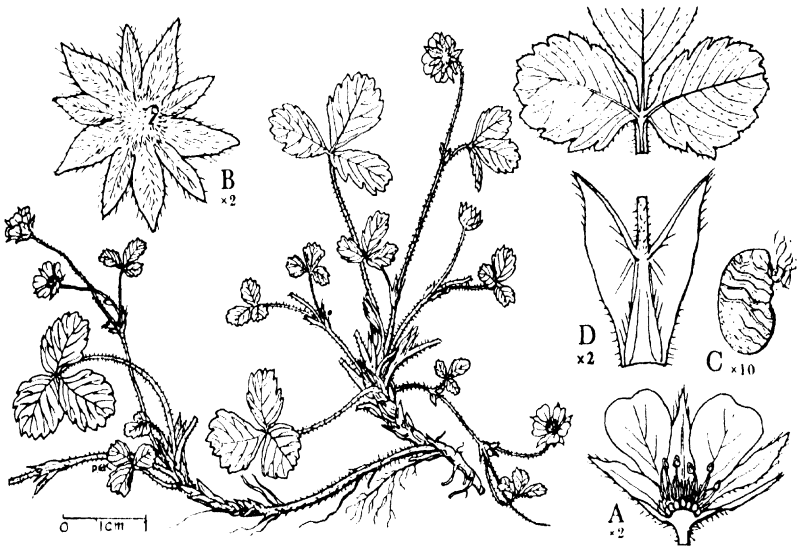
556. POTENTILLA FRUTICOSA L. The SHRUBBY CINQUEFOIL is a small shrub 18-30 in. (45-75 cm.) high with many brown, glabrous, woody stems. It grows only in stony and bushy places on limestone in Teesdale, near Keswick, and in Counties Clare and Galway. Leaves pinnate; leaflets 5, linear-lanceolate, entire, green and covered both sides with silky hairs; stipules narrow, acute, entire, thin and hairy. Flowers 20 mm., shortly stalked and in few-flowered cymes; sepals 5, hairy; episepals linear, acute, narrower than and a little shorter than the narrow, acute sepals; petals yellow, ovate, orbicular, just exceeding sepals. Achenes 2·0 × 1·7 mm., ± ovate, hairy; receptacle hairy.

Mid June—late July. (Upper Teesdale, Durham.)
A. flower l.s. B. portion of calyx. C. leaf and stipule. D. achene.



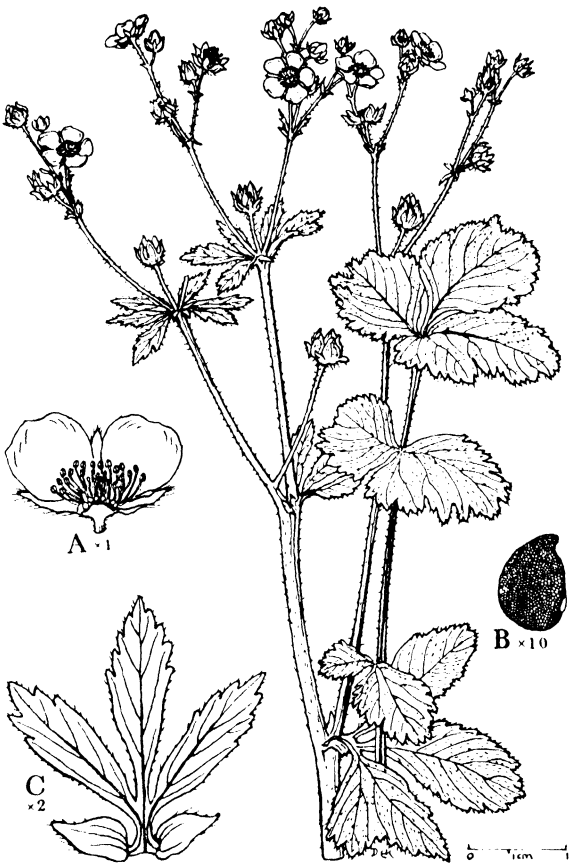
557. POTENTILLA PALUSTRIS (L.) Scop. The MARSH CINQUEFOIL is a rather stout perennial with a glabrous, erect, branched, leafy stem 12-30 in. (30-75 cm.) high, growing from a decumbent stock. It occurs quite commonly in bogs, marshes, wet heaths and pond margins throughout the British Isles. Leaves pinnate; leaflets 5, lanceolate, toothed, glabrous; stipules scaly, adnate, long. Flowers 30-35 mm. diam., shortly stalked and in few-flowered cymes; sepals 5, crimson, glabrous, ovate, acute; episepals small, linear, half the length of the ovate, acute sepals; petals small, spathulate, toothed, half the length of sepals, crimson. Achenes 2·0 × 1·7 mm., semi-globular, smooth; receptacle conical.

Late June—early Sept. (West Stow, Suffolk.)
A. flower l.s. B. part of calyx. C. achene. D. stipule.



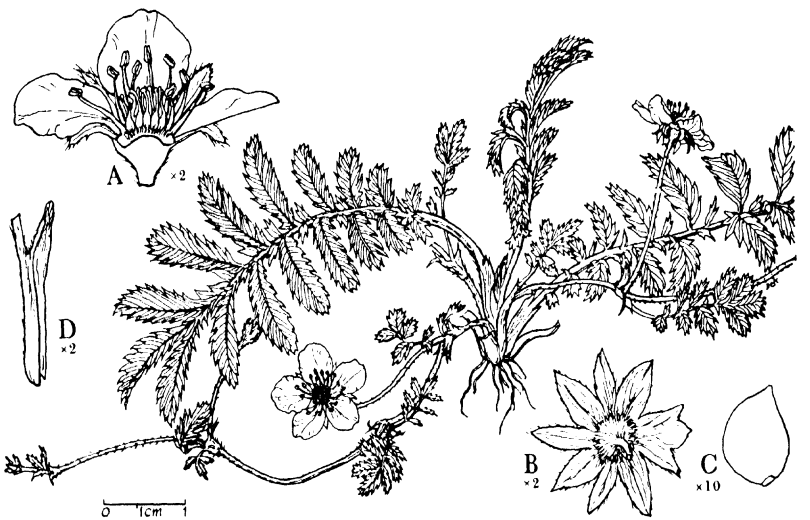
558. POTENTILLA STERILIS (L.) Garcke. The BARREN STRAWBERRY is a hairy perennial with several decumbent, softly hairy flowering stems 3-5 in. (8-13 cm.) long and a few slender stolons growing from an ascending, woody rootstock. It is found abundantly in dry places and hedgerows in all the British Isles except N. Scotland. Leaves forming a rosette, ternate, obovate, coarsely toothed; stipules triangular, entire, hairy. Flowers 10-15 mm. diam., almost solitary on long stalks; episepals linear-lanceolate, acute, almost as long as sepals; petals 5, white, cordate, as long as sepals. Achenes 1·5 mm. long, half ovoid, wrinkled, with a tuft of hairs by the hilum.

Early March—mid May. (Halesworth, Suffolk.)
A. flower l.s. B. calyx. C. achene. D. leaf and stipule.



559. POTENTILLA RUPESTRIS L. The ROCK CINQUEFOIL is a stout perennial with many erect, branched, hairy stems 12-20 in. (30-50 cm.) high, growing from a woody stock. It is found very rarely on limestone rocks in Central Wales. Leaves pinnate, leaflets 3-7, those of the lower leaves broadly ovate, of the upper, lanceolate, all toothed and hairy, green; stipules triangular, entire, ciliate. Flowers 15 mm., shortly stalked, cymose; sepals 5, hairy, episepals linear, about half as long as the ovate, acute sepals; petals 5, white, obovate, one and a quarter times as long as calyx. Achenes 2 × 2 mm., semi-globular, with a recurved tip, netted

Mid May—early June. (Hort. Lavington ex Montgomeryshire.)
A. flower l.s. B. achene. C. upper leaf and stipule.

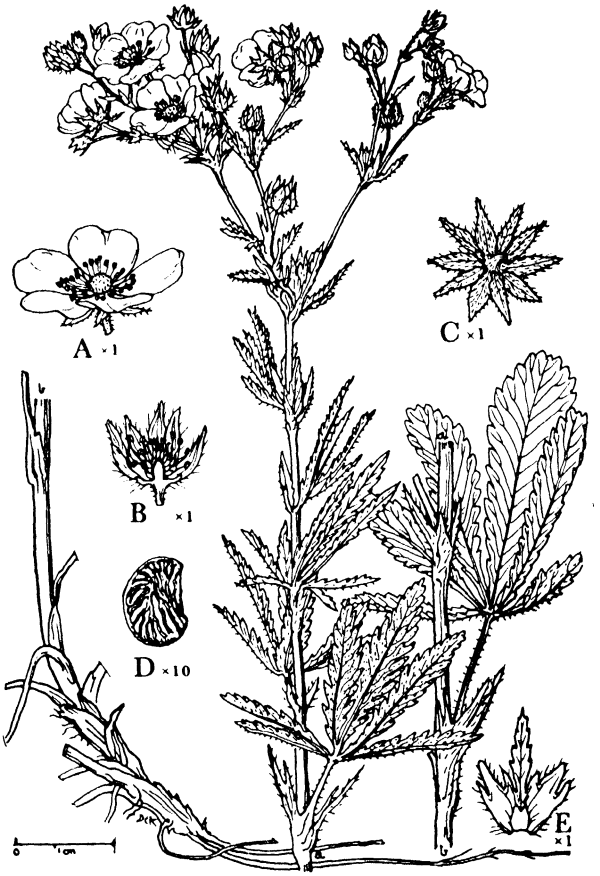


560. POTENTILLA ANSERINA L. The SILVER-WEED is a rather slender perennial with flower-scapes 2-4 in. (5-10 cm.) high, growing from a creeping and rooting, prostrate runner up to 12 in. (30 cm.) long, which arises in a rosette of leaves. It is abundant in waste and grassy places throughout the British Isles. Radical leaves pinnate; leaflets 11-15, narrowly lanceolate, deeply and acutely toothed, with smaller leaflets in between, covered with silky hairs, white beneath and green or occasionally white above; stipules long, adnate, free part lanceolate, entire, hairy. Flowers 30-35 mm. diam., solitary in the axils of the leaves of the runners; episepals linear-lanceolate, equalling the acute, rather broader sepals; petals 5 or more, yellow, ovate, one and a half times the length of the sepals. Achenes 2 × 2 mm., sub-globular with a pointed apex, smooth, glabrous.

Late June—early Sept. (Rauceby, Lincolnshire.)
A. flower l.s. B. calyx. C. achene. D. stipule.

561. POTENTILLA ARGENTEA L. The SILVERY CINQUEFOIL is a rather slender perennial with a hairy, decumbent, then erect, little-branched stem 4-9 in. (10-23 cm.) high, growing from a woody stock. It is found on dry, sandy ground here and there throughout England and E. Scotland. Leaves palmate, leaflets 5, narrowly lanceolate, with a few, large, acute teeth towards the apex, white and covered with silky hairs beneath, green and glabrous above; stipules narrow, acute, entire. Flowers 6-8 mm. diam., shortly stalked and cymose; sepals 5, episepals linear, sub-acute, narrower and equal in length to the rather broader and hairy sepals; petals pale yellow, obcordate, hardly exceeding calyx. Achenes 1·0 × 0·7 mm., rounded, ovoid, vertically wrinkled.

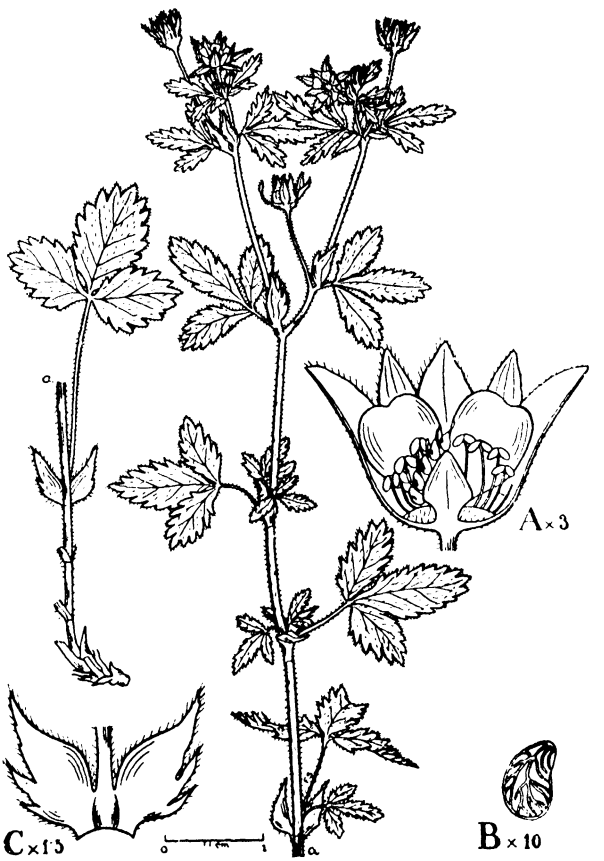
Mid June—early Sept. (Cavenham, Suffolk.)
A. flower l.s. B. calyx. C. achene. D. stipule and leaf.



562. POTENTILLA RECTA L. This GARDEN POTENTILLA is a stout biennial with erect, much-branched, hairy stems 9-18 in. (22-45 cm.) high, growing from a stout rootstock. It has become established in a few waste places in England. Leaves palmate, leaflets 5-7, of lower leaves, lanceolate, of upper linear, all coarsely toothed and hairy, green; stipules trifid, hairy. Flowers 20-25 mm., shortly stalked, cymose; sepals 5, episepals equal to hairy sepals, all linear; petals 5, golden or pale yellow, obcordate, nearly twice as long as calyx. Achenes 2·2 × 1·5 mm., half-ovoid, deeply vertically wrinkled, glabrous.

Early June—mid Sept. (King's Lynn, Norfolk.)

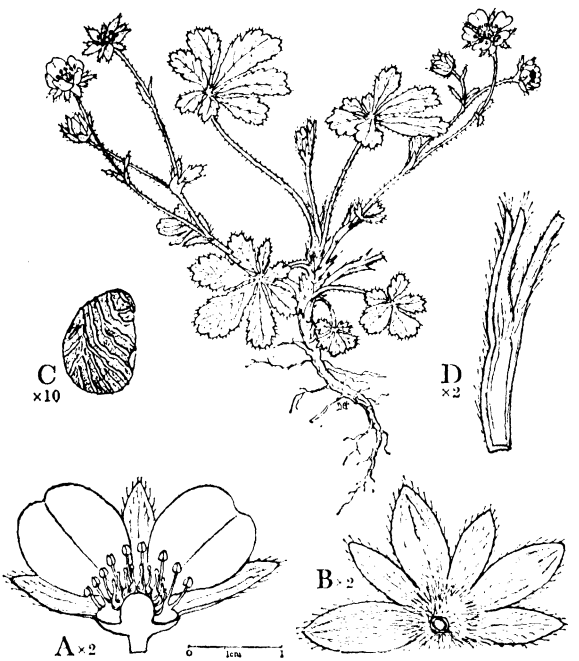
A. flower. B. flower l.s., without petals. C. calyx. D. achene. E. stipule.



563. POTENTILLA NORVEGICA L. This NORWEGIAN POTENTILLA is a rather stout perennial with an erect, somewhat hairy, branched stem 9-12 in. (23-30 cm.) high. It is found here and there naturalized on old walls and mostly in S.E. England. Leaves ternate, leaflets obovate, hairy, coarsely toothed; stipules ovate, acuminate, toothed. Flowers 10 mm. diam., mostly crowded at the top of the stem; episepals acute, narrow, almost as long as the lanceolate, acute, hairy sepals; petals 5, yellow, obovate, shorter than the sepals. Achenes 1·2 mm. long; half-ovoid, glabrous, wrinkled.

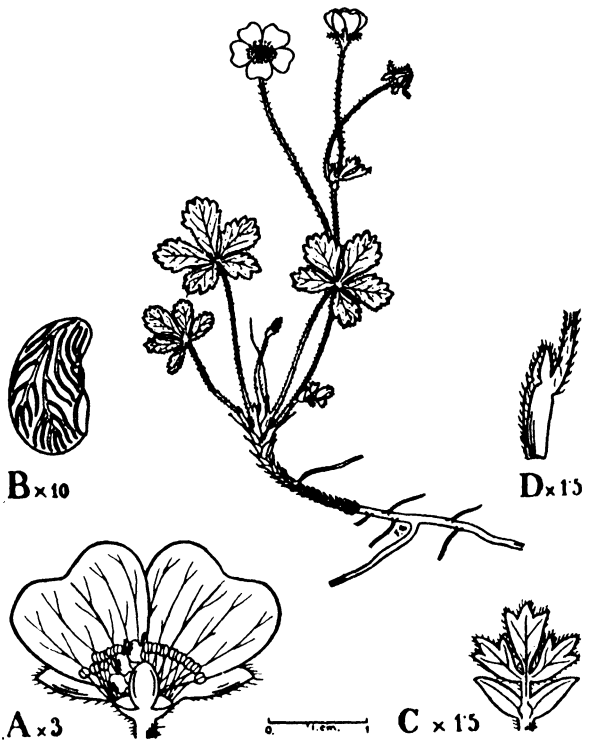
Late June—late July. (Box Hill, Surrey.)

A. flower l.s. B. achene. C. stipules.



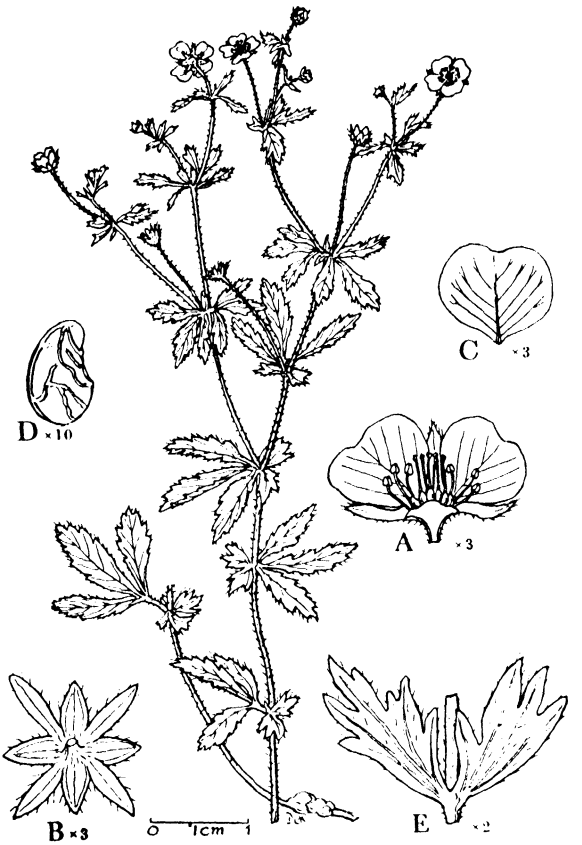
564. POTENTILLA TABERNÆMONTANI Aschers (*P. verna* auct.). The SPRING CINQUEFOIL is a small perennial with many flowering stems 4-6 in. (10-15 cm.) high, and prostrate, rooting, barren shoots 3-8 in. (8-20 cm.) long, growing from a rather slender stock. It grows in dry, basic grassland from Hampshire and Suffolk to C. Scotland. Leaves palmate, leaflets 5-7, obovate, truncate, dentate, the terminal tooth smallest, hairy with appressed hairs, green; stipules long, linear-lanceolate, hairy. Flowers 10-13 mm., almost solitary, on long stalks; sepals 5; episepals sub-acute, ovate, hairy, three-fifths the length of the sepals; petals 5, yellow, cordate; twice as long as sepals. Achenes 2 × 1 mm. long, half-oval, wrinkled, glabrous.

Early May—late June. (Dovedale, Derbyshire.)
A. flower l.s. B. calyx. C. achene. D. stipule.



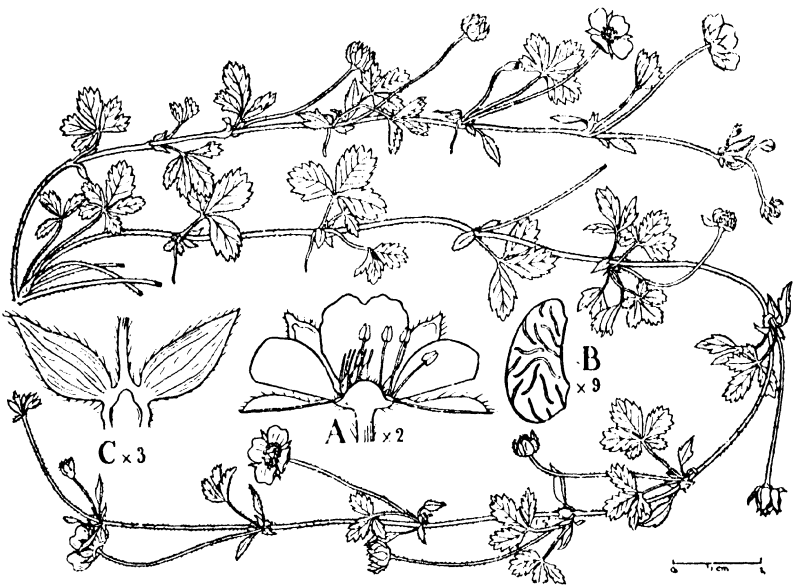
565. POTENTILLA CRANTZII (Cr.) Beck ex Fritsch. The ALPINE CINQUEFOIL is a small suberect perennial with flowering stems 4-6 in. (10-15 cm.) high, and procumbent, hairy, non-rooting, leafy branches 2-4 in. (5-10 cm.) long, growing from a thick stock. It grows here and there on basic rocks in the mountains of N. Wales, N. England and Scotland, and is sometimes abundant. Leaves palmate, leaflets 5, ovate, not truncate, dentate, the teeth all subequal, hairy with appressed hairs, green; stipules ovate, hairy. Flowers 16 mm. diam., almost solitary on long stalks; sepals 5, episepals three-fifths the length of hairy, lanceolate sepals; petals 5 yellow, cordate, twice as long as sepals. Achenes 1·7 mm long, half-oval with vertical wrinkles, glabrous.

Early June—late July. (Ben Lawers, Perthshire.)
A. flower l.s. B. seed. C. upper leaf. D. stipule of lower leaf.



566. POTENTILLA ERECTA (L.) Rausch. The COMMON TORMENTIL is a slender, rather hairy perennial with erect or suberect, little-branched stems 9-12 in. (23-30 cm.) high. It is abundant in grassland or heaths on acid and light soils throughout the British Isles. Leaves ternate, lanceolate, coarsely toothed and sparsely hairy; stipules leaf-like, toothed, hairy. Flowers 10-15 mm., in long stalked cymes; sepals 4, episepals linear lanceolate longer than the lanceolate sepals; petals 4, cordate, as long as the sepals, yellow. Achenes 1·5 × 1·0 mm., half-ovate, acute, glabrous, with few wrinkles.

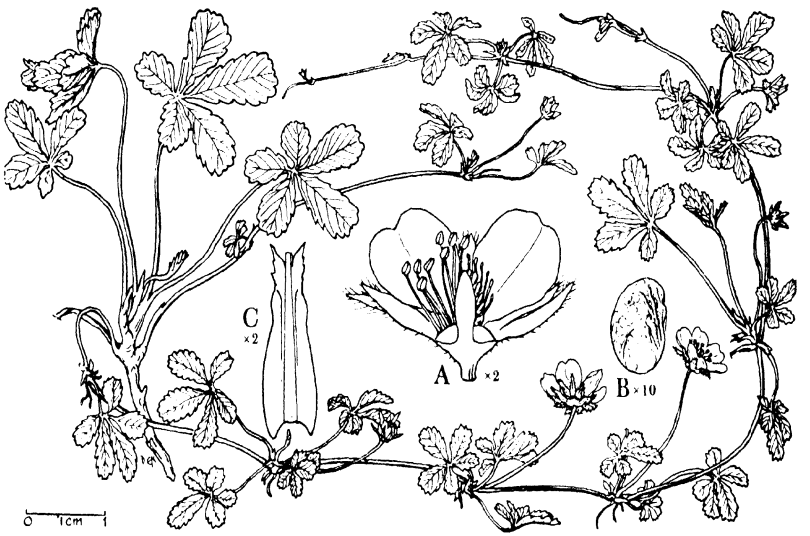
Mid June—late Sept. (Axe Edge, Derbyshire.)
A. flower l.s. B. calyx. C. petal. D. achene. E. stipule.



567. POTENTILLA ANGLICA Laichard (*P. procumbens* Sibth.). The CREEPING TORMENTIL is a slender perennial with leaves and flower scapes 2-4 in. (5-10 cm.) high, growing from a long creeping and rooting, prostrate, rather hairy stem 6-24 in. (15-60 cm.) long. It is found uncommonly in grassland, heaths and hedge banks, chiefly on non-calcareous soils in various scattered localities. Leaves ternate, narrowly obovate, coarsely toothed, green and somewhat hairy; stipules lanceolate, acute, entire, hairy. Flowers 12-15 mm. diam., solitary in the axils of the leaves; sepals usually 4; episepals three-quarters length of the ovate, acute, hairy sepals; petals 4, yellow, cordate, as long as the sepals. Achenes 2 × 1 mm., half-ellipsoid, glabrous, faintly wrinkled.

Mid June—late Sept. (Wareham, Dorset.)

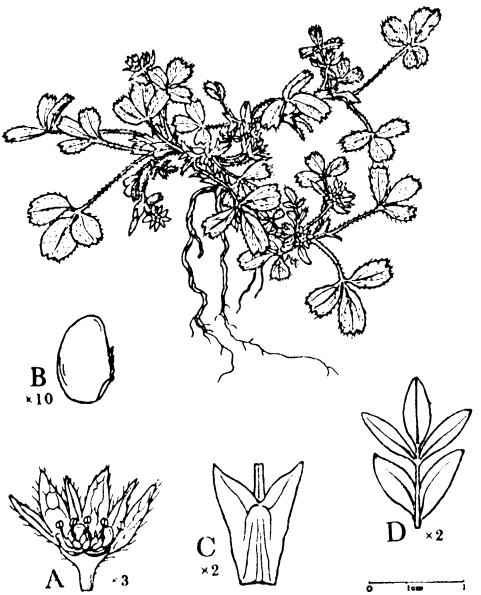
A. flower l.s. B. achene. C. stipule.



568. POTENTILLA REPTANS L. The CREEPING CINQUEFOIL is a slender perennial with flowers and leaves 2-4 in. (5-10 cm.) high, growing from procumbent, rooting stems up to 36 in. (90 cm.) long. It is a common plant found in hedge banks and waste places on neutral and basic soil throughout the British Isles. Leaves palmate, leaflets 5, lanceolate with a ± truncate apex, coarsely toothed and almost glabrous; stipules long, adnate, free part lanceolate, entire, subglabrous. Flowers 15-20 mm. diam., solitary in the axils of the leaves; sepals usually 5, episepals linear, acute, equalling the lanceolate, acute sepals; petals 5 or more, yellow, cordate, one and a half times as long as sepals. Achenes 2·5 × 1·7 mm., ovoid, obtuse, glabrous, wrinkled only near hilum.

Mid June—mid Sept. (Empingham, Rutland.)

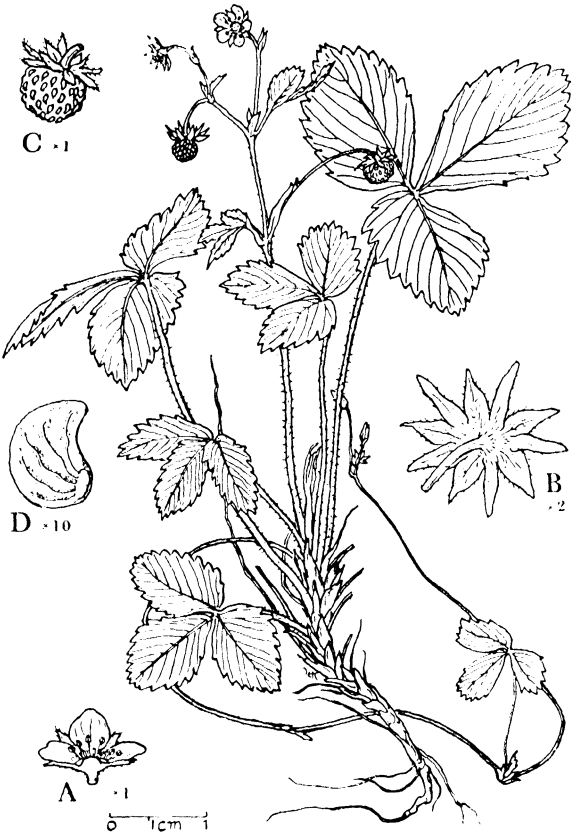
A. flower l.s. B. achene. C. stipule.



569. POTENTILLA SIBBALDI Haller fil. = SIBBALDIA PROCUMBENS L. The ALPINE SIBBALDIA is a dwarf, tufted, rather hairy perennial with flowering stems and basal leaves 1-3 in. (2-8 cm.) high, growing from a woody, prostrate, branched, rooting stock 2-9 in. (5-23 cm.) long. It is found quite abundantly on mountain pastures in Scotland between 2,000 and 4,000 ft. and in one or two places in N. England. Leaves ternate; leaflets obovate, truncate, toothed at the apex, sparingly hairy, dark green; stipules half-adnate, triangular, acute, toothed, ciliate. Flowers 5-7 mm. diam., almost sessile in terminal clusters; sepals 5, episepals linear, acute, narrower than, but as long as, the lanceolate, acute sepals; petals yellow, minute, ovate, one-quarter the length of sepals. Achenes 1·2 × 0·7 mm., ellipsoid, rounded at both ends, smooth, glabrous.

Late June—mid Aug. (Ben Lawers, Perthshire.)

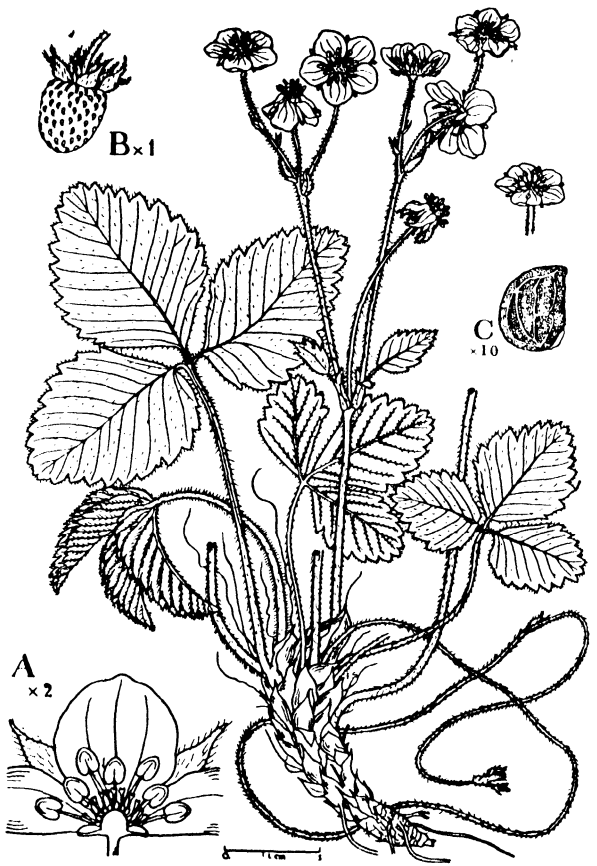
A. flower l.s. B. achene. C. stipule of lower leaf. D. upper leaf.



FRAGARIA L. Herbaceous plants with ternate leaves. Flowers perfect; sepals 5; epicalyx present. Receptacle swollen in fruit, bearing numerous carpels on its surface.

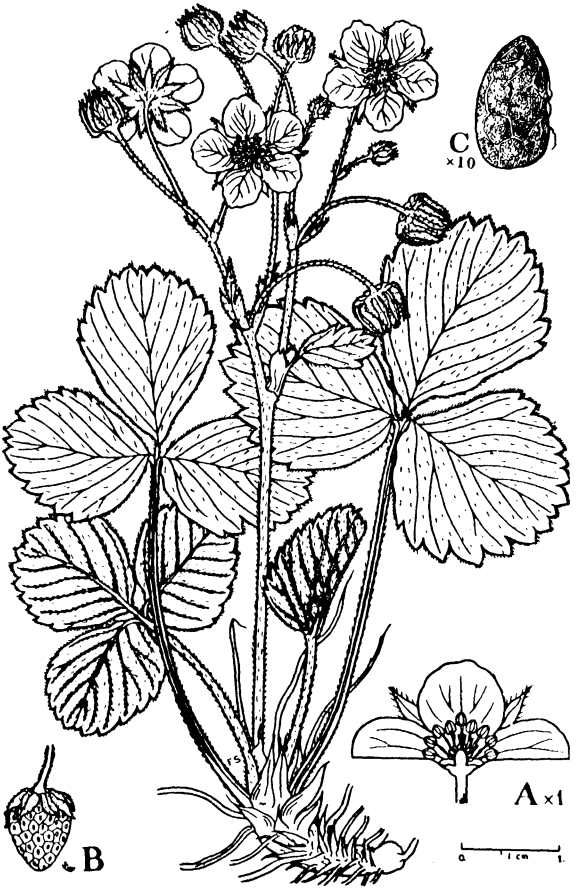
570. FRAGARIA VESCA L. The WILD STRAWBERRY is a small perennial with erect flowering stems 3-6 in. (8-15 cm.) high, and numerous runners growing from a thick, erect rootstock. It is an abundant plant in woodlands and rather bare, shady places throughout the British Isles. Leaflets elliptical with acute teeth, green and covered both sides with silky hairs. Flowers 10-12 mm. diam.; sepals lanceolate, acute; episepals narrower and slightly longer; petals white. Fruiting receptacle 7-10 mm., scarlet, globular; achenes 1·5 × 1·0 mm., with radial striae, reniform, beak blunt.

Early May—mid July. (Via Gellia, Derbyshire.)
A. flower l.s. B. calyx. C. fruit. D. achene.



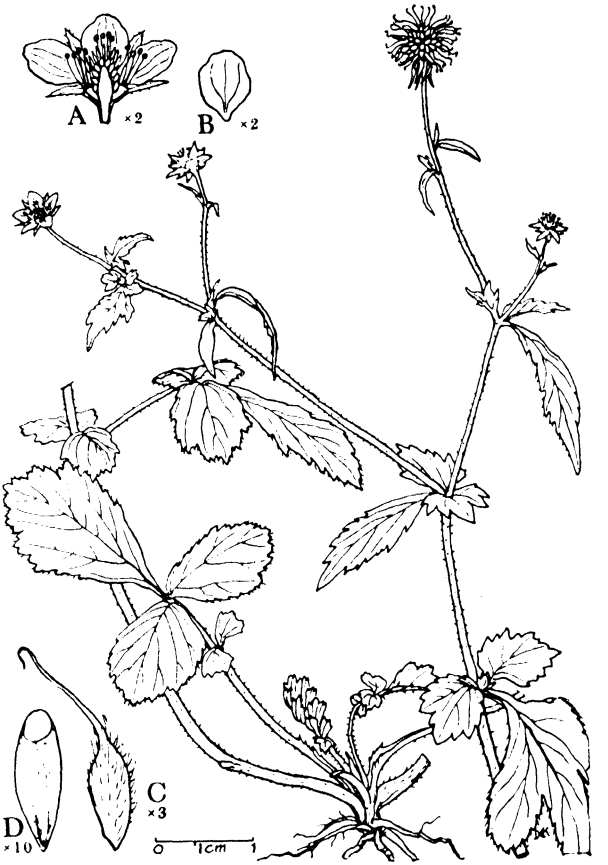
571. FRAGARIA MOSCHATA Duchesne. The HAUTBOY STRAWBERRY is a rather small perennial with erect flowering stems 4-15 in. (10-38 cm.) high and very few runners, growing from a thick ascending rootstock. It is a relic of former cultivation and is established here and there in many parts of the British Isles. Leaflets ovate, all shortly stalked, with acute teeth and green and hairy on both sides; petioles with spreading hairs. Flowers 15-20 mm. diam., subdiœcious; sepals lanceolate acuminate; petals broadly ovate, white. Fruit about 10 mm. diam., purple-red; achenes 1·2 × 1·0 mm., with radial striæ.

Late April—late May. (Potterne, Wiltshire.)
A. flower l.s. B. fruit. C. achene.



572. FRAGARIA ANANASSA Duchesne (*F. chiloensis* auct.). The GARDEN STRAWBERRY is a stout perennial with erect flowering stems 4-18 in. (10-45 cm.) high and numerous runners, growing from a thick ascending rootstock. It is almost universally cultivated and has become established on railway banks and similar places near habitations throughout the British Isles. Leaflets broadly ovate, unequally stalked or lateral one sessile, with acute teeth, dark green and sub-glabrous above, white and hairy beneath; petioles with ± appressed hairs. Flowers 20-35 mm. diam., hermaphrodite, sepals narrowly lanceolate acuminate; petals broadly ovate, white. Fruit about 15-30 mm. diam., red; achenes 1·5 × 1·0 mm. sub-ovoid, honeycombed and finely netted.

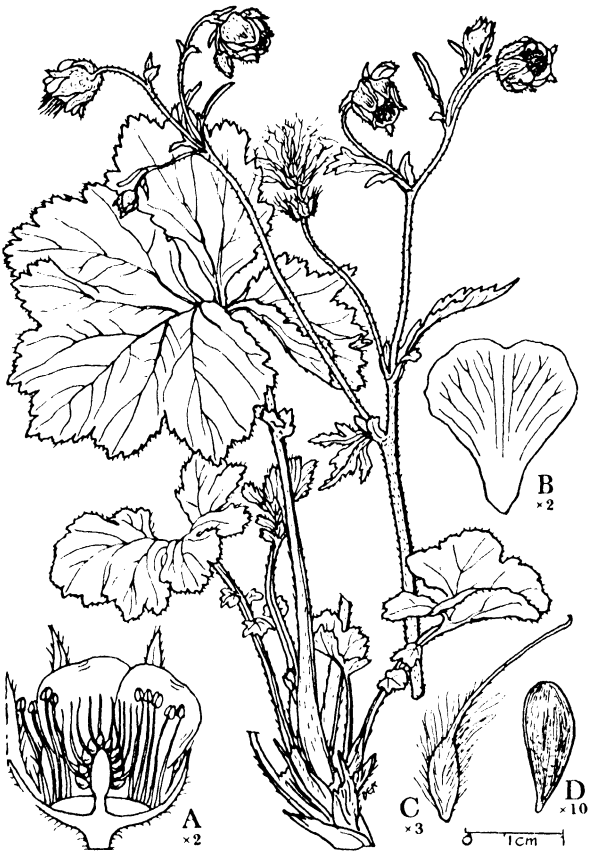
Late April—late May. (Worthy Junction, Hampshire.)
A. flower l.s. B. fruit. C. achene.



GEUM L. Herbaceous plants with unequally pinnate leaves. Flowers perfect; sepals 5; epicalyx present. Receptacle dry, bearing numerous dry carpels which are awned and hooked at the apex.

573. GEUM URBANUM L. The COMMON AVENS or HERB BENNETT is a somewhat hairy perennial with branched, erect, leafy flowering stems 6-15 in. (15-38 cm.) high and numerous radical leaves growing from a short, thick rhizome. It is abundant in hedges, banks and woodmargins over all the British Isles except N. Scotland where it is rare. Rhizome short, thick. Leaves with a narrow, orbicular, terminal lobe and lanceolate, rather smaller lateral ones; stipules large, semi-orbicular. Flowering stems bearing 3-6 erect flowers. Flowers 10-12 mm. diam.; calyx lobes rather short, hairy, acute; epicalyx lobes narrower; petals spreading, ovate, entire, yellow, not much longer than sepals. Receptacle sessile; carpels rather hairy; seed 2·0 × 0·6 mm., ovoid, acute and finely striate, black. Mid May—early July. (Bramcote, Notts.)

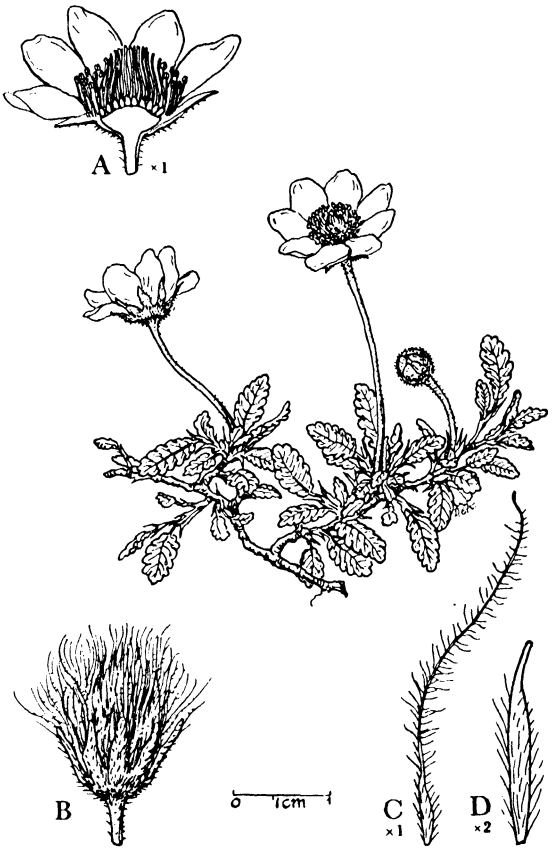
A. flower l.s. B. petal. C. ripe achene. D. seed.



574. GEUM RIVALE L. The WATER AVENS is a somewhat hairy perennial with almost simple, erect flowering stems 3-12 in. (8-30 cm.) high, and many radical leaves, growing from a stout, creeping and rooting rhizome. It grows commonly in marshes and wet meadows and is spread over most of the British Isles, but is absent in the south-west. Leaves with a large rounded terminal lobe and few, very small lateral segments; stipules lanceolate, toothed. Flowering stems bearing 1-3 nodding flowers. Flowers 8-10 mm. diam., calyx lobes long, hairy, acute; epicalyx lobes much narrower; petals erect, ovate, spathulate, lobed, pink to orange, rather shorter than sepals. Receptacle stalked above the calyx; carpels very hairy; seed 1·7 × 0·7 mm., ellipsoid, acuminate, finely striate.

Early May—early July. (Linby, Nottinghamshire.)
A. flower l.s. B. petal. C. ripe achene. D. seed.

(A hybrid between this and the last, called *G. intermedia*, is rather common.)

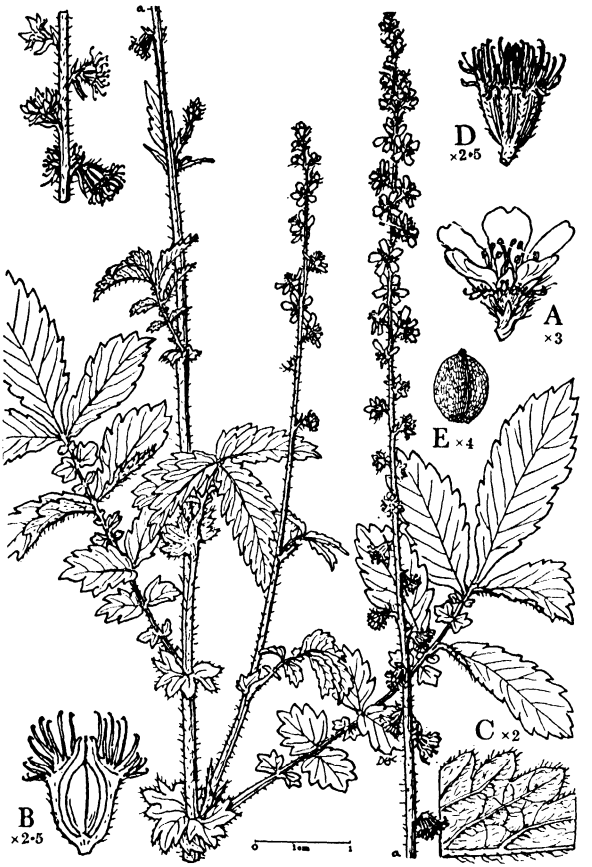


DRYAS L. Herbaceous to woody, prostrate undershrubs with simple leaves. Flowers perfect, sepals 7-10 with no epicalyx; petals 8. Receptacle dry, bearing numerous dry carpels with a feathery awn.

575. DRYAS OCTOPETALA L. The MOUNTAIN AVENS is a tufted, creeping perennial with flowering scapes 3-6 in. (8-15 cm.) high, growing from a dense mass of branched, procumbent, woody stems. It is a very rare plant of calcareous rocks on mountains in N. England, Scotland and Ireland, descending to the rocky sea coast in N. Scotland and Ireland. Stem woody, creeping, much-branched; leaves oblong, crenate, dark green and glabrous above, white-tomentose beneath; stipules scarious. Flowers 30-35 mm. diam., solitary; sepals about 8, lanceolate, acute; petals white, twice as long as sepals. Achenes 10 mm. long, compressed, hairy, linear; awn 40 mm. long.

Late May—early Aug. (The Burren, Co. Clare.)

A. flower l.s. B. head of achenes. C. single carpel. D. single achene.

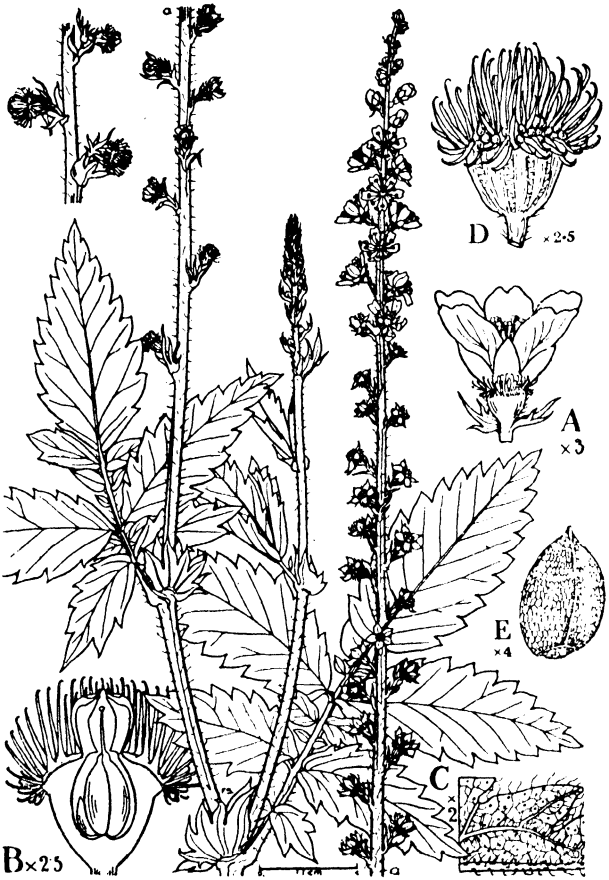


AGRIMONIA L. Herbaceous perennials with pinnate leaves. Flowers perfect, sepals 5 to 9, no epicalyx; petals 5; calyx tube woody, campanulate, half enclosing 1-5 carpels. Stamens perigynous.

576. AGRIMONIA EUPATORIA L. The COMMON AGRIMONY is a stout perennial with an erect, hairy, little-branched stem 10-18 in. (25-45 cm.) high, growing from a woody rootstock. It is common on banks and in pastures throughout the British Isles except in N. Scotland. Leaves pinnate; leaflets 5-9, with smaller ones in between, lanceolate, acute, deeply and simply serrate, hairy but not glandular beneath; stipules half-orbicular with large teeth. Flowers 6-8 mm. diam.; petals yellow, broadly lanceolate. Fruit 3 × 2 mm., with straight sides, conical, with deep, longitudinal furrows; outer spines of fruit erect or spreading. Achenes 2·5 × 2·0 mm., triquetrous, ovoid, shortly acuminate, netted.

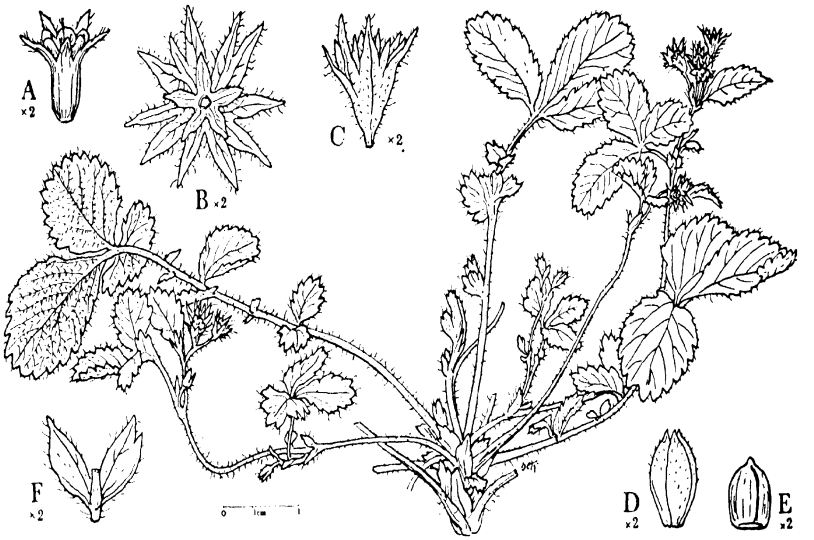
Late July—early Oct. (Hitcham, Suffolk.)

A. flower. B. fruit l.s. C. leaf (lower surface). D. fruit. E. achene.



577. AGRIMONIA ODORATA (Gouan) Mill. The FRAGRANT AGRIMONY is a stout perennial with an erect, hairy and glandular, little-branched stem 24-36 in. (60-90 cm.) high, rising from a woody root-stock. It is rather common in pastures in England and S. Scotland. Leaves pinnate; leaflets 5-11 with small ones in between, lanceolate, acute, dentate serrate, covered beneath with hairs and many odorous glands; stipules half-ovate with 5-7 acute, long teeth. Flowers 7-10 mm.; petals lanceolate, yellow. Fruit 5·0 × 4·5 mm., with rounded sides (campanulate), smooth or with shallow furrows; outer spines of fruit deflexed. Achene 4·5 × 2·5 mm., triquetrous, ovoid, acuminate, netted.

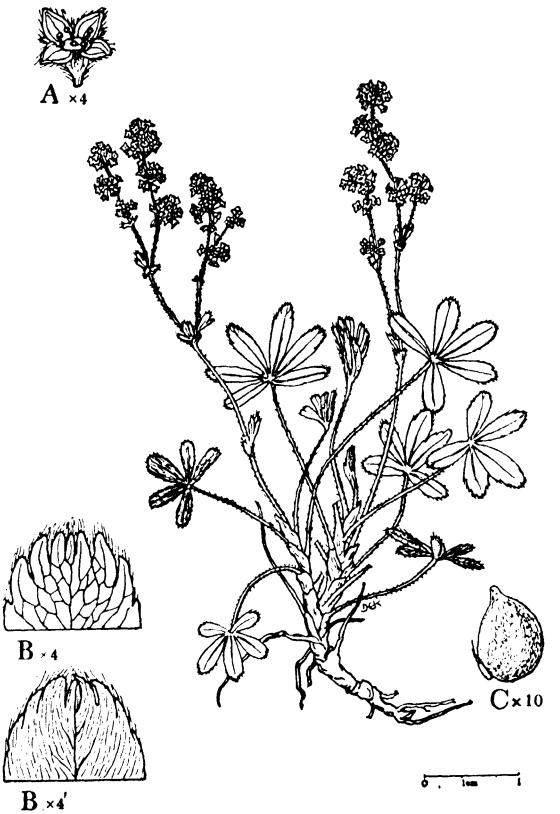
Late July—mid Sept. (Byland Abbey, Yorkshire.)
A. flower. B. fruit l.s. C. lower surface of leaf. D. fruit. E. seed.



578. AGRIMONIA (AREMONIA) AGRIMONOIDES L. This GARDEN AGRIMONY is a small, hairy perennial with decumbent stems 6-15 in. (15-38 cm.) long, growing from a woody stock. It is a cultivated plant that has become naturalized on banks and in woods in certain places in southern Scotland. Leaves pinnate with large and small lobes alternating; upper ternate, lobes obovate, toothed, hairy; stipules ovate, acute, entire or with a single tooth. Flowers 7-10 mm. diam., in small clusters or cymes; calyx 5-lobed, alternating with almost equally large, epicalyx lobes and an involucre of 6-10 lobes under each flower; petals yellow, ovate, entire, shorter than the sepals; stamens 5-10, enlarged; fruiting calyx tube without spines. Achene 5 × 4 mm., ovoid, truncate.

Late May—mid July. (Ayrshire.)

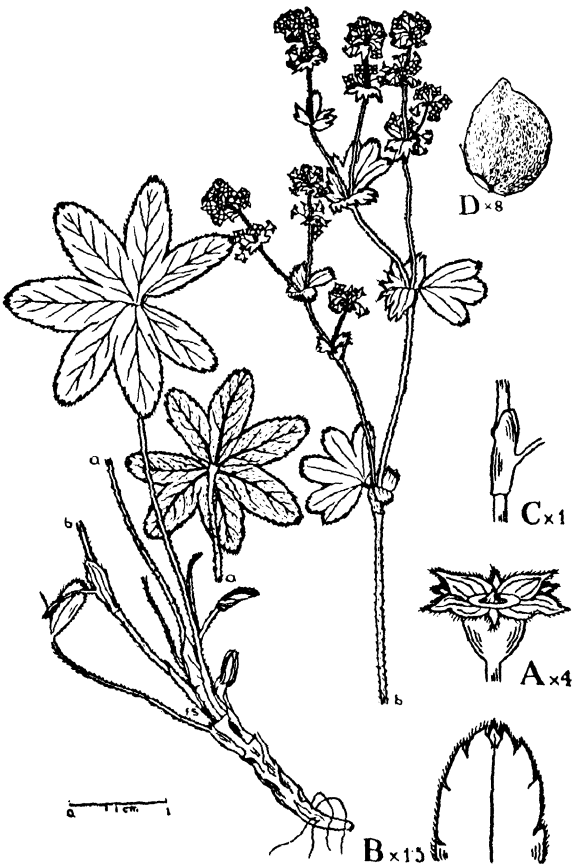
A. flower with involucre. B. calyx. C. flower without involucre. D. fruit. E. achene. F. stipule.



ALCHEMILLA L. Herbaceous, erect or prostrate plants with subrotate, palmate or trifid leaves. Corolla absent; sepals 4; epicalyx present; stamens 4. Calyx tube dry, conical or cylindrical, enclosing a single free carpel.

579. ALCHEMILLA ALPINA L. The ALPINE LADY'S MANTLE is a much-branched, erect, silky perennial with many flowering stems 4-9 in. (10-23 cm.) high, rising from a woody decumbent base. It is abundant in mountain grassland in all the highland districts of the British Isles. Stems covered with silky hairs. Leaves palmate, lobes lanceolate, oblong, green and glabrous above, silvery and silky beneath, divided almost to the base; stipules lanceolate, acute. Flowers 3 mm. diam., in dense leafless clusters; sepals 4, yellow-green. Urceoles hemispherical, hairy; calyx veins obvious; achene 1·5 × 1·2, semi-globular with produced, pointed apex, finely striate; style persistent.

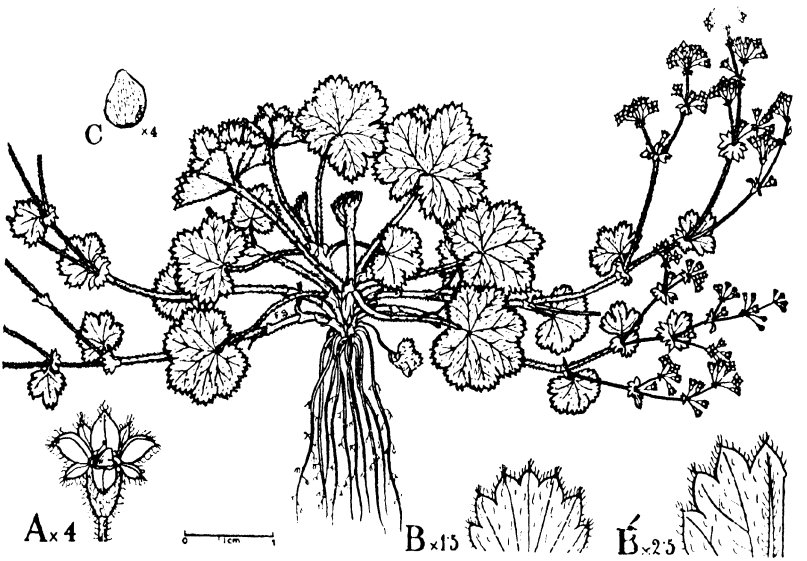
Mid June—early Sept. (Ben Lawers, Perthshire.)
A. fruit (urceole). B. leaf, upper; B′. lower surface. C. achene.



580. ALCHEMILLA CONJUNCTA Bab. This SILVERY LADY'S MANTLE is a much-branched, erect, silky perennial with several stems 10-12 in. (25-30 cm.) high, rising from a decumbent base. It is found rarely in only two alpine regions of Scotland. Stems covered with silky hairs. Leaves palmatisect; lobes 5-7, lanceolate, reaching half-way to base, glabrous above, silvery and silky beneath; stipules half-adnate, triangular. Flowers 4 mm. diam., in rather dense, leafless clusters; sepals yellow-green. Urceoles hemispherical, ciliate, veins obvious; achenes 2·0 × 1·3 mm., suborbicular and subobtuse, striate, yellow-green.

Mid June—late July. (Clova, Forfar.)

A. fruit (urceole). B. leaf apex. C. stipule. D. achene.

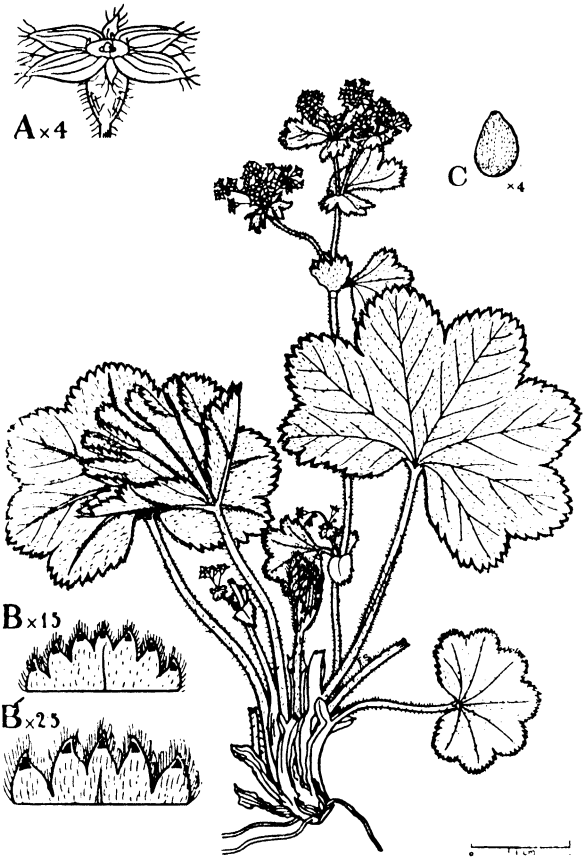


ALCHEMILLA VULGARIS L. The common Lady's Mantle is now considered to include 10 species based chiefly on the distribution of hairiness, the shape of the leaf and the fruit or urceole. The following are the commonest and most obvious:

581. ALCHEMILLA MINOR Huds. (*A. hybrida* Mill.). This PUBESCENT LADY'S MANTLE is a very hairy plant with decumbent stems 2-6 in. (5-15 cm.) long. It is found chiefly in the mountain limestone district of Yorkshire and also in a few other places. Stems, petioles, pedicels and urceoles thickly covered with spreading, silky hairs; root leaves hairy, with nine or seven broad, deeply incised lobes; lobes with equal, rather wide teeth, hairy on the margin, basal sinus closed. Flowers 3 mm. diam., in dense clusters; calyx green, veins few, faint. Urceoles pear-shaped, hairy; achene 1·5 × 1·0 mm., orbicular, with obtuse apex, smooth, yellow-green.

Mid May—mid Aug. (Ingleton, Yorkshire.)

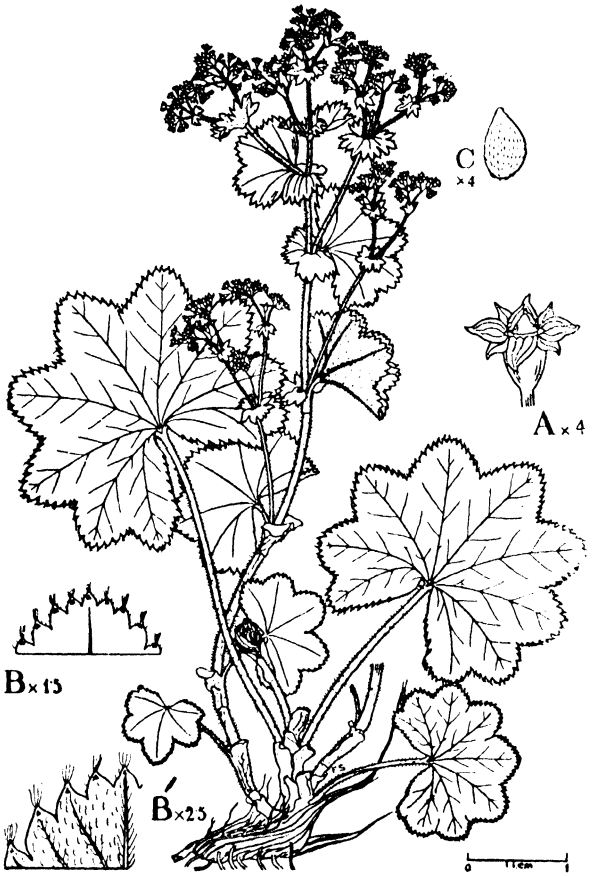
A. fruit (urceole). B. leaf, upper; B′. lower surface. C. achene.



582. ALCHEMILLA VESTITA (Buser) Raunk (*A. minor* auct.). This LESSER LADY'S MANTLE is a rather small, suberect, hairy plant which is very common in grassy places and is the prevailing form in S. England. Plants 5-15 in. (12-30 cm.) tall; stems, petioles, pedicels and urceoles covered with spreading hairs but not silky. Root leaves hairy with seven lobes one-third of the radius; lobes blunt with obtuse teeth and uniformly ciliate margin; basal sinus wide. Flowers 3-4 mm. diam.; inflorescence poor; calyx green, veins obvious. Urceoles pear-shaped, covered with many spreading hairs; achene 2·2 × 1·5 mm., ovoid, subacute, finely striate.

Mid May—mid Aug. (Bayford Wood, Hertfordshire.)
A. fruit (urceole). B. leaf, upper; B′. lower surface. C. achene.

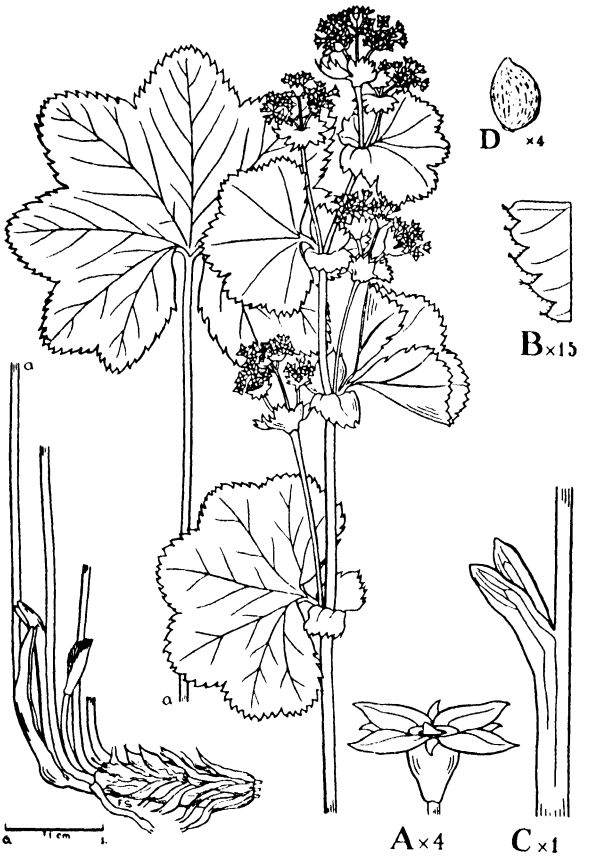
(*A. minima* Walters from Ingleborough only, is a similar but very dwarf plant. *A. monticola* Opiz. (from Teesdale only) and *A. filicaulis* Buser differ mainly in the glabrous pedicels; the former has a closed basal sinus to the leaf; the latter has it open.)



583. ALCHEMILLA XANTHOCHLORA Rothm. (A. *pratensis* auct.). This PALE LADY'S MANTLE is an erect, robust, subglabrous plant of grassland, widely spread over the whole of Britain. Plants 5-15 in. (12-38 cm.) tall; stem and petioles hairy with spreading hairs; pedicels and upper part of stem glabrous; root leaves glabrous above with 9 lobes one-third to one-fourth of the radius; lobes rather acute with equal, acute teeth; hairs longest at the apex of the teeth; sinus wide. Flowers 2-3 mm.; inflorescence much-branched; calyx green, veins well marked. Urceoles hemispherical, glabrous; achenes 2·5 × 1·5 mm., ovoid, acute, very finely striate, yellow-green.

Mid May—mid Aug. (Forest in Teesdale, Durham.)
A. urceole. B., B′. leaf margin. C. achene.

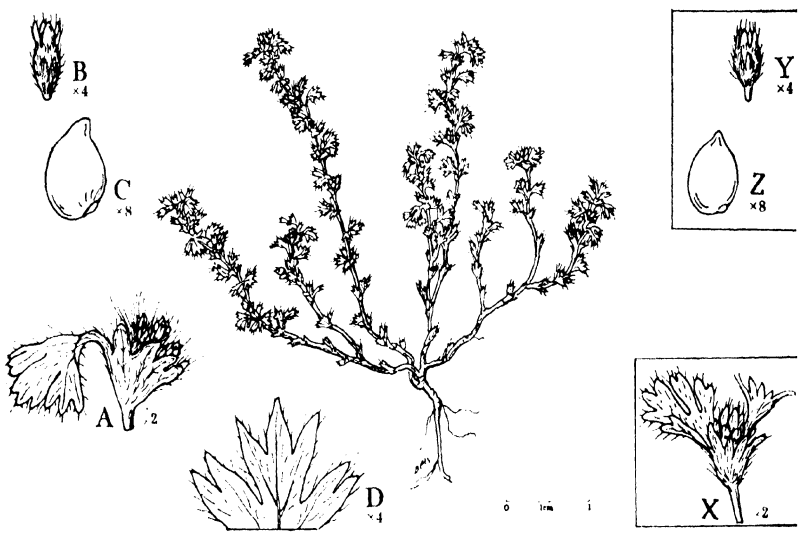
(*A. glomerulans* Buser is an alpine form in which the hairs of the stem are appressed and the leaves hairy above; *A. acutiloba* Opiz., found in Teesdale, has more acute lobes but is otherwise similar.)



584. ALCHEMILLA GLABRA Neygenf. (*A. alpestris* auct.). This HIGHLAND LADY'S MANTLE is a robust, suberect, almost glabrous plant which is common in mountain pastures and rare elsewhere throughout the British Isles. Plant 6-9 in. (15-23 cm.) tall, glabrous. Root leaves with 9 lobes one-third to one-fourth of the radius; lobes rather long, acute, with unequal, acute teeth and a few hairs on the margin and on the upper part of the veins below; basal sinus wide. Flowers 4 mm. diam.; inflorescence richly branched; calyx green, veins faint. Urceoles campanulate, glabrous; achenes 2·5 × 1·5 mm., ovoid, subacute and finely striate.

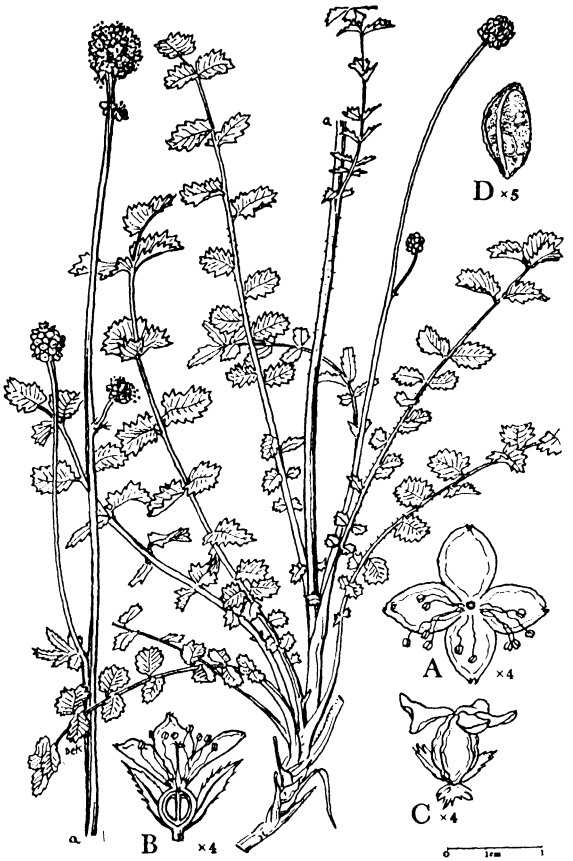
Early July—mid Aug. (Ben Lawers, Perthshire.)
A. urceole. B. leaf, upper surface. C. stipule. D. achene.

(*A. obtusa* Buser from Balgavies Loch, Angus, differs in having hairy lower stems and petioles; *A. wicherœ* (Bus.) Stef. has the leaf sinus almost closed and the lower stem and petioles are hairy.)



585. ALCHEMILLA (APHANES) ARVENSIS Scop. The PARSLEY PIERT (French *piérce pierre*) is a small annual with many prostrate or suberect, hairy, leafy stems 1-4 in. (3-10 cm.) long. It is abundant on dry, bare, sandy and calcareous soils throughout the British Isles. Leaves on short stalks, orbicular, trifid, with long, acute teeth, green and hairy; stipules united in a cup, lobes triangular, ovate. Flowers 8 mm., in axillary clusters; sepals green; fruiting urceole bottle-shaped, 2·4 mm. long; achenes 1·0 × 1·5, ovoid, with a rounded apex. (*A. microcarpa* Boiss and Reut. differs in the stipule lobes being acute, narrow, the urceoles ellipsoid, 1·8 mm. long, and achenes 1·2 × 1·0 mm.)

Mid May—early Oct. (Milldale, Staffordshire.)
A. stipule. B. urceole. C. achene. D. portion of leaf.
X. stipule. Y. urceole. Z. achene of *A. microcarpa*.)

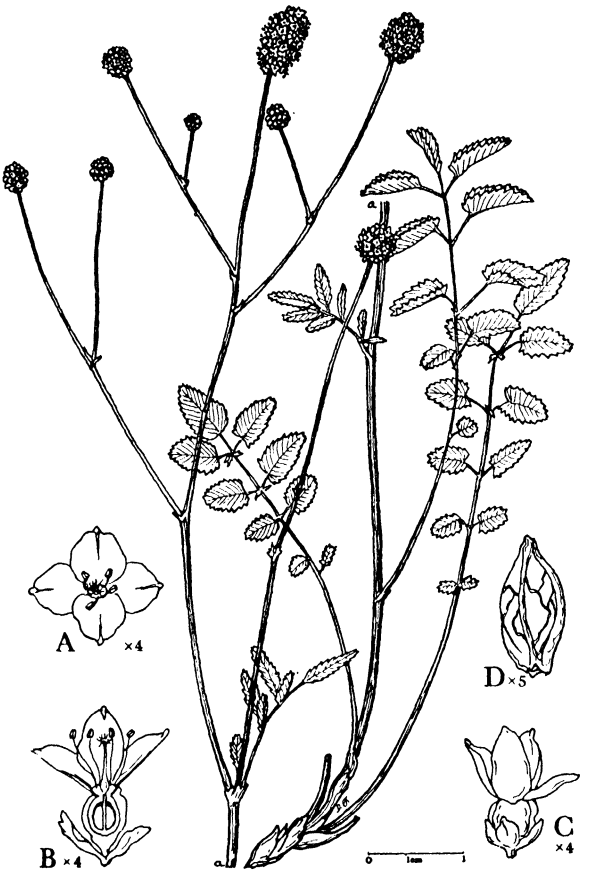


POTERIUM L. Herbs with pinnate leaves and flowers in small, dense heads. Corolla absent; epicalyx absent; stamens many. Calyx tube woody, corky in fruit, enclosing 1-6 free carpels; spines absent.

586. POTERIUM SANGUISORBA L. The SALAD BURNET is a rather stout perennial with erect flowering stems 4-15 in. (10-38 cm.) high, growing from a thick stock. It is abundant in calcareous grassland in England, becoming rare in Scotland but found as far north as Angus. Leaves pinnate, forming a basal rosette; leaflets 7-12 pairs, shortly ovate, toothed, 5-15 mm. long; stipules scarious. Inflorescence globose, the lowest flowers male, the intermediate hermaphrodite, the uppermost female; flowers 7-12 mm. diam.; sepals 4, green, tinged with red, apex jagged; fruiting calyx 2·0 × 1·5 mm., with narrow, entire wings and fine reticulations on the face. Achenes 2·5 × 1·2 mm., triquetrous, ellipsoid, slightly winged and wrinkled.

Late May—early Sept. (Lambourne, Berkshire.)

A. male flower, top view. B. flower l.s. C. female flower. D. achene.



587. POTERIUM (SANGUISORBA) OFFICINALE (L.) A. Gray. The ROSE BURNET is a tall, little-branched perennial with erect stems 9-18 in. (23-45 cm.) high, growing from a woody stock. It is abundant in damp meadows and on river banks throughout England except the S.E. and in parts of Ireland and S. Scotland. Leaflets 4-7 pairs, elliptical with shallow, acute teeth, 10-15 mm. long; stipules linear, entire, glabrous. Inflorescence ovoid; flowers 2-3 mm. diam., hermaphrodite; sepals 4, crimson, with a produced point; stamens 4. Fruiting calyx 3·5 × 1·8 mm., narrowly ovoid with narrow, entire wings and a finely reticulate calyx face.

Mid June—mid July. (Ashbourne, Derbyshire.)

A. flower (top view). B. flower l.s. C. ripening calyx. D. dry fruit.

588. POTERIUM POLYGAMUM Waldst. and Kit. The FODDER BURNET is sometimes cultivated, so it is found as a relic in waste places. Leaves 7-10 pairs, elliptical with narrow, acute teeth, 15-20 mm. long. Inflorescence globose to shortly ovoid, lowest portion male, remainder hermaphrodite; flowers 10 mm.; sepals 4, green. Fruiting calyx 5 × 8 mm., large, with broad, wavy wings and strongly toothed ridges with denticulate pits on the face.

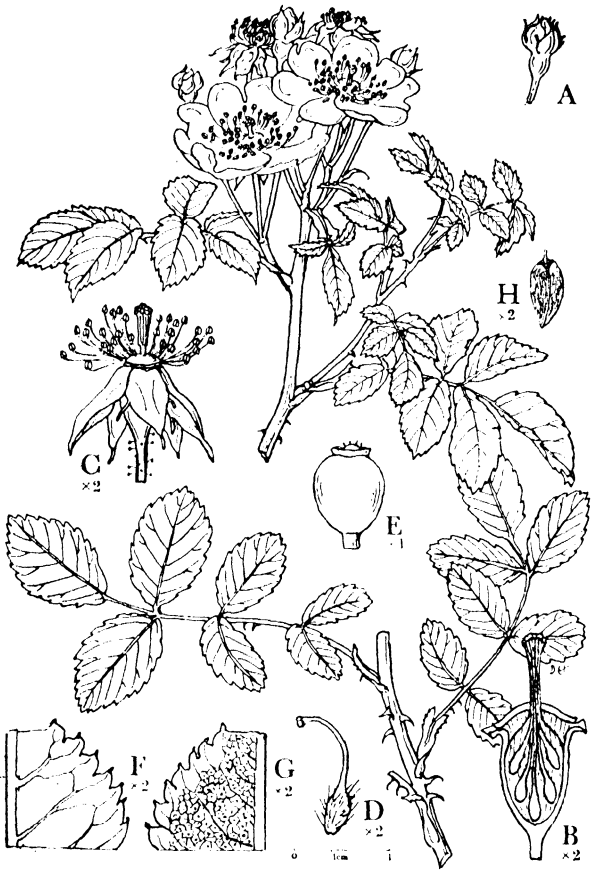
Mid July—early Sept. (Alresford, Hampshire.)
A. flower. B. flower l.s. C. female flower. D. dry fruit.

ACÆNA Mutis ex L. Decumbent herbs or undershrubs with pinnate leaves. Flowers perfect; epicalyx absent; petals 4; stamens many. Flowers in globular heads; calyx-tube dry, enclosing 1-3 carpels and with a spine under each sepal.

589. ACÆNA ANSERINIFOLIA (J. R. and G. Forster) Druce. The NEW ZEALAND BURWEED, which has become naturalized in several places in S. England, is a small woody perennial with erect or ascending leafy, pilose stems 1-3 in. (2-7 cm.) high, growing from a prostrate creeping, much-branched, woody base. Leaves pinnate; leaflets 3-4 pairs, 5-10 mm. long, ovate, obtuse, deeply crenate, serrate, pilose beneath; stipules adnate and scarious. Inflorescence globose, 5-10 mm. diam., enlarging in fruit; flower 4 mm. diam., greenish; fruiting calyx surrounded by 4 glochidiate spines 10 mm. long.

Early June—late July. (Dartmoor, Devon.)

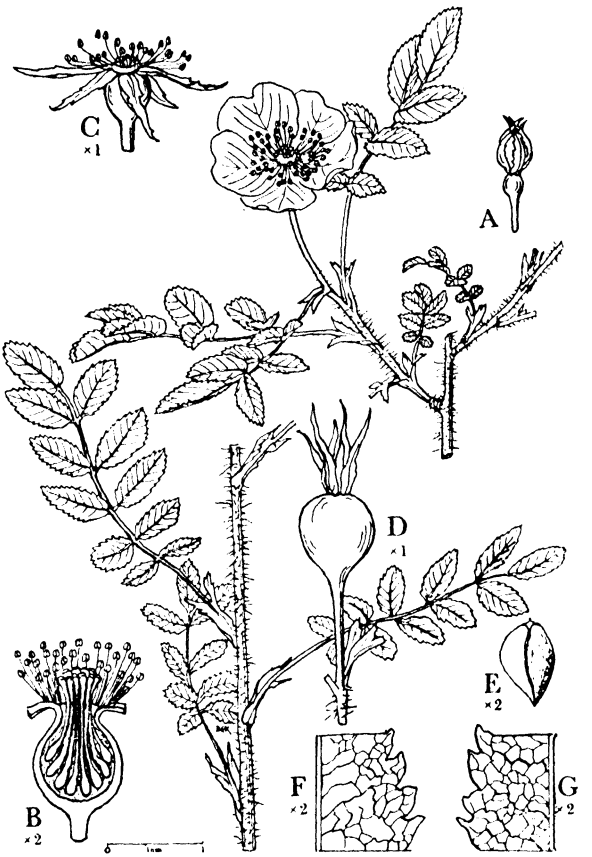
A. flower top view. B. young flower. C. older flower. D. fruit. E. portion of leaf.



ROSA L. Shrubs with prickly stems and pinnate leaves. Flowers few, in simple cymes. Calyx tube fleshy, completely enclosing a large number of free carpels and closed at apex.

590. ROSA ARVENSIS L. The TRAILING DOG-ROSE forms a low, spreading bush with trailing branches. It is common in hedges and waste land over the greater part of the British Isles. Prickles uniform, slender, hooked. Leaflets lanceolate, simply serrate, glabrous. Pedicels eglandular, long; flowers 30-45 mm. diam.; sepals nearly simple, deciduous; petals white; styles united in a column, protruding from the calyx tube, hairy. Fruit about 9-10 mm. long, usually globose to ovoid; nutlet 4·5 × 3·0 mm., trigonous, with the remains of the style on the apex.

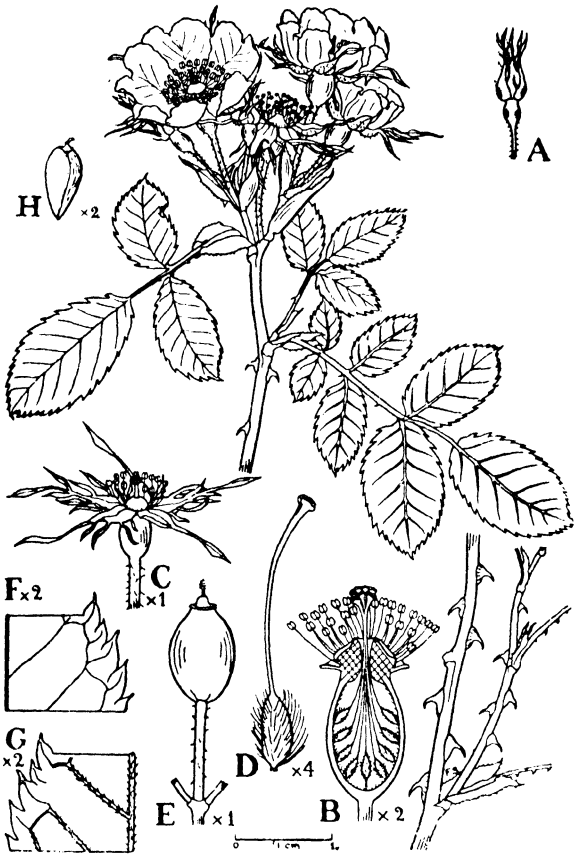
Early June—mid July. (Bramcote, Nottinghamshire.)
A. bud. B. calyx tube l.s. C. calyx. D. pistil. E. fruit. F. leaf upper, G. lower surface. H. seed.



591. ROSA PIMPINELLIFOLIA L. (*R. spinosissima* auct.). The BURNET ROSE forms a low, erect or spreading shrub 6-50 in. (15-125 cm.) tall and spreads by suckers. It is found on dunes, sandy heaths and limestone grassland throughout the British Isles. Prickles numerous, straight, passing into numerous stiff bristles. Leaflets ovate, simply serrate, glabrous or glandular. Pedicels bristly; flowers 30-40 mm. diam., nearly solitary; sepals little divided; petals white, yellow or rarely pink; styles free, woolly. Fruit about 12 mm. diam., obovoid, subglobose, spiny, purple-black; seed 5 × 3 mm. diam., trigonous, striate, yellow.

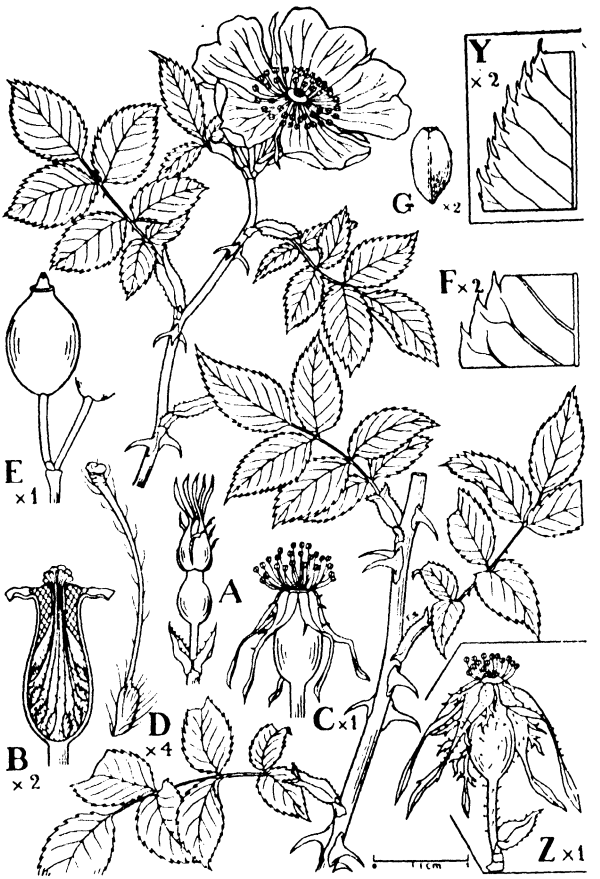
Mid June—mid July. (Bangor, Caernarvon.)

A. bud. B. calyx tube l.s. C. calyx. D. fruit. E. seed. F. leaf, upper, and G. lower surface.



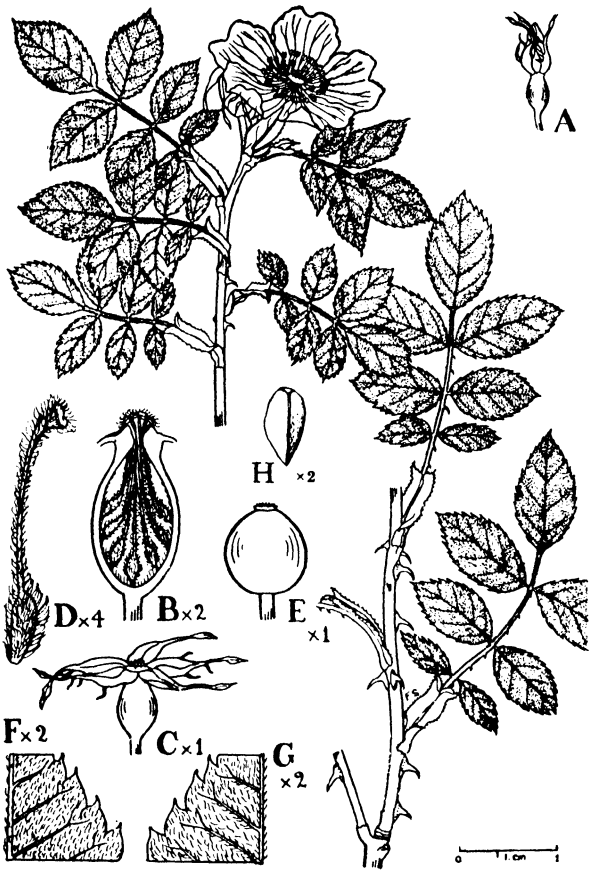
592. ROSA STYLOSA Desv. This "STYLOUS" DOG-ROSE forms a rather large, suberect bush and is rather common in hedges in S. England. Prickles uniform, stout, hooked, with broad, dilated base. Leaflets elliptical, simply serrate, glandular and pubescent at least on midribs below; upper stipules not much larger than lower ones. Pedicels clustered, rather long, glandular; flowers 35-45 mm. diam.; sepals very pinnate, reflexed, deciduous; petals usually pink; styles glabrous, exserted from a conical disc, united in a column when young, becoming free later. Fruit ovoid or ellipsoid, smooth; nutlet 4·5 × 3·0 mm., apiculate, trigonous, smooth, yellow.

Mid June—late July. (Worthy Down, Hampshire.)
A. bud. B. calyx tube. C. calyx. D. carpel. E. fruit.
F. leaf, upper and G. lower surface. H. seed.



593. ROSA CANINA L. The COMMON DOG ROSE is a very variable plant usually forming an erect or large spreading bush 36-108 in. (1-3 m.) high with erect or arching stems. It is abundant and widely distributed throughout the British Isles in hedges and scrubland. Leaflets simply (gr. *lutetianæ*) or doubly serrate (gr. *dumales*) glabrous and eglandular, but glandular and bi-serrate in gr. *scabratæ*. Pedicels smooth, but glandular hispid in the last group and gr. *andegavenses*; flowers 50-60 mm. diam.; sepals much or little pinnate, reflexed or spreading, deciduous before the fruit ripens; petals diffused with pink; styles short, rarely exserted, hispid, glabrous or woolly. Fruit 10-12 mm. diam. of variable form, typically ovoid, ellipsoid, smooth but glandular hispid in gr. *andevagenses*. Nutlet 5 × 3 mm., triquetrous, conical, smooth, rounded at top. Early June—early July. (Mayfield, Sussex.)

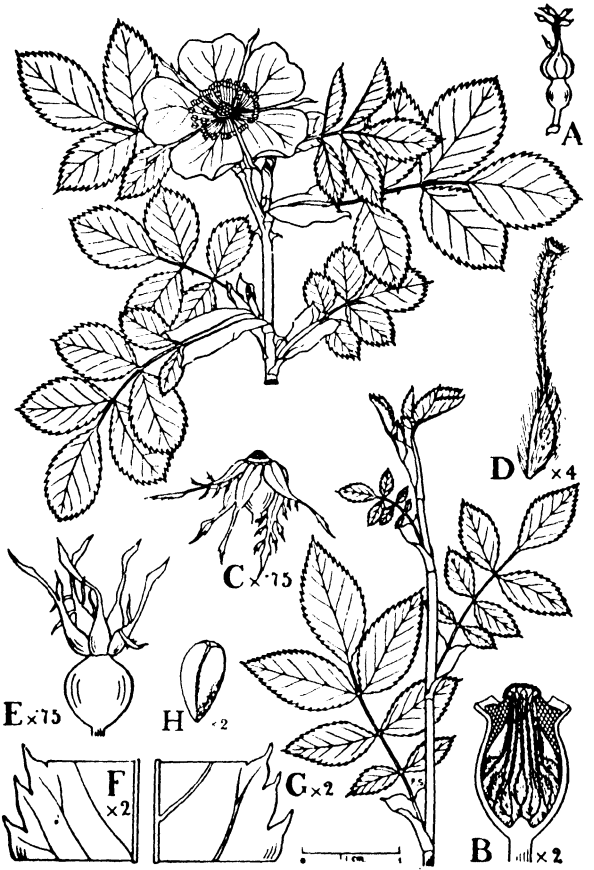
A. bud. B. calyx tube l.s. C. calyx. D. carpel. E. fruit. F. leaf, lower surface. G. seed. (Y. leaf of group *dumales*. Z. fruit of group *andegavenses*.)



594. ROSA DUMETORIUM Thuill. This HAIRY-LEAVED DOG-ROSE is a spreading bush with arching stems, common in England but rarer in Scotland—distinguished from *R. canina* by its pubescent leaves. Prickles uniform, stout, hooked, with broad base. Leaflets simply or doubly serrate, pubescent below and above, eglandular. Pedicels eglandular; flowers 35-45 mm. diam.; sepals much or little pinnate, reflexed or spreading, deciduous before the fruit ripens; petals suffused with pink; styles short, rarely exserted, usually villous. Fruit 12 mm. diam., of variable shape, typically ovate-urceolate; nutlet 5×3 mm., triquetrous, conical, smooth, rounded at top.

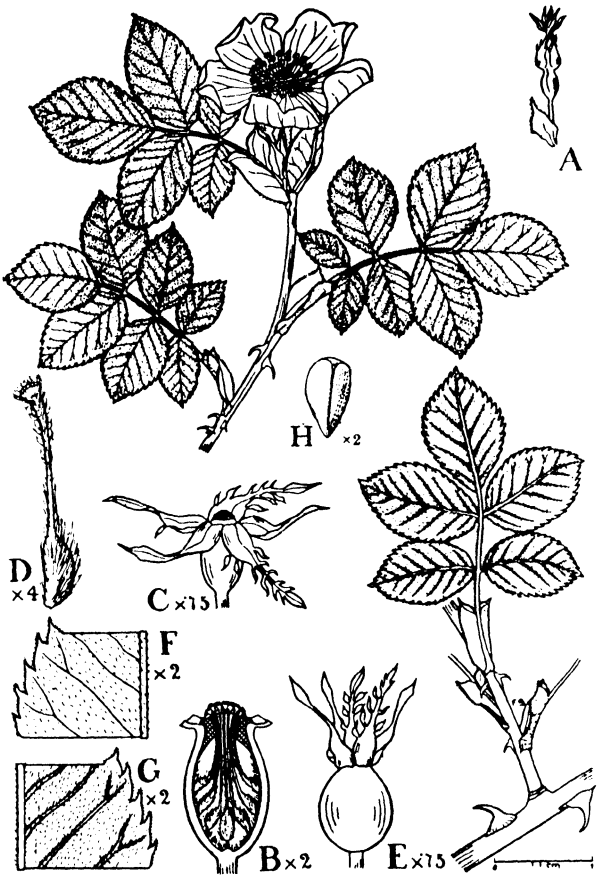
Mid June—mid July. (Mayfield, Sussex.)

A. bud. B. calyx tube. C. calyx. D. ovary. E. fruit. F. leaf, upper, and G. lower surface. H. seed.



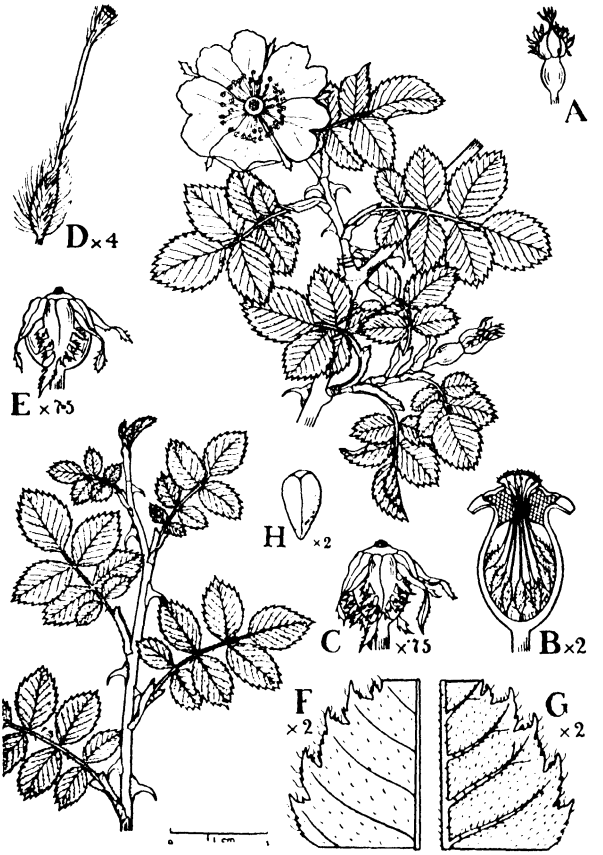
595. ROSA GLAUCA Vill. ex Lois. (*R. dumalis* Bechst p.p.). This GLAUCOUS DOG-ROSE forms a spreading or suberect bush with arching stems about 2-10 ft. (1-3 m.) high. It is common in Scotland and N. England and very rare in the south. Prickles small, hooked, with dilated base. Leaflets simply or doubly serrate, glabrous and usually eglandular. Flowers 40-50 mm. diam.; pedicels short, hidden by bracts; upper stipule considerably larger than the lower ones; sepals pinnate, sometimes reflexed, later erect, persistent until the fruit ripens; petals white or suffused with pink; stigmas in a flat, woolly head; styles woolly. Fruit 20-25 mm., of variable form, usually glabrous; nutlet 5 × 3 mm., obovoid, trigonous, striate, yellow.

Early June—late July. (Bolton by Bowland, Yorkshire.)
A. bud. B. calyx tube l.s. C. calyx. D. carpel. E. fruit. F. leaf, upper, and G. lower surface. H. nutlet.



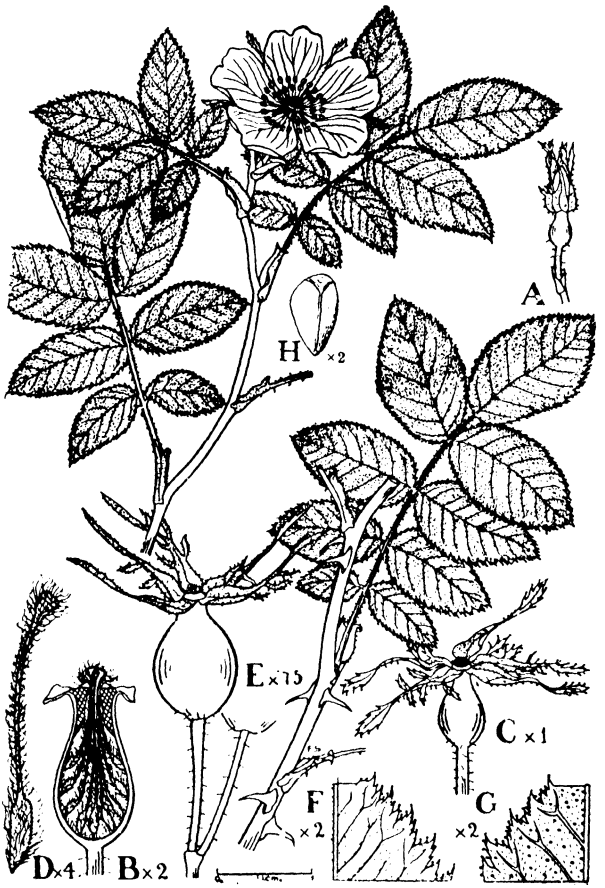
596. ROSA CORIIFOLIA Fries. This THICK-LEAVED DOG-ROSE forms a spreading or suberect bush with arching stems 2-10 ft. (1-3 m.) high. It is rather common in N. England and Scotland. Prickles small, hooked, with dilated base. Leaflets simply or doubly serrate, pubescent. Flowers 40-50 mm. diam.; pedicels short, hidden by bracts; upper stipules considerably larger than the lower ones; sepals pinnate, sometimes reflexed, later erect, and persistent until the fruit ripens; petals white, pink or red; stigmas in a flat, woolly head; styles woolly. Fruit 20-25 mm., of variable form, usually glabrous; nutlet 5 × 3 mm., obovoid, trigonous, striate, yellow.

Early June—late July. (Fearnan, Perthshire.)
A. bud. B. calyx l.s. C. calyx. D. carpel. E. fruit. F. leaf, upper, and G. lower surface. H. nutlet.



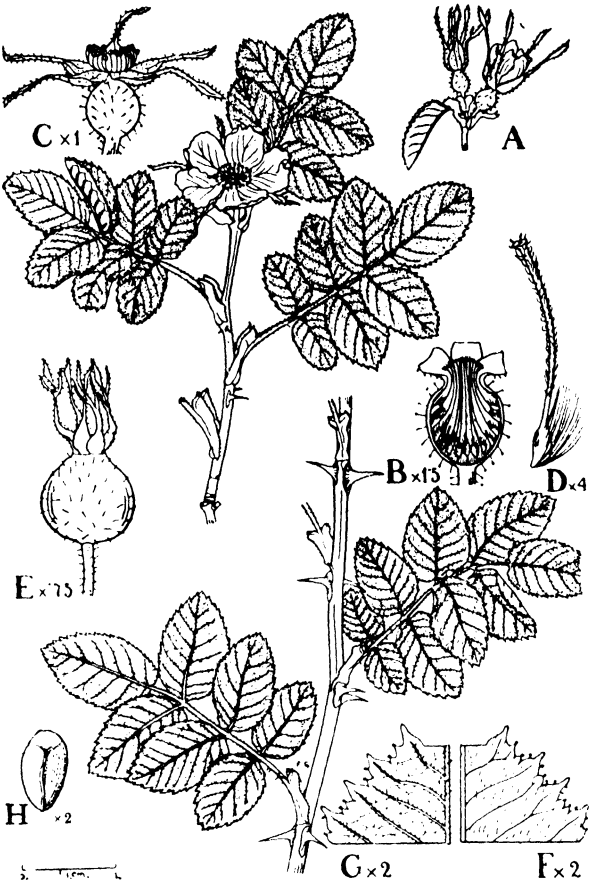
597. ROSA OBTUSIFOLIA Desv. This OBTUSE-LEAVED DOG-ROSE forms a spreading or suberect bush with arching stems. It grows commonly at times in scrubland in England. Prickles various, some, at least, very hooked and with dilated base. Leaflets broadish, biserrate, ±pubescent, often with a few subfoliar glands; upper stipules not much larger than the lower. Pedicels of varied length; flowers 35-45 mm. diam.; sepals short, often pinnate, at first reflexed, later deciduous; petals pink or red; stigmas in a flat, slightly exserted dome; styles usually thinly hispid. Fruit 10-15 mm. diam., of variable form, typically roundish; nutlet 5 × 3 mm., obovoid, trigonous, striate, yellow.

Mid June—late July. (Mayfield, Sussex.)
A. bud. B. calyx tube l.s. C. calyx. D. carpel. E. fruit. F. leaf, upper, and G. lower surface. H. nutlet.



598. ROSA TOMENTOSA Sm. This SOFT-LEAVED ROSE forms a rather erect bush which is common in England and Scotland and rare in the south. Branches tall, arching; prickles medium, straight or hooked. Leaflets usually doubly serrate, pubescent on both sides, usually glandular beneath; upper stipules rather larger than the lower. Pedicels medium or long, glandular; flowers 45-55 mm.; sepals markedly pinnate, spreading and falling before the fruit ripens; petals red, pink or white; stigmas in a large, flattish dome; styles usually hispid Fruit varied, 15-20 mm., usually ovoid, glabrous; nutlet 5×3 mm., obovoid, triquetrous, smooth.

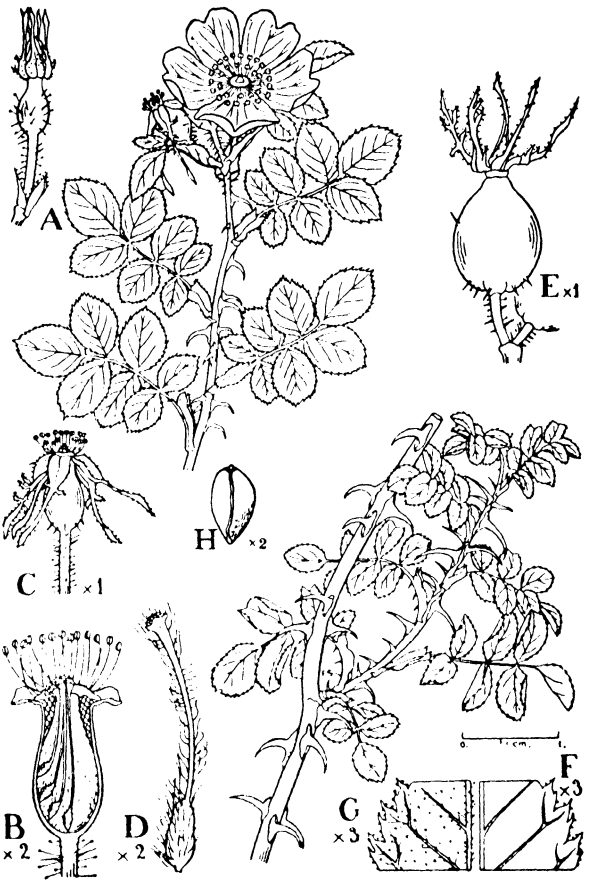
Early June—mid July. (Mayfield, Sussex.)
A. bud. B. calyx tube l.s. C. calyx. D. carpel. E. fruit. F. leaf, upper, and G. lower surface. H. nutlet.



599. ROSA VILLOSA L. (*R. mollis* Sm.). This DOWNY ROSE forms usually a rather erect bush, and is common in N. England and Scotland and very rare in the south. Branches ± erect; prickles medium, straight. Leaflets usually doubly serrate, pubescent on both sides, usually glandular beneath; upper stipules larger than the lower ones. Pedicels short, glandular, hidden by bracts; flowers 30-50 mm. diam.; sepals slightly pinnate, soon erect, persistent; petals pink or deep red; stigmas in a large, flattish dome; styles woolly. Fruit 16-22 mm. diam., roundish, rather large, aciculate; nutlet 5 × 2 mm., obovoid, triquetrous, smooth.

Early June—mid July. (Adel, Yorkshire.)
A. bud. B. calyx tube l.s. C. calyx. D. carpel. E. fruit. F. leaf, upper, and G. lower surface. H. nutlet.

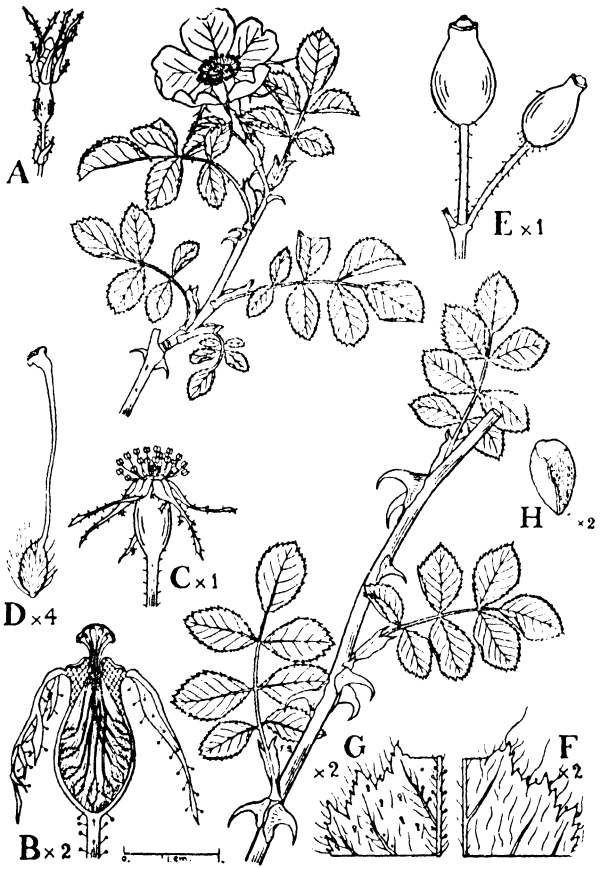
[*R. sherardii* Davies (*R. omissa* Déségl.) is the name given to plants with characters intermediate between this and the last. The sepals are erect and are shed when the fruit is ripening.]



600. ROSA RUBIGINOSA L. The TRUE SWEETBRIAR forms a low-growing shrub up to 36 in. (90 cm.) high. It is found in scrubland and on downs, particularly in chalky districts. Prickles various, larger strongly hooked. Leaflets small, obtuse, with rounded base, glabrous above, pubescent and covered with odorous glands below; stipules medium, glandular. Pedicels short, glandular, or aciculate; flowers 35-45 mm. diam.; sepals pinnate, erect or spreading, persistent till fruit ripens; petals deep pink; stigmas in a flattish dome; styles hispid. Fruit 12-15 mm. diam., large, shape varied, usually smooth; nutlet 5 × 3 mm., obovoid, triquetrous, faintly striate.

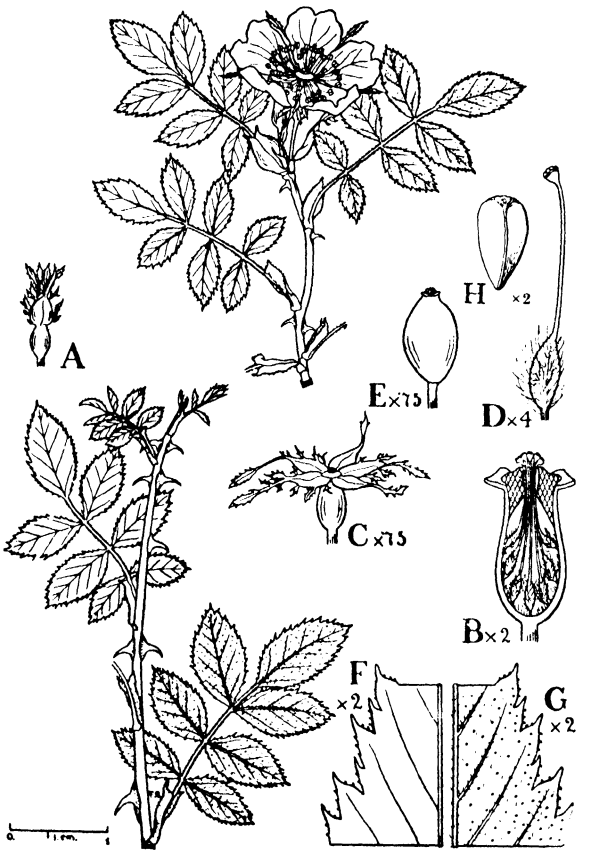
Mid June—mid July. (Stockbridge, Hampshire.)

A. bud. B. calyx tube l.s. C. calyx. D. carpel. E. fruit. F. leaf, upper, and G. lower surface. H. nutlet.



601. ROSA MICRANTHA Bonrrer ex Sm. This HAIRY-LEAVED SWEETBRIAR forms a spreading bush, often with arching stems 36-48 in. (90-120 cm.) long, which is found in scrubland and hedges on calcareous soils, particularly in England. Prickles various, larger strongly hooked. Leaflets hairy and covered beneath with odorous glands; stipules small, glandular. Pedicels rather long, glandular, not aciculate; flowers 30-40 mm. diam.; sepals pinnate, spreading and falling early before the fruit reddens; petals deep pink; stigmas somewhat exserted in a roundish head; styles glabrous. Fruit 8-10 mm., smallish, often with a "neck," smooth; nutlet 5 × 3 mm., obovoid, trigonous and faintly striate.

Mid June—mid July. (Box Hill, Surrey.)
A. bud. B. calyx tube l.s. C. calyx. D. carpel. E. fruit F. leaf, upper, and G. lower surface. H. nutlet.



602. ROSA AGRESTIS Savi. This SLIGHTLY SCENTED BRIAR forms a spreading bush, often with arching stems, which is found rarely in S. England. Prickles rather stout, curved. Leaflets smallish, elliptical, acute at each end, biserrate, glabrous above, with inodorous glands and some hairs beneath; stipules rather large, glabrous. Pedicels smooth; flowers 35-40 mm. diam.; sepals pinnate, spreading and falling early before the fruit reddens; petals pink; stigmas rather exserted, in a roundish head; styles glabrous. Fruit 10 mm. diam., elliptical to roundish, glabrous; nutlet 6 × 3 mm., obovoid, triquetrous, smooth.

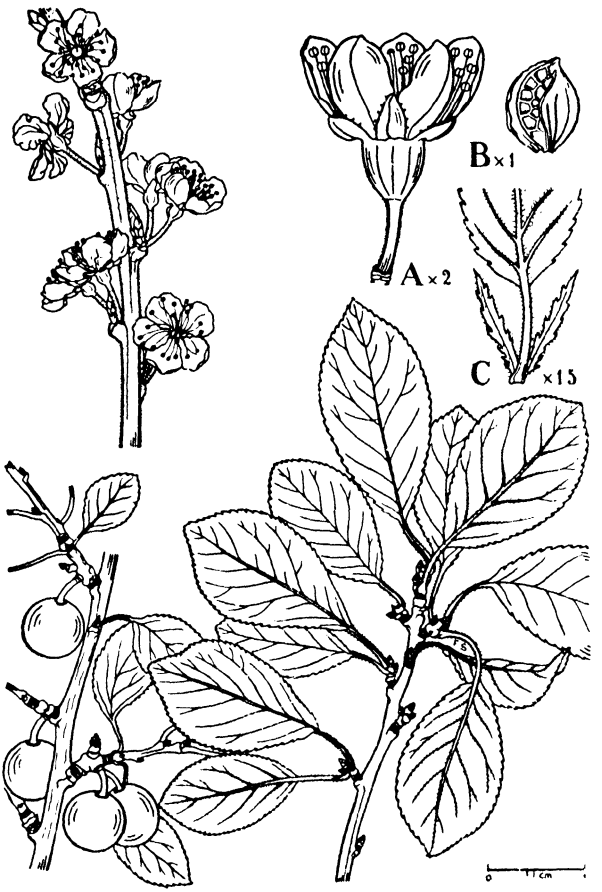
Mid June—mid July. (Hog's Back, Surrey.)
A. bud. B. calyx tube l.s. C. calyx. D. carpel. E. fruit. F. leaf, upper, and G. lower surface. H. nutlet.

(*R. elliptica* Tausch. is similar but more erect with ± persistent sepals on the fruit. It is very rare.)

PRUNUS L. Shrubs or trees with undivided leaves. Calyx free; petals 5. Fruit fleshy or juicy, with a hard "stone" containing 1 or 2 seeds. Ovary at the base of a cup formed by the base of the calyx.

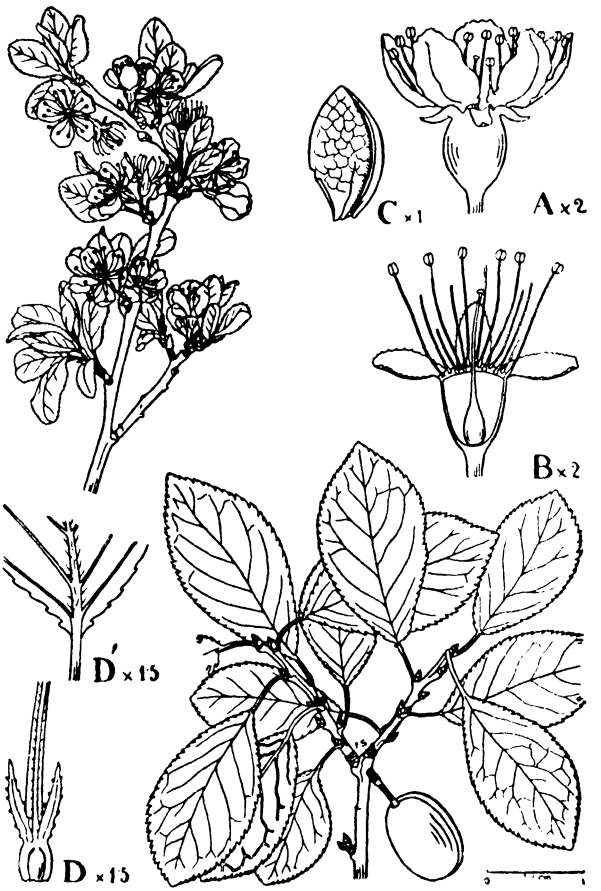
603. PRUNUS SPINOSA L. The BLACKTHORN is a bush or small tree 3-12 ft. (1-4 m.) high, found commonly in scrub, woodland and hedgerows throughout the British Isles. Branches spinous, young twigs blackish and glabrous. Leaves lanceolate to ovate, serrate, acute, glabrous except on the petiole; stipules minute. Flowers 10-15 mm. diam., appearing before the leaves, in axillary clusters; pedicels glabrous; petals white. Fruit 12-15 mm., globose, dark purple, patent or erect; stone roundish, smooth.

Late March—early May. (Bramcote, Nottingham.)
A. flower. B. flower l.s. C. stone. D. leaf, lower surface.



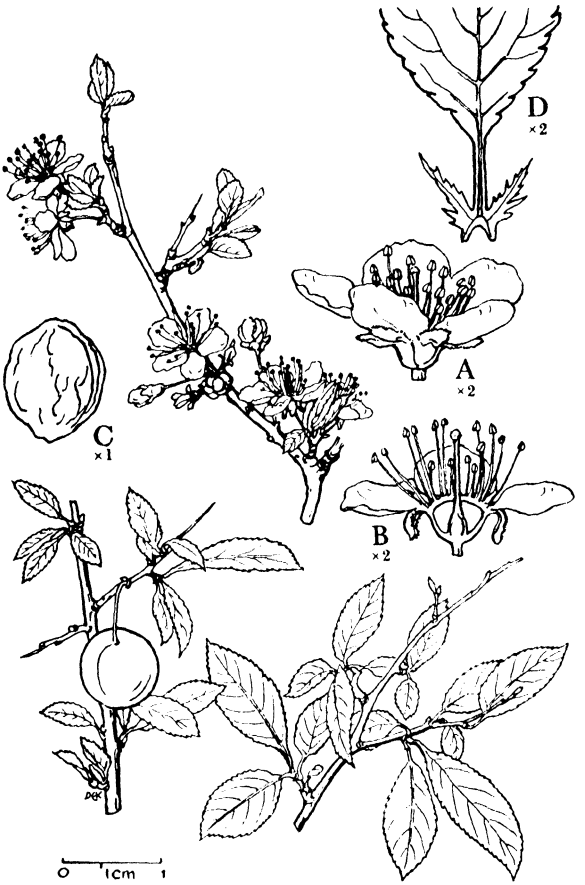
604. PRUNUS INSTITIA L. The BULLACE is a bush or small tree, 3-12 ft. (1-4 m.) high, found rather commonly in hedges and scrubland throughout the British Isles. Spinous branches rarely produced; young branches pubescent or villous. Leaves very variable, usually obovate, serrate, acute, underside pubescent when young; stipules linear, acute, toothed. Flowers 15-25 mm. diam., appearing with the leaves; pedicels pubescent; petals white. Fruit 15-20 mm. diam., globose, purple or yellow, drooping; stone roundish, rugose.

Early April—mid May. (Worlington, Suffolk.)
A. flower. B. stone. C. leaf and stipules (lower surface).



605. PRUNUS DOMESTICA L. The WILD PLUM is a bush or small tree 3-12 ft. (1-4 m.) high, found in hedges and woods, usually as a relic of cultivation and hence very variable. Spinous branches absent; young branches glabrous. Leaves very variable, usually ovate, serrate, underside with a few scattered hairs on veins and pedicels; stipules linear, acute, toothed. Flowers 15-25 mm. diam., appearing with the leaves; pedicels glabrous; petals white. Fruit 10-15 × 12-20 mm., ovoid, drooping; stone oval, rough.

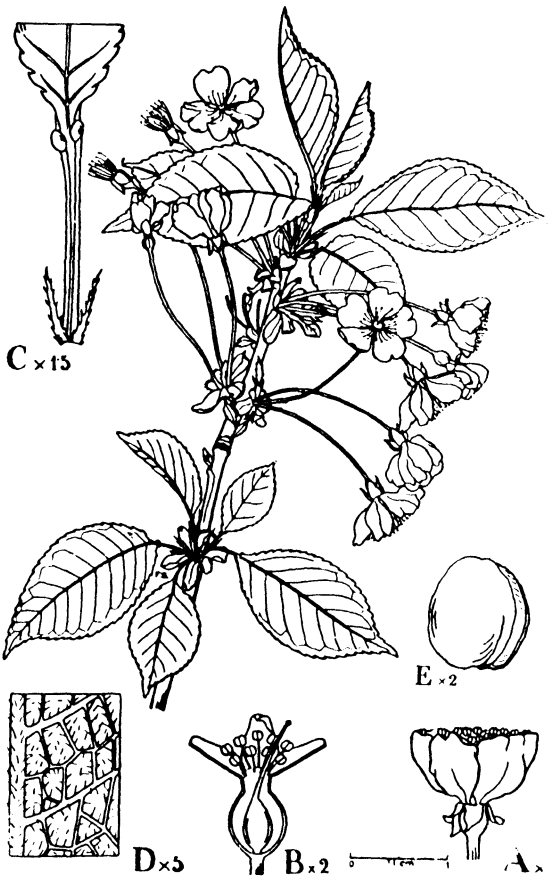
Late April—mid May. (Hinton Admiral, Hampshire.)
A. flower. B. flower l.s. C. stone. D. stipule and petiole (upper surface). D′. leaf (lower surface).



606. PRUNUS CERASIFERA Ehrh. The MYROBALAN or CHERRY PLUM is a bush or small tree up to 25 ft. (8 m.) high, which is frequently planted in hedges and shrubberies and has become naturalized in various parts of Britain. Branches with spiny ends; young twigs greenish, glabrous. Leaves lanceolate, serrate, pointed, glabrous; stipules linear-lanceolate, dentate. Flowers 20-25 mm., in simple umbels, appearing with the leaves; pedicels glabrous; petals white. Fruit 20-25 mm. diam., globose, reddish; stone roundish, smooth.

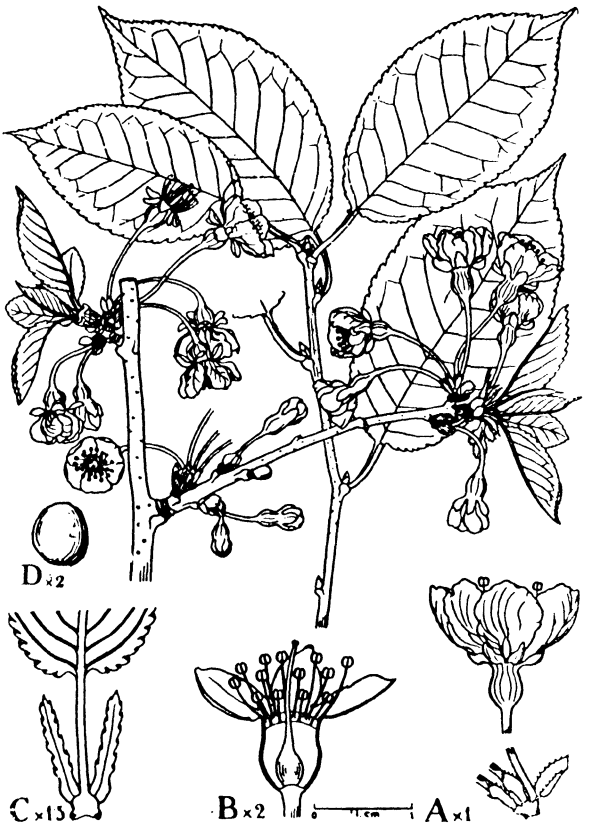
Mid March—mid April. (Higham, Suffolk.)

A. flower. B. flower l.s. C. stone. D. stipule and portion of leaf, lower surface.



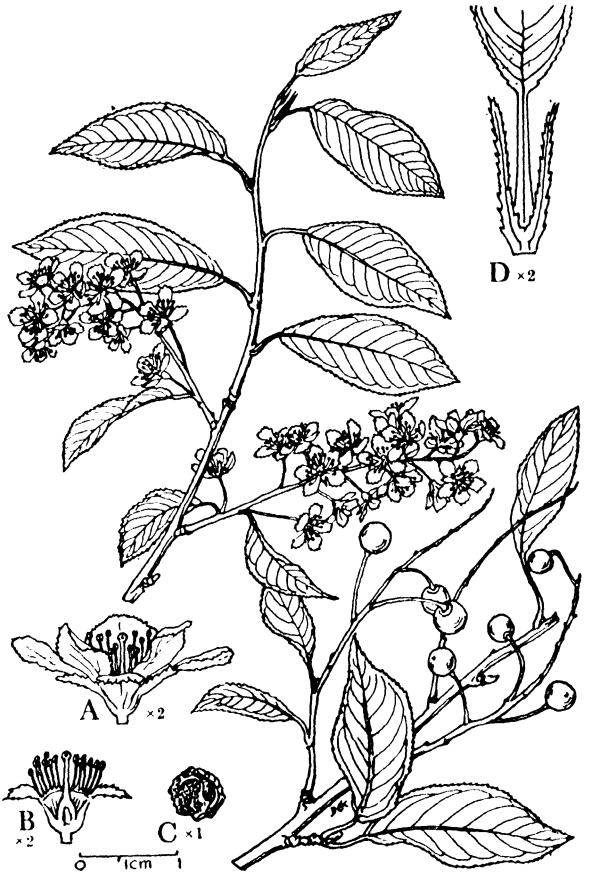
607. PRUNUS AVIUM (L.) L. The WILD CHERRY or GEAN is a deciduous tree, 15-75 ft. (5-25 m.) high, which is common in woods in all Britain except N. Scotland. Suckers few. Leaves, when young, flaccid, drooping, hairy on under surface, serrations all equal; petiole with two glands; stipules linear-lanceolate. Flowers 15-20 mm. diam., in umbels; pedicels slender; calyx tube constricted at top; sepals subacute, soon reflexed; petals white, fragile, notched. Fruit 4-6 mm., globular, red and yellow; stone 6 mm., globular, smooth.

Late April—mid May. (Cuffley Woods, Middlesex.)
A. flower. B. calyx l.s. C. stipules and part of leaf (upper surface). D. part of leaf (lower surface). E. stone.



608. PRUNUS CERASUS L. The DWARF CHERRY is a small, bushy shrub 4-15 ft. (1·5-5·0 m.) high with many suckers. It occurs in hedgerows and scrub, particularly in S. England, Wales and Ireland, but rather rarely. Leaves when young, firm, erect or spreading, nearly glabrous on under surface, serrations irregular and unequal; glands on petiole small or absent. Flowers 18-23 mm. diam., in umbels; pedicels rather stout; calyx tube campanulate and not constricted at the top; sepals ovate, blunt, ultimately reflexed; petals white, thick and scarcely notched. Fruit 4-5 mm., globular, dark red; stone 4 mm., globular, smooth.

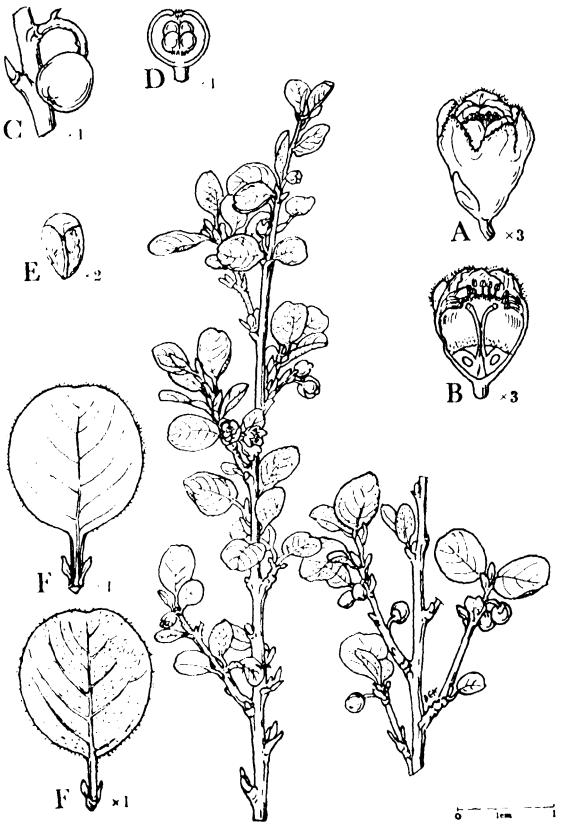
Late April—mid May. (Bridport, Dorset.)
A. flower and bracts. B. calyx l.s. C. stipules and part of leaf (lower surface). D. stone.



609. PRUNUS PADUS L. The BIRD CHERRY is a large bush or small tree 4-40 ft. (1-13 m.) high, which is common in woods of N. England and Scotland but almost absent elsewhere. Leaves ovate, pointed, glabrous, doubly serrate; stipules lanceolate, dentate. Flowers 12-15 mm. diam., in racemes; sepals acute, spreading, serrate; petals white, ovate, serrate. Fruit 6-8 mm. diam., globular, dark red, long stalked; stone globose, wrinkled.

Mid May—mid June. (Whatstandwell, Derbyshire.)
A. flower. B. flower without petals l.s. C. stone. D. leaf (lower surface) and stipule.

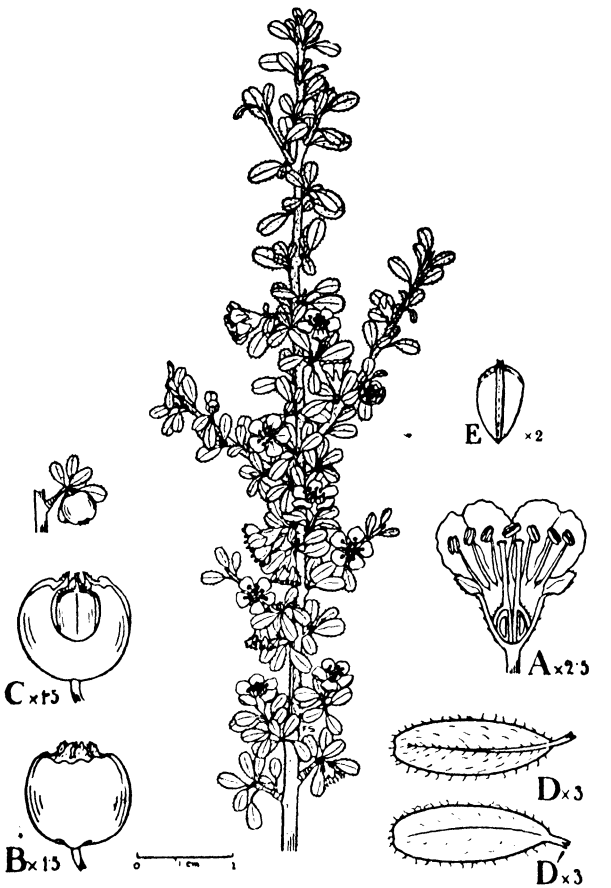
(*P. laurocerasus* L., the familiar Cherry Laurel, with glossy, evergreen leaves and racemes of white, scented flowers, is extensively planted and well established in many places.)



COTONEASTER Medic. Shrubs with spineless branches and entire leaves. Calyx tube fleshy, open at the apex, enclosing 3-5 carpels, which are free from each other on the inside and form woody nuts.

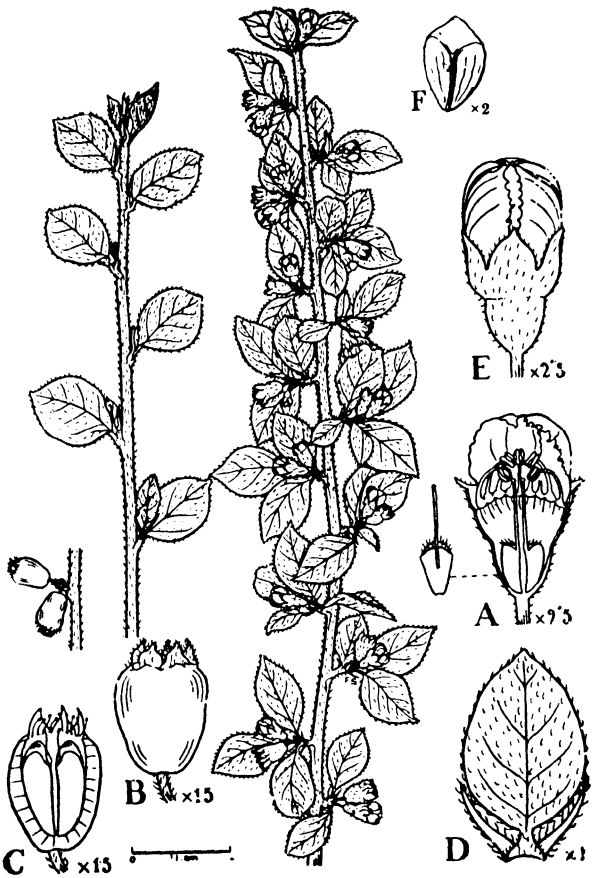
610. COTONEASTER INTEGERRIMUS Medic. This ENTIRE-LEAVED COTONEASTER is a small, spreading bush 12-36 in. (30-90 cm.) high that is found only in small quantity on limestone cliffs of the Great Orme, Wales. Leaves deciduous, entire, roundly ovate, glabrous above and grey-tomentose below. Flowers 4 mm. diam., one or two together; petals pink, erect or often incurved. Fruit 5-7 mm. diam., subglobose, red. Stone 3·0 × 4·5 mm., triquetrous, finely striate, yellow. Early—late May. (Hort. Lavington, ex Great Orme.)

A. flower. B. flower l.s. C. fruit. D. fruit t.s. E. stone. F. leaf lower, F′. upper surface.



611. COTONEASTER MICROPHYLLUS Wall. ex Linl. This SMALL-LEAVED COTONEASTER is a small, spreading bush with straggling and arching stems 12-30 in. (30-75 cm.) high. It is a common garden shrub, naturalized here and there, chiefly on limestone cliffs. Leaves small, ovate, evergreen, slightly hairy. Flowers 10 mm. diam., solitary; sepals small, ovate, hairy; petals white, spreading. Fruit 8·0 × 8·5 mm., almost spherical, red. Stone 5 × 3 mm., triquetrous, acute, smooth.

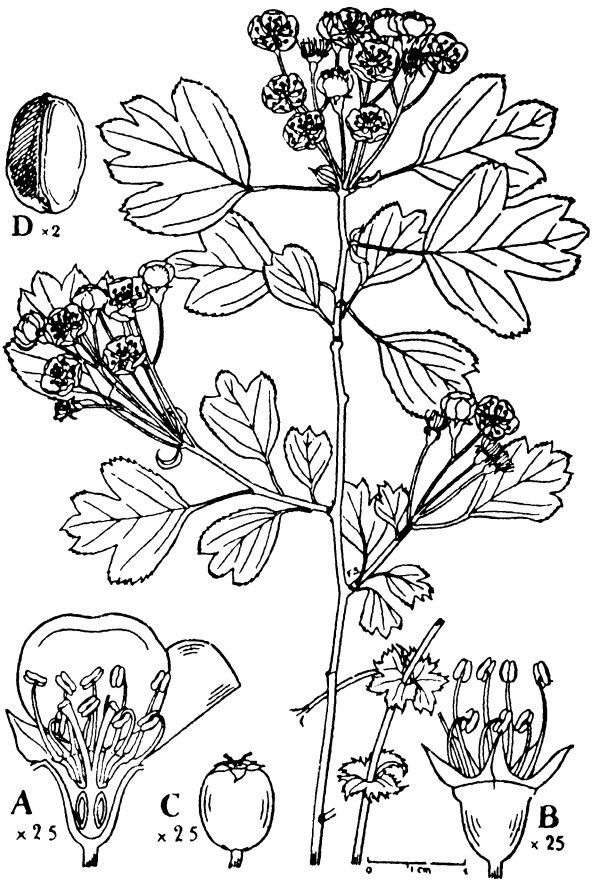
Mid May—mid June. (Longcliffe, Derbyshire.)
A. flower l.s. B. fruit. C. fruit l.s. D. leaf, lower, and D′. upper surface. E. stone.



612. COTONEASTER SIMONSII Baker. This HIMALAYAN COTONEASTER is naturalized in coppices and waste places in some parts of England. It is a bush about 48 in. (120 cm.) high, with erect stems. Leaves medium, deciduous, ovate, hairy; stipules linear, hairy. Flowers 4 mm. diam., 1 or 2 together; petals red, erect or often incurved. Fruit 10 × 8 mm., red or orange, obovate, drooping. Stone 6·0 × 3·5 mm., triquetrous, striate.

Late May—mid July. (Penzance, Cornwall.)
A. flower l.s. B. fruit. C. fruit l.s. D. leaf. E. flower bud. F. stone.

(*C. horizontalis* with spreading branches and small, ovate leaves all in one plane, is also naturalized in one or two places.)

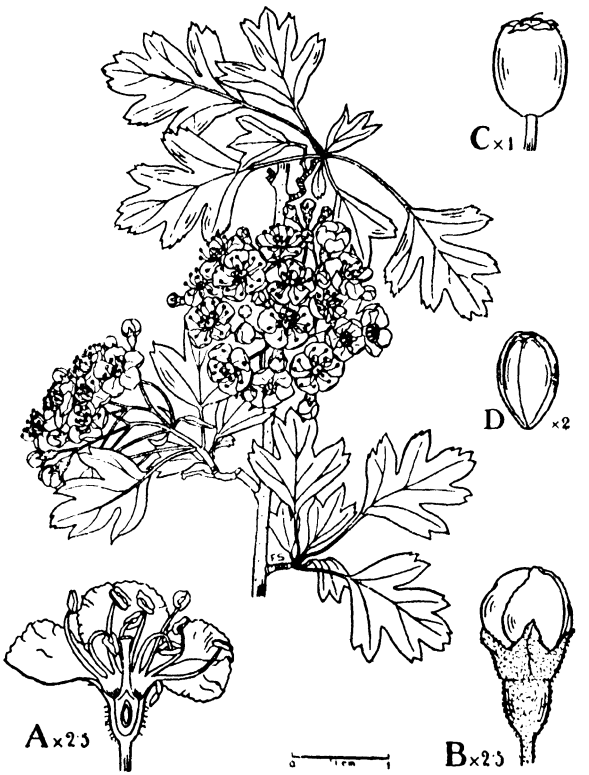


CRATÆGUS L. Shrubs or small trees with spiny branches, thorns and simple, pinnatifid leaves. Flowers in dense corymbs. Calyx tube mealy, completely enclosing 1-3 carpels, which are partly joined below and form a cartilaginous wall to the seed.

613. CRATÆGUS OXYACANTHOIDES Thuill. This MANY-STYLED HAWTHORN is an erect shrub or small tree 1-10 ft. (1·0-3·5 m.) high. It is not as common as the next. Leaves shining, usually broadly and not deeply lobed; stipules reniform, clasping, toothed. Cymes few (5-15) flowered; pedicels and calyx usually glabrous; flowers 15-20 mm. diam., scented; calyx teeth narrow, long, acute; petals often incurved, white or pink. Styles and nuts 1-3; stone 6 × 5 mm., obovoid, keeled.

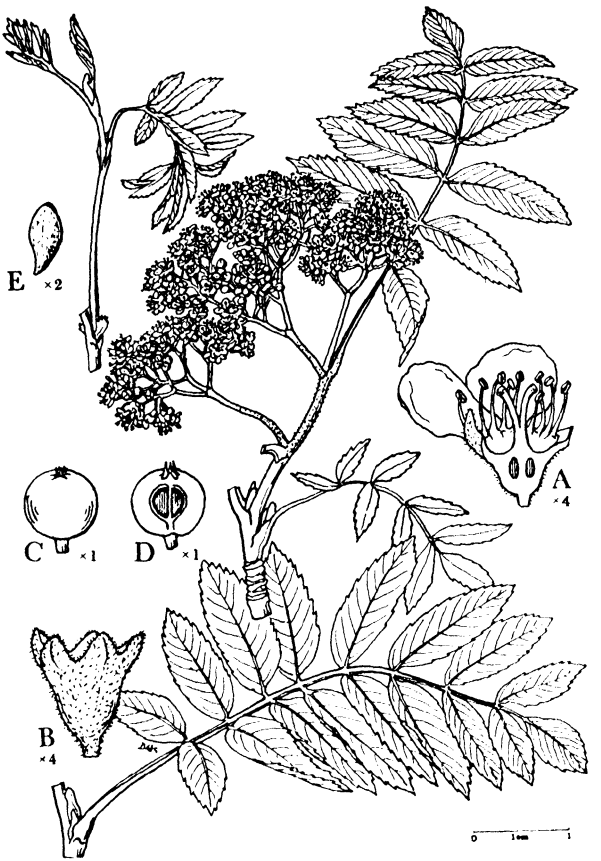
Late May—mid June. (Finchley, Middlesex.)

A. flower l.s. B. calyx. C. fruit. D. stone.



614. CRATÆGUS MONOGYNA Jacq. This SINGLE-STYLED HAWTHORN is a very common, erect shrub or small tree 1-10 ft. (1·0-3·5 m.) high, spread throughout the British Isles. Leaves dull on surface, usually deeply and acutely lobed; stipules reniform, clasping, toothed. Cymes 12-50 flowered; pedicels and calyx villous; flowers 15 mm. diam., scented; calyx teeth broad, short; petals rather flat, white or cream. Style one; stone 8 × 5 mm., triquetrous, keeled and rounded.

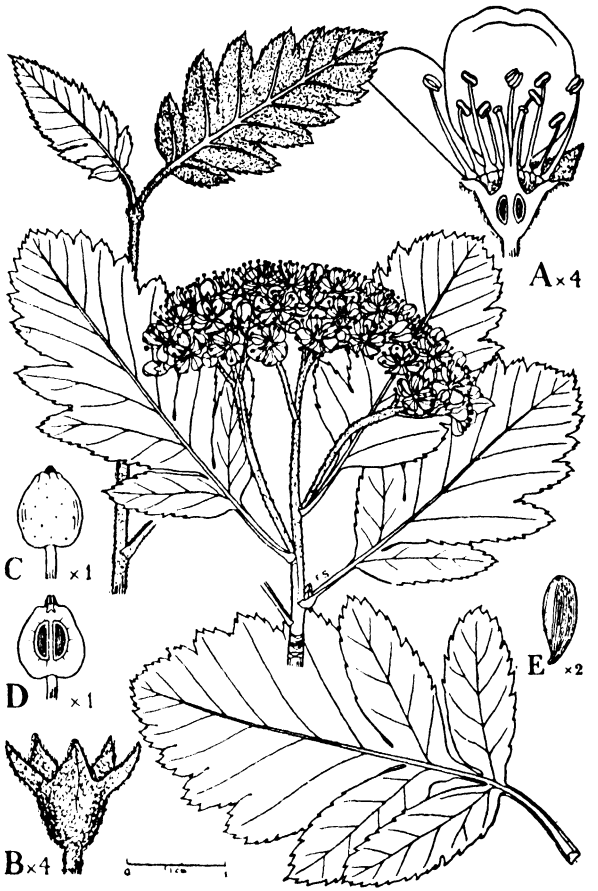
Late May—mid June. (Cheshunt, Hertfordshire.)
A. flower l.s. B. bud. C. fruit. D. stone.



SORBUS L. Trees or shrubs with spineless branches and toothed or pinnate leaves. Flowers in dense compound corymbs. Calyx tube mealy, almost completely investing carpels. Carpels about 5, horny with 1-2 seeds. Styles free or joined at base.

615. SORBUS AUCUPARIA L. The MOUNTAIN ASH or ROWAN is a slender tree up to 50 ft. (17 m.) high, growing in woodlands, heaths and mountain rocks and widely spread on the lighter non-calcareous soils throughout the British Isles. Leaves glabrous, pinnate, with usually 6-7 pairs of lanceolate, acute, toothed leaflets. Flowers 5-6 mm. diam., in large corymbs; petals white. Fruit 6-9 mm., subglobose, scarlet, with a few inconspicuous lenticels; teeth of fruiting calyx spreading; seed 4 × 2 mm., fusiform, striate, orange.

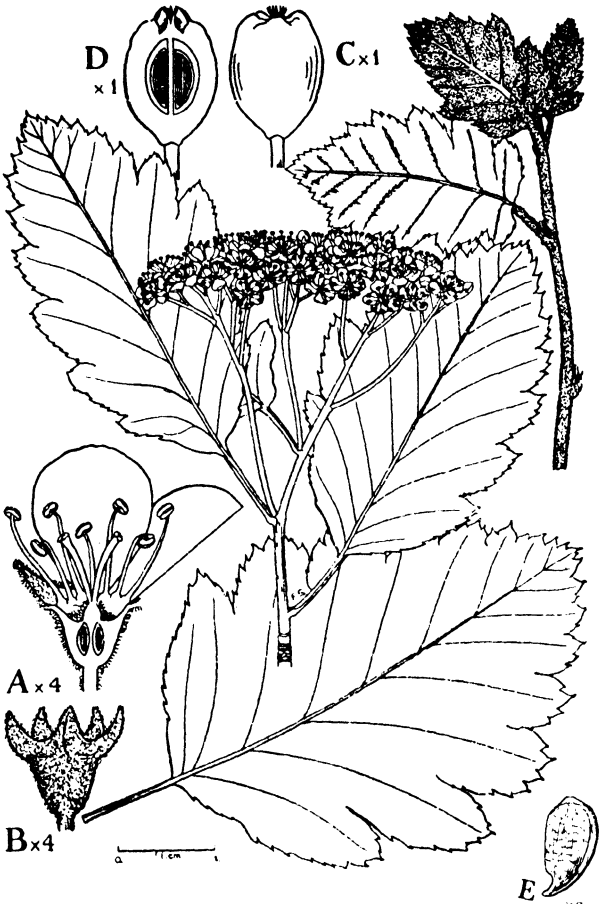
Late May—late June. (Bramcote, Nottinghamshire.)
A. flower l.s. B. calyx. C. fruit. D. fruit l.s. E. seed.



616. SORBUS PSEUDOFENNICA E. F. Warb. (*S. fennica* auct.). This CUT-LEAVED WHITE BEAM is a small, slender tree 10-13 ft. (3-5 m.) high, which is found only in one limestone gorge in the Island of Arran. Leaves covered beneath with an uneven grey felt, broadest in the middle, pinnate at the base, with 1-3 pairs of free, broadly lanceolate leaflets; remainder of the leaf with progressively shallower segments. Flowers 10-12 mm., in a small, roundish corymb; petals white. Fruit 8-10 mm., longer than broad, scarlet, with a few inconspicuous lenticels; teeth of fruiting calyx dry, erect, internal space very small; seed 5·5 × 2·5 mm., ellipsoid, striate with a recurved tip.

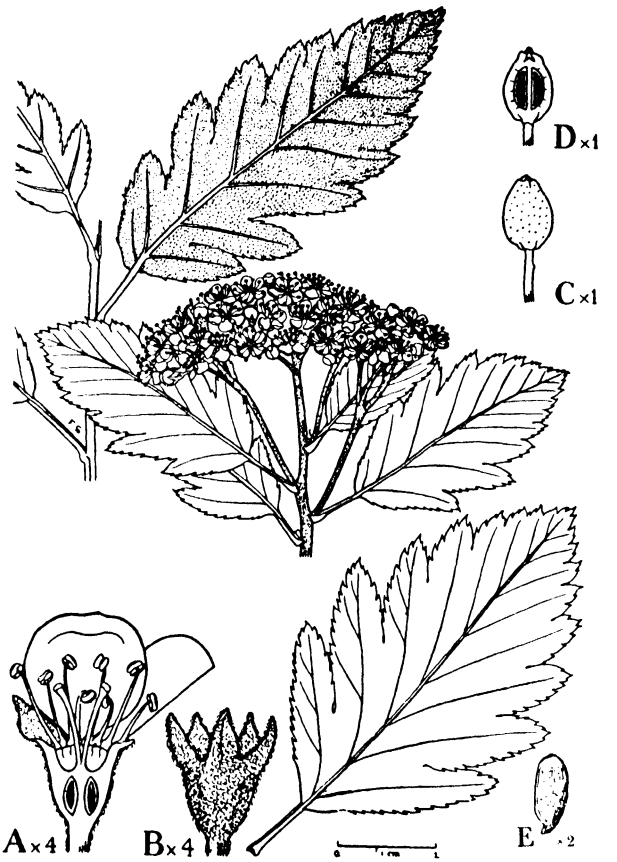
Late May—early June. (Glen Catacol, Arran.)
A. flower l.s. B. calyx. C. fruit. D. fruit l.s. E. seed.

(The hybrid *S. aria* × *aucuparia* (*S. semipinnata* Roth.) is frequently planted. It has a narrower leaf than the above with 2-3 pairs of free leaflets.)



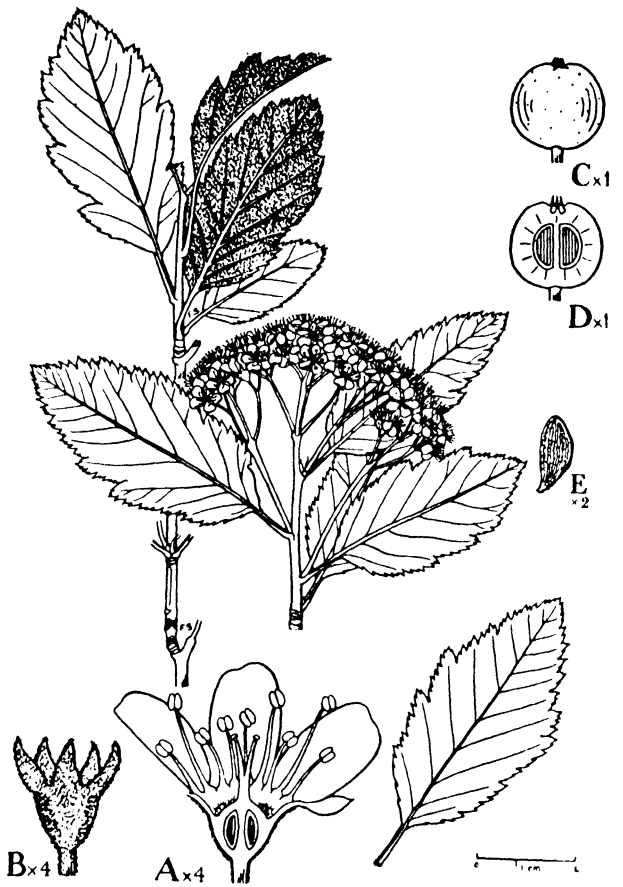
617. SORBUS INTERMEDIA (Ehrh.) Pers. (*S. scandica* (L.) Fr.). This BUFF-LEAVED WHITE BEAM is a small to medium tree up to 15 ft. (5 m.) high, which is frequently planted in woodlands though it may be wild in a few places. Leaves covered beneath with a smooth yellow-white felt, broadly ovate, broadest about the middle, distinctly pinnatifid; lowest and middle incisions one- to two-thirds of the distance to the midrib; upper shallower; veins 8-10 pairs. Flowers 8-10 mm. diam., in broad corymbs; petals white. Fruit 12-15 mm., ovoid, longer than broad, red-brown, with lenticels few or none; teeth of fruiting calyx large, dry, erect or converging, the large internal space half-filled with conical style base; seed 6 × 3 mm., ellipsoid, with a curved tip, finely striate, light brown.

Late May—mid June. (Pilmoor, Yorkshire.)
A. flower l.s. B. calyx. C. fruit. D. fruit l.s. E. seed.



618. SORBUS ARRANENSIS Hedl. This SCOTTISH WHITE BEAM is a small, slender tree 15-20 ft. (5-7 m.) high, which is found only in limestone gorges in the Island of Arran. Leaves covered with an uneven, grey-white felt, rather narrow, broadest below the middle, distinctly pinnatifid; lowest incisions half, or more than half-way to midrib; upper progressively shallower; veins 8-10 pairs. Flowers 8-10 mm. diam.; petals cream. Fruit 8-10 mm., longer than broad, scarlet, covered with few inconspicuous lenticels; teeth of fruiting calyx dry, small, erect, internal space obvious; seed 5 × 2 mm., ellipsoid, striate, with a recurved tip.

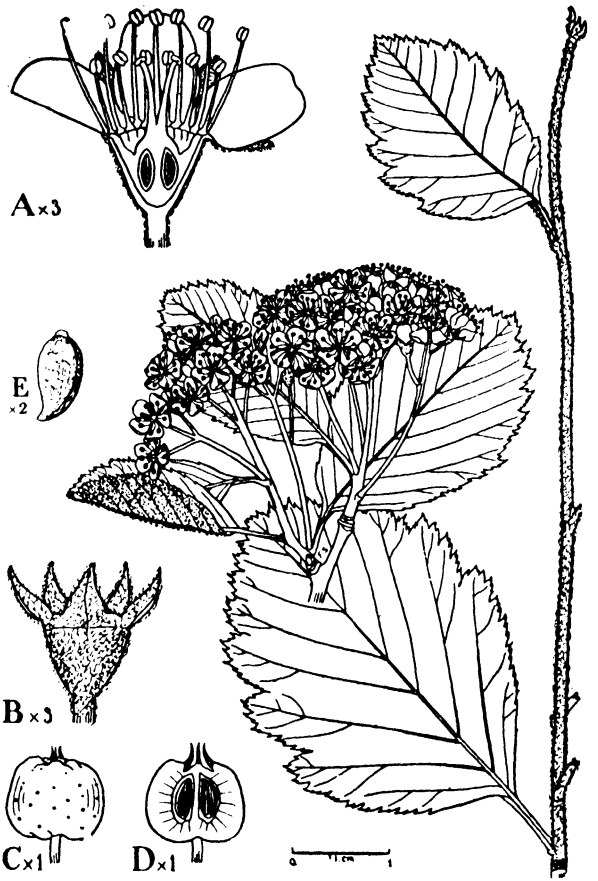
Late May—early June. (Glen Catacol, Arran.)
A. flower l.s. B. calyx. C. fruit. D. fruit l.s. E. seed.



619. SORBUS MINIMA (A. Ley.) Hedl. This LESSER WHITE BEAM is a slender tree 6-15 ft. (2-5 m.) high, which grows only on limestone cliffs in the county of Brecon. Leaves covered beneath with a smooth, grey-white felt, small, narrow, broadest at the middle, distinctly pinnatifid; lowest incisions one-fourth to one-third of the distance to the midrib; others progressively shallower; veins 8-10 pairs. Flowers 6-8 mm. diam.; petals white. Fruit 6-8 mm., globose, scarlet, covered with few small lenticels; teeth of fruiting calyx thin, dry erect, internal space small; seed 5·0 × 2·5 mm., half-ellipsoid, striate and with a recurved tip.

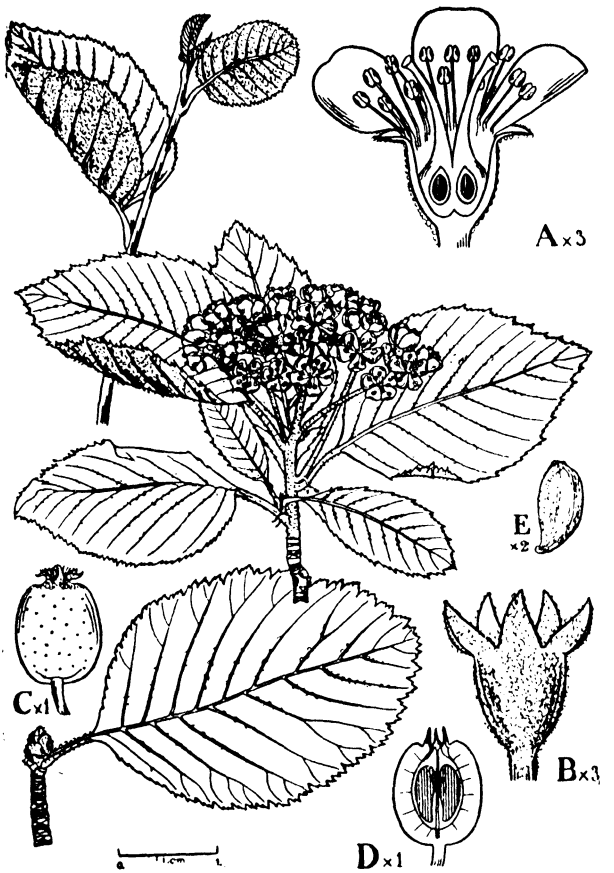
Late May—mid June. (Crickhowell, Brecon.)
A. flower l.s. B. calyx. C. fruit. D. fruit l.s. E. seed.

(*S. leyana* Wilm. from the same region has wider, more deeply lobed leaves but the same type of small, round fruit as the above.)



620. SORBUS ANGLICA Hedl. This ENGLISH WHITE BEAM is a rather small, common tree up to 12 ft. (4 m.) high, which grows on chalk and limestone cliffs in S.W. and W. England. Leaves covered beneath with a smooth, grey-white felt, rather large, broad, distinctly pinnatifid, middle and lowest incisions equal and larger than the rest; veins 9-11 pairs. Flowers 10-12 mm. diam., in level-topped corymbs; petals cream. Fruit 8-12 mm., about as broad as long, red, with a few obvious lenticels; teeth of fruiting calyx dry, erect or converging, internal space very small; seed 6 × 3 mm., ellipsoid, finely striate, with recurved point, light brown.

Late May—mid June. (Cheddar, Somerset.)
A. flower l.s. B. calyx. C. fruit. D. fruit l.s. E. seed.

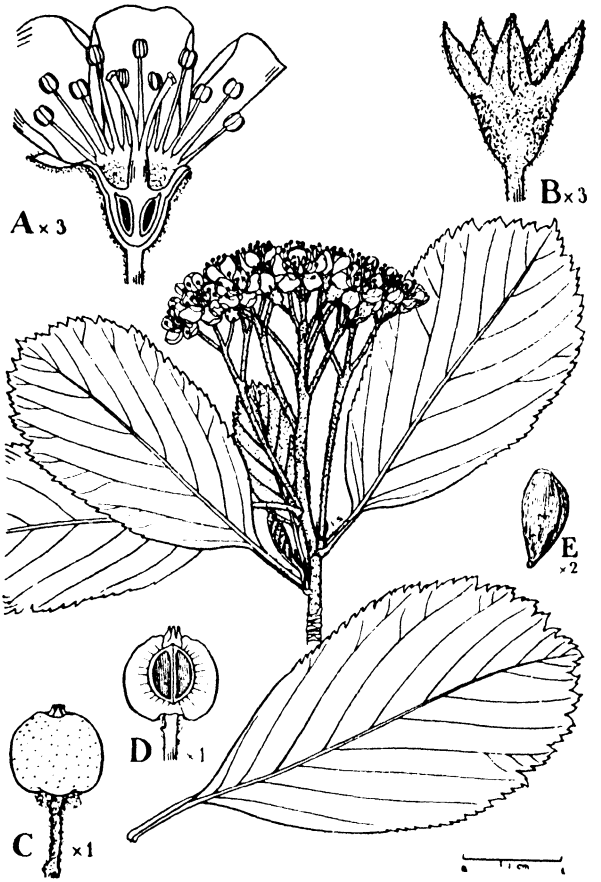


621. SORBUS ARIA (L.) Crantz. The COMMON WHITE BEAM is a small, spreading tree 6-20 ft. (2-7 m.) high, which grows commonly on chalk downs and in woods, particularly in S. England. Leaves covered beneath with a smooth white felt, broadly ovate, broadest at or below the middle, irregularly serrate throughout; veins 9-11 pairs. Flowers 10-12 mm. diam., in rather large corymbs; petals white. Fruit 8-15 mm., longer than broad, red, with many obvious lenticels; teeth of fruiting calyx thick, erect or diverging, internal space small; seed 6 × 3 mm., ellipsoid, with recurved point, finely striate, light brown.

Late May—mid June. (Godstone, Surrey.)
A. flower l.s. B. calyx. C. fruit. D. fruit l.s. E. seed.

622. SORBUS PORRIGENTIFORMIS E. F. Warb. (*S. porrigens* auct.). This GREY-LEAVED WHITE BEAM is a bush or small spreading tree up to 15 ft. (5 m.) high, which occurs rarely in limestone scrub and woods in S.W. England. Leaves covered beneath with a smooth white felt, broadly obovate, broadest about the middle, but not flat-topped; lowest portion sparsely serrate; upper irregularly and coarsely serrate; veins 8-10 pairs. Flowers 12-15 mm. diam.; petals white. Fruit 8-12 mm., as broad as or broader than long, red, with few large lenticels at base; teeth of fruiting calyx thin, dry, erect or converging, internal space small; seed 5·5 × 3·0 mm., pyriform, with straight tip, finely netted.

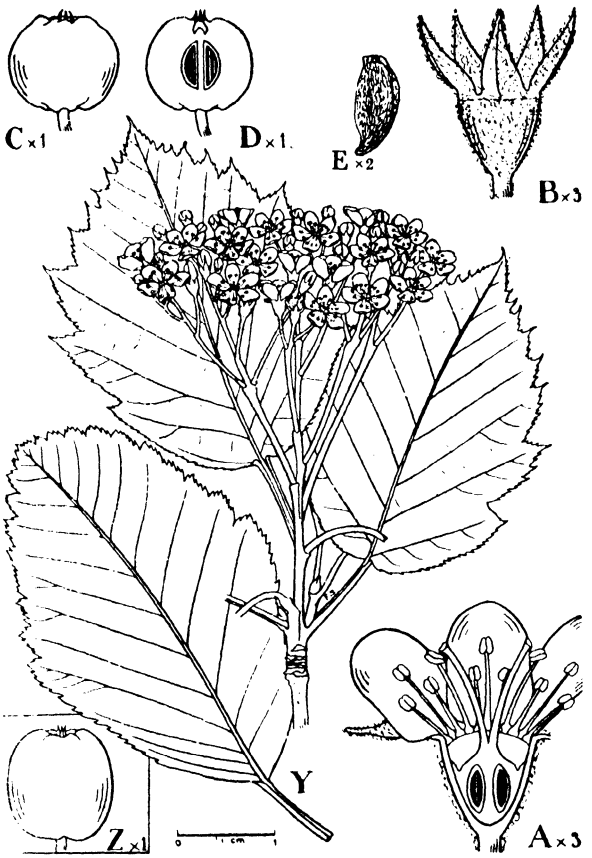
Late May—mid June. (Anstey's Cove, Devon.)
A. flower l.s. B. calyx. C. fruit. D. fruit l.s. E. seed.



623. SORBUS RUPICOLA (Syme) Hedl. This NORTHERN WHITE BEAM is a bush or small, slender tree 2-6 ft. (1-2 m.) high, which grows rather commonly on limestone cliffs in N. and W. England. Leaves covered beneath with an even, white felt, obovate, broadest above the middle, almost flat-topped, lowest portion of margin almost entire, upper irregularly serrate; veins 5-10 pairs. Flowers 12-15 mm. diam.; petals white. Fruit 12-15 mm., as long as, or longer than broad, red, with many small lenticels; teeth of fruiting calyx thick, erect, internal chamber obvious; seed 6 × 3 mm., pyriform with straight tip, finely striate, brown.

Early—late June. (Winch Bridge, Durham.)
A. flower l.s. B. calyx. C. fruit. D. fruit l.s. E. seed.

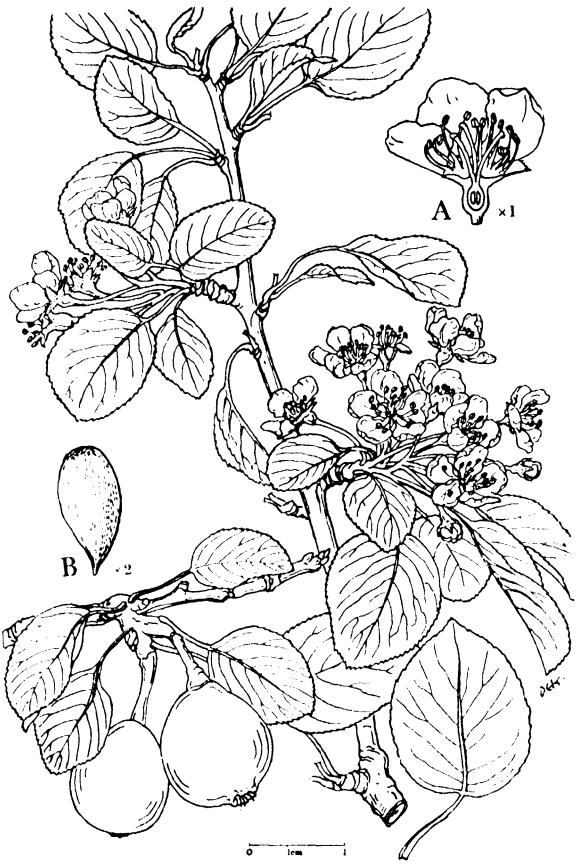
(The leaves of *S. lancastriensis* Warb. are of similar shape but a little larger; while in *S. eminens* Warb., they are broader as well as larger. There is considerable overlapping in all these forms.)



624. SORBUS DEVONIENSIS E. F. Warb. This BROAD-LEAVED WHITE BEAM is a shrub or small tree up to 10 ft. (3·5 m.) high that grows in limestone woods in S.W. England. Leaves covered beneath with a flocculent grey felt, broad, ovate, broadest at or above the middle, margin with very acute, serrate lobes; veins 8-12 pairs. Flowers 12-15 mm., in large corymbs; petals cream coloured. Fruit 10-15 mm., nearly as broad as long, orange, with few large lenticels; teeth of fruiting calyx obvious, dry, recurved, the rather large internal space one-quarter filled with a conical style base; seed 6-7 × 3 mm., ellipsoid, with a curved tip, finely striate, light brown. Late May—mid June. (Lynton, Devon; and Y-Z, Bristol.) A. flower l.s. B. calyx. C. fruit. D. fruit l.s. E. seed. (Y. leaf, and Z. fruit of var. *bristoliensis* Wilm.) (*S. subcuneata* Wilm. is a similar plant with narrower leaves, while *S. bristolensis* Wilm. has longer, rather rhomboidal leaves with less acute teeth; the fruit is more elongated. The hybrid *S. aria* × *torminalis* = *S. vagensis* Wilm. is found in Monmouthshire.)

625. SORBUS TORMINALIS (L.) Crantz. The WILD SERVICE TREE is a small to medium tree up to 40 ft. (13 m.) high, which occurs here and there in woods in various parts of England, especially on clay soils. Leaves subglabrous, ovate-cordate, acute, deeply lobed, lobes acuminate, lowest and middle one-third of the distance to midrib; veins 6-8 pairs. Flowers 10-12 mm. diam.; calyx woolly, teeth triangular, acute; petals cream. Fruit 12-16 mm., ovoid, longer than broad, brown, with numerous lenticels; teeth of fruiting calyx spreading, internal space small; seed 8 × 3 mm., half-ovoid, compressed, with recurved tip, striate, yellow-brown.

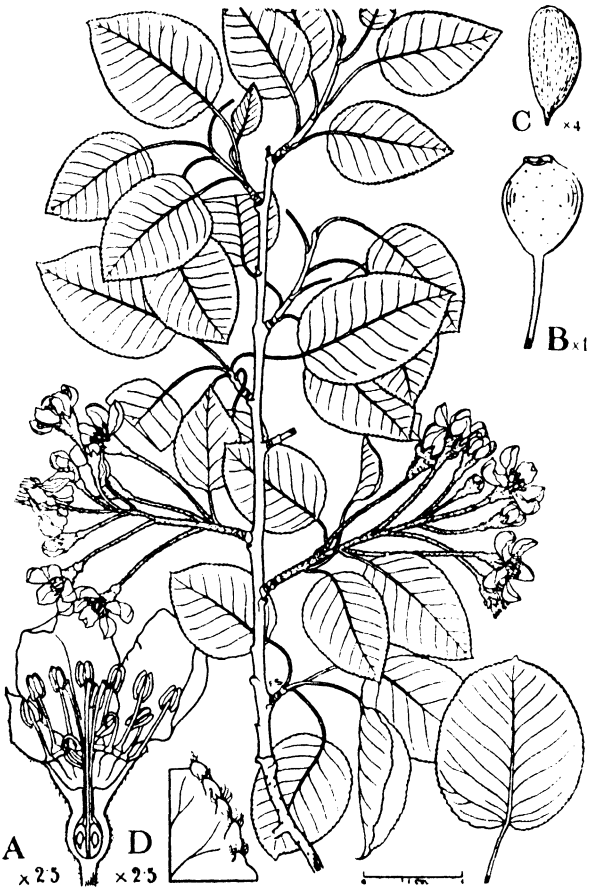
Late May—mid June. (Market Rasen, Lincolnshire.)
A. flower l.s. B. calyx. C. fruit. D. fruit l.s. E. seed.



PYRUS L. Trees or shrubs with unarmed or spiny branches and simple leaves. Calyx tube fleshy, completely investing carpels. Carpels about 5, horny, with 1-2 seeds.

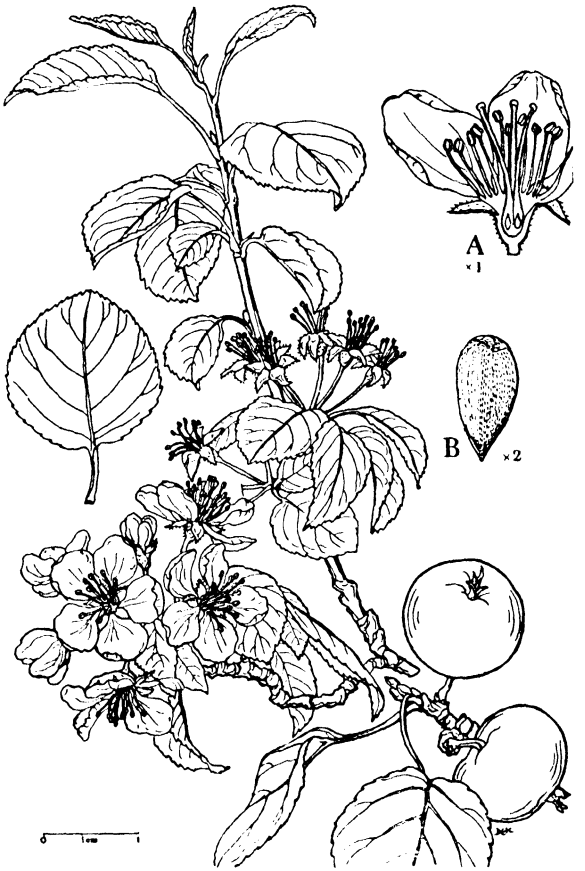
626. PYRUS COMMUNIS L. The WILD PEAR is a small to large tree, often a relic of cultivation, but wild in S. and W. England. Branches often spiny. Leaves ovate, acute, rounded at base, tomentose when young, regularly serrate; stipules scaly. Flowers 20-25 mm. diam., all on long stalks, corymbose; calyx constricted below, somewhat downy; sepals 5, floccose; petals white. Fruit 20-40 mm., globose, pyriform, depressed at top, tapering into stalk, lenticels few to many; seed 8 × 4 mm., obovate with an acuminate base, finely striate.

Mid—late May. (Hartlebury Common, Worcestershire.)
A. flower l.s. B. seed



627. PYRUS CORDATA Desv. This DWARF PEAR is a small shrub 6-10 ft. (2·0-3·5 m.) high with spreading, spiny branches. It occurs in hedges and woods in a few places in S.W. England. Leaves broadly ovate or cordate, nearly glabrous and regularly serrate. Flowers 18-20 mm. diam., in a simple corymb, outer on long stalks; inflorescence level-topped; calyx long, funnel-shaped, covered with a brownish pubescence; petals pink. Fruit 4·0 × 1·7 mm., pyriform, almost glabrous, covered with lenticels; seed 4·0 × 1·7 mm., obovoid with acuminate base, striate, brown.

Late May—mid June. (Egg Buckland, Devon.)
A. flower l.s. B. fruit. C. seed. D. portion of leaf.



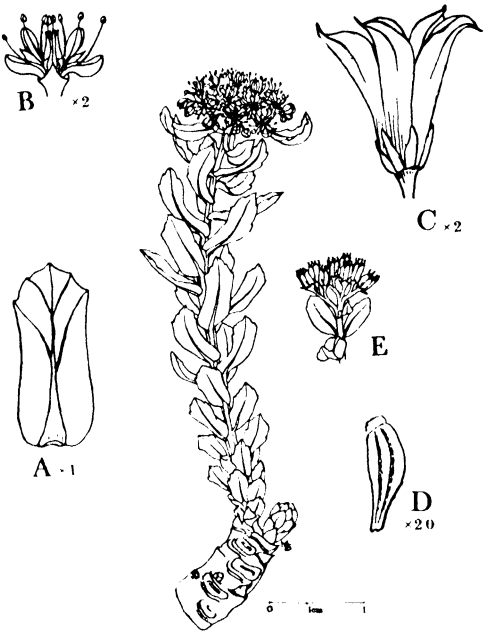
628. PYRUS MALUS L. The WILD CRAB APPLE is a small to medium tree up to 10 ft. (3·5 m.) high, which is common in hedges and woods throughout the British Isles except in the extreme north. Branches glabrous, brown, often spiny. Leaves ovate, acute, glabrous, finely serrate; stipules entire. Flowers 18-20 mm. diam., in simple umbels of 4-7 rays; petals white suffused with pink. Fruit 30-60 mm. diam., subglobose, smooth, juicy, depressed at each end; seed 8 × 4 mm., pyriform, finely striate, brown.

Mid May—late June. (Bramcote, Nottinghamshire.)
A. flower l.s. B. seed.

629. PYRUS (MESIPILUS) GERMANICA (L.) Hook. fil. The MEDLAR is a small, thorny tree 6-10 ft. (2·0-3·5 m.) high with entire, finely serrate leaves. It has long been grown for its fruit and is naturalized in hedges in S. England. Flowers 20-50 mm. diam., on short, pubescent stalks, solitary; calyx hairy with long, acuminate sepals; petals wrinkled in bud, white. Fruit 40-50 mm., globose, truncate and open at apex, exposing 5 carpels; stone 12 × 3 mm., with woody walls, cuneoid, irregularly wrinkled.

Early—late June. (Minehead, Somerset.)
A. calyx. B. calyx tube l.s. C. stone (dorsal and lateral views).

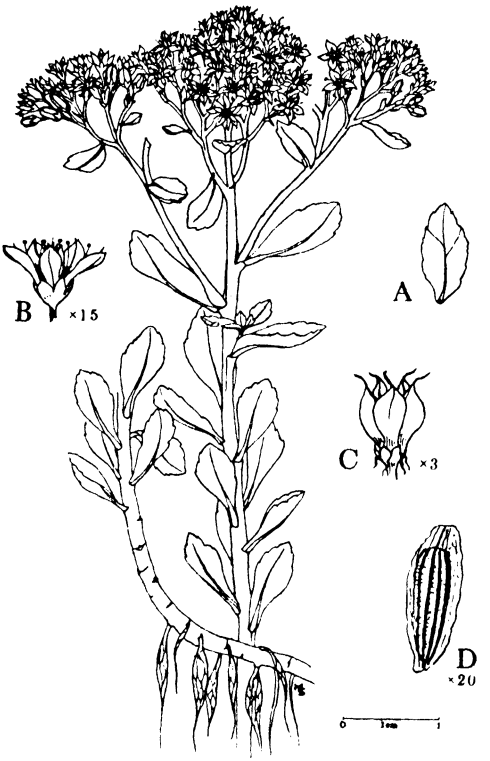
(*Amelanchier confusa* Hyland with long racemes of narrow-petalled flowers is planted and naturalized in woods in S. England.)



SEDUM L. Succulent, herbaceous perennials with showy flowers and elongated, leafy stems. Flowers 4-5-merous; sepals present; petals free; stamens double the number of petals; carpels 5, free; fruit of many-seeded follicles.

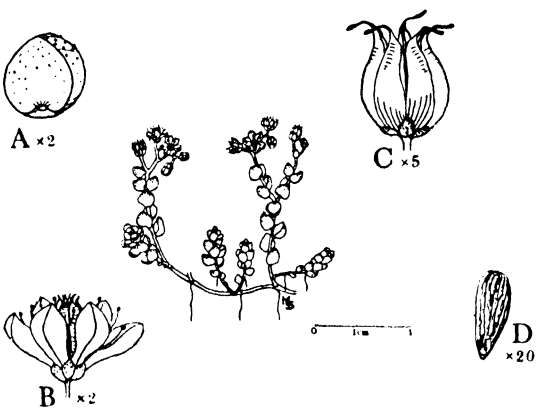
630. SEDUM ROSEA (L.) Scop. The ROSE-ROOT is a small, tufted perennial with many, simple, leafy stems 3-9 in. (8-23 cm.) high, growing from a thick, fleshy rootstock. It is found on mountain cliffs and rocks in the mountainous regions of Britain. Leaves 10-40 mm. long, thick, flat, obovate, acute, toothed. Inflorescence terminal, compact; flowers dicœcious; male 6 mm. diam., with linear sepals, yellow, linear petals one and a half times as long as sepals, and 4 stamens rather longer than petals; female with linear sepals, greenish, linear petals about as long as sepals, and 4 spreading carpels 10-12 mm. long, which are later reflexed and recurved in fruit; seed 0·8 × 0·2 mm., clavate, vertically ribbed, grey.

Early June—mid July. (Ben Laiough, Perthshire.)
A. leaf. B. male flower. C. follicles. D. seed. E. fruiting female inflorescence.



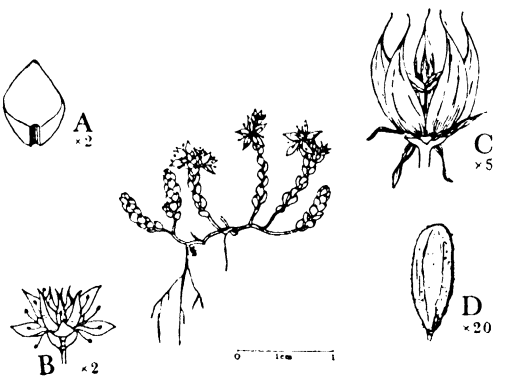
631. SEDUM TELEPHIUM L. The ORPINE or LIVELONG is a tufted perennial with many flowering stems 6-12 in. (15-30 cm.) high, growing from a thick rootstock. It is found here and there in woods, hedge banks and rocks throughout the British Isles. Leaves 10-40 mm. long, large, thick, flat, obovate, toothed. Flowers 10 mm. diam., in terminal, compact cymes; sepals triangular; petals pink, lanceolate, twice as long as sepals; carpels 3 mm. long, boat-shaped, erect in fruit; seed 1·0 × 0·3 mm., ellipsoid, striate, winged, grey.

Late July—mid Sept. (Lathkil Dale, Derbyshire.)
A. leaf. B. flower. C. follicles. D. seed.



632. SEDUM DASYPHYLLUM L. The THICK-LEAVED STONECROP is a small, tufted, reddish perennial with leafy shoots 1 in. (2·5 cm.) and flowering scapes 2-3 in. (5-8 cm.) high, growing erect from a branched creeping and rooting basal portion. It is found here and there naturalized on old walls near villages. Leaves 3-5 mm., very thick, suborbicular, glandular-pubescent. Flowers 10 mm. diam., in few-flowered, long-stalked cymes; sepals small, ovate; petals white, tinged with pink, very much longer than the sepals. Carpels 3 mm., boat-shaped, acute, erect in fruit; seed 0·6 × 0·2 mm., smooth, striate, grey.

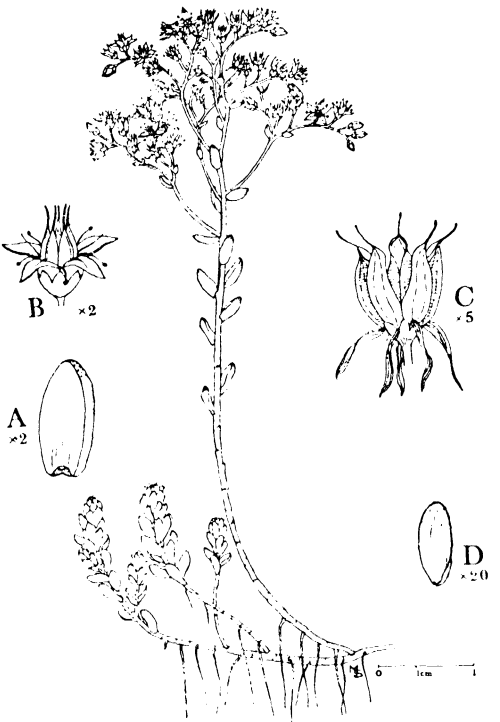
Late May—early Sept. (Conway, N. Wales.)
A. leaf. B. flower. C. follicles. D. seed.



633. SEDUM ANGLICUM Huds. The ENGLISH STONECROP is a dwarf, tufted, reddish perennial with numerous, leafy flowering shoots 1-3 in. (3-8 cm.) high, growing erect from a slender, prostrate, much-branched, creeping and rooting basal portion. It grows abundantly on rocks and in sandy soil in W. Britain and Ireland, particularly near the sea, rarely elsewhere. Leaves 3-5 mm. long, thick, ovoid, glabrous. Flowers 12 mm. diam., in few-flowered cymes; sepals ovate, obtuse; petals white, tinged with pink, twice as long as sepals. Carpels 3 mm. long, lanceolate, acuminate, erect in fruit; seed 3·0 × 0·8 mm., smooth, hairy, grey.

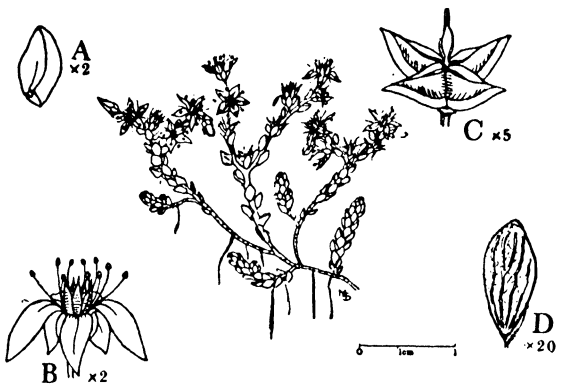
Mid June—mid Sept. (Portree, Skye.)

A. leaf. B. flower. C. follicles. D. seed.



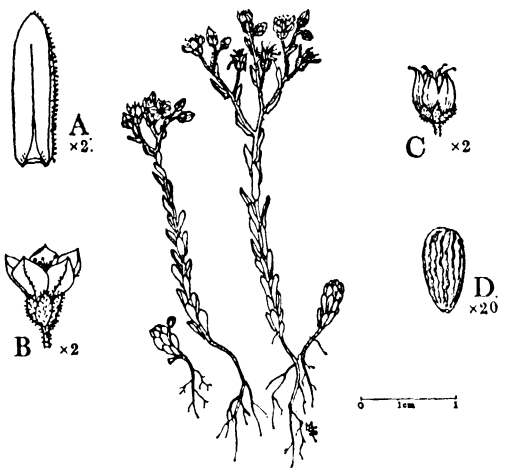
634. SEDUM ALBUM L. The WHITE STONECROP is a rather stout, green or reddish, matted perennial with many flowering shoots 4-9 in. (10-23 cm.) high, and leafy, barren stems 2-4 in. (5-10 cm.) long growing from rather robust, creeping and rooting stems. It is found naturalized here and there on rocks and walls, though perhaps native in the south-west. Leaves 8-10 mm. long, thick, oblong (oblong-ovate in var. *micranthum* Bast.), obtuse, flattened above and slightly glandular. Flowers 0·8 mm. diam., in many-flowered cymes; sepals triangular; petals white, twice as long as sepals. Carpels 3 mm. long, lanceolate, acute, erect in fruit; seed 0·5 × 0·2 mm., ellipsoid, and very finely striate.

Mid June—early Aug. (Kingston-on-Soar, Nottinghamshire.)
A. leaf. B. flower. C. follicles. D. seed.



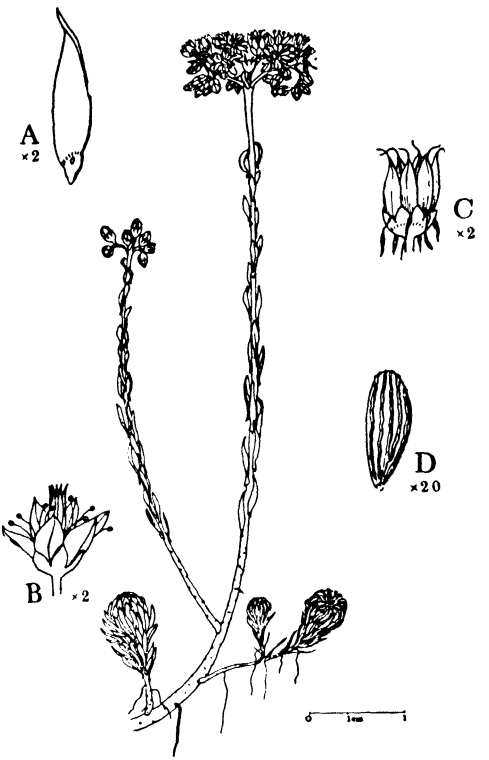
635. SEDUM ACRE L. The COMMON STONECROP or WALL-PEPPER is a small, tufted, green perennial with leafy flowering stems 1-3 in. (3-9 cm.) high, growing erect from a much-branched, slender, creeping and rooting portion. It is very common in dry places and on walls throughout the British Isles. Leaves 3-5 mm. long, thick, cuneiform, acute, green, glabrous. Flowers 10-12 mm. diam., in few-flowered cymes; sepals lanceolate, acute; petals yellow, twice as long as sepals. Carpels 2·5 mm. long, lanceolate, spreading in fruit; seed 0·8 × 0·3 mm., ellipsoid, with vertical ridges, grey.

Mid June—late July. (Alford, Lincolnshire.)
A. leaf. B. flower. C. follicles. D. seed.



636. SEDUM VILLOSUM L. The HAIRY STONECROP is a slender, green or reddish, creeping biennial with a few, erect, branched, slender, leafy, flowering stems 4-8 in. (10-20 cm.) high, growing from a slender, creeping stock. It grows infrequently in wet mountain springs and bogs northwards from Lancashire and Yorkshire. Leaves 6-12 mm. long, thick, oblong, obtuse, glandular, pubescent. Flowers 6 mm. diam., in few-flowered, lax cymes; sepals lanceolate, obtuse; petals white, edged with pink, ovate, apiculate, twice as long as sepals. Carpels 3 mm. long, boat-shaped, erect in fruit; seed 0·6 × 0·3 mm., ovoid, with vertical ridges, brown.

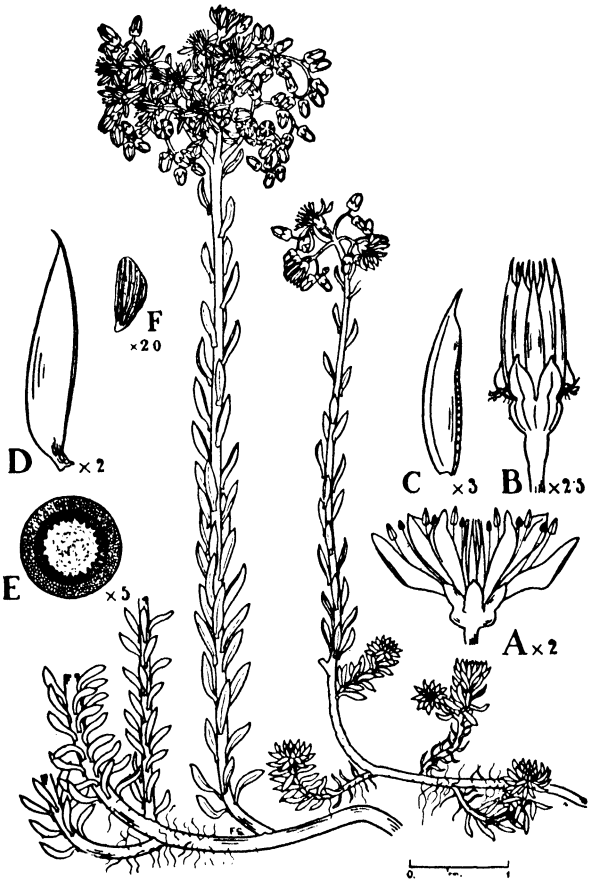
Early June—late July. (Upper Teesdale, Yorkshire.)
A. leaf. B. flower. C. follicles. D. seed.



637. SEDUM ELEGANS Lej. (*S. rupestre* auct.). This YELLOW STONECROP is a rather stout perennial with flowering shoots 5-9 in. (12-23 cm.) high and many condensed, round-topped, barren shoots 1-3 in. (3-8 cm.) high, growing erect from a decumbent, rooting lower portion. It is found here and there on rocks and cliffs throughout England and Wales. Stem leaves 8-12 mm. long, all erect; upper with dilated base, glaucous green, linear-lanceolate, thick, smooth. Flowers 12-15 mm. diam., in level-topped, many-flowered cymes; main axes distinct; sepals oval, triangular; petals yellow, lanceolate, three times as long as the sepals. Carpels 5 mm. long, lanceolate, acute, erect in fruit; seed 0·8 × 0·3 mm., narrowly ellipsoid, with vertical ridges, brown.

Mid July—mid Aug. (Cheddar, Somerset.)

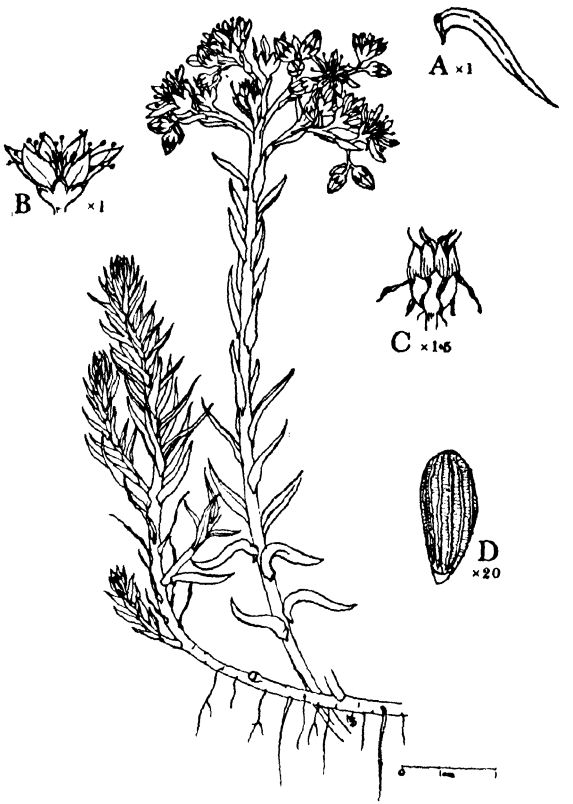
A. leaf. B. flower. C. follicles. D. seed.



638. SEDUM FORSTERANUM Sm. This YELLOW WELSH STONECROP is a slender perennial with flowering shoots 6-8 in. (15-20 cm.) high and many condensed, level-topped, barren shoots 1-2 in. (2-5 cm.) high, growing erect from a decumbent and rooting lower portion. It is found on rocks and cliffs in W. England and Wales. Stem leaves 15 mm. long, all erect; upper with dilated base, green, linear-lanceolate, thick, smooth. Flowers 12-15 mm. diam., in roundish, many-flowered cymes of which the main axes grow out close together; sepals oval, triangular; petals yellow, lanceolate, three times as long as the sepals. Carpels lanceolate, acute, erect in fruit; seed 0·5 × 0·2 mm., ellipsoid, narrow, brown.

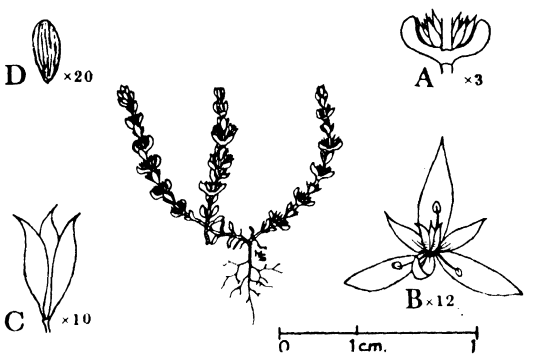
Early July—late Aug. (Minehead, Somerset.)

A. flower. B. carpels. C. follicle. D. leaf. E. stem t.s. F. seed.



639. SEDUM REFLEXUM L. The REFLEXED STONECROP is a stout perennial with flowering shoots 6-12 in. (15-30 cm.) high and numerous, elongated, conical-topped, lower shoots 3-4 in. (8-10 cm.) high, growing erect from a decumbent and rooting lower portion. It is common in gardens and naturalized here and there on banks and rocks. Upper stem leaves 15-22 mm. long, erect; lower reflexed with dilated base, glaucous, lanceolate, linear, thick, smooth. Flowers 15 mm. diam., in roundish, many-flowered cymes, main axes distinct; sepals oval, triangular; petals yellow, lanceolate, 3 times as long as the sepals. Carpels 6 mm. long, lanceolate, acute, erect in fruit; seed 0·9 × 0·4 mm., ellipsoid, ridged, brown.

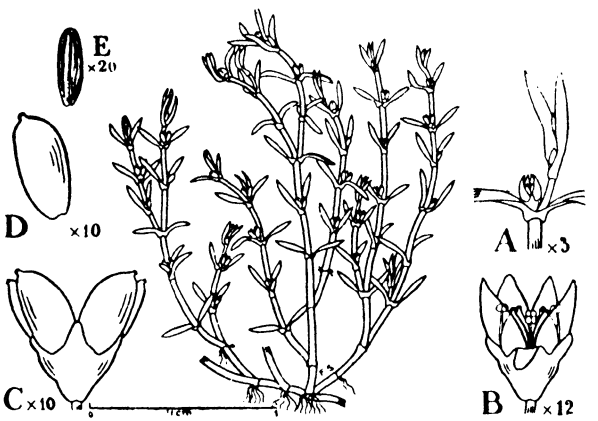
Early July—late Aug. (Keadby, Lincolnshire.)
A. leaf. B. flower. C. follicles. D. seed.



TILLÆA L. Dwarf annuals with minute flowers. Sepals present; petals free or fused at base; stamens as many as petals, fruit of 3 or 4 follicles.

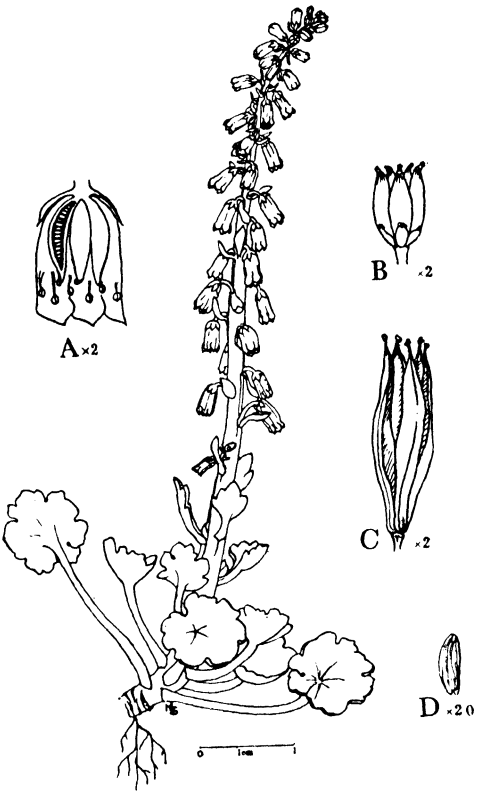
640. TILLÆA (CRASSULA) MUSCOSA L. This DWARF MOSSY TILLÆA is a dwarf, tufted, reddish annual 0·5-2·0 in. (1-5 cm.) high, found rarely in bare, sandy places in E. and S. England. Leaves 1-2 mm. long, opposite, crowded, ovate-oblong, united at base. Flowers 2-5 mm. diam., sessile in almost all the leaf axils, parts in threes, sepals ovate, acute; petals reddish, lanceolate. Carpels narrow, lanceolate, two-seeded; seed 0·4 mm., ovoid, ridged, brown.

Mid May—early July. (Langford Moor, Nottinghamshire.)
A. node with flowers. B. flower. C. carpels. D. seed.



641. TILLÆA (CRASSULA) AQUATICA L. This WATER TILLÆA is a dwarf, creeping, greenish annual 1-3 in. (1-8 cm.) high, that was found in the mud on the margin of a pool near Leeds. Leaves 3-5 mm. long, distant, linear, opposite, united at base. Flowers 1·5 mm. diam., sessile in the upper leaf axils; parts in fours; sepals triangular, obtuse; petals thin, white, ovate; carpels boat-shaped, many seeded; seed 0·5 mm. long, ellipsoid, ridged, brown.

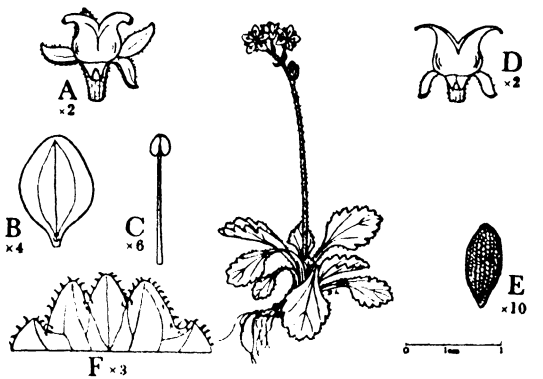
Mid May—early July. (Adel, Yorkshire.)
A. node with flowers B. flower. C. carpels. D. single carpel. E. seed.



COTYLEDON L. Succulent, herbaceous perennials with flowers in racemes or panicles. Flowers 5-merous; sepals present; petals united; stamens 10; fruit a cluster of follicles.

642. COTYLEDON UMBILICUS-VENERIS DC=UMBILICUS RUPESTRIS (Salis.) Dandy. The WALL PENNYWORT is a succulent perennial with flowering stems 6-15 in. (15-38 cm.) high, rising from a rosette of peltate-orbicular, crenate leaves. It is frequent on rocks and walls in W. Britain. Flowers 5 mm. diam., pendulous, in long, almost simple racemes; sepals united at base, small, acute; corolla 10 mm. long, cylindrical, yellow-green. Carpels 6, 10-12 mm. long, erect, cylindrical; seed 0·9 × 0·3 mm., ellipsoid, striate, grey.

Mid May—mid July. (Conway, Caernarvonshire.)
A. flower l.s. B. pistil. C. ripe carpels. D. seed.

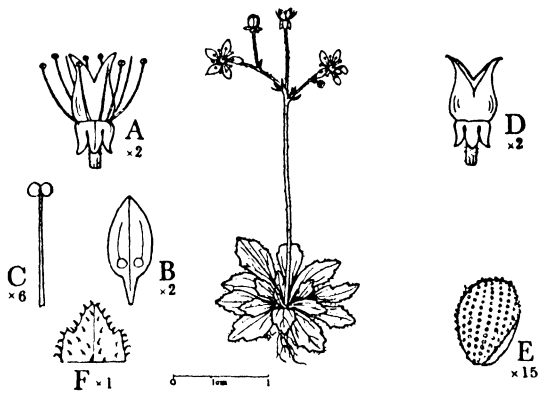


SAXIFRAGA L. Herbs with showy flowers. Sepals 5, free or adherent at base; petals 5, stamens 10, both inserted on edge of calyx. Styles 2, fruit a two-horned, many-seeded capsule.

643. SAXIFRAGA NIVALIS L. This ALPINE SNOW SAXIFRAGE is a small perennial with simple scape 1-5 in. (2-13 cm.) high, found on rocks on high mountains fairly frequently in Scotland and very rarely in Wales and England. Leaves 15 mm. long, in a basal rosette, spathulate, toothed, margin glandular hairy. Flowers 7 mm. diam., shortly stalked, in a dense, short raceme; sepals ovate, spreading, equalling petals, glandular; petals ovate, white suffused with pink; capsule 3-4 mm. long, with narrow, acute, recurved horns and calyx adhering to about half-way up; seed 1·0 × 0·5 mm., ovoid, pointed, honeycombed, brown.

Mid July—mid Aug. (Ben Lawers, Perthshire.)

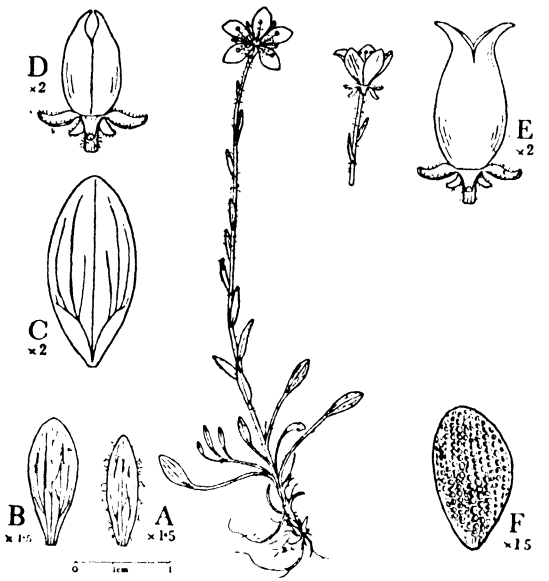
A. calyx. B. petal. C. stamen. D. capsule. E. seed. F. leaf apex.



644. SAXIFRAGA STELLARIS L. The STARRY SAXIFRAGE is a small perennial 1-5 in. (3-13 cm.) high, which is found quite commonly in bogs and rills in the mountainous parts of the British Isles. Leaves 17-20 mm. long, a few in a basal rosette, spathulate, sessile, with 3-7 acute teeth, sparsely hairy. Flowers 10 mm. diam., stalked, in an open, few-flowered cyme, scape naked, with few glands; sepals oblong, reflexed; petals narrow, lanceolate, white, with two orange spots at base; capsule 4 mm. long, ellipsoid, with short, divergent horns, free of and superior to the calyx; seed 0·8 × 0·6 mm., ovoid, tuberculate, brown.

Mid June—late Aug. (Teesdale, Co. Durham.)

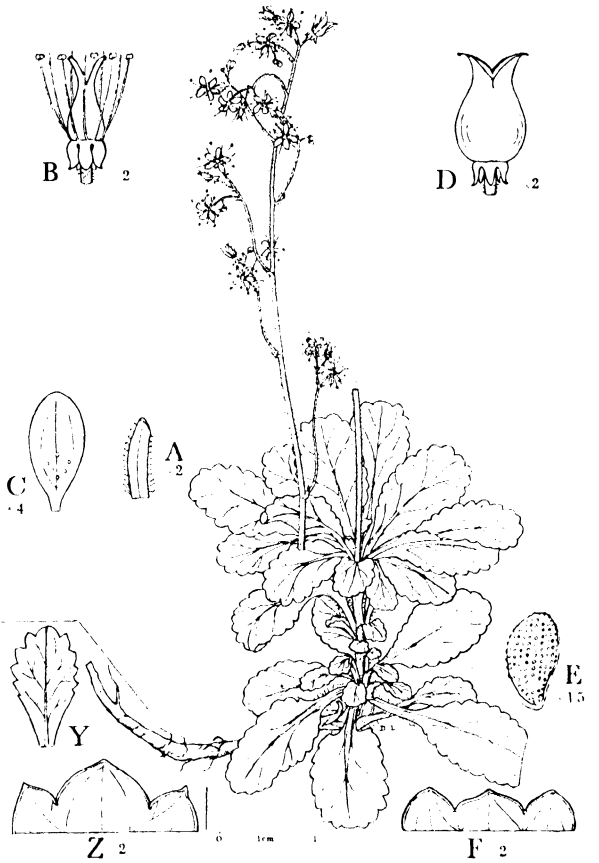
A. calyx and pistil. B. petal. C. stamen. D. capsule. E. seed. F. portion of leaf.



645. SAXIFRAGA HIRCULUS L. The YELLOW MARSH SAXIFRAGE is a small perennial with short, barren trailing shoots at the base, and erect, flowering shoots 4-6 in. (10-15 cm.) high. It is found, very rarely, in wet, grassy places on certain moorlands in N. England and S. Scotland and parts of Ireland. Stems viscid and hairy, leafy; leaves lanceolate, petiolate. Flowers 18-25 mm. diam., solitary, terminal; sepals oblong, ciliate, spreading in flower and in fruit; petals yellow-orange, spotted with orange-red, with 2 tubercles at base, longer than sepals; capsule 10 × 4 mm., ovoid, with long, divergent horns, free of and superior to the calyx; seed 1·2 × 0·7 mm., ovoid, pitted, brown.

Late July—early Sept. (Mickle Fell, Yorkshire.)

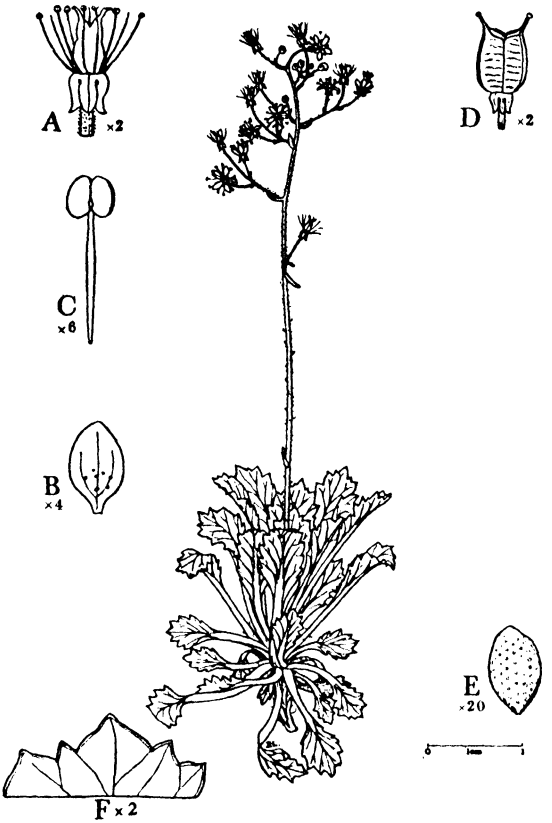
A. bract. B. sepal. C. petal. D. calyx and pistil. E. capsule. F. seed.



646. SAXIFRAGA UMBROSA L. The true LONDON PRIDE is a tufted perennial with flowering scapes 4-9 in. (10-23 cm.) high, growing from a leafy rosette. It is found only in a few limestone gorges in Yorkshire, though a hybrid between this and the next is common in gardens and is naturalized in several places. Leaves spathulate with regular, uneven, rounded, rather shallow, numerous teeth; lamina thick, rather hairy; petioles with few hairs, rather long, flattened. Flowers stalked, in a rather large, loose cyme, scape glandular-pilose only near top; sepals lanceolate, acute, reflexed; petals narrow, lanceolate, reddish, with two red and several orange spots at the base; capsule 8 × 4 mm., ellipsoid, with erect horns free of and superior to the calyx; seeds 0·6 × 0·4 mm., ovoid, tuberculate, brown. The London Pride of gardens differs in its longer, not so hairy petioles and more numerous, bolder teeth to the leaf.

Early—late June. (Pen-y-ghent, Yorkshire.)

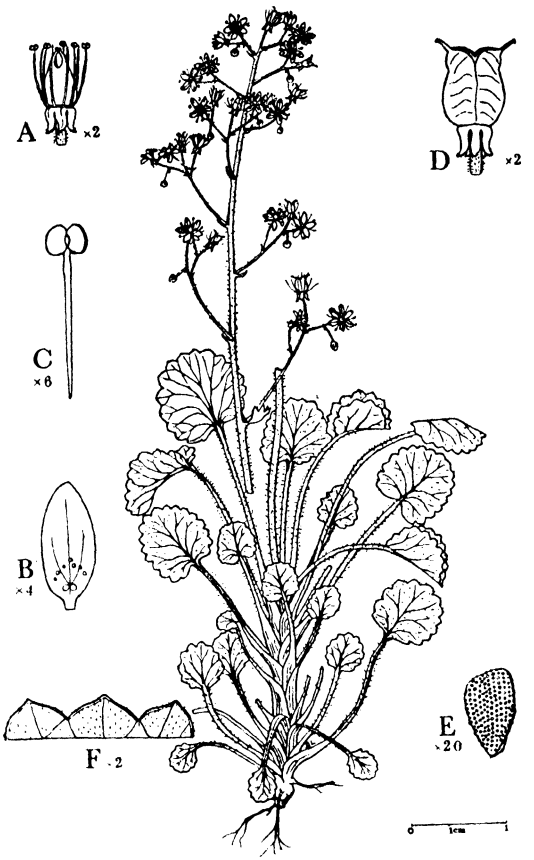
A. bract. B. sepals and pistil. C. petal. D. capsule. E. seed. F. leaf tip. (Y., Z. leaf of London Pride.)



647. SAXIFRAGA SPATHULARIS Brot. The ST. PATRICK'S CABBAGE is a tufted perennial with a branched, flowering scape 4-9 in. (10-23 cm.) high, growing from a leafy rosette. It is found only among non-calcareous rocks in S. and W. Ireland, and often abundantly. Leaves spathulate, with irregular, acute, rather deep teeth; lamina thick, glabrous; petioles glabrous, flattened. Flowers 5-6 mm. diam., stalked, in a medium-sized, loose cyme; scape glandular-pilose throughout; sepals lanceolate, acute, reflexed; petals narrow, lanceolate, white, with two red and several orange spots at the base; capsule 5 × 3 mm., ovoid, with divaricate horns, free of and superior to the calyx; seed 0·6 × 0·3 mm., ovoid, tubercled, brown.

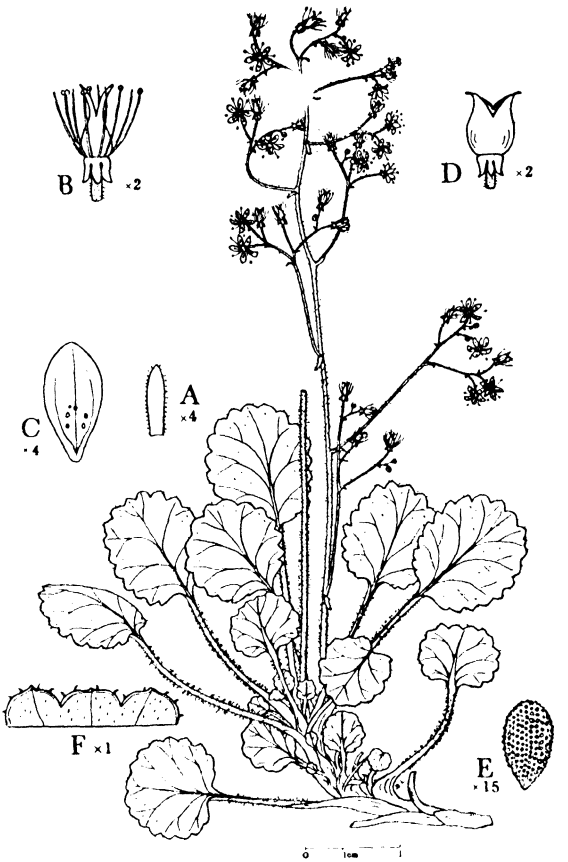
Late May—late July. (Cloghane, Co. Kerry.)

A. calyx and pistil. B. petal. C. stamen. D. capsule. E. seed. F. leaf tip.



648. SAXIFRAGA HIRSUTA L. (*S. geum* auct pl.). This ROUND-LEAVED IRISH SAXIFRAGE is a densely tufted perennial with a branched, flowering scape 6-9 in. (15-23 cm.) high, growing from a rosette of leaves. It is found only on calcareous rocks in western Ireland. Leaves orbicular or reniform, with cordate base, regular, shallow, blunt or acute teeth, slender, hairy petioles and lamina hairy on both sides. Flowers 6 mm. diam., stalked, in a loose cyme, scape glandular hairy; sepals lanceolate, acute, reflexed; petals narrow, lanceolate, white with several orange spots at the base, twice as long as sepals; capsule 5 × 4 mm., ellipsoid, with short, diverging horns, free of and superior to the calyx; seed 0·6 × 0·3 mm., ovoid, tubercled, dark brown.

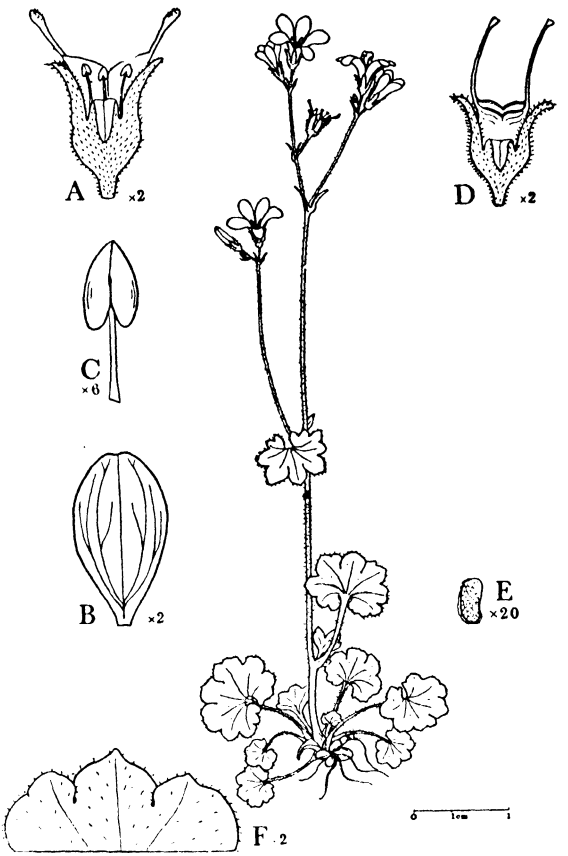
Late May—early July. (Cloghane, Co. Kerry.)
A. calyx and pistil. B. petal. C. stamen. D. capsule. E. seed. F. leaf tip.



649. SAXIFRAGA GEUM L. This KIDNEY-LEAVED SAXIFRAGE is a tufted perennial with flowering scapes 6-9 in. (15-23 cm.) high, growing from a leafy rosette. It originated as a garden hybrid and is found naturalized in a few places in Scotland and N. England. Leaves in a basal rosette, usually reniform and rather large, with regular, shallow, blunt teeth; lamina sparsely hairy; petioles slender, hairy, but somewhat flattened. Flowers 5-6 mm. diam., stalked, in a large, loose cyme; sepals lanceolate, acute, reflexed; petals narrow, lanceolate, white, with orange spots at the base, twice as long as sepals; capsule 6 × 3 mm., narrowly ellipsoid, with short, diverging horns free of and superior to the calyx; seed 0·6 × 0·4 mm., ellipsoid, tubercled, black.

Early—late June. (Weathercote, Yorkshire.)

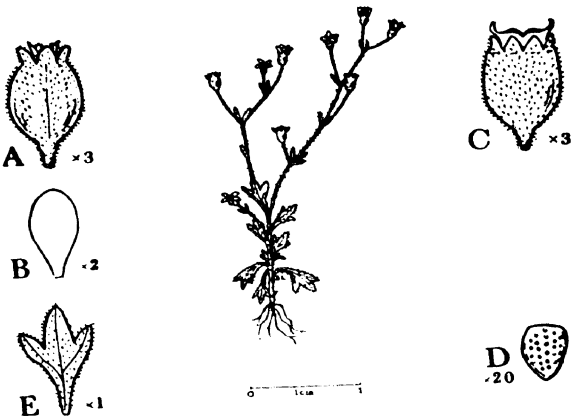
A. bract. B. calyx and pistil. C. petal. D. capsule. E. seed. F. leaf apex.



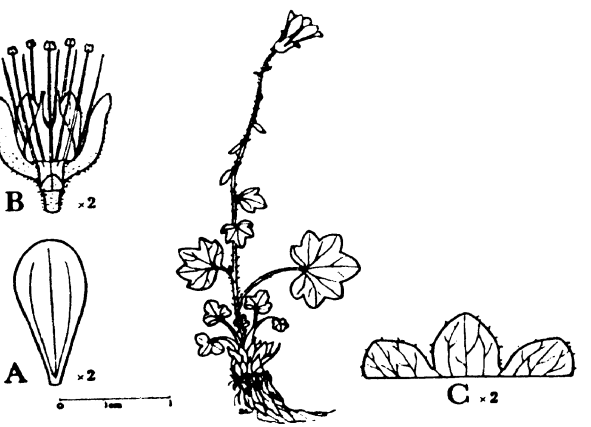
650. SAXIFRAGA GRANULATA L. The MEADOW SAXIFRAGE is an erect perennial with simple or slightly branched, leafy, flowering scapes 4-9 in. (10-23 cm.) high. It is a fairly common plant of basic grassland from C. Scotland southwards to Kent and Somerset. Radical leaves in a loose rosette, cordate, reniform, crenate, somewhat hairy, with bulbils in the axils; upper leaves few with no bulbils. Flowers 15 mm. diam., 1-7, on pedicels 7-8 mm. long; sepals ovate, glandular, subacute; petals white, ovate, twice as long as sepals; capsule ovoid with long, ascending horns and attached for three-quarters of its length to the calyx tube; seed 0·6 × 0·3 mm., cylindrical, finely netted, brown.

Late May—early July. (Icklingham, Suffolk.)

A. sepals and pistil. B. petal. C. stamen. D. capsule. E. seed. F. portion of leaf.


A ×3
B ×2
E ×1
C ×3
D ×20

A ×2
B ×2
E ×1·5
C ×2
D ×15


B ×2
A ×2
C ×2

651. SAXIFRAGA TRIDACTYLITES L. The RUE-LEAVED SAXIFRAGE is a very common annual 1-6 in. (2-15 cm.) high, growing on dry walls and rocks throughout the British Isles. Stems erect, glandular, leafy. Leaves about 10 mm. long, simple or palmate, glandular, reddish. Flowers 3-4 mm., solitary or cymose; sepals triangular, glandular; petals ovate, white, exceeding sepals; capsule 4 mm. long, ovoid, with horizontally divergent, then recurved horns and attached for nearly its whole length to the swollen calyx tube; seed 0·4 × 0·3 mm., ovoid, margined, tubercled, brown.

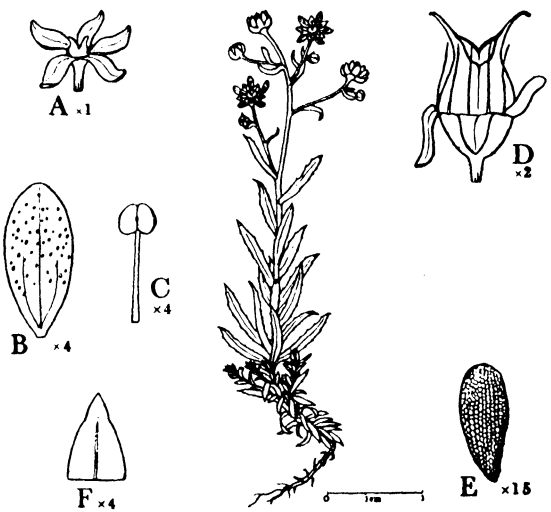
Mid April—mid June. (Barnack, Northamptonshire.)
A. calyx. B. petal. C. calyx and capsule. D. seed. E. leaf.

652. SAXIFRAGA RIVULARIS L. This ALPINE BROOK SAXIFRAGE is a small, straggling perennial 1-3 in. (3-8 cm.) high, which grows on screes and rocks on high mountains in a few places in the Scottish Highlands. Stems glabrous, leafy; leaves palmate with 3-7 obtuse lobes; lower stalked, all glabrous. Flowers 5 mm. diam., 1-3 on long pedicels; sepals ovate, subobtuse; petals white, much exceeding sepals; capsule ovoid with very short, somewhat divergent horns and attached for less than half its length to the swollen calyx tube; seed 0·7 × 0·3 mm., ellipsoid, with parallel network, brown.

Mid July—late Aug. (Cairngorm Mountains, Inverness.)
A. ovary and calyx. B. petal. C. capsule. D. seed. E. leaf.

653. SAXIFRAGA CERNUA L. This NODDING ALPINE SAXIFRAGE is a small, erect perennial with a usually simple, leafy stem 1-4 in. (3-10 cm.) high. It is found only near the summit of two Scottish mountains. Leaves palmate with 3-7 subobtuse lobes and buds in the leaf-axils. Plant rarely flowering; flowers 10 mm. diam., solitary, terminal, suberect; sepals ovate, spreading, hairy; petals white, oblong, much exceeding calyx; fruit not ripening in this country.

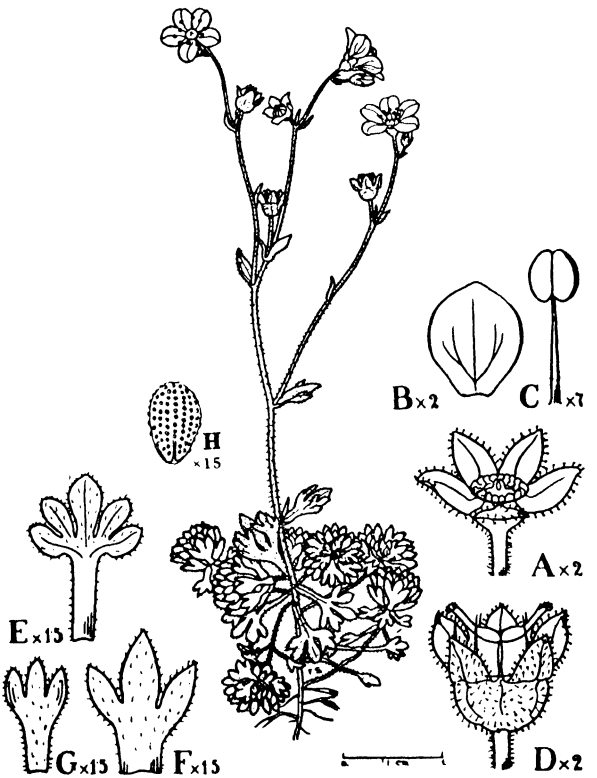
Mid July—mid Aug. (Ben Lawers, Perthshire.)
A. petal. B. pistil, stamens and calyx. C. apex of leaf.



654. SAXIFRAGA AIZOIDES L. The LESSER YELLOW MOUNTAIN SAXIFRAGE is a loosely tufted perennial 3-6 in. (8-15 cm.) high, with shortly trailing, glabrous, leafy shoots and erect, flowering ones. It is rather frequent on wet rocks and in streamlets in highland Britain. Leaves linear-lanceolate, serrate, almost sessile. Flowers 12 mm. diam., in loose, few-flowered cymes; sepals glabrous, obtuse, spreading, yellow-green; petals lanceolate, yellow spotted with orange, slightly exceeding the sepals; capsule 8 × 5 mm., ovoid, acute, with short, suberect, diverging horns joined to the calyx for about a third of its length; seed 1·0 × 0·4 mm., ellipsoid and pointed, netted.

Early June—early Sept. (Spean Bridge, Inverness.)

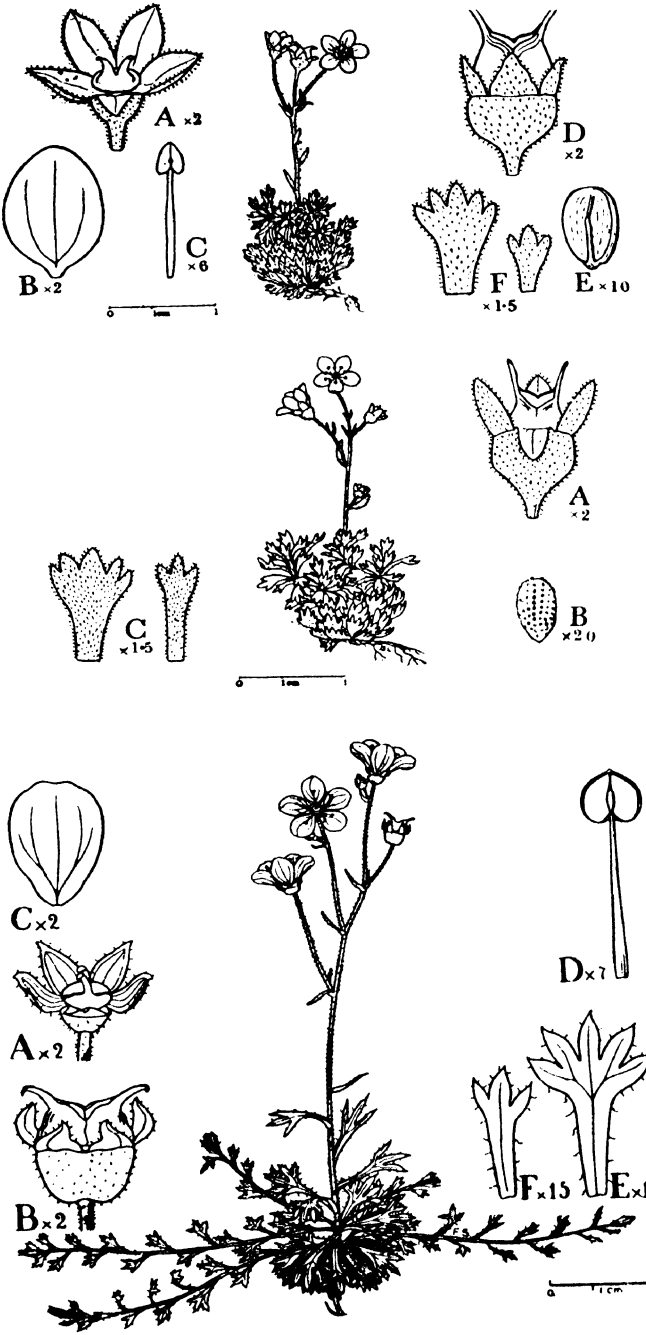
A. calyx and pistil. B. petal. C. stamen. D. capsule. E. seed. F. leaf tip.



655. SAXIFRAGA ROSACEA Mœnch. This IRISH MOSSY SAXIFRAGE is a loosely tufted perennial with branched flowering stems 3-6 in. (8-15 cm.) high, and without axillary buds on the shortly creeping prostrate stems. It is a rare plant of damp rock ledges in W. Ireland. Lowest leaves with 3-7 acute to obtuse lobes which are lightly clothed with long, glandular hairs. Flowers 15-17 mm. diam.; secondary pedicels usually long; calyx lobes sub-acute; petals ovate, pure white, contiguous; filaments tapering; horns of capsule 2-3 mm., blunt, shorter than calyx lobes, angle between them 100-120 degrees; seed 0·7 × 0·5 mm., ovoid, tubercled, brown.

Mid June—mid July. (Hort. ex Brandon Mt., Kerry.)

A. calyx. B. petal. C. stamen. D. capsule. E. lowest leaf. F. middle leaf. G. upper leaf. H. seed.


A ×2
B ×2
C ×6
D ×2
F ×1·5
E ×10
A ×2
C ×1·5
B ×2·0
C×2
A×2
B×2
D×7
F×15
E×15

656. SAXIFRAGA CÆSPITOSA L. This TUFTED SAXIFRAGE is a close-growing perennial with branched, flowering stems 1-4 in. (3-10 cm.) high, growing from leafy, basal rosettes. It is very rare, growing on rocks on a few mountains in Snowdonia and the Scottish Highlands. Basal leaves many, very short and barren and without creeping barren shoots; lowest leaves 5-lobed; others 3-fid, the lobes obtuse, covered with short, glandular hairs. Flowers 10-12 mm. diam., secondary pedicels very shortly overtopping primary; calyx lobes obtuse, glandular; petals ovate, dirty white; filament slightly tapering; horns of capsule 2-3 mm., rather acute, longer than calyx lobes, angle between them 70-90 degrees; seed 1·0 × 0·6 mm., ovoid, striate, brown.

Mid May—late June. (Hort. Devizes ex Castle Rock, Inverness.)
A. calyx. B. petal. C. stamen. D. capsule. E. seed. F. leaves.

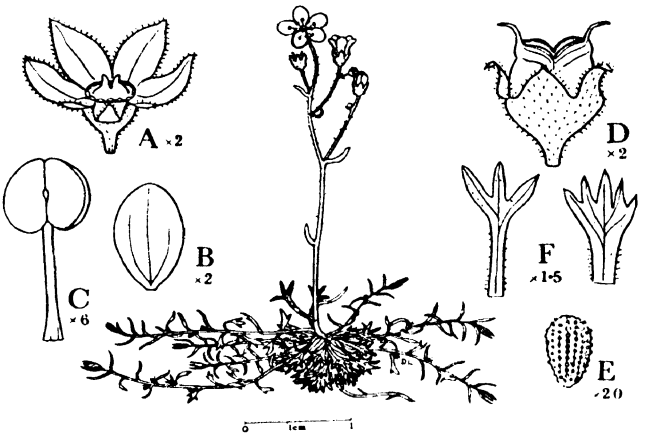
657. SAXIFRAGA HARTII D. A. Webb. This HART'S MOSSY SAXIFRAGE is a loosely tufted glandular perennial without axillary buds on the shortly creeping, prostrate stems, and flowering stems 3-4 in. (8-10 cm.) high. It has been found only on the Arranmore Island, Donegal. Lowest leaves with 5 or more subacute lobes which are covered with short, glandular hairs. Flowers 12 mm., secondary pedicels short; calyx glandular, hairy, lobes acute; petals ovate, pure white; filament slightly tapering; horns of capsule about 3 mm., rather longer than sepals, almost parallel.

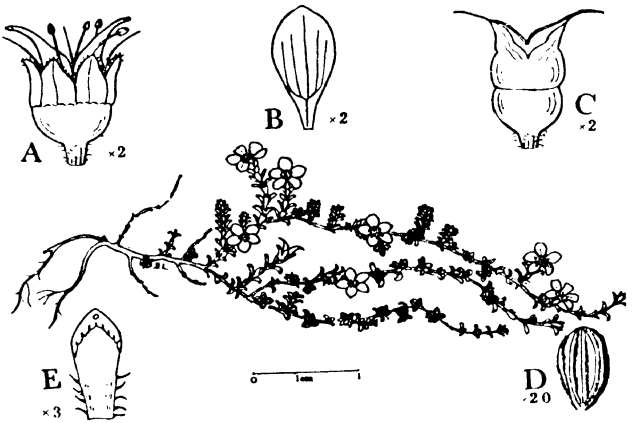
Late May—mid June. (Hort. Dublin ex Donegal.)
A. capsule. B. seed C. leaves.

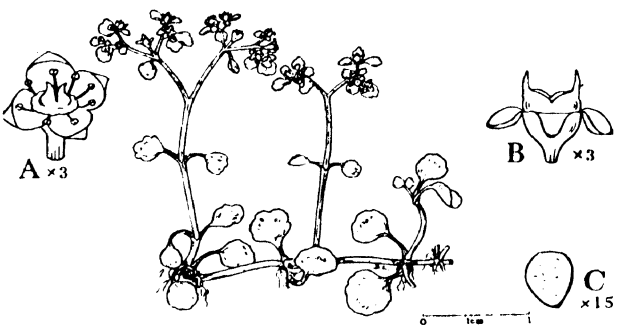
658. SAXIFRAGA PLATYPETALA Sm. The BROAD-PETALLED MOSSY SAXIFRAGE is a small and variable perennial with numerous rather dense rosettes of basal leaves from which grow rather long, creeping, barren shoots and flowering scapes 3-6 in. (15-30 cm.) high. It is apparently a rare plant of limestone rocks and cliffs of N. England and Scotland. Rosette leaves 5-lobed, the outer lobes sometimes toothed, acute, aristate and somewhat hairy; leaves of barren shoots and stem mostly trifid with cuneate peduncles, only the uppermost linear; axillary buds few, conical rather than fusiform. Flowers 15-20 mm. diam., nodding in bud, secondary pedicels long; calyx lobes overlapping; filaments tapering gradually, anther apiculate; horns of capsule 10 mm., blunt, angle between them 140-160 degrees.

Late May—early July. (Pen-y-ghent, Yorkshire.)
A. calyx. B. capsule. C. petal. D. stamen. E. lower leaf. F. middle leaf.

(This may be only a marked variety of *S. hypnoides* L.)


A ×2
B ×2
C ×6
D ×2
F ×1·5
E ×20
0 1cm 1


A ×2
B ×2
C ×2
E ×3
D ×20
0 1cm 1


A ×3
B ×3
C ×15
0 1cm 1

659. SAXIFRAGA HYPNOIDES L. The COMMON MOSSY SAXIFRAGE is a very variable perennial with numerous rather lax rosettes of basal leaves from which grow rather long, creeping, barren shoots and flowering scapes 3-6 in. (15-30 cm.) high. It is an uncommon plant of calcareous rocks and pastures in the hilly districts of Britain. Rosette leaves three-lobed, the lobes acute, aristate, sparsely hairy; leaves of barren shoots usually linear with axillary fusiform bulbils. Flowers 10-12 mm. diam., nodding in bud; secondary pedicels long; calyx lobes acute; petals cream coloured, narrowly ovate, usually non-contiguous; filament tapering gradually; anther apiculate; horns of capsule 10 mm., blunt; angle between them 140-160 degrees; seed 0·5 × 0·3 mm., ovoid, tubercled, brown.

Late May—early July. (Dovedale, Derbyshire.)
A. calyx. B. petal. C. stamen. D. capsule. E. seed. F. leaves.

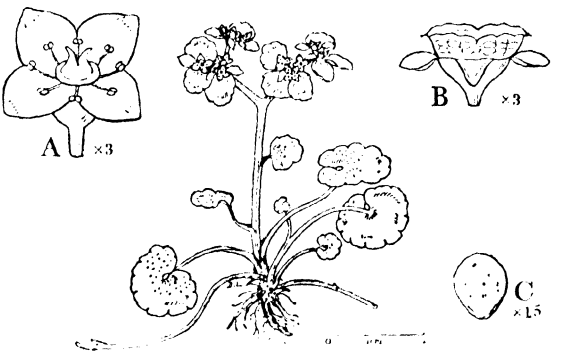
660. SAXIFRAGA OPPOSITIFOLIA L. The PURPLE MOUNTAIN SAXIFRAGE is a small perennial with prostrate stems 3-8 in. (8-20 cm.) long, from which grow the flowering stems about 1 in. (2·5 cm.) high. It is found on calcareous mountain rocks in Scotland and more rarely in England and Wales. Leaves 3-4 mm. long, opposite, crowded, obovate, ciliate, with a pore at apex. Flowers solitary, 8-10 mm. diam.; sepals triangular, spreading, ciliate; petals ovate, longer than sepals, purple; capsule 3·5 mm. long, with spreading horns and calyx adhering half-way up; seed 0·5 × 0·3 mm., ovoid, with vertical ribs, black.

Early April—late June. (Pen-y-ghent, Yorkshire.)
A. calyx. B. petal. C. capsule. D. seed. E. leaf.

CHRYSOSPLENIUM L. Herbs with rather inconspicuous flowers. Sepals 4, adherent at base; petals 0; stamens 8, inserted at edge of calyx. Styles 2; fruit a one-celled, two-valved capsule.

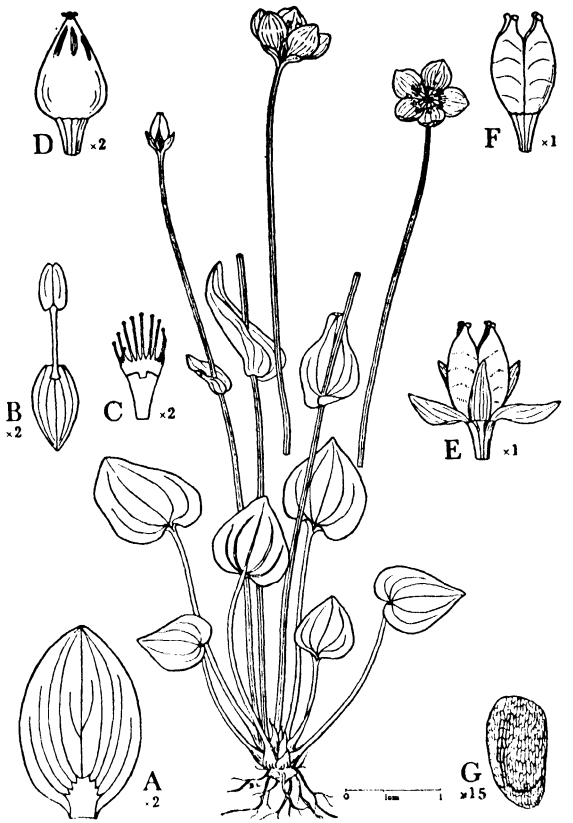
661. CHRYSOSPLENIUM OPPOSITIFOLIUM L. This OPPOSITE-LEAVED GOLDEN SAXIFRAGE is a small, tufted, creeping plant with flowering stems 3-4 in. (8-10 cm.) high. It is common in wet, shady places throughout the British Isles. Stem creeping and rooting. Leaves spathulate, crenate, almost glabrous. Flowers 2·5 mm. diam., in rather open, level-topped cymes; sepals golden yellow. Capsule 2·5 mm. long, with erect horns; seed 0·5 × 0·4 mm., ovoid, smooth, brown.

Early April—early May. (Hartford, Cheshire.)
A. flower. B. capsule. C. seed.



662. CHRYSOSPLENIUM ALTERNIFOLIUM L. This ALTERNATE-LEAVED GOLDEN SAXIFRAGE is a small, creeping plant with flowering stems 3-4 in. (8-10 cm.) high. It is found, though uncommonly, in wet, shady places throughout the British Isles. Plant stoloniferous; leaves long stalked; lower leaves reniform, thinly crenate, covered with short hairs. Flowers 5 mm. diam., in rather dense, level-topped cymes; sepals golden yellow. Capsule 3 mm., with short horns; seed 0·6 × 0·5 mm., ovoid, smooth, brown.

Early April—early May. (Ashbourne, Derbyshire.)
A. flower. B. capsule. C. seed.

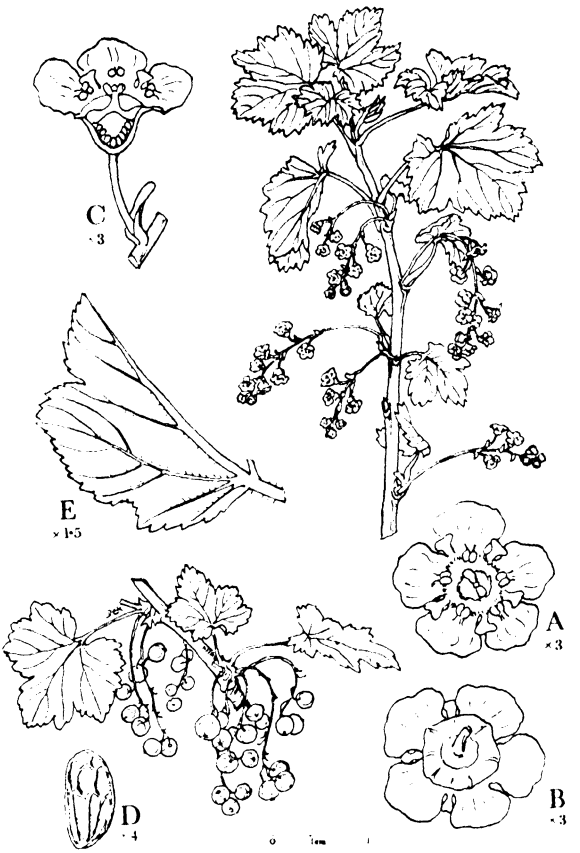


PARNASSIA L. Perennial herbs with showy flowers. Sepals 5, almost free; petals 5; stamens 5, alternating with tufts of capitate filaments. Stigmas 3, sessile; fruit a one-celled, four-valved capsule.

663. PARNASSIA PALUSTRIS L. The GRASS OF PARNASSUS is a tufted perennial with numerous simple flowering scapes 3-8 in. (8-20 cm.) high, rising from a bunch of ovate-cordate leaves. It is found in damp, basic grassland and bogs in many parts of the British Isles. Flowers 20 mm. diam., solitary; sepals small, oval, spreading; petals white with greenish veins. Capsule large, sub-globular; seed 1·0 × 0·5 mm., ovoid, striate, grey.

Early Aug.—early Oct. (Cunning Dale, Derbyshire.)

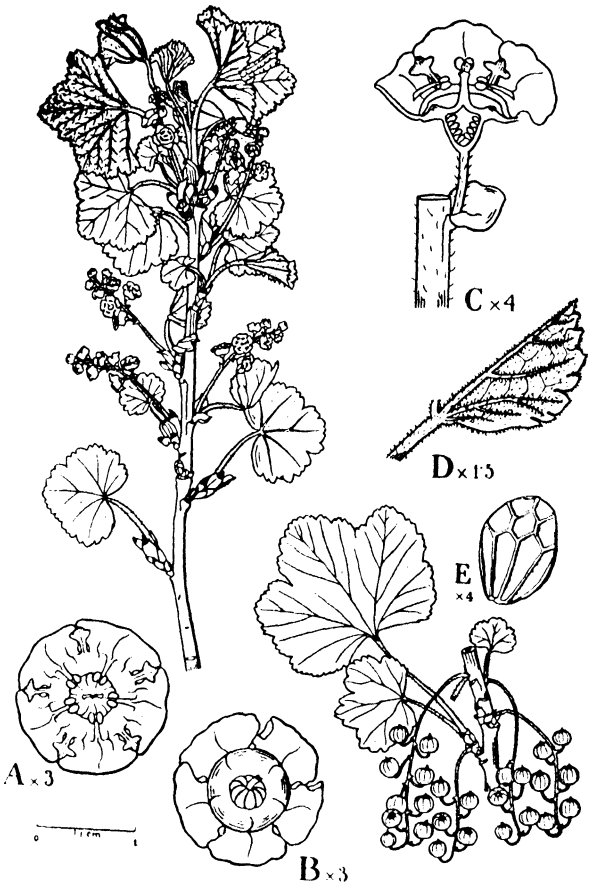
A. petal. B. stamen. C. staminode. D. pistil. E. capsule and calyx. F. capsule. G. seed.



RIBES L. Shrubs with simple, exstipulate leaves and flowers in racemes. Sepals and petals 4-5, the latter small with stamens of the same number placed alternate with the petals on a conspicuous receptacle rising above the ovary. Fruit a many-seeded berry.

664. RIBES RUBRUM L. (*R. sylvestris* Lam). The WILD RED CURRANT is a small, straggling shrub about 36 in. (90 cm.) high, found frequently on river banks, in woods and fen carr throughout the British Isles. Stems brown, somewhat hairy. Leaves palmate with a deep, narrow sinus, glabrous except on the midribs, scentless. Racemes 6-20 flowered, pendulous; bracts half length of pedicels; flowers 5-6 mm. diam.; sepals spreading, suborbicular, green or tinged with red; petals very small, cuneiform, truncate; receptacle five-sided, saucer-like; stamens with medium length filaments, spreading inwards. Fruit 6-8 mm., red, in a pendulous raceme; seed 3·5 × 1·2 mm., ovoid, honeycombed, yellow. Late April—mid May. (Mappleton, Derbyshire.)

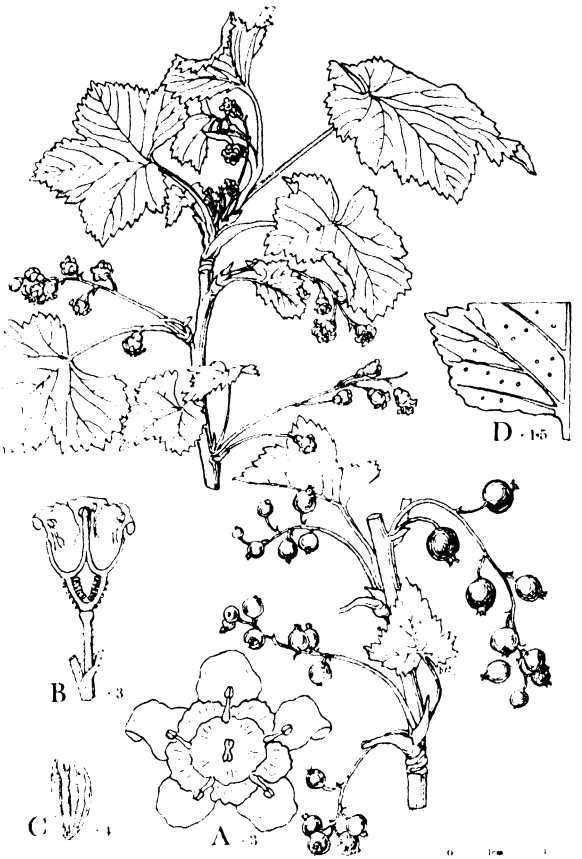
A. flower, upper side, B. lower side, C. l.s. D. seed. E. leaf, lower surface.



665. RIBES SPICATUM Robson (*R. pubescens* Hartm.). This DOWNY RED CURRANT is a small, straggling shrub about 36 in. (90 cm.) high, found infrequently in woods and on river banks in Scotland and N. England. Young stem pubescent, older sparsely hairy. Leaves palmate with a shallow, wide sinus, usually pubescent below, scentless. Racemes 6-20 flowered, suberect or spreading in flower, pendulous in fruit; bracts half-length of pedicels; flowers 6-7 mm. diam.; sepals spreading, suborbicular, green or tinged with purple; petals very small, cuneiform, trifid; receptacle circular, cup-like; stamens with very short filaments, spreading inwards. Fruit 6 mm., red; seed 3·5 × 1·2 mm., ovoid, honeycombed, yellow.

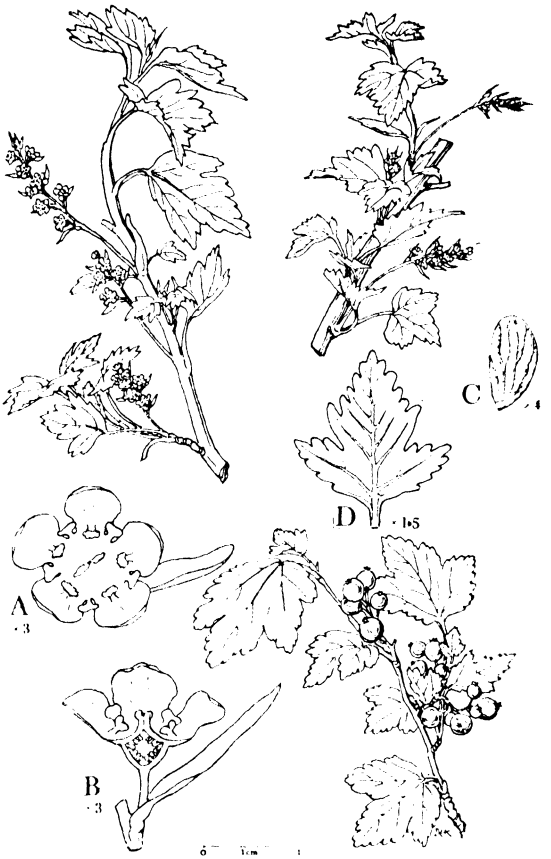
Late April—mid May. (Appleby, Westmorland.)

A. flower, upper side, B. lower side. C. flower l.s. D. portion of leaf. E. seed.



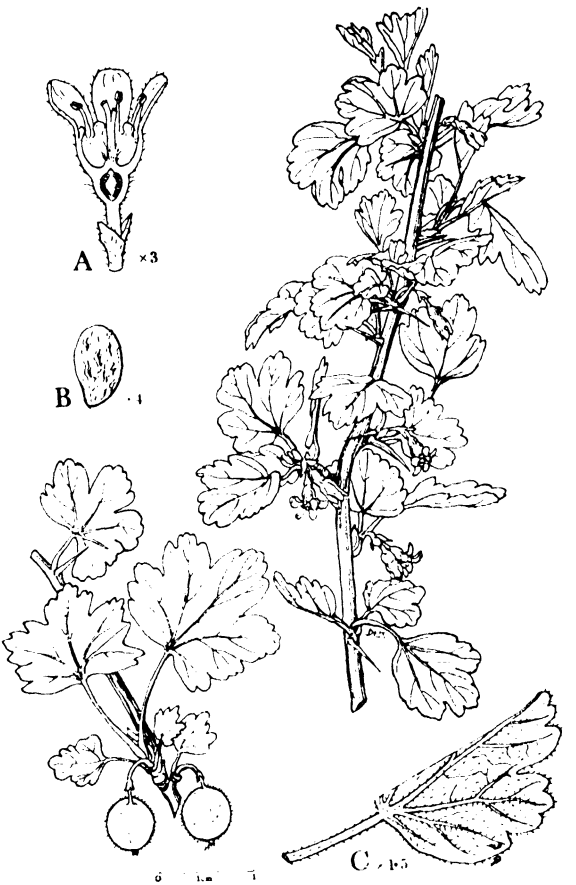
666. RIBES NIGRUM L. The BLACK CURRANT is a stout, ± erect shrub 36-48 in. (90-120 cm.) high, found frequently in woods and on streamsides throughout the British Isles. Leaves palmate, with a deep, wide sinus, glandular and pubescent only on the veins below, scented. Racemes 3-10 flowered, pendulous; bracts hairy, short; flowers 8 mm. diam.; sepals erect and recurved at apex, oblong, purple-green; petals whitish, ± erect, ovate, half as long as sepals; receptacle campanulate; stamens equalling petals. Fruit 8-10 mm., black; seed 3·0 × 1·5 mm., ovoid, vertically ribbed, yellow.

Late April—early May. (Clifton, Nottinghamshire.)
A. flower, upper side, B. lower side. C. flower l.s. D. leaf surface. E. seed.



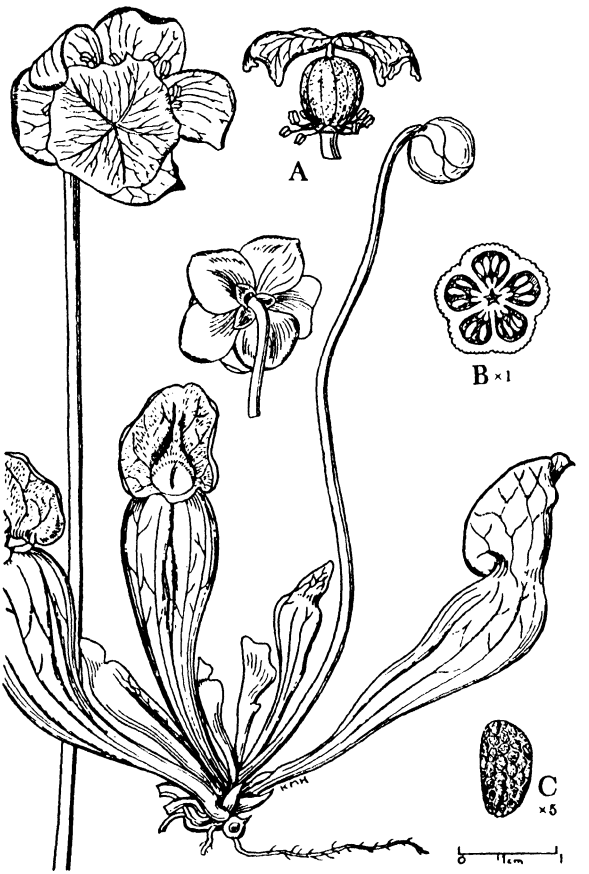
667. RIBES ALPINUM L. The MOUNTAIN CURRANT is a small shrub about 36 in. (90 cm.) high, with pendulous branches, found on cliffs and river banks mainly in N. England. Stems brown, glabrous; leaves palmate or ternate, glabrous, with narrow teeth, scentless. Racemes 5-12 flowered, erect; bracts exceeding flowers; flowers 6 mm. diam., dicœcious; sepals spreading, suborbicular, green or tinged with red; petals very small, cuneiform, truncate; receptacle round, saucer-shaped; stamens with medium-length filaments spreading inwards. Fruit 6-8 mm., globose, red, in an erect raceme; seed 3·0 × 1·5 mm., ellipsoid, striate, vertically ribbed, yellow.

Late April—mid May. (Dovedale, Derbyshire.)
A. male flower. B. female flower l.s. C. seed. D. leaf.



668. RIBES UVA-CRISPA L. (*R. grossularia* L.). The WILD GOOSEBERRY is a small, spiny shrub up to 36 in. (90 cm.) high, commonly found in hedges and on stream sides throughout the British Isles. Stems glabrous, spiny; leaves cordate and toothed, glabrous or pubescent, scentless. Racemes 1-2 flowered; flowers 10 mm. diam., pendulous; sepals reflexed, oblong, green; petals paler, erect; stamens erect, twice as long as petals. Fruit 10-20 mm., globose, hairy or glabrous, green; seed 2·5 × 2·0 mm., ovoid, wrinkled, brown.

Mid April—early May. (Mayfield, Staffordshire.)
A. flower l.s. B. seed. C. leaf, lower side.

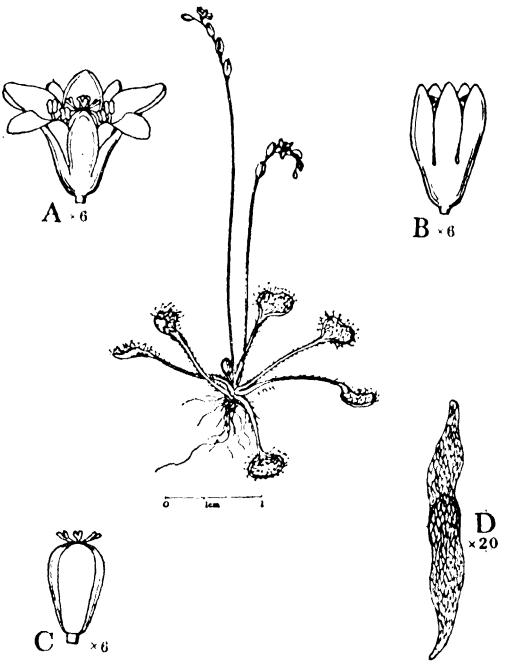


SARRACENIA L. Insectivorous plants with radical leaves forming tubular "pitchers." Flowers solitary, nodding; sepals 5, coloured; petals 5, free; stamens many, free; ovary single with a large, peltate stigma; fruit a capsule with numerous seeds.

669. SARRACENIA PURPUREA L. This PITCHER PLANT is a rather stout perennial with flowering scapes 6-10 in. (15-25 cm.) high. It is a native of America, but was planted in a bog in Co. Roscommon in 1907 and has there established itself and is spreading. Leaves all radical in a rosette, the pitchers about 3 in. (8 cm.) long, with a cordate rim. Flowers 50 mm. diam., sepals and petals 5, purple; stigma umbrella-like, 30-40 mm. diam. Capsule 35 mm., suborbicular; seed 2·5 × 1·5 mm., ovoid, honeycombed, dark brown.

Early June—early Aug. (Co. Roscommon.)

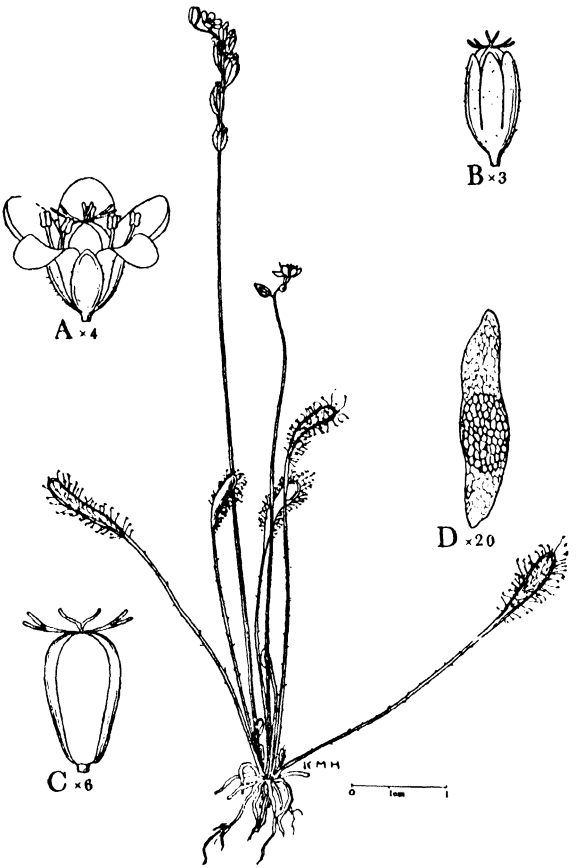
A. pistil and stamens. B. ovary t.s. C. seed.



DROSERA L. Herbaceous, insectivorous plants; leaves all radical with glandular hairs. Sepals, petals and stamens 4, 6 or 8; ovary 1-celled, superior; styles 3-5; fruit a capsule.

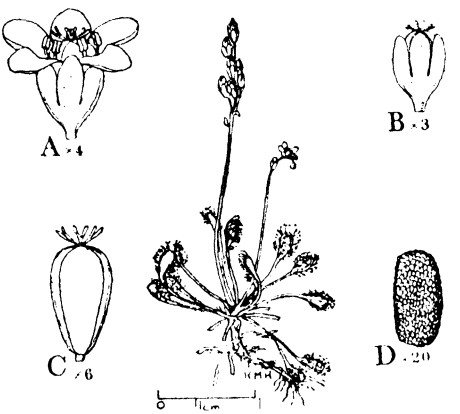
670. DROSERA ROTUNDIFOLIA L. The COMMON SUNDEW is a slender, reddish perennial with one or more flowering scapes 2-4 in. (5-10 cm.) long, rising erect from a prostrate, spreading rosette of orbicular, glandular leaves. It is found frequently in bogs and on wet moors throughout the British Isles. Flowers 5 mm. diam. in racemes on leafless scapes; petals and sepals usually six; sepals glabrous, lanceolate; petals white. Capsule 4-5 mm. long, acute, usually exceeding the sepals; seed 2·5 × 0·4 mm., cylindrical, reticulate, winged, white.

Late June—mid Aug. (Roydon Common, Norfolk.)
A. flower. B. pistil and sepals. C. capsule. D. seed.



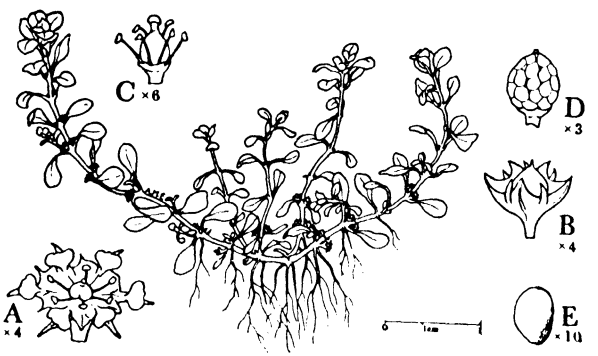
671. DROSERA ANGLICA Huds. The GREATER SUNDEW is a slender, reddish perennial, with several flowering scapes 9-12 in. (23-30 cm.) long, growing erect from a rosette of patent, suberect, elongate-spathulate leaves. It grows in very wet bogs in several parts of the British Isles, though rarely. Flowers about 6 mm. diam.; petals and sepals 5-8; sepals narrow, lanceolate, hairy; petals white. Capsule 5-7 mm. long, obovoid, exceeding sepals; seed 3·0 × 0·4 mm., reticulate, winged, grey.

Late June—mid Aug. (Roydon Common, Norfolk.)
A. flower. B. calyx and pistil. C. capsule. D. seed.



672. DROSERA INTERMEDIA Drev. and Hayne. The SMALLER LONG-LEAVED SUNDEW is a rather stout, reddish perennial which is found in wet bogs and on moors in various parts of the British Isles, though rarely. Flowering scapes 3-4 in. (8-10 cm.) long, several, decumbent at base and then becoming erect, growing from a rosette of suberect, oblong, spathulate, glandular leaves. Flowers 4-6 mm. diam. in racemes on leafless scapes; petals and sepals 4-6; calyx united below with 5 broad, triangular teeth and an epicalyx of 5 linear lobes; petals white. Capsule 2·5 × 2·0 mm., ovoid or pyriform, about equalling the sepals; seed 0·6 × 0·2 mm., ovoid, granulate, not winged, brownish.

Late June—mid Aug. (Roydon Common, Norfolk.)
A. flower B. calyx and pistil. C. capsule. D. seed.

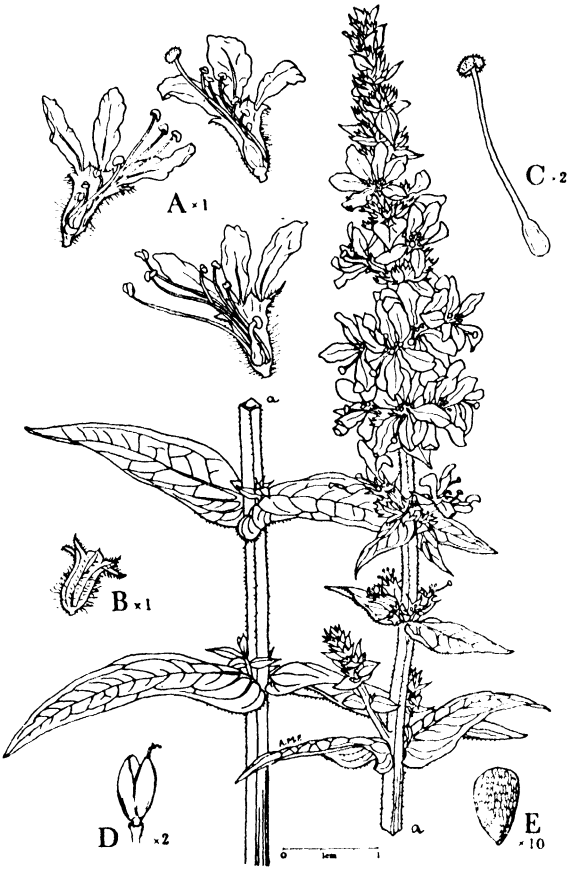


PEPLIS L. Small annual herbs with inconspicuous flowers. Calyx campanulate with 6 teeth; epicalyx with 6 teeth; petals fugacious; capsule globular.

673. PEPLIS PORTULA L. The WATER PURSLANE is a dwarf prostrate plant with numerous, reddish stems 1-6 in. (2-15 cm.) long, rooting at the nodes. It is common on the muddy margins of pools in non-calcareous districts. Leaves ovate, obtuse, spathulate, entire. Flowers 3 mm. diam. in the axils of the leaves; calyx lobes 6, with appendages; petals, when present, 6, very thin. Capsule 3 mm. long, subglobose or ovoid; seed 0·7 × 0·5 mm., ovoid, smooth, grey.

Late June—mid Sept. (Bettws y Rhos, Denbigh.)

A. flower. B. calyx and pistil. C. stamens and pistil. D. capsule. E. seed.



LYTHRUM L. Leafy annuals or perennials with showy, axillary flowers; calyx tubular with 4-6 teeth and epicalyx with the same number; petals 4-6, longer than sepals. Stamens nearly twice as many as petals; ovary superior; capsule two-celled.

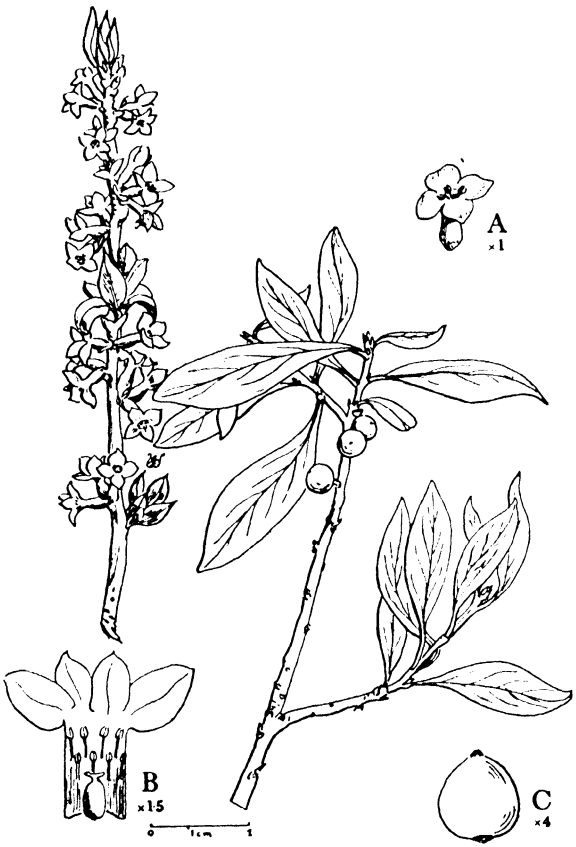
674. LYTHRUM SALICARIA L. The PURPLE LOOSESTRIFE is an erect plant with stout, almost simple annual stems growing 12-30 in. (30-75 cm.) high from a perennial rootstock. It is common in ditches and on river banks throughout the British Isles except in N. and E. Scotland. Leaves opposite, lanceolate, entire. Flowers 20 mm. diam., in axillary whorls and forming a dense spike; calyx tubular, ribbed, purple; petals 8-12, purple or pink; stamens of varied length. Capsule 5 mm. long, ovoid, enclosed in calyx tube; seed 1·0 × 0·6 mm., ovoid, netted, grey. Mid July—late Sept. (Zouch, Nottinghamshire.)

A. three types of flower in l.s. B. calyx. C. pistil. D. capsule. E. seed.

675. LYTHRUM HYSSOPIFOLIA L. This NARROW-LEAVED LOOSESTRIFE is a small annual with glabrous, slightly branched stems about 6 in. (15 cm.) high, decumbent at the base. It is a very rare plant of damp, bare ground in a few places in S. and E. England. Lower leaves ovate; upper linear lanceolate, sessile. Flowers 5 mm. diam., solitary in the axils of the leaves; calyx funnel-shaped, green; petals lilac; stamens 6. Capsule 5 × 2 mm., cylindrical, enclosed in the calyx; seed 0·7 × 0·5 mm., ovoid, smooth, grey.

Early July—mid Sept. (Hort. ex Jersey.)

A. flower. B. calyx l.s. with stamens and pistil. C. calyx. D. capsule. E. seed.



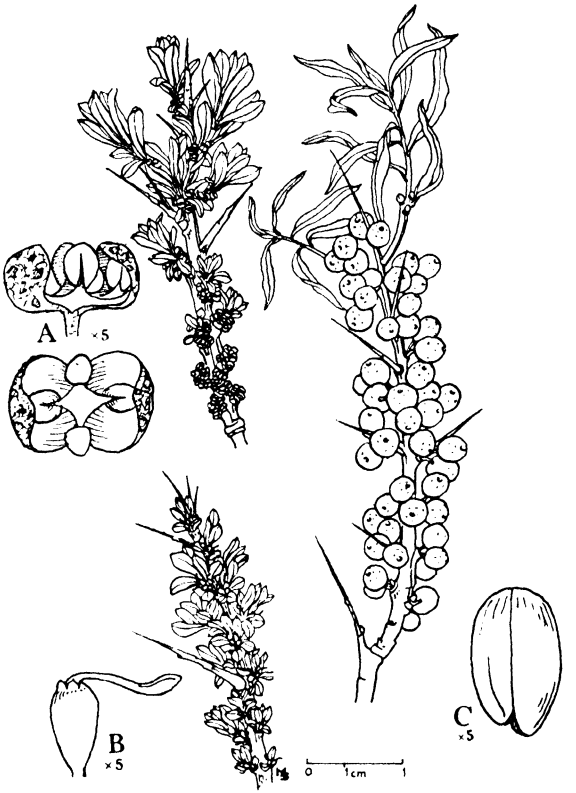
DAPHNE L. Shrubs or trees with alternate and entire, exstipulate leaves and rather showy flowers. Perianth with a distinct tube, four-cleft; stamens 8, inserted on the top of the perianth tube, fruit a berry or drupe with a one-seeded stone.

676. DAPHNE MEZEREUM L. The MEZEREON is a small, deciduous shrub 12-30 in. (30-75 cm.) high which occurs very rarely in woods on limestone and chalk in several parts of England. Leaves lanceolate with acute apex and narrowed base, soft, light green, entire. Flowers 8-12 mm. diam., in clusters on the year-old, woody stems, sweetly scented; perianth pink, four-lobed, lobes subequal, spreading, about as long as tube. Berry 8-12 mm., ovoid, scarlet; seed 5 mm. diam., broadly ovoid, smooth, orange.

Late Feb.—early April. (Wiltshire.)
A. flower. B. open perianth and pistil. C. seed.

677. DAPHNE LAUREOLA L. The SPURGE LAUREL is a small evergreen shrub 12-36 in. (30-90 cm.) high, which occurs rather commonly here and there in woods and hedges on basic soils in England and Wales, northward to the Tyne and Lune. Leaves lanceolate with acute apex and narrowed base, coriaceous, dark green, shining, entire. Flowers 8-12 mm. diam., in small, axillary racemes at the upper part of the one-year-old stem, scented; perianth yellow-green, 4-lobed, lobes subequal, suberect, much shorter than the tube. Berry about 12 mm. diam., ovoid, black; seed 0·8 × 0·3 mm., conical, acute, with central channel, very finely striate, pale yellow.

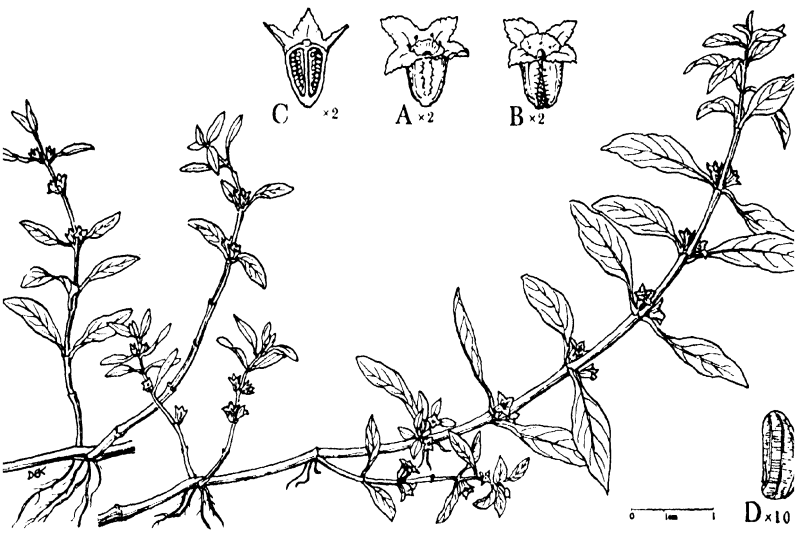
Early March—late April. (nr. Cardiff.)
A. flower. B. open perianth and pistil. C. seed.



HIPPOPHÆ L. Shrubs with simple, alternate, silvery leaves and inconspicuous, dicœcious flowers; sepals on male flower 2, large; on female 2, minute; stamens 4; fruit a berry or drupe; ovary superior, one-celled, with a single ovule.

678. HIPPOPHÆ RHAMNOIDES L. The SEA BUCKTHORN is a small, deciduous, much-branched shrub 12-40 in. (30-100 cm.) high, which occurs on sandhills and some cliffs on the E. and S.E. sea coasts of England and is often planted in similar places elsewhere. Leaves linear-lanceolate, subsessile, with acute apex and cuneate base, entire, covered with silvery scales on one or both sides. Flowers appearing before the leaves; male 4 mm. diam., in short spikes on the year-old wood; perianth lobes 2, greenish-yellow; stamens 4. Female flowers 1·5 mm. diam., solitary or in short, axillary clusters, perianth tubular, lobes 2, very small; stigma large, style protruding. Fruit a succulent berry 8-13 mm. diam., formed partly from the perianth, orange; seed 40 × 25 mm., ovoid, with central vertical ridge, brown.

Mid March—mid April. (Gibraltar Point, Lincolnshire.)
A. male flower. B. female flower. C. seed.



LUDWIGIA L. Water plants with undivided leaves and inconspicuous flowers. Sepals 4; petals 4 or none; stamens 4; fruit four-celled, ovoid; seeds numerous, without hairs.

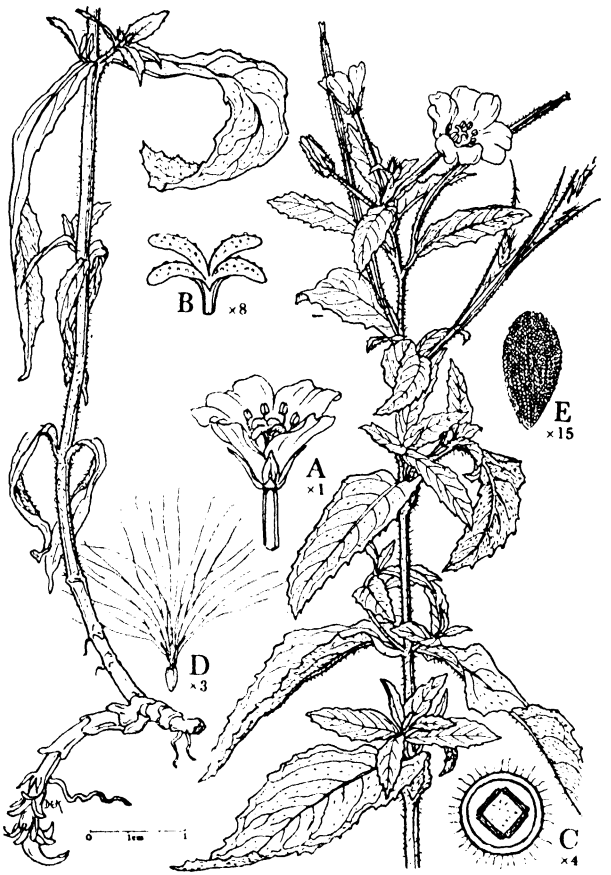
679. LUDWIGIA PALUSTRIS (L.) Elliott. The MARSH LUDWIGIA is a small, glabrous, perennial plant with stems 3-6 in. (8-15 cm.) long; lower part creeping and rooting; upper part ascending. It is found only in watery places in Hampshire and, formerly, in Sussex. Leaves opposite, ovate, entire, glabrous. Flowers 5-6 mm. diam., solitary in the axils, bracts 2; calyx green, tinged with red; sepals 4; petals absent. Capsule 5 × 3 mm., ovoid, with 4 keels; seed 1·2 × 0·6 mm., half-ovoid, vertically ribbed, white.

Late June—late July. (Lyndhurst, Hampshire.)
A. flower. B. fruit. C. capsule l.s. D. seed.

EPILOBIUM L. Herbs with undivided leaves and red, pink or white flowers. Petals 4; stamens 8; ovary inferior, long, linear; seeds with a pappus of simple hairs. Hybrids are frequent in this genus.

680. EPILOBIUM (CHAMÆNERION) ANGUSTIFOLIUM L. The ROSEBAY WILLOW-HERB is a stout perennial with an erect, almost simple stem growing 24-48 in. (60-120 cm.) high from a creeping rootstock. It is abundant on heaths, waste ground and in woodlands throughout the British Isles. Stem square; leaves lanceolate, acute, scattered or whorled, almost glabrous and entire. Flowers 25 mm. diam., in long, terminal racemes, somewhat irregular; sepals linear, as long as petals; petals pink, ovate-spathulate; stigmas 4. Capsule spreading, pubescent; seed 2 mm. long, fusiform, faintly tubercled, pappus five times length of seed. Early July—early Aug. (Bethersden, Kent.)

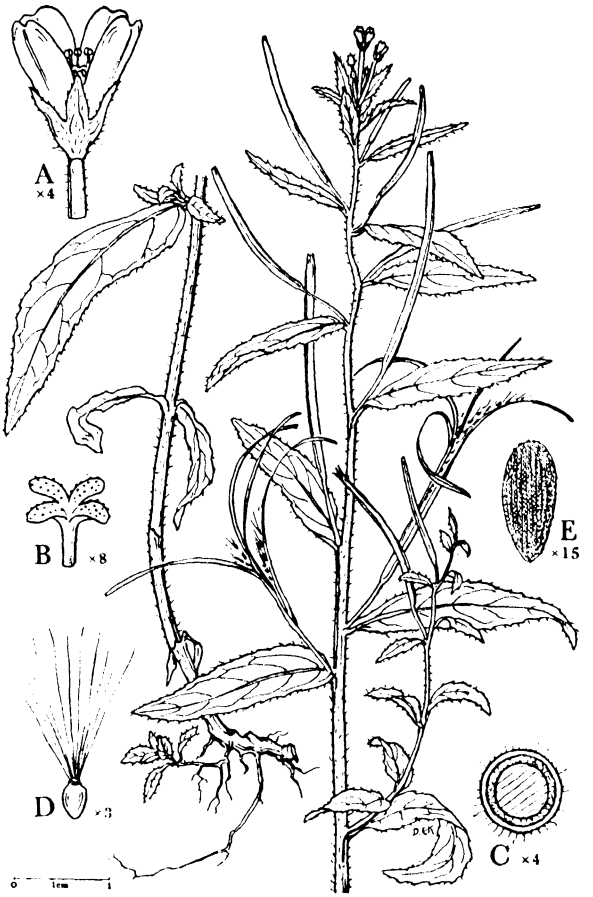
A. style. B. seed and pappus. C. seed. D. stem t.s.



681. EPILOBIUM HIRSUTUM L. The GREAT HAIRY WILLOW-HERB is a softly hairy, stout perennial with an erect, little-branched, terete stem, growing 24-60 in. (30-150 cm.) from a stoloniferous base. It is common on stream banks and in marshes throughout the British Isles. Stem round, hairy; leaves opposite, broadly-lanceolate, sessile, toothed and hairy. Flowers 25 mm. diam., regular, suberect; petals crimson, undulate, slightly notched, twice as long as linear sepals; stigma with 4 long lobes. Capsule 60-80 mm. long, downy; seed 1 mm. long, ovoid, densely and acutely tubercled, brown; pappus six times length of seed.

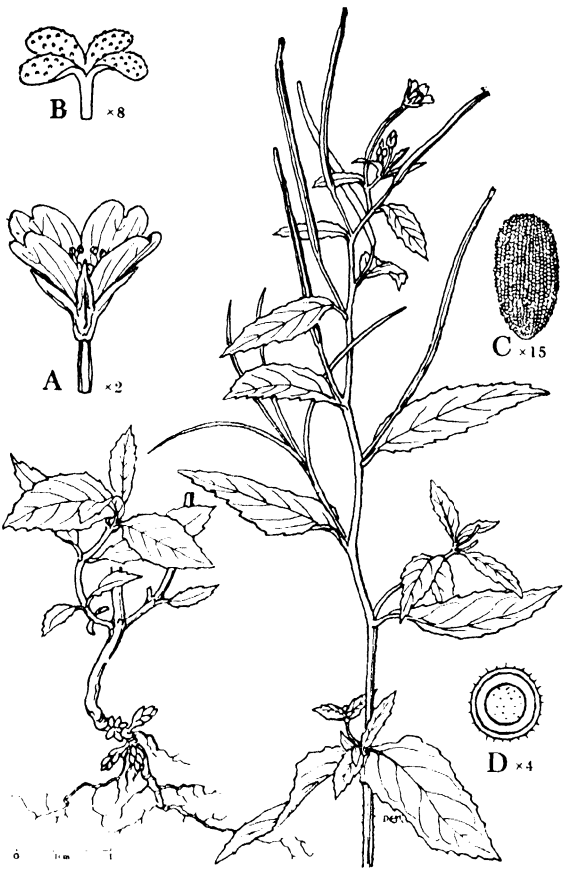
Mid July—late Aug. (Bethersden, Kent.)

A. flower. B. stigma. C. stem t.s. D. seed and pappus. E. seed



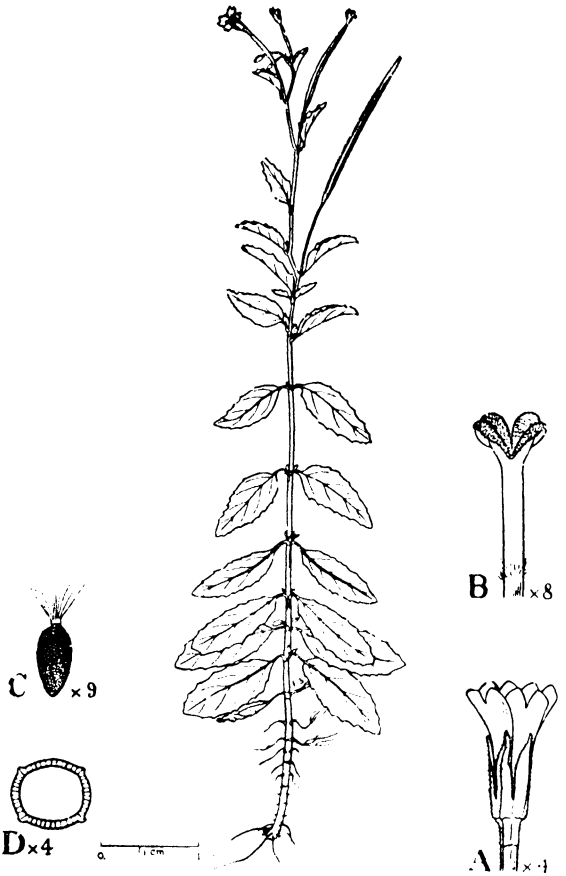
682. EPILOBIUM PARVIFLORUM Schreb. The LESSER HAIRY WILLOW-HERB is a softly hairy perennial with an erect, somewhat branched stem, growing 9-24 in. (23-60 cm.) from a decumbent base which produces rosettes in the autumn. It is abundant in damp places throughout the British Isles. Stem terete, hairy; leaves mostly alternate, lanceolate, toothed, hairy; upper sessile; lower with very short petioles. Flowers 5-7 mm. diam., regular, erect; petals red, notched; stigma deeply 4-cleft. Capsules erect, glabrous; seed 1·5-2·0 × 0·5 mm., ovoid, densely and acutely tubercled.

Mid July—late Aug. (Kingston-on-Soar, Nottinghamshire.)
A. flower. B. stigma. C. stem t.s. D. seed and pappus. E. seed.



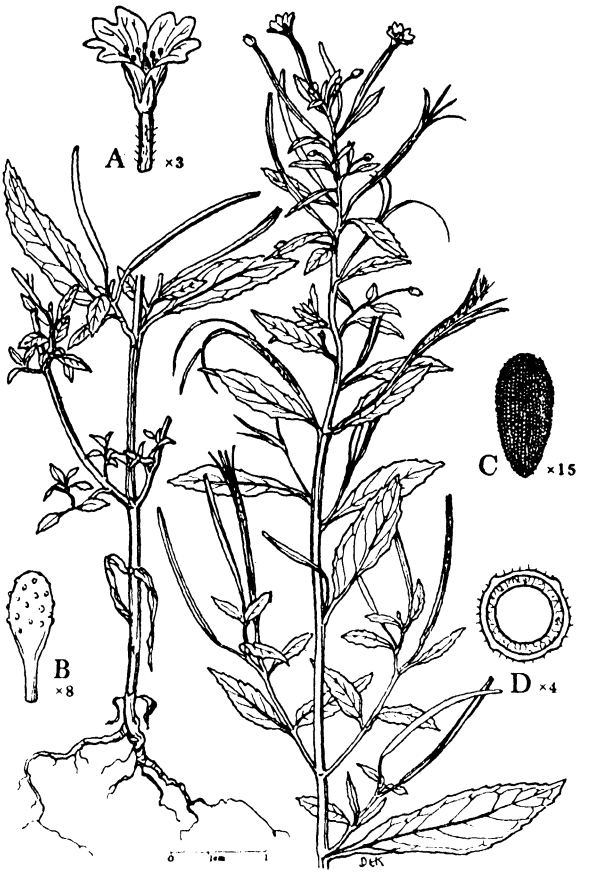
683. EPILOBIUM MONTANUM L. The BROAD-LEAVED WILLOW-HERB is an almost glabrous perennial with an erect, little-branched, terete stem growing 6-18 in. (15-45 cm.) from the base, which produces sessile rosettes in the autumn. It is common in dry places throughout the British Isles. Stems round, glabrous; leaves mostly opposite, broadly lanceolate, toothed, glabrous except on veins, subsessile. Flowers 9-10 mm. diam., regular, suberect; petals pale red, deeply notched, twice as long as narrow sepals; stigma with 4 broad lobes. Capsules 40-80 mm. long, slightly downy; seed 1·0 × 0·5 mm., ovoid, densely and shortly tubercled, light brown.

Mid June—early Aug. (Bramcote, Nottingham.)
A. flower. B. stigma. C. seed. D. stem t.s.



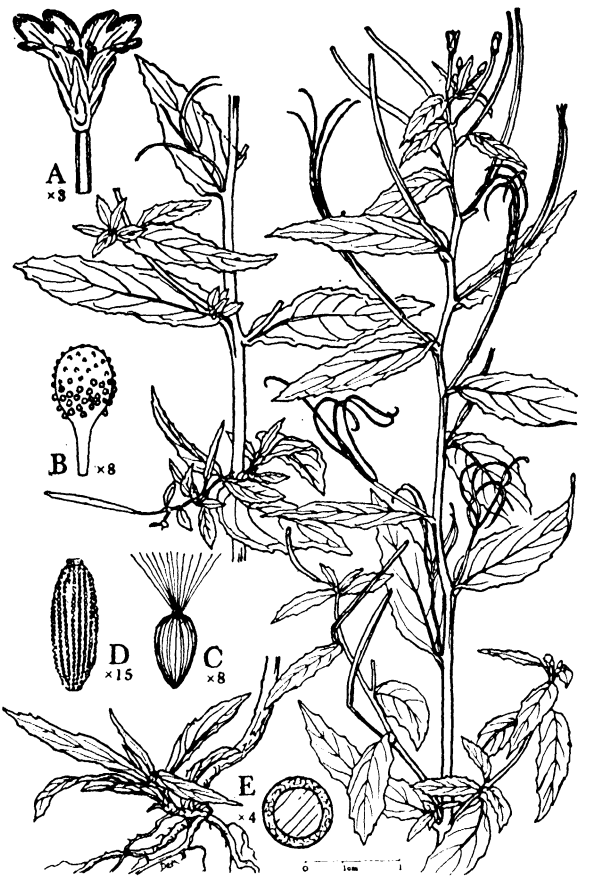
684. EPILOBIUM LANCEOLATUM Seb. and Mauri. This SMALL SPEAR-LEAVED WILLOW-HERB is a slightly downy perennial with an erect, slightly angular, almost simple stem growing 6-18 in. (15-45 cm.) from the base, which produces loose, sessile rosettes in the autumn. It is an infrequent plant of dry places and walls in S. and S.W. England. Lower leaves opposite, upper alternate; all stalked, elliptical to lanceolate, with parallel sides and small, distinct teeth. Flowers 6-8 mm. diam., regular, recurved in bud, later spreading; petals pink, bifid, twice as long as linear sepals; stigma 4-fid, with 4 short lobes. Capsules 50-70 mm. long, downy; seed 1·0 × 0·5 mm., tapering at both ends, finely tubercled, brown.

Mid July—early Oct. (Burnham Sandhills, Somerset.)
A. flower. B. stigma. C. seed. D. stem t.s.



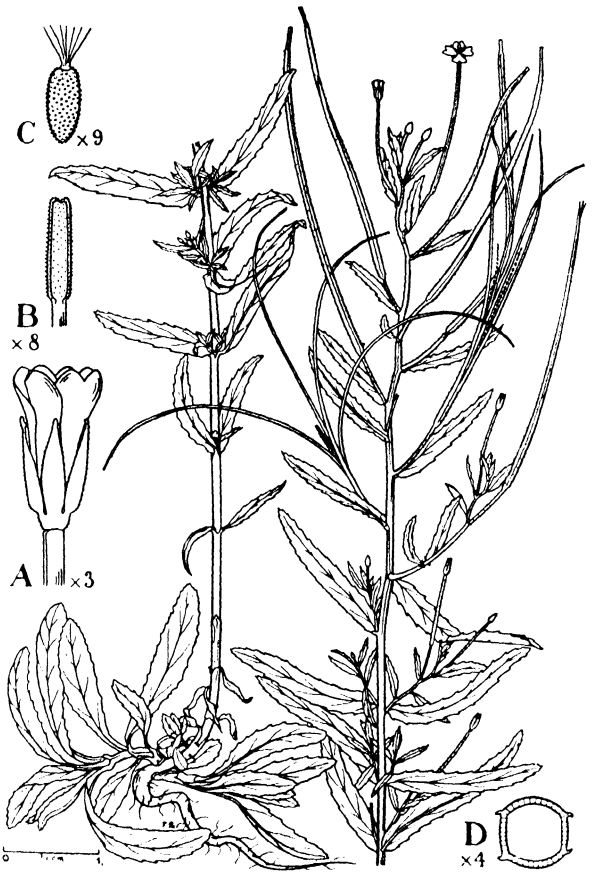
685. EPILOBIUM ROSEUM Schreb. This PALE-FLOWERED WILLOW-HERB is a slightly hairy perennial with an erect, branched, glabrous stem, growing 6-20 in. (15-50 cm.) from a base which produces lax rosettes on short stolons in the autumn. It is found, though not commonly, in damp and shady places in Britain N. to Perthshire. Stem round with 4 raised lines; leaves opposite, broadly-lanceolate, widely toothed, glabrous, gradually narrowed into a rather long stalk. Flowers 6·5-7·0 mm. diam., regular, nodding in bud; petals deep pink, bifid, hardly twice as long as the lanceolate sepals; stigma capitate. Capsules 35-60 mm. long, hairy; seed 1·0 × 0·5 mm., long, apex truncate, base acute, finely tubercled, brown.

Mid July—late Aug. (Consall, Staffordshire.)
A. flower. B. stigma. C. seed. D. stem t.s.



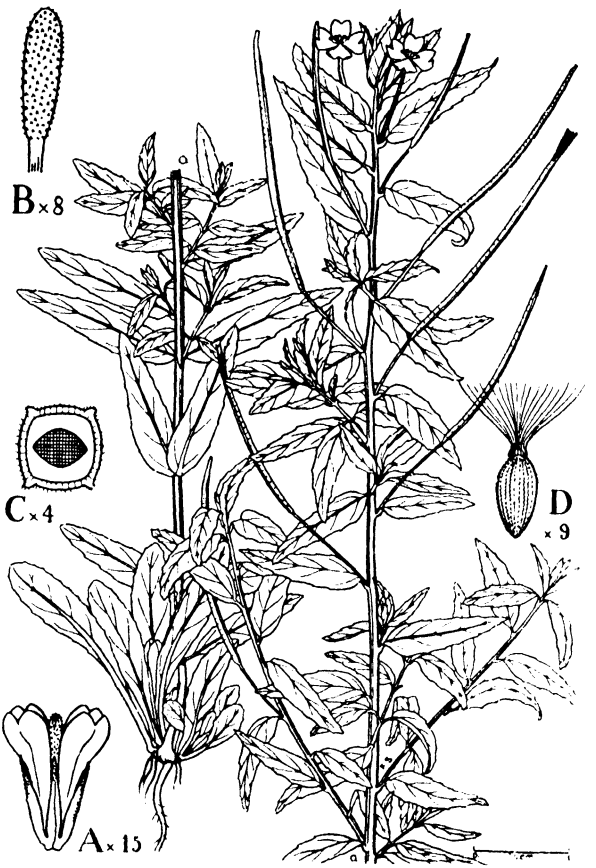
686. EPILOBIUM ADENOCAULON Hausskn. This LESSER ROSY WILLOW-HERB is a rather glandular hairy perennial with an erect, branched, reddish, terete stem growing 20-40 in. (50-100 cm.) from a non-stoloniferous base, which produces rosettes in the autumn. It has been recently introduced and is now common in waste places, especially in S.E. England. Leaves opposite, lanceolate, toothed, glabrous, suddenly narrowed into a short stalk. Flowers 5-6 mm. diam., regular, always erect, numerous; petals pink with a red border, deeply bifid, hardly twice as long as the lanceolate sepals; stigma capitate. Capsule 50-70 mm., hairy; seed 1·0 × 0·5 mm., tapering at base and with a short, terminal beak, brown.

Mid July—late Aug. (Milford, Surrey.)
A. flower. B. stigma. C. seed and pappus. D. seed. E. stem t.s.



687. EPILOBIUM ADNATUM Griseb. (*E. tetragonum* auct.). The SQUARE-STALKED WILLOW-HERB is a glabrous perennial with a four-ridged, squarish, rather stout stem growing 9-30 in. (18-75 cm.) from a base which produces dense, subsessile, autumnal rosettes. It is rather frequent in woods and damp places throughout the British Isles. Leaves opposite, strap-shaped, sessile, adnate, with well-marked, acute teeth directed towards the apex. Flowers 8 mm. diam., regular; petals notched, pink, hardly twice as long as lanceolate sepals; stigma cylindrical. Capsule 70-90 mm., downy; seed 1·0 × 0·5 mm., oblong-ovoid, bluntly tubercled, red-brown.

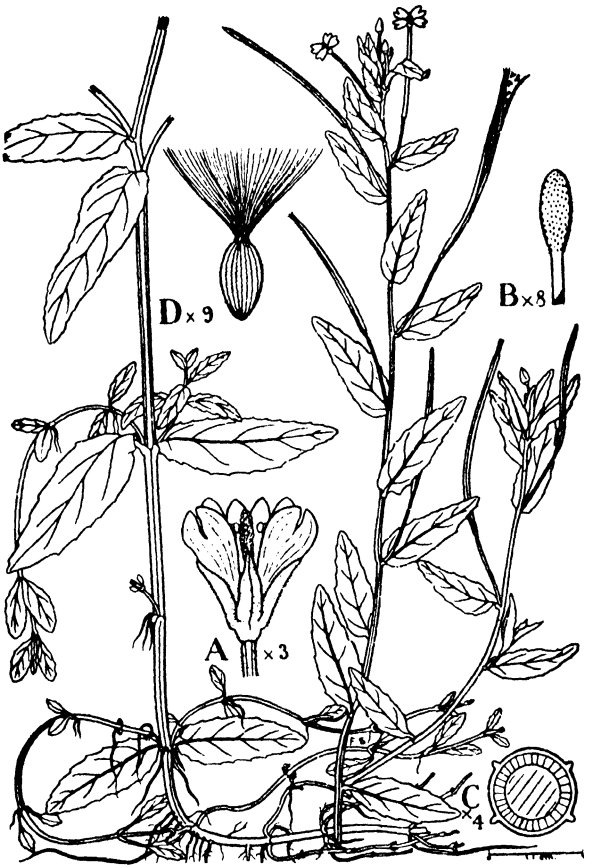
Mid July—late Aug. (Reigate, Surrey.)
A. flower B. stigma. C. seed. D. stem t.s.



688. EPILOBIUM LAMYI F. W. Schultz. This SOUTHERN SQUARE-STALKED WILLOW-HERB is a glabrous perennial with a four-ridged, squarish, rather stout stem, growing 12-30 in. (30-75 cm.) from a base which produces sessile, autumnal rosettes. It is an uncommon plant of woods in the southern half of England and Wales. Leaves opposite, tapering gradually from a broad base; upper shortly-stalked; lower sessile, with few small teeth directed outwards. Flowers 10-12 mm. diam., regular; petals bifid, red, twice as long as narrow, lanceolate sepals; stigma clavate. Capsules 70-90 mm. long, downy; seed 1·0×0·5 mm., obovoid, tubercled and ridged, red-brown.

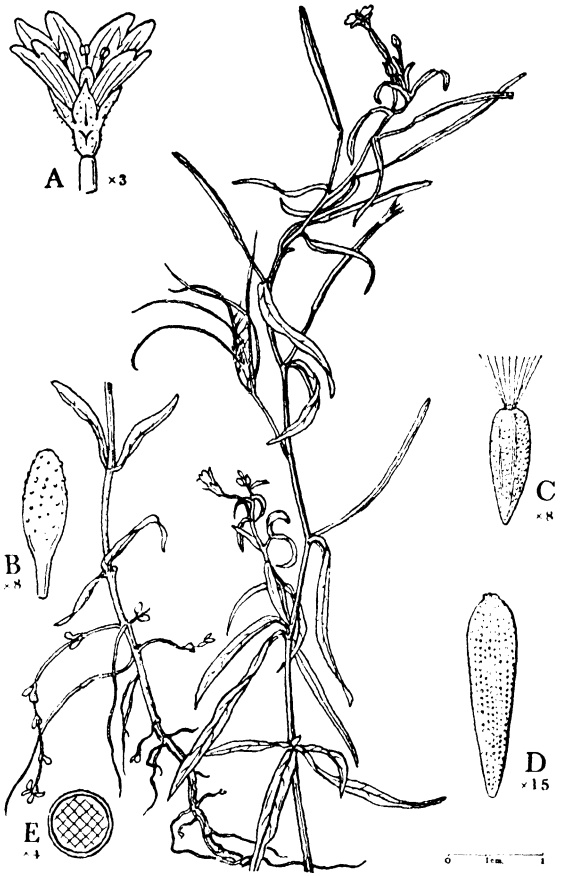
Mid July—late Aug. (Beaconsfield, Buckinghamshire.)

A. flower. B. stigma. C. stem t.s. D. seed.



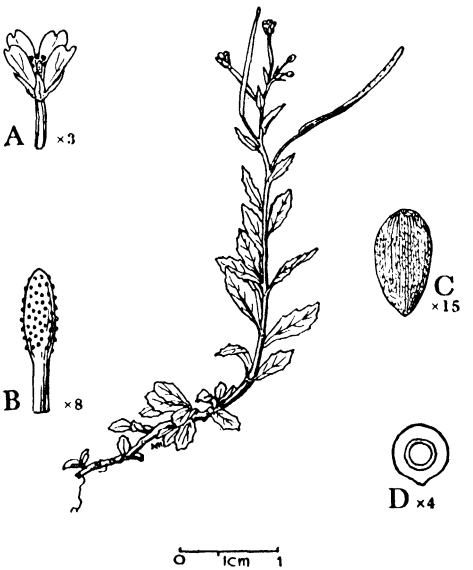
689. EPILOBIUM OBSCURUM Schreb. This FAINTLY SQUARE-STALKED WILLOW-HERB is a glabrous perennial which has a stem with two slender ridges 6-20 in. (15-50 cm.) high, rising from a decumbent base which produces long summer stolons with many small leaves and an ill-marked rosette. It is frequent in woods and damp places throughout the British Isles. Leaves opposite, tapering gradually from a broad base, sessile, with few small teeth directed outwards. Flowers 7-9 mm. diam., regular; petals deeply bifid, red, twice as long as lanceolate sepals; stigma clavate. Capsule 40-70 mm., downy; seed 1·0 × 0·5 mm., obovate, densely and acutely tubercled, light brown.

Mid July—early Sept. (Lyndhurst, Hampshire.)
A. flower. B. stigma. C. stem t.s. D. seed and pappus



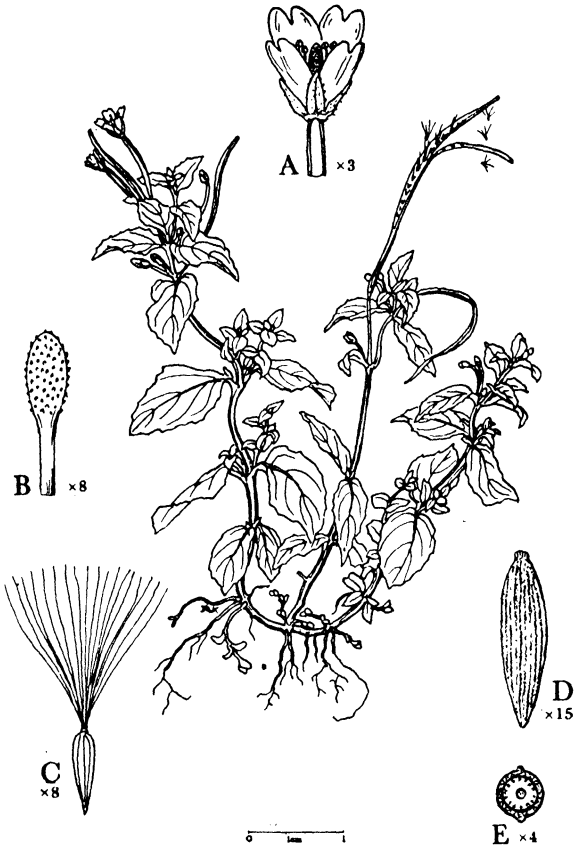
690. EPILOBIUM PALUSTRE L. The MARSH WILLOW-HERB is a nearly glabrous perennial with a little-branched, terete stem rising 6-20 in. (15-50 cm.) from a decumbent base, which produces long, white, underground stolons terminating in a white bulbil. It is thinly spread in marshes and acid bogs throughout the British Isles. Leaves opposite, linear-lanceolate, entire, sub-glabrous, sessile. Flowers 4-6 mm. diam., regular, spreading; petals red, shortly notched, more than twice as long as lanceolate sepals; stigma capitate. Capsule 50-70 mm. diam., downy; seed 1·0 × 0·5 mm., apex with a short beak, base acute, finely and openly tubercled, light brown.

Mid July—late Aug. (Llangammarch, Radnorshire.)
A. flower. B. stigma. C. seed and pappus. D. seed. E. stem t.s.



691. EPILOBIUM ANAGALLIDIFOLIUM Lam. The ALPINE WILLOW-HERB is a sub-glabrous perennial with a slender stem, with two faint ridges 1-6 in. (3-15 cm.) high, growing from a decumbent base, which produces slender stolons ending in a rosette. It is rather frequent in mountain rills and bogs throughout highland Britain. Leaves opposite, lanceolate, gradually narrowed into a sub-sessile base, faintly toothed and glabrous. Flowers 4-5 mm., regular, drooping; petals red, bifid, half as long again as linear-lanceolate sepals; stigma clavate. Capsule erect, 25-35 mm. long, sub-glabrous; seed 1·0 × 0·4 mm., obovoid, with acute base and a tapering, but not beaked, apex, faintly tubercled.

Late June—mid Aug. (Ben Lawers, Perthshire.)
A. flower. B. stigma. C. seed. D. stem t.s.



692. EPILOBIUM ALSINIFOLIUM Vill. This CHICKWEED WILLOW-HERB is a sub-glabrous perennial with a slender stem with two faint ridges, 2-9 in. (5-23 cm.) high, growing from a decumbent base with slender summer stolons producing scale leaves. It is frequent in mountains rills and bogs in highland Britain. Leaves opposite, ovate-lanceolate, toothed, glabrous and sessile. Flowers 9 mm. diam., regular, at first drooping then erect; petals red, bifid, hardly twice as long as triangular sepals; stigma clavate. Capsules 30-50 mm. long, sub-glabrous; seed 1·0 × 0·4 mm., narrowly-obovoid, with an acute base and a distinct beak, finely tubercled.

Mid July—late Aug. (Ben Lawers, Perthshire.)
A. flower. B. stigma. C. seed and pappus. D. seed. E. stem t.s.

693. EPILOBIUM NERTERIOIDES Cunn. (*E. pedunculare* auct.). This NEW ZEALAND WILLOW-HERB has escaped from gardens and is now spreading over heaths and grassland, especially in N. Wales. It is a glabrous perennial with a slender, prostrate and rooting stem 2-10 in. (5-25 cm.) long and small, ovate leaves. Flowers about 3 mm. diam., solitary, regular; petals pink, entire, half as long again as linear sepals; stigma clavate. Capsule 25-30 mm. long, glabrous; seed 0·7 × 0·3 mm., ovoid, acute, tuberculate, brown.

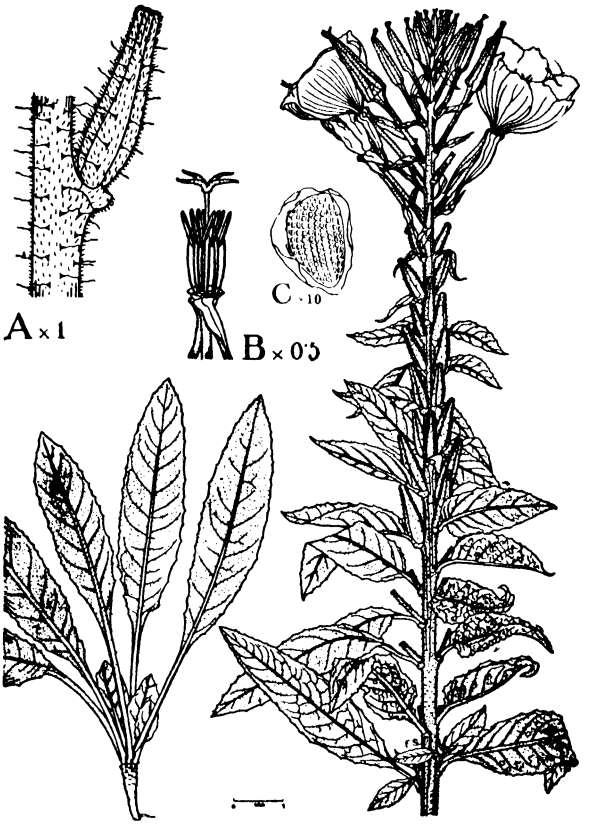
Late June—early Sept. (Penmanmahwr., Caernarvonshire.)
A. flower. B. stigma. C. seed and pappus. D. seed. E. stem t.s.

ŒNOTHERA L. Herbs with undivided leaves and yellow, red or purple flowers. Sepals, petals 4; stamens 8; ovary cylindrical, four-celled, seeds without pappus, many.

694. ŒNOTHERA BIENNIS L. The EVENING PRIMROSE is a rather common biennial plant, naturalized on sandhills and waste places in lowland Britain. Stem almost simple, 12-50 in. (30-125 cm.) high, pubescent, but without red-based hairs. Leaves narrowly lanceolate, toothed, shortly-stalked or sessile, pubescent. Flower 35-40 mm. diam.; sepals green; petals light yellow; stigma equalling the stamens. Capsule 30-35 mm., cylindrical, pilose, but without red-based hairs; seed 1·4 × 1·0 mm., honeycombed, winged, black.

Early June—early Sept. (Mildenhall, Suffolk.)

A stigma, stamens and sepals. B. stigma. C. fruit. D. seed.



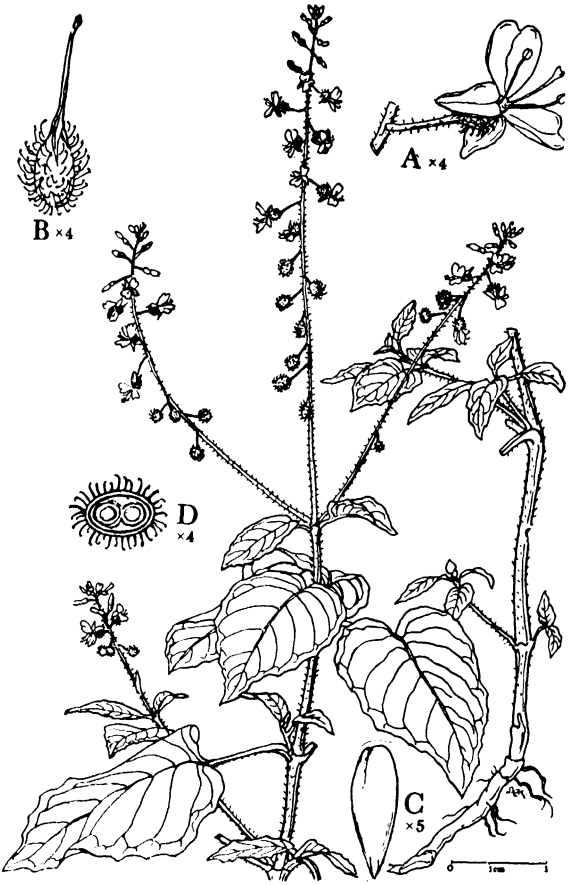
695. ŒNOTHERA ERYTHROSEPALA Borbás (*O. lamarkiana* auct.). This LARGE EVENING PRIMROSE is a rather common biennial plant, naturalized in sandy, waste places throughout lowland Britain. Stem erect, little branched, 18-40 in. (45-100 cm.) high, pubescent and with red-based hairs. Leaves lanceolate, shortly stalked, pubescent. Flowers 60 mm. diam., in a loose raceme; sepals red striped; petals light yellow; stigma exceeding the stamens. Capsule 25 mm. long, clavate and tapering towards apex, pilose and with red-based hairs; seed 1·4 × 1·0 mm., cuneoid, honeycombed, winged, black.

Early July—early Sept. (Tuddenham, Suffolk.)
A. capsule. B. stamens and stigma. C. seed.

696. ŒNOTHERA STRICTA Ledeb. (*O. odorata* auct.). This SMALL FLOWERED EVENING PRIMROSE is an introduced plant, naturalized in sand-dunes, particularly in S.W. England. Stem little branched, 18-20 in. (45-50 cm.) high, glandular-pubescent, but without red-based hairs. Leaves linear-lanceolate, sessile, with undulate margins. Flowers 35-40 mm. diam., sepals hairy, reddish; petals yellow, later turning red; stigma equalling the stamens. Capsule 18-25 mm., clavate with silky and glandular hairs; seed 1·5 × 0·7 mm., ovoid, honeycombed, winged.

Mid July—late Aug. (Burnham, Somerset.)
A. capsule. B. stigma. C. seed.

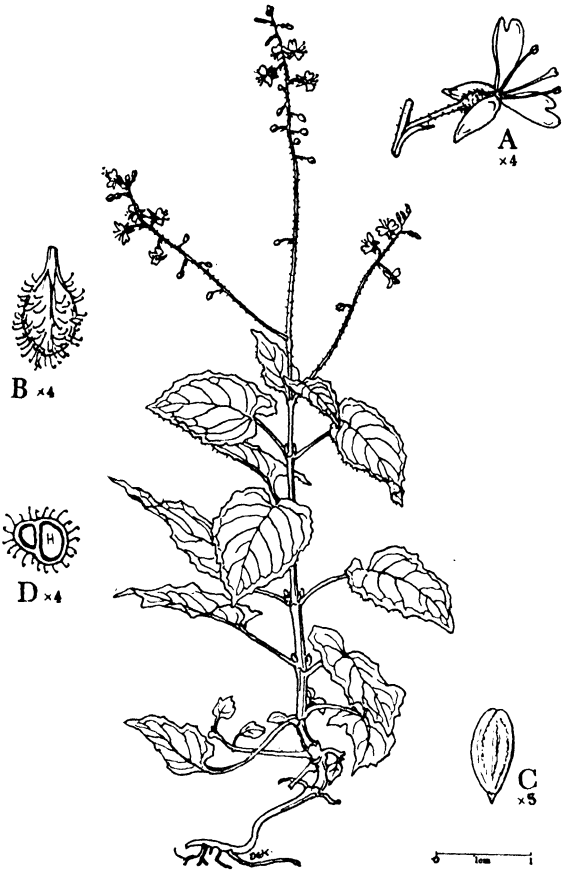
(*Fuchsia, magellanica* Lam., the Small Fuchsia, is extensively planted and naturalized in Ireland and elsewhere.)



CIRCÆA L. Herbs with undivided leaves and pink or white flowers. Sepals, petals and stamens 2; fruit one- to two-celled, rounded, shed with the pedicel.

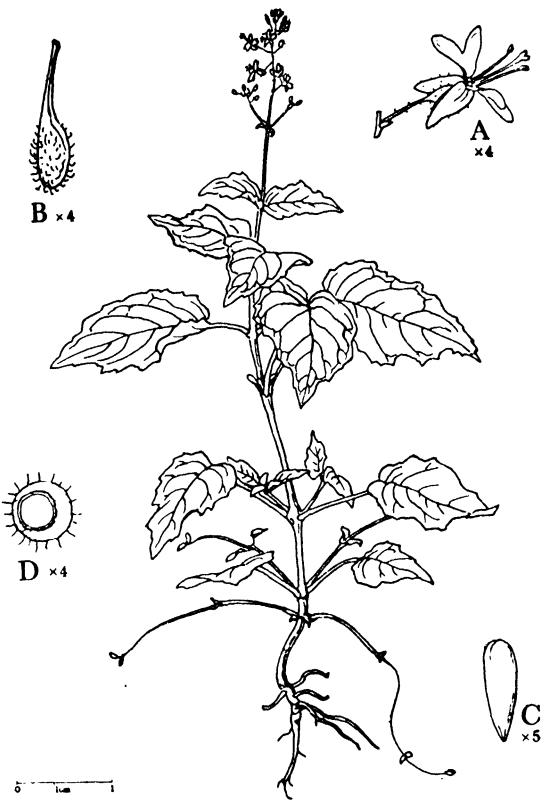
697. CIRCÆA LUTETIANA L. The COMMON ENCHANTER'S NIGHTSHADE is a slender perennial with a somewhat branched stem 12-18 in. (30-45 cm.) high, growing from a far-creeping rhizome. It is very common in woods and shady places throughout the British Isles. Stem and petioles hairy; leaves cordate, sinuate, with a pubescent, furrowed, unwinged petiole. Flowers 3 mm. diam., in leafless racemes, bracteoles absent; sepals and flower-stalks glandular, pubescent; petals pink, slightly two-lobed; stigma two-lobed. Fruit 3·0 × 2·5 mm., obovoid, equally two-celled, covered with stiff, hooked bristles; seed 3 × 1 mm., ellipsoid, pointed, smooth.

Mid July—mid Aug. (Bramcote, Nottinghamshire.)
A. flower. B. fruit. C. seed. D. fruit t.s.



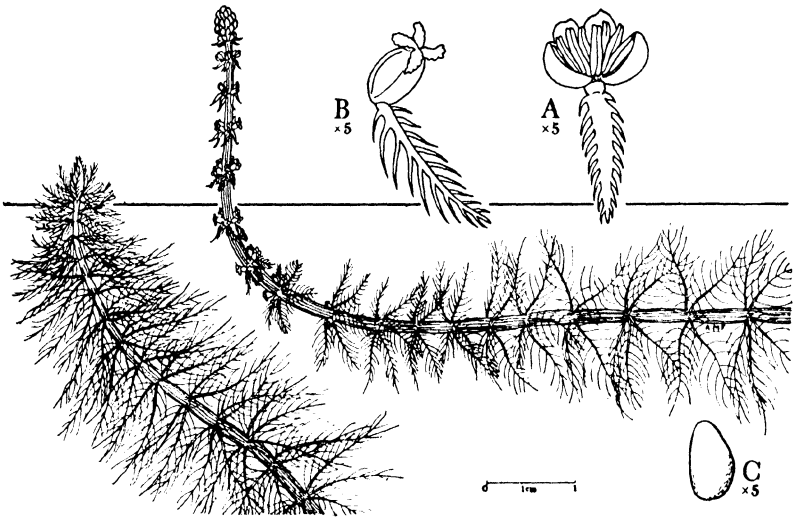
698. CIRCÆA INTERMEDIA Ehrh. This GLABROUS ENCHANTER'S NIGHTSHADE, intermediate between the last and the next, is a rather slender perennial herb with a somewhat branched stem 9-12 in. (23-30 cm.) high, growing from a far-creeping rhizome. It is a rather rare plant of woods and shady places, especially in hilly districts in the north of England and all Scotland. Stem and petioles glabrous; leaves cordate, dentate, with a rather pubescent, furrowed, unwinged petiole. Flowers 4 mm. diam., in short racemes; bracteole setaceous; sepals and flower stalks sparsely pubescent; petals pink, deeply two-lobed; stigma bifid, notched. Fruit 2·5 × 2·0 mm., obovoid, two-celled, but one abortive, covered with soft bristles; seed 2·2 × 1·0 mm., ellipsoid, pointed, smooth.

mid July—late Aug. (Killin, Perthshire.)
A. flower. B. fruit. C. seed. D. fruit t.s.



699. CIRCÆA ALPINA L. The ALPINE ENCHANTER'S NIGHTSHADE is a slender, perennial herb with simple stem 4-6 in. (10-15 cm.) high, growing from a far-creeping rootstock. It occurs rarely in woods and shady places in mountainous districts. Stem and petioles glabrous; leaves cordate, distantly toothed, thin, with a flat-winged, glabrous petiole. Flowers 3 mm. diam., in very short racemes; bracteoles setaceous; sepals and flower stalks glabrous; petals pink, deeply lobed; stigma capitate, entire. Fruit 2·0 × 1·5 mm., oblong, one-celled, covered with soft bristles; seed 2·0 × 0·8 mm., ellipsoid, pointed, smooth.

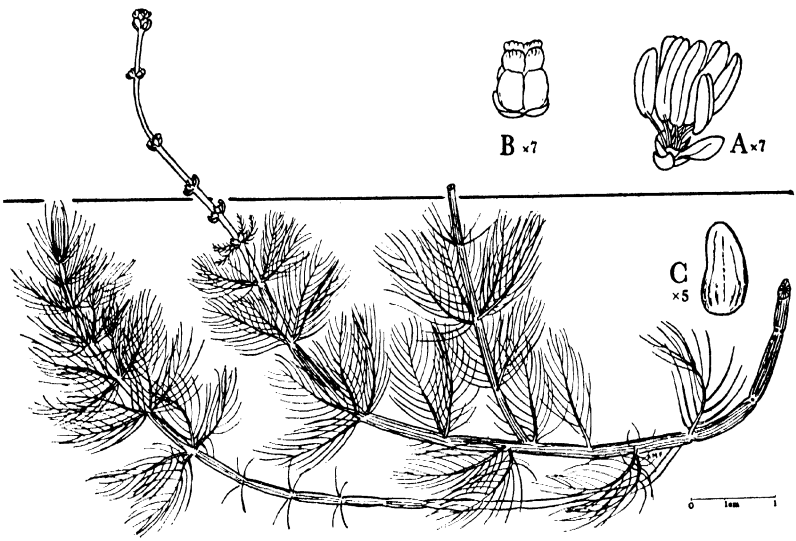
Early July—late Aug. (Fearnan, Perthshire.)
A. flower. B. fruit. C. seed. D. fruit t.s.



MYRIOPHYLLUM L. Aquatic plants with capillate leaves and minute, sessile flowers in whorls. Calyx four-lobed; petals 4 or 0; stamens 8, 6 or 4; ovary four-celled, each cell one-seeded.

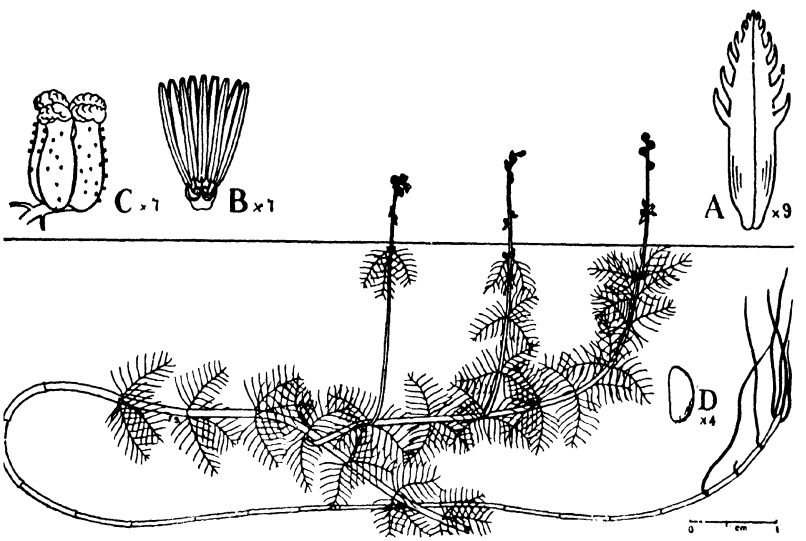
700. MYRIOPHYLLUM VERTICILLATUM L. This DENSE-FLOWERED WATER MILFOIL is a submerged water plant with rather stout, submerged stems 18-120 in. (45-300 cm.) long, bearing whorls of pectinate leaves 25-45 mm. long, usually 5 in a whorl. It is found uncommonly in still waters and slow streams in England and Ireland. Flowering stems rising 2-4 in. (5-10 cm.) out of the water; flowers 3 mm. diam., whorled; bracts pectinate; petals absent on female flowers, 4 on male flowers, greenish yellow. Stamens 8; fruit 2·0 × 1·2 mm., subglobular, four-lobed; nut 1·5 × 1·0 mm., half-ovoid, smooth, black.

Early June—mid July. (Lincoln.)
A. male flower and bract. B. female flower and bract. C. nut.



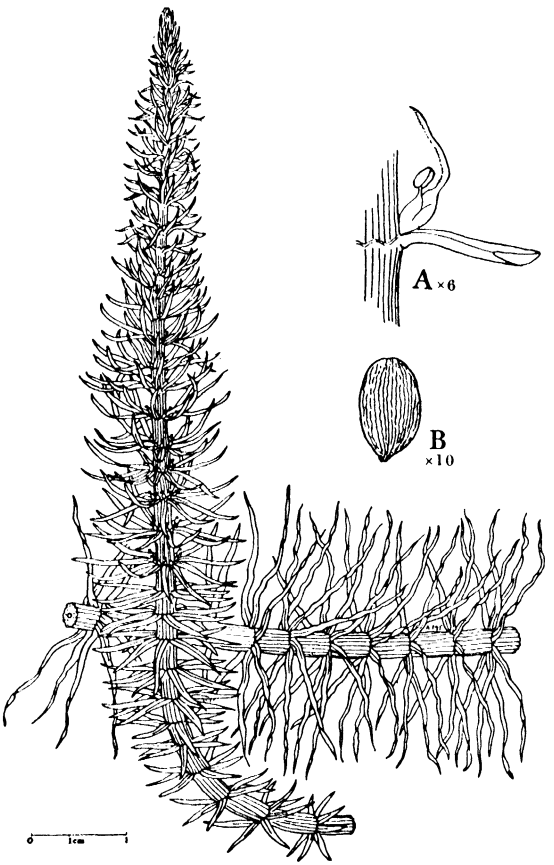
701. MYRIOPHYLLUM SPICATUM L. The COMMON WATER MILFOIL is a submerged water plant with medium to stout, branched, submerged stems 12-108 in. (30-270 cm.) long, bearing whorls of pectinate leaves 15-30 mm. long, usually 4 in a whorl. It is found commonly in pools and rivers with hard water throughout the British Isles. Flowering stems rising 1-3 in. (2-8 cm.) out of the water. Flowers 1 mm. diam., whorled; bracts entire, shorter than the flowers; petals 4, of female flowers very small, of male flowers larger, caducous, red. Stamens 8; fruit 2·2 × 1·2 mm., sub-globular, four-lobed; nuts 2 × 1 mm., ovoid, striate, black.

Mid June—mid Aug. (Calverton, Nottinghamshire.)
A. male flower with bract. B. female flower. C. seed.



702. MYRIOPHYLLUM ALTERNIFLORUM DC. This ALTERNATE-FLOWERED WATER MILFOIL is a submerged water plant with slender, branched, submerged stems 10-100 in. (25-250 cm.) long, bearing whorls of pectinate leaves 10-25 mm. long, usually 4 in a whorl. It is found commonly in pools and rivers with soft water throughout lowland Britain. Flowering stems rising 1-2 in. (2-5 cm.) out of the water; flowers 2 mm., in alternate clusters of 3-4 flowers; petals 4, of female flowers very small; of male flowers larger, caducous, yellow and red. Stamens 8, fruit longer than broad, four-lobed; nuts 2 × 1 mm., ovoid, striate, black.

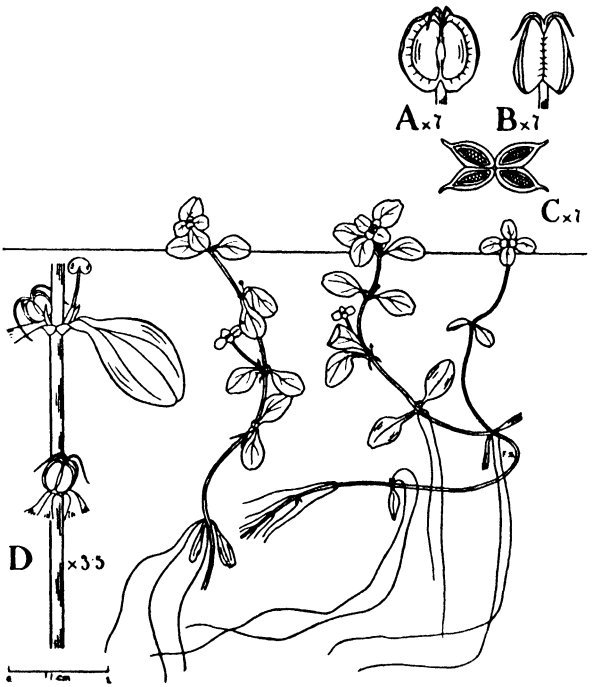
Mid June—mid Aug. (Brookwood, Surrey.)
A. bract. B. stamens. C. fruit. D. nut.



HIPPURIS L. An aquatic plant with whorled, linear leaves and minute flowers. Perianth a rim round the ovary; stamen 1; style 1.

703. HIPPURIS VULGARIS L. The MARE'S TAIL or FOX-TAIL is a partly submerged water plant with the lower part of the simple, solid stem up to 40 in. (100 cm.) long trailing under the water, and upper flowering part 6-12 in. (15-30 cm.) long growing erect out of the water. It is common in pools and rivers of hard water throughout the British Isles. Lower leaves 30-40 mm. long., submerged, thin, with wavy margin; emergent leaves 10-20 mm. long, thick, with entire margin. Flowers in the axils of the leaves of the emergent portion, minute, consisting of ovary, elongated warty stigma and a single stamen; seed 1·5 × 0·8 mm., ovoid, striate, black.

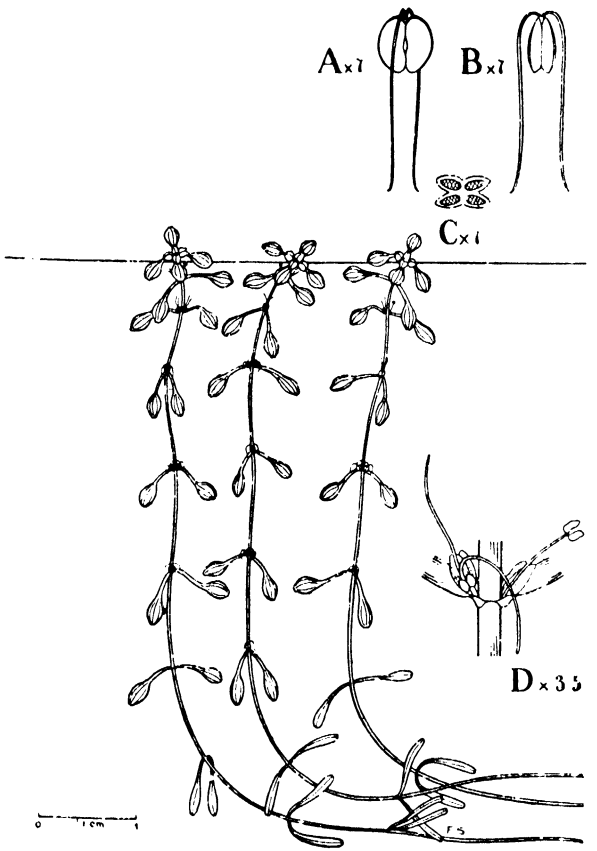
Early June—mid July. (Newstead, Nottinghamshire.)
A. leaf axis and flower. B. seed.



CALLITRICHE L. Aquatic plants with opposite, linear or spathulate leaves and minute, unisexual flowers in the axils of the leaves. Sepals and petals absent; stamen single; ovary four-celled, with 2 long styles.

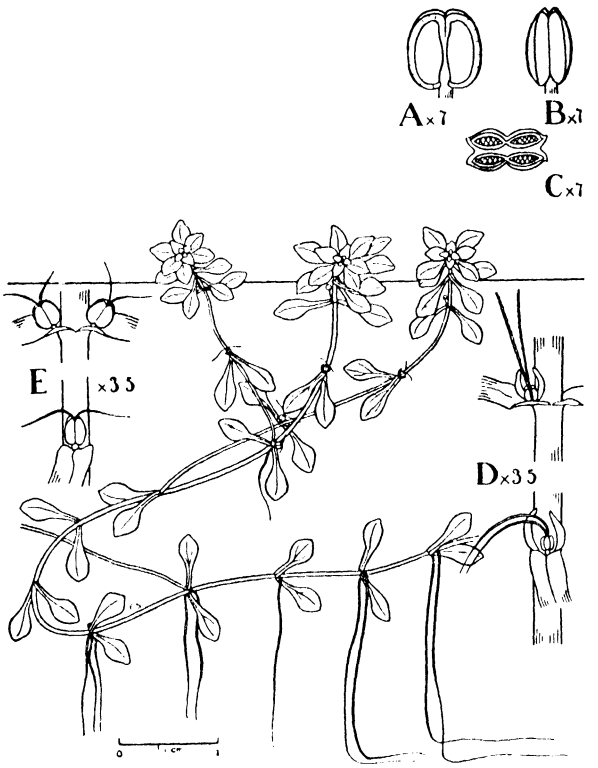
704. CALLITRICHE STAGNALIS Scop. This COMMON WATER STARWORT is a very common plant of ponds, wet mud, ditches and streams throughout the British Isles. Stems slender, 6-36 in. (15-90 cm.) long. All leaves in the summer very much alike, ovate-spathulate, forming large, well-marked rosettes. Fruit 1·3 × 1·4 mm., medium, about as broad as long, with rounded sides and a well-marked wing; bracts falcate, persistent; styles 4 mm., erect in flower, reflexed in fruit.

Late May—late Sept. (Brickendon Green, Hertfordshire.)
A. fruit, front, and B. side view. C. fruit t.s. D. flowers, bracts and leaf



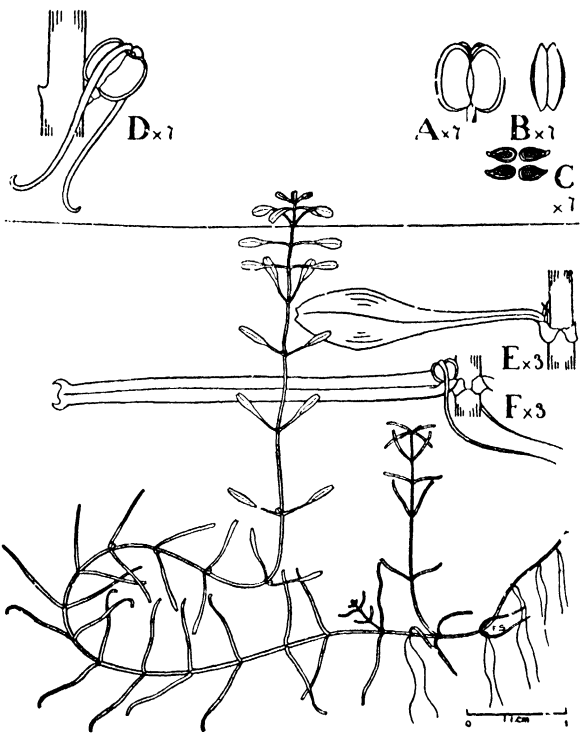
705. CALLITRICHE PLATYCARPA Kütz. (*C. polymorpha* Lönnr.). This LONG-STYLED WATER STARWORT is a rare plant of ditches and pools in various parts of the British Isles. Stem 8-24 in. (20-60 cm.) long; a few lower leaves linear-lanceolate, the rest ovate, three-veined and forming a well-marked rosette. Fruit small, 1·2 × 1·0 mm., rather longer than broad, with rounded sides, edges keeled and scarcely winged; bracts falcate, persistent; styles 8 mm., persistent.

Late May—mid Sept. (Lea Marston, Buckingham.)
A. fruit, front, and B. side view. C. fruit t.s. D. flowers.



706. CALLITRICHE OBTUSANGULA Le Gall. This BLUNT-FRUITED WATER STARWORT is a rather common water-plant growing in ditches and ponds in many parts of England. Stem 8-24 in. (20-60 cm.) long; leaves all ovate-spathulate, five-veined, upper forming large, well-marked rosettes. Fruit medium, 1·5 × 1·5 mm., about as broad as long, with straight, parallel sides and very blunt, rounded edges; bracts falcate, persistent; styles 4 mm. long, persistent.

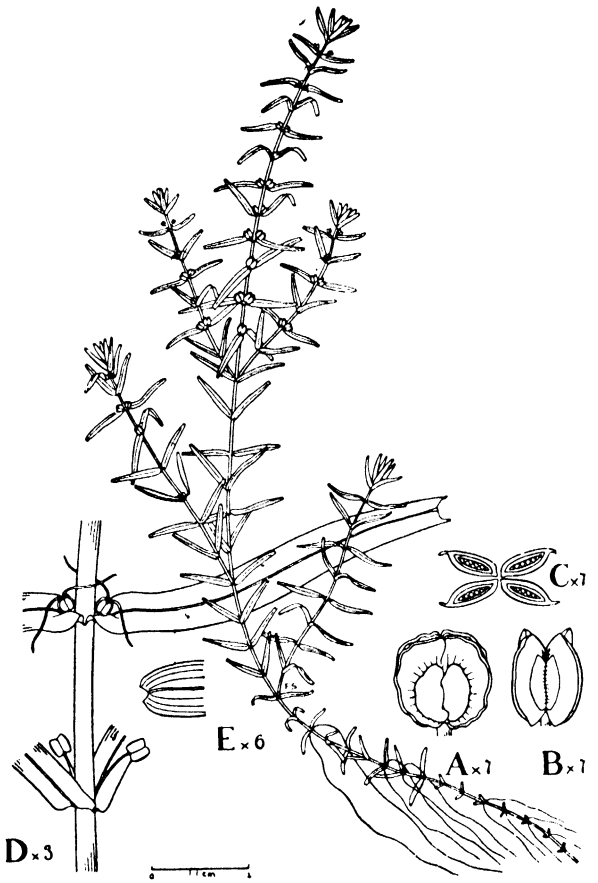
Mid June—mid Sept. (Hoddesdon Mill, Hertfordshire.)
A. fruit, front, and B. side view. C. fruit t.s. D. flowers.
E. fruits and nodes.



707. CALLITRICHE INTERMEDIA Hoffm. (*C. hamulata* Kütz.). This NARROW-LEAVED WATER STARWORT is a rather common plant of lakes and streams, particularly in Scotland. Stems very slender, 10-40 in. (25-100 cm.) long. Lowest leaves linear with emarginate apex, others changing gradually into the uppermost, which are narrow, spathulate, and form an ill-marked rosette. Fruit 1·4 × 1·1 mm., sessile, longer than broad, with almost straight sides and with a blunt keel, lobes parallel; bracts hooked, overlapping, soon falling; styles 7 mm., reflexed and soon falling. Var. *pedunculata* DC. is similar, but has long-stalked fruits.

Mid June—late Sept. (River Dole, Forfar.)

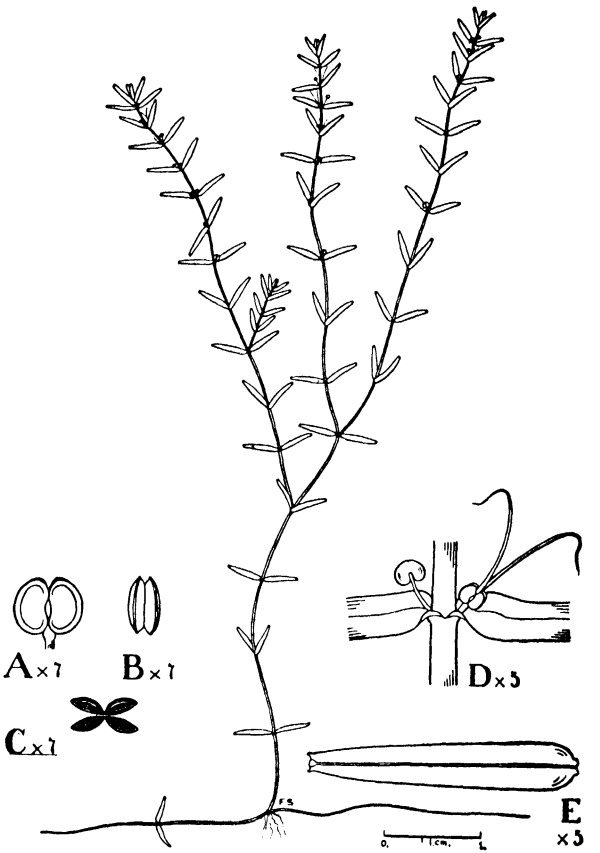
A. fruit, front, and B. side view. C. fruit t.s. D. ovary with styles. E. upper leaf and node with bracts. F. lower leaf and flower.



708. CALLITRICHE HERMAPHRODITICA L. (*C. autumnalis* L.). The AUTUMNAL WATER STARWORT is a rather uncommon plant in lakes and canals in various parts of England, Wales and Scotland. Whole plant submerged 8-24 in. (20-60 cm.) long, of a deep, translucent green, with leaves all alike, linear, enlarged at the base, with an emarginate apex and forming no rosettes. Fruit large, 2 × 2 mm., as broad as long, with a broad wing and easily separating lobes; bracts absent; styles long, spreading.

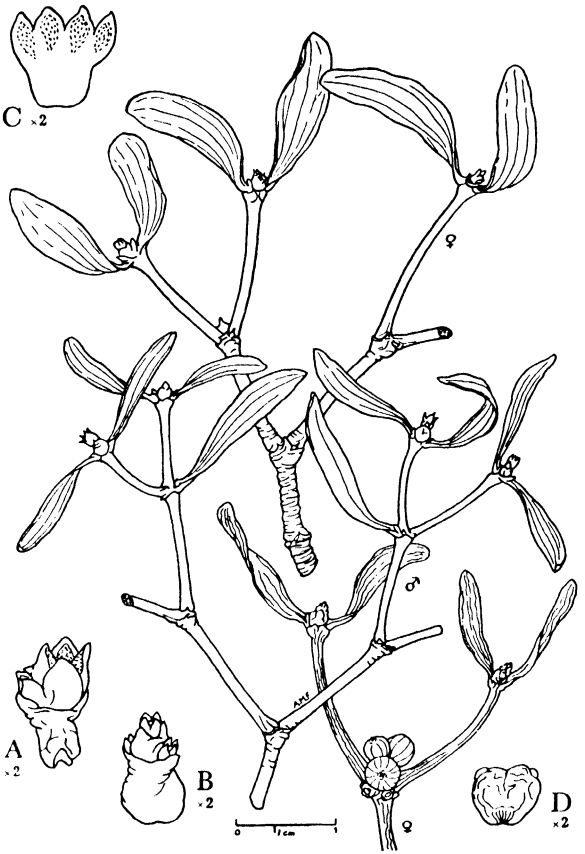
Early June—mid Sept. (Loch Leven, Kinross.)

A. fruit, front, and B. side view. C. fruit t.s. D. flowers and leaf. E. leaf apex.



709. CALLITRICHE TRUNCATA Guss. This BLUNT-LEAVED WATER STARWORT is a rare plant and occurs in still water in some of the S. and midland counties of England. Whole plant submerged, very slender, of a translucent, reddish-green, stems up to 24 in. (60 cm.) long. Leaves all alike, broadly linear, enlarged at the base, with a truncate and emarginate apex and forming no rosettes. Fruit small, 1·0 × 1·2 mm., rather broader than long, with a blunt edge and easily separating lobes; bracts absent; styles 3-5 mm., somewhat reflexed, soon falling.

Early June—mid Sept. (Clumber, Nottinghamshire.)
A. fruit, front, and B. side view. C. fruit t.s. D. flowers and node. E. leaf.

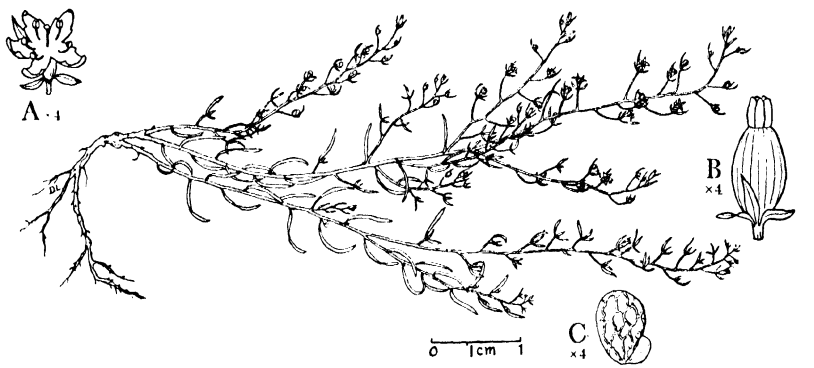


VISCUM L. Green semi-parasitic plants with small leaves and rather inconspicuous, dicœcious flowers. Calyx minute; petals 4; anthers sessile in the centre of the petals; ovary inferior; fruit a berry.

710. VISCUM ALBUM L. The MISTLETOE is a small, bushy plant with somewhat woody, green, dichotomous stems 6-30 in. (15-75 cm.) long. It is a parasite on various trees in England and Wales northwards to Yorkshire and is most frequent in the West. Leaves ovate-lanceolate, opposite, sessile, rather coriaceous, light green, entire. Flowers in clusters in the axes of upper leaves; the male about 4 mm. diam., calyx absent, and with 4 sepaloid, triangular petals on which grow the sessile anthers; the female about 2 mm. diam., in a cup-shaped bract, with a small, indistinctly four-toothed calyx and 4 very small petals; fruit a greenish white berry, 10 mm. diam., vertically striate, viscous and containing a single seed; seed 5 × 4 mm., subspherical, irregularly wrinkled, white.

Late Feb.—early May. (Winkburn, Nottinghamshire.)

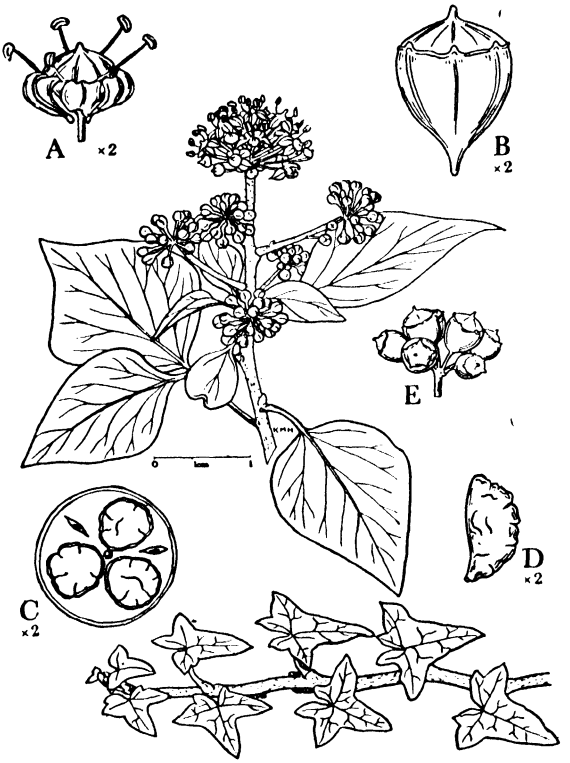
A. male. B. female flower. C. petals and stamens of male flower. D. seed.



THESIUM L. Perennial, partly parasitic, green plants with small, alternate leaves and small, rather conspicuous flowers. Perianth five-lobed; stamens 5; ovary inferior, one-celled, forming a three-seeded, nut-like fruit.

711. THESIUM HUMIFUSUM DC. The BASTARD TOADFLAX is a slender, yellow-green perennial with very numerous, branched, spreading or suberect stems 4-10 in. (10-25 cm.) long, growing from a woody stock. It is parasitic on the roots of many herbaceous plants in chalk and limestone grassland, though uncommonly, in southern, central and eastern England. Leaves 10-15 mm. long, linear, acute or obtuse, entire, sessile. Flowers 3-4 mm. diam., each subtended by an involucre of 3 subulate bracts, the pedicels being arranged in a racemose manner; perianth greenish-white, segments 5, triangular, acute. Fruit 3 × 2 mm., ovoid, vertically furrowed, crowned by the persistent perianth lobes; seed 2·5 × 2·0 mm., ovoid, striate, green.

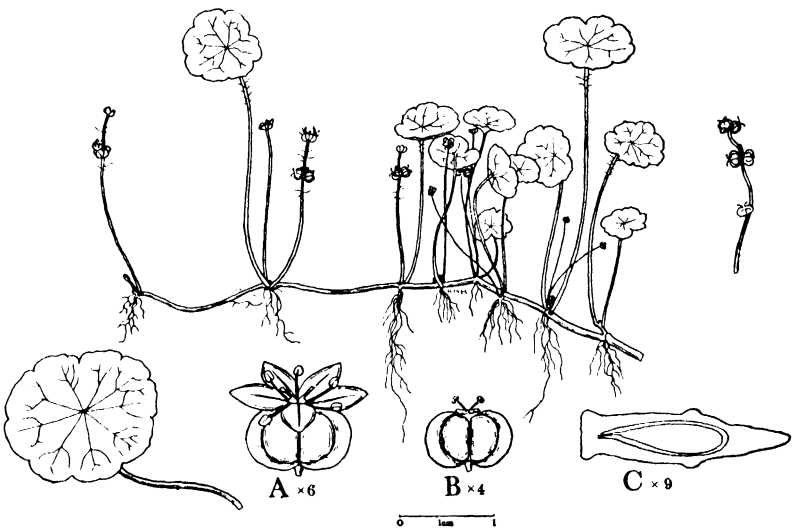
Late June—early Sept. (Risby, Suffolk.)
A. flower. B. fruit. C. seed.



HEDERA L. Woody plants, climbing by adhesive roots; flowers perfect; calyx small with a limb of 5 teeth; petals 5-10 free; stamens 5-10; ovary inferior, five-celled; styles 5-10, connivent or united. Fruit a five-celled, five-seeded berry.

712. HEDERA HELIX L. The COMMON IVY is a woody, evergreen perennial which climbs up walls, trees and similar surfaces by means of adhesive rootlets on the stems, or it trails along the ground. It is abundant in woods, hedgerows, old walls and shady places throughout the British Isles. Leaves of climbing stems hastate, of flowering stems ovate, pointed, all evergreen and coriaceous, entire, acute. Flowers 8-10 mm. diam., forming a rounded umbel; corolla yellow-green, petals recurved; stamens long, erect. Fruit urceolate, blackish-green, crowned by the calyx, some cells usually abortive; seed 8 × 6 mm., cuneoid, wrinkled, black.

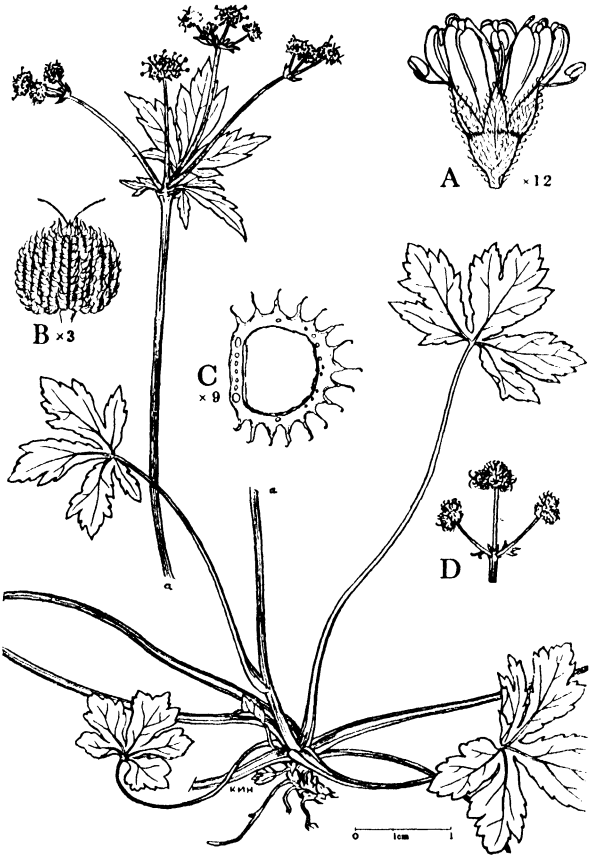
Mid Oct.—mid Nov. (Ashbourne, Derbyshire.)
A. flower. B. fruit. C. berry t.s. D. seed. E. cluster of fruits.



HYDROCOTYLE L. Perennial herbs with peltate leaves; flowers in whorls; fruit laterally compressed; commisure 0; vittæ or canals in the carpel 0.

713. HYDROCOTYLE VULGARIS L. The MARSH PENNYWORT is a small perennial with simple leaves and flowering scapes 1-7 in. (3-18 cm.) high, growing from a procumbent, rooting, slender stem. It is common in wet marshes and bogs throughout the British Isles. Leaves peltate, crenate; petioles 50-200 mm. long, sparsely hairy. Flowers 3 mm. diam., calyx very small; petals pink, entire. Fruit 1·5 × 2·5 × 0·7 mm., laterally compressed with acute keel and four lateral ridges.

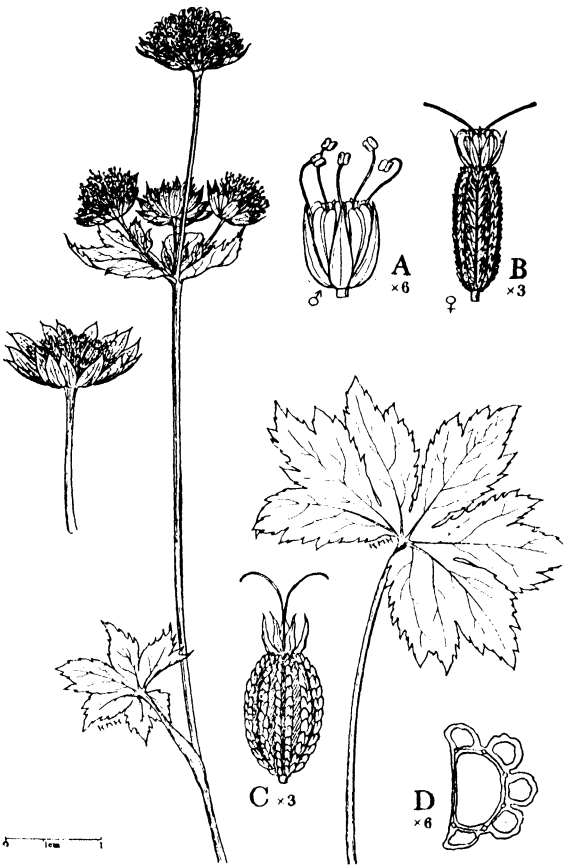
Late May—mid Aug. (Bradley, Derbyshire.)
A. flower. B. fruit. C. carpel t.s.



SANICULA L. Rather stout and small perennials with palmate leaves. Flowers in globular heads, heads umbellate; fruit subterete, spiny; commissure wide; ribs 0; vittæ 1 in each groove.

714. SANICULA EUROPÆA L. The WOOD SANICLE is a perennial plant with erect, ribbed stems about 8-15 in. (20-38 cm.) high, growing from a thick, decumbent stock. It is common in woods throughout the British Isles. Leaves glabrous, palmate, with acute lobes. Flowers 1·5 mm. diam.; calyx teeth long, acute, hairy; petals white or pink, notched. Fruit 4·0 × 3·5 × 2·0 mm., almost globular, with long, hooked bristles.

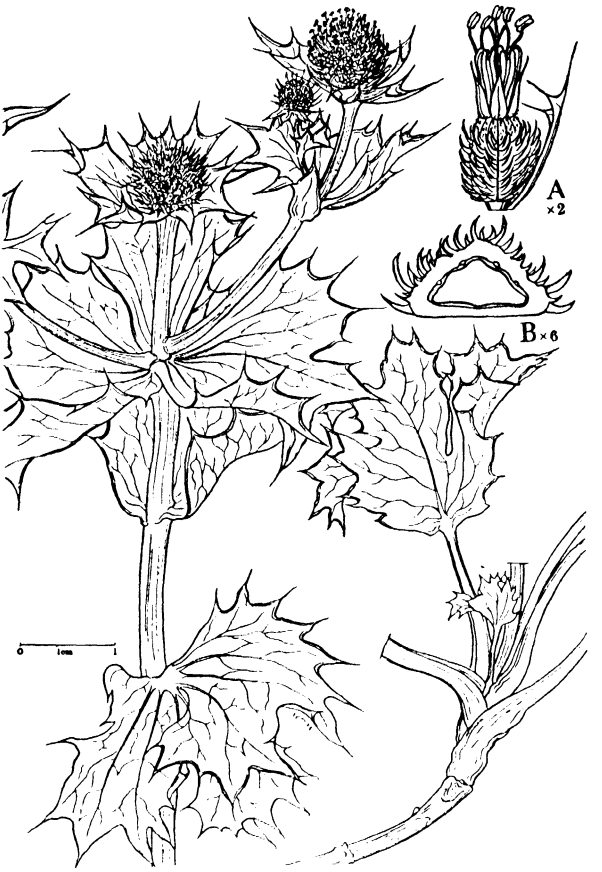
Mid May—mid Aug. (Mappleton, Derbyshire.)
A. flower. B. fruit. C. carpel t.s. D. fruiting branch.



ASTRANTIA L. Leaves palmate. Flowers in simple umbels, bracts exceeding flowers; fruit avoid; commisure broad; calyx teeth conspicuous; ribs large, inflated; vittæ one in each groove.

715. ASTRANTIA MAJOR L. The ASTRANTIA is a stout, glabrous, little-branched perennial with stems 12-36 in. (30-90 cm.) high, growing erect from a creeping rootstock. It is naturalized in several places in England. Radical leaves palmate, with 3-7 deeply toothed lobes; bracts lanceolate, entire, white or pink. Flowers 1·5 mm. diam., some male, some hermaphrodite; male 2 mm., female 7 mm. long; calyx campanulate; petals pink. Fruit 6·0 × 3·0 × 2·5 mm., ellipsoid; each carpel with 5 inflated, serrate ridges, and a vitta in each groove.

Late June—mid Aug. (Stokesay, Shropshire.)
A. male flower. B. female flower. C. fruit. D. carpel t.s.

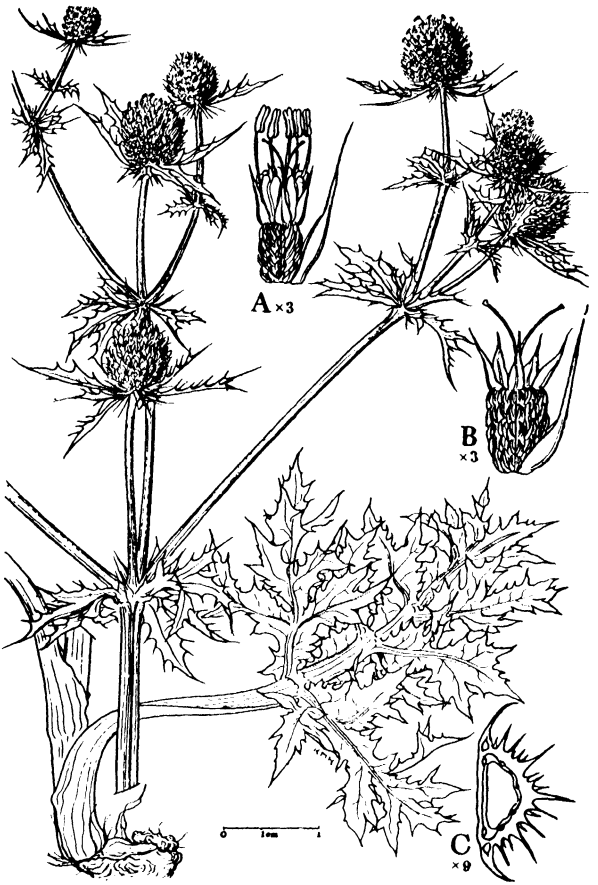


ERYNGIUM L. Stout perennial plants with coriaceous, spiny, palmate to bipinnate leaves. Flowers in heads; bracts spiny; fruit elliptical, spiny; commisure wide; calyx teeth longer than petals, acuminate; ridges obscure; vittæ one in each groove, slender.

716. ERYNGIUM MARITIMUM L. The SEA HOLLY is a much-branched, spiny, glabrous perennial 3-9 in. (8-23 cm.) high, which is found frequently on sandy and shingly sea-shores throughout the British Isles. Stems terete, glabrous. Leaves ribbed, blue-green, palmate, three-lobed; bracts trifid. Flowers 4 mm. diam., calyx teeth lanceolate with spiny apex; petals blue, linear, bifid, erect. Fruit 4·0 × 4·0 × 3·5 mm., elliptical, spiny, each carpel with 3 obscure and two more obvious ridges and one slender vitta in each groove.

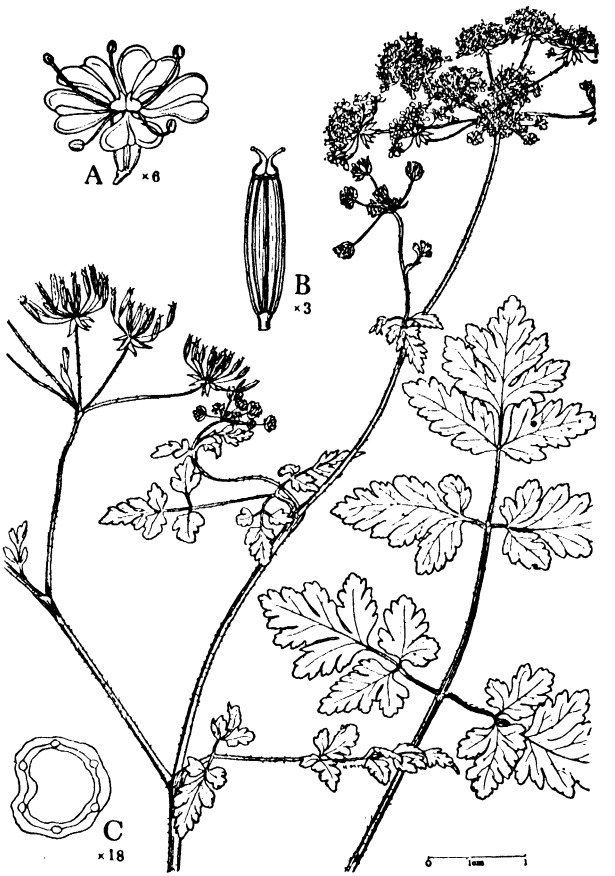
Mid July—early Sept. (Deganwy, Caernarvonshire.)

A. flower with bract. B. carpel t.s.



717. ERYNGIUM CAMPESTRE L. This FIELD ERYNGO is a much-branched, spiny glabrous, pale-green perennial about 24 in. (60 cm.) high, which is found in a few dry, grassy places in S. England. Leaves pale bluish-green, bipinnate, margins spiny; bracteoles subulate, simple. Flowers 2 mm. diam.; calyx teeth triangular with a spiny apex; petals linear, bifid, erect, white or purplish. Fruit 2·0 × 1·7 × 2·0 mm., elliptical, spiny, each carpel with 5 slender, obscure ridges and a vitta in each groove.

Late July—late Aug. (Plymouth, Devon.)
A. flower and bracteole. B. fruit. C. carpel t.s.

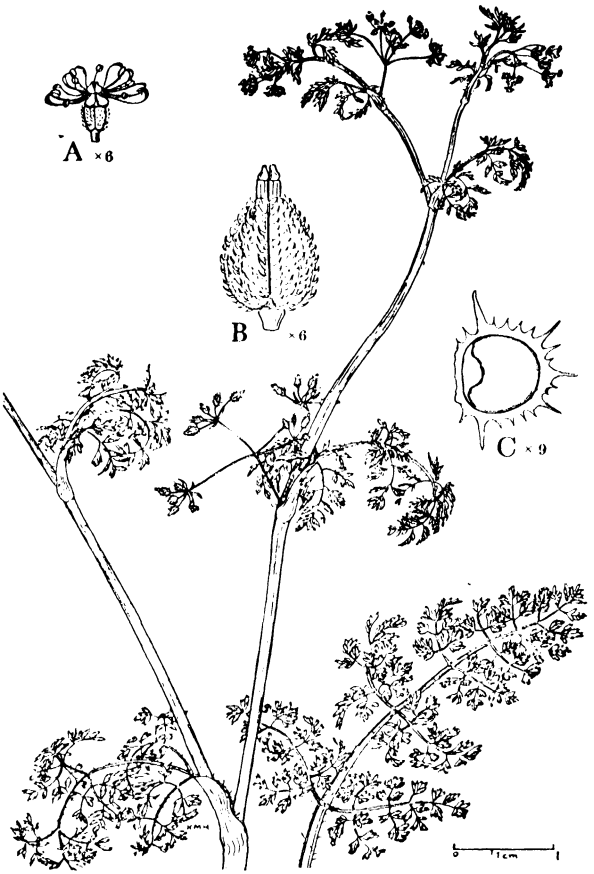


CHÆROPHYLLUM L. Slender to stout perennials with tripinnate leaves, segments narrow. Flowers in compound umbels. Bracts usually 0; bracteoles several; calyx teeth 0. Fruit elongate, truncate; commisure narrow; ridges broad; vittæ one in each groove.

718. CHÆROPHYLLUM TEMULENTUM L. The COMMON CHERVIL is a rather slender perennial with hairy, branched, ribbed and spotted stems 9-30 in. (28-75 mm.) high, which grows abundantly in hedgerows and pastures in all the British Isles, though rarely in the extreme north. Leaves tripinnate, deep green, hairy, segments of medium width, acute. Flowers 3·5 mm. diam.; petals white, notched, with an incurved point. Fruit 6×2×2 mm., narrow, elongate, olive-green or blackish, each carpel with 5 distinct ridges and a vitta between each groove. mid June—mid Aug. (Ashbourne, Derbyshire.)
A. flower. B. fruit. C. carpel t.s.

719. CHÆROPHYLLUM AUREUM L. This GOLDEN CHERVIL is a stout perennial with slightly hairy, ribbed, much-branched stems 24-36 in. (60-90 cm.) high. It is naturalized in one or two places in Scotland. Leaves tripinnate, yellow-green, glabrous, segments broad, acute. Flowers 3 mm. diam.; petals white, notched, with an inflexed point. Fruit 12·0 × 4·0 × 1·5 mm., narrow, elongate, yellow or brown, each carpel with 5 distinct ridges and a vitta between each groove.

Mid July—mid Aug. (Callander, Perthshire.)
A. fruit. B. carpel t.s.



ANTHRISCUS Pers. Rather slender annuals or perennials with tripinnate leaves, segments narrow. Flowers in compound umbels. Bracts usually 0, bracteoles several; calyx teeth 0. Fruit elongate, shortly-beaked; commisure constricted; ridges very slender; vittæ usually 0.

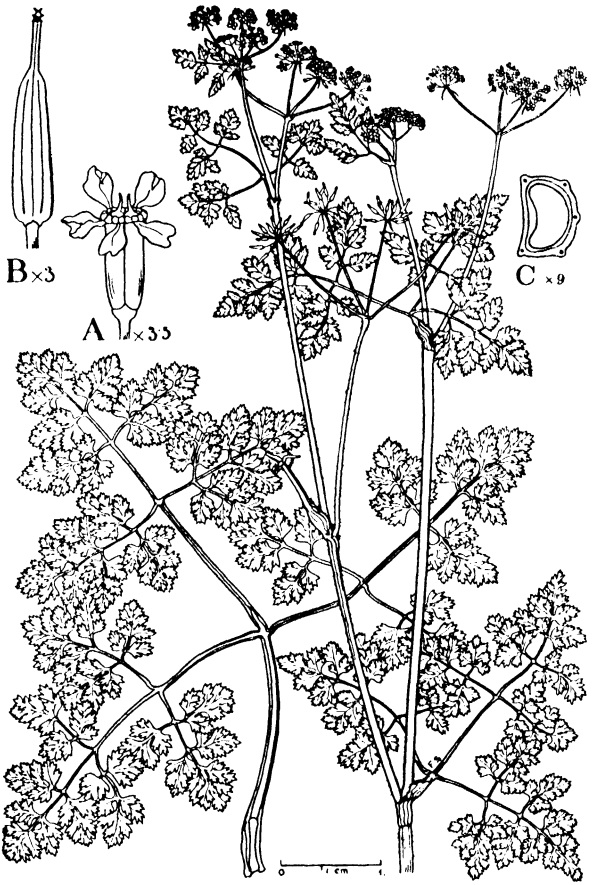
720. ANTHRISCUS CAUCALIS Bieb. (*A. vulgaris* Pers.). The LESSER HEDGE PARSLEY is a slender, sparsely hairy annual with branched, light green, ribbed stems 9-24 in. (23-60 cm.) high. It occurs in waste places on sandy soils here and there throughout lowland Britain. Leaves three- or four-times pinnate, segments almost linear. Flowers 2 mm. diam., petals white, subequal, with a long, acute, incurved point. Fruit 3·5 × 2·0 × 1·5 mm., bristly, sub-clavate with a short, suddenly narrowed beak; carpels with neither definite ribs nor vittæ.

Early May—mid July. (Calverton, Nottingham.)

A. flower. B. fruit. C. carpel t.s.

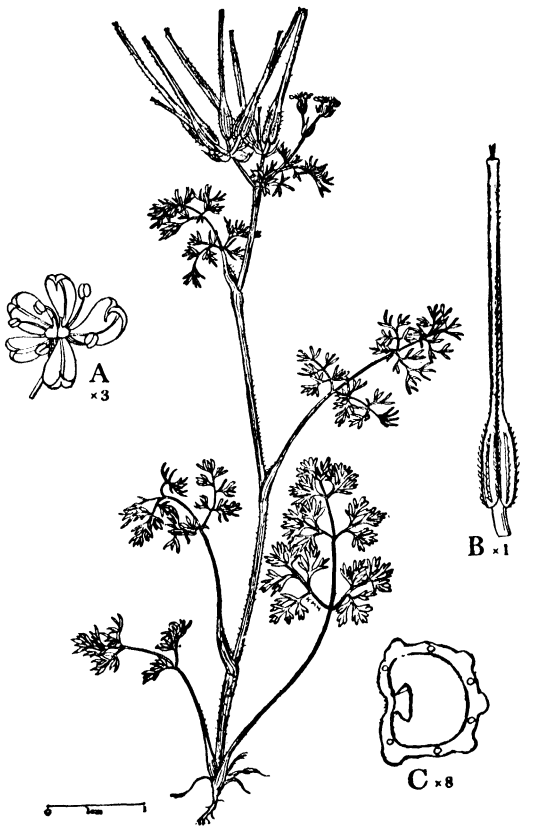
721. ANTHRISCUS SYLVESTRIS (L.) Hoffm. The HEDGE PARSLEY is a stout perennial with sparsely hairy, branched, ribbed stems 20-50 in. (50-125 cm.) high, which is very abundant in waste places and roadsides throughout the British Isles. Leaves green, bipinnate, segments acute, cuneiform. Flowers 3·5-4·0 mm.; petals white, unequal, with a small, acute, incurved point. Fruit $6 \times 3 \times 1{\cdot}5$ mm., glabrous, sub-clavate, with a short beak; each carpel with 5 very slight ribs.

Late April—early June. (Ashbourne, Derbyshire.)
A. flower. B. fruit. C. carpel t.s.



722. ANTHRISCUS CEREFOLIUM (L.) Hoffm. This GARDEN HEDGE PARSLEY is a very slender annual with slightly pubescent, branched stems 12-24 in. (30-60 cm.) high. It is a relic of cultivation which is naturalized in a few waste places. Leaves tripinnate, segments small, oval-lanceolate. Flowers 4 mm.; petals white, subequal, with a short, inturned point. Fruit 8·0 × 2·0 × 2·2 mm., glabrous, clavate, with a longish beak; each carpel with 5 very slight ribs.

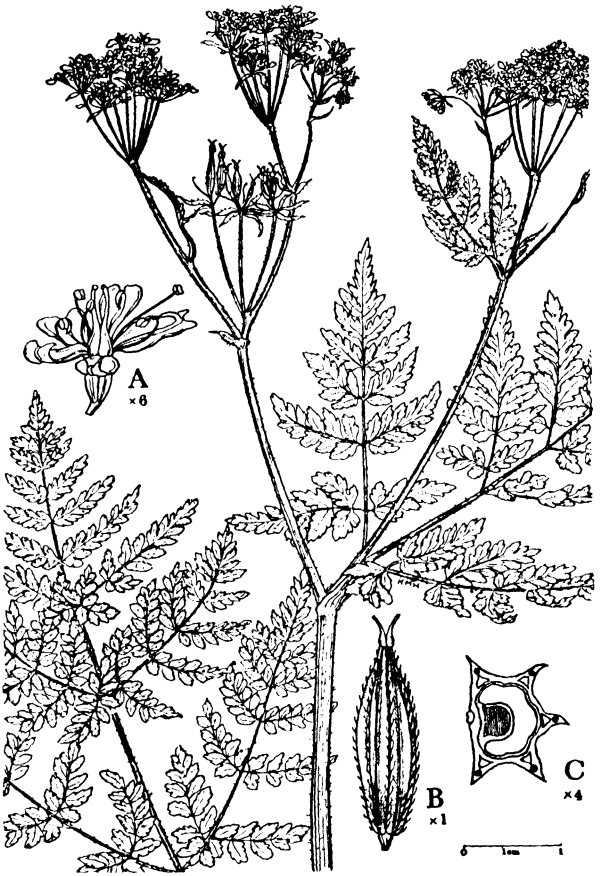
Late May—mid July. (Ross on Wye, Hereford.)
A. flower. B. fruit. C. carpel t.s.



SCANDIX L. A slender annual with tripinnate leaves, segments many, linear. Flowers in compound umbels; bracts and bracteoles several. Fruit linear with a long, narrow beak; commisure constricted; ridges blunt; vittæ one in each groove; albumen grooved.

723. SCANDIX PECTEN-VENERIS L. The SHEPHERD'S NEEDLE is a slender, sparsely hairy, much-branched annual 6-12 in. (15-30 cm.) high, which is a frequent cornfield weed throughout the British Isles. Leaves green, bipinnate with fine, almost linear segments. Flowers 5 mm.; calyx absent, petals white, unequal, with an incurved, acute apex. Fruit 40 × 5 × 2 mm., clavate with a very long beak; each carpel with 5 blunt ribs, hairy on the margin, and a vitta in each groove.

Mid April—early July. (Ashbourne, Derbyshire.)
A. flower. B. fruit. C. carpel t.s.

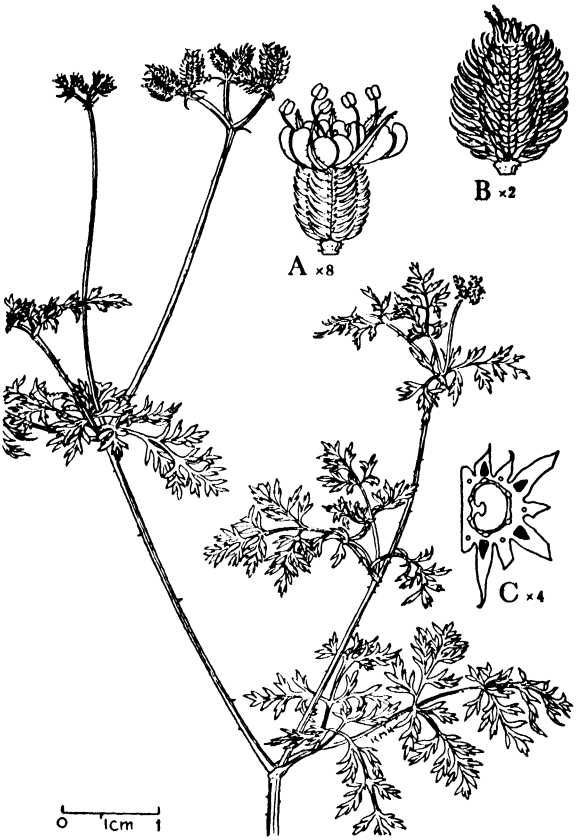


MYRRHIS Mill. Stout perennial; leaves tripinnate or triternate, segments very numerous. Flowers in compound umbels; bracts few or 0; bracteoles many. Fruit linear, oblong, beaked; commisure broad; ridges prominent; vittæ usually 0.

724. MYRRHIS ODORATA (L.) Scop. The SWEET CICELY is a stout, aromatic perennial with sparsely hairy, much-branched stems 12-36 in. (30-90 cm.) high, growing from a thick rootstock. It is commonly found in damp places in N. England, Wales and Scotland. Leaves tripinnate with small, ovate, toothed segments. Flowers 3·5-4·0 mm. diam.; calyx teeth absent; petals white, unequal, with a narrow, incurved point. Fruit 20 × 8 × 4 mm., linear-lanceolate, acute; each carpel with 5 large, acute ridges, scabrid on the margin.

Early May—mid June. (Dovedale, Derbyshire.)

A. flower. B. fruit. C. carpel t.s.

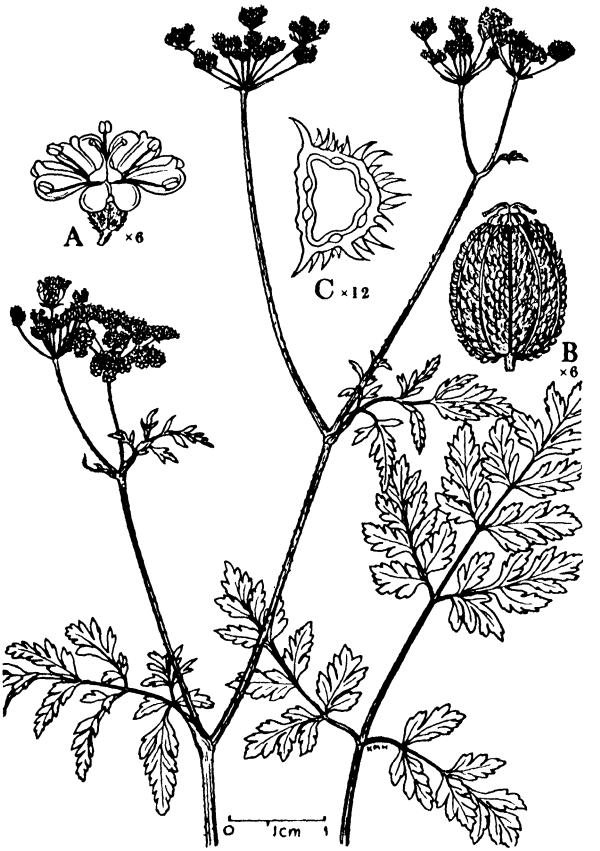


CAUCALIS L. Annual or biennial herbs with bi- or tripinnate leaves; segments various. Flowers in compound terminal and lateral umbels. Bracts and bracteoles simple. Fruit terete, covered with hooked bristles; albumen furrowed; commisure wide; each carpel with 5 primary and 5 secondary ridges from which the large spines arise, and a vitta under each secondary ridge.

725. CAUCALIS PLATYCARPOS L. (*C. daucoides* L.). This CARROT BURR PARSLEY is a small annual with rather pubescent, branched, striate stems 9-12 in. (18-30 cm.) high. It is found very rarely in cornfields in E. England and as a casual elsewhere. Leaves grey-green, pubescent, tripinnate, segments narrow, cuneate; bracts 1 or 0, linear. Flowers 2 mm.; sepals linear, acute, long; petals pink, unequal, notched, with an incurved point. Fruit $10 \times 8 \times 5$ mm., including the long, curved spines, ovoid.

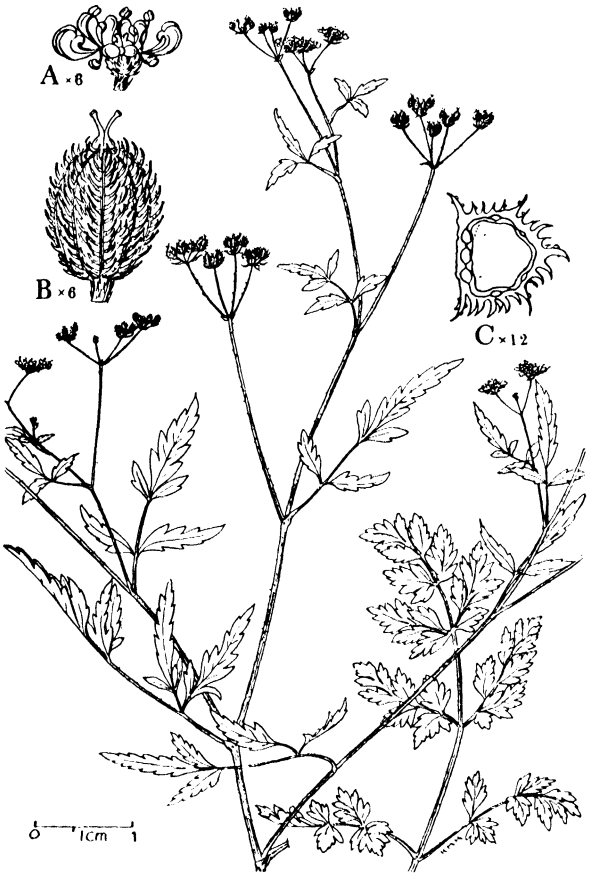
Mid June—early July. (Lakenheath, Suffolk.)

A. flower. B. fruit. C. carpel t.s.



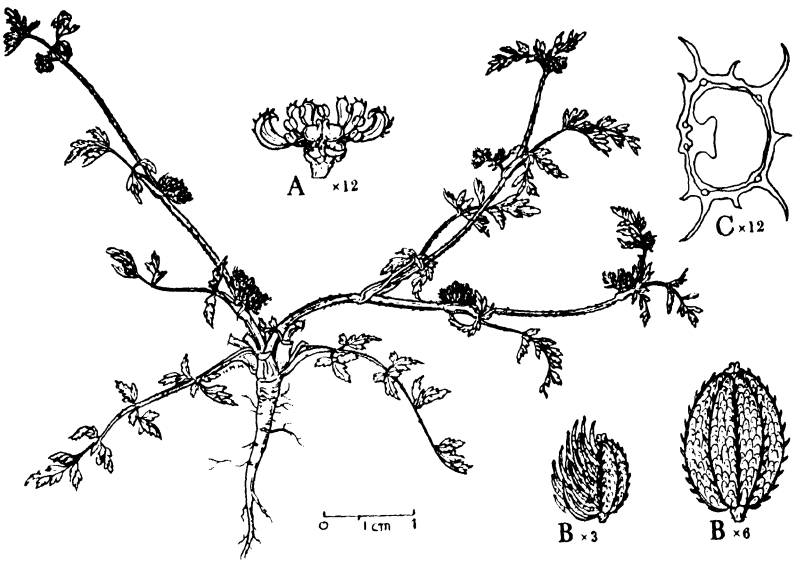
726. CAUCALIS ANTHRISCUS (L.) Huds. = TORILIS JAPONICA (Houtt.) DC. The COMMON BURR PARSLEY is an erect, somewhat hairy annual 12-40 in. (30-100 cm.) high, with rather few, semi-erect branches. It is abundant on roadsides and in waste places throughout the British Isles except the extreme north. Leaves green, somewhat hairy, bi- or tripinnate, segments rather narrow; bracts several, linear. Flowers 3·5 mm. diam., in rather dense umbels on long, semi-erect peduncles; petals pink or white, equal, notched, with an incurved point. Fruit 3·5 × 2·5 × 3·0 mm., ovoid, with rather short, hooked bristles and spreading styles.

Late June—mid Sept. (Bradley, Derbyshire.)
A. flower. B. fruit. C. carpel t.s.



727. CAUCALIS (TORILIS) ARVENSIS Huds. The CORN BURR PARSLEY is an erect, much-branched, hairy annual with hairy, ribbed stems 6-18 in. (15-45 cm.) high. It is found uncommonly in cornfields, chiefly in S. and E. England. Leaves green, somewhat hairy, bi- or tri-pinnate, segments narrow, cuneate; bracts 1 or 0, linear. Flowers 3 mm. diam., in lax umbels on long, spreading peduncles; petals white, equal, notched, with an incurved point. Fruit 3·5 × 2·5 × 3·0 mm., ovoid, with long, curved bristles, thickened at tip and with sub-erect styles.

Mid June—early Aug. (Rauceby, Lincolnshire.)
A. flower. B. fruit. C. carpel t.s.



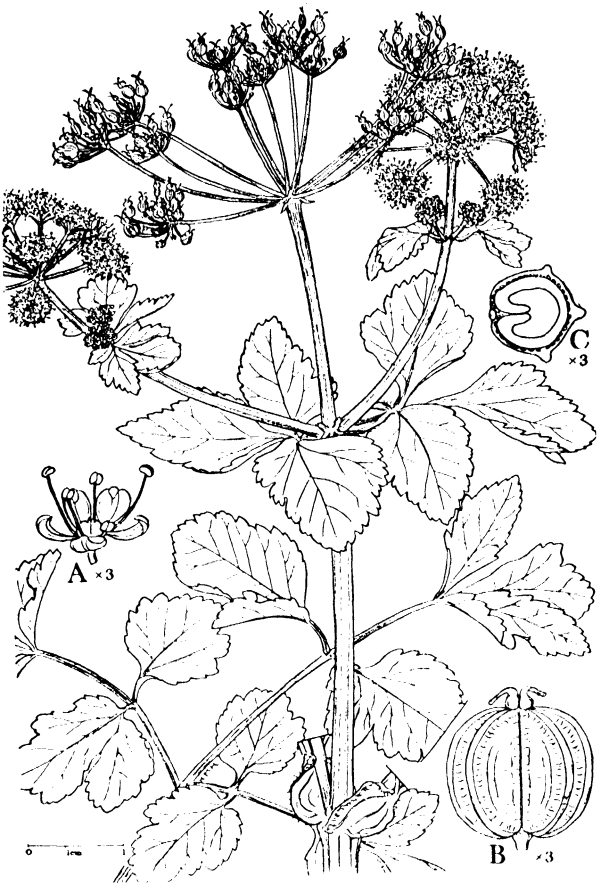
728. CAUCALIS (TORILIS) NODOSA (L.) Scop. The KNOTTED BURR PARSLEY is a decumbent, spreading annual with hairy, striate stems 6-12 in. (15-30 cm.) long, which is common on dry grassland in S. England and rare elsewhere. Leaves green, hairy, bipinnate; segments rather acute, wide, cuneiform; bracts lanceolate. Flowers about 1·5 mm. diam., in small, axillary, almost sessile umbels; petals white, unequal, notched, with an incurved point. Fruit 3·0 × 2·5 × 1·5 mm., ovoid, outer carpels covered with long bristles, inner with tubercles, each carpel almost terete, with long spines on the prominent secondary ridges and short spines on the small primary ones.

Late May—mid Aug. (Brixham, Devon.)
A. flower. B. outer, and B′. inner fruit. C. carpel t.s.
(C. *latifolia* L., with simple, pinnate leaves, broad, toothed segments and umbels on very long stalks, occurs rarely as a casual.)

CORIANDRUM L. Slender, little-branched annuals with pinnatifid leaves. Flowers in compound umbels. Fruit almost globular; commisure wide, the two carpels not readily separating; calyx teeth conspicuous, ridges faint, vittæ 0.

729. CORIANDRUM SATIVUM L. The CORIANDER is a glabrous annual with slender, little-branched stems 12-18 in. (30-45 cm.) high. It occurs here and there in England as a relic of cultivation. Lower leaves bipinnate, segments wide; upper leaves tripinnate, segments linear. Flowers 2 mm.; calyx teeth long; petals white or pinkish, unequal, with incurved tips. Fruit 3·7 × 4·0 × 4·0 mm., orbicular, glabrous.

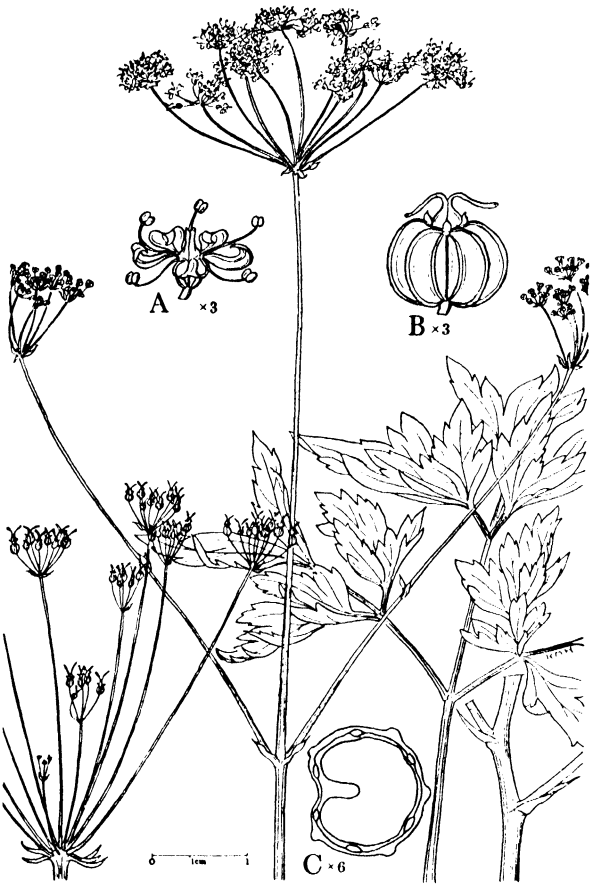
Mid June—early July. (Hort. ex Par, Cornwall.)
A. flower. B. fruit. C. carpel t.s.



SMYRNIUM L. Stout herbs with triternate leaves; flowers in compound umbels; bracts and bracteoles minute or absent. Fruit ovoid; commisure narrow; albumen grooved; ribs conspicuous, winged; vittæ many, small.

730. SMYRNIUM OLUSATRUM L. The ALEXANDERS is a large, bushy, glabrous perennial with a smooth, shining stem 12-36 in. (30-90 cm.) high. It is found in waste places and hedge banks especially near the sea northward to Central Scotland. Leaves biternate; segments broadly oval, obtusely toothed, shining. Flowers 4 mm.; calyx teeth 0; petals yellow with incurved tip. Fruit 3·0 × 4·0 × 3·5 mm., ovoid, with six prominent keels, black.

Mid April—early June. (Nottingham Castle.)
A. flower. B. fruit. C. carpel t.s.



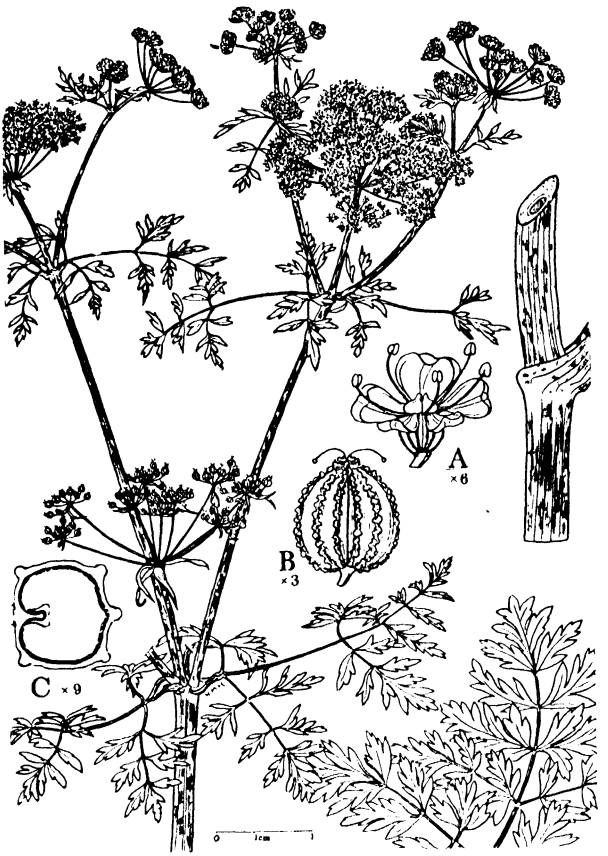
PHYSOSPERMUM Cusson. Leaves bi- or triternate, segments broad; flowers in compound umbels; bracts and bracteoles present; calyx teeth evident. Fruit terete; commisure narrow; each carpel subglobular, with 5 slight ridges and a vitta in each groove; albumen furrowed.

731. PHYSOSPERMUM CORNUBIENSE (L.) DC. The BLADDER-SEED is a rather stout, erect perennial with slender glabrous, striate, branched stems 18-24 in. (45-60 cm.) high, growing from a fusiform root. It is found in a few bushy places in Cornwall, Devon and Buckinghamshire. Leaves triternate, petioles long, segments broadly cuneate, teeth acute. Flowers 5 mm. diam.; calyx teeth small; petals white with an incurved tip. Fruit 4 × 5 × 3 mm., glabrous, ridges slight.

Mid July—mid Aug.

(Hort. Market Lavington ex Burnham, Buckinghamshire.)

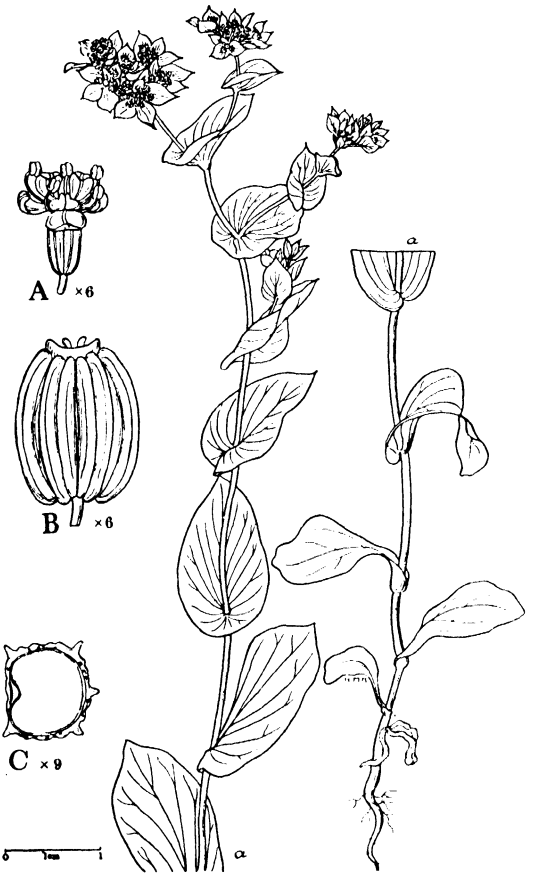
A. flower. B. fruit. C. carpel t.s.



CONIUM L. Stout herbs with tripinnate leaves; flowers in compound umbels; bracts and bracteoles present. Fruit terete; commisure narrow; seed grooved, ribs conspicuous, wavy; vittæ 0.

732. CONIUM MACULATUM L. The HEMLOCK is a large, bushy, glabrous biennial with a glabrous, spotted, striate stem 24-72 in. (60-180 cm.) high, found in damp places throughout most of the British Isles. Leaves bipinnate; segments narrow, acute, cuneate; bracts linear, obvious; bracteoles unilateral. Flowers 3 mm. diam.; calyx teeth 0; petals white, obtuse, with tip incurved. Fruit 5·0 × 5·0 × 1·7 mm., almost globular, with prominent, wavy ridges.

Early June—late Aug. (Ashbourne, Derbyshire.)
A. flower. B. fruit. C. carpel t.s.

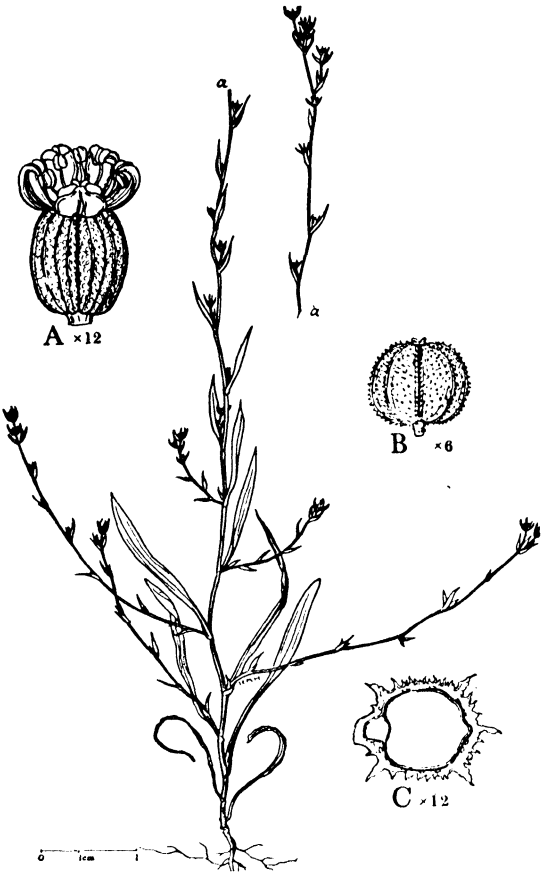


BUPLEURUM L. Rather slender herbs with simple, entire leaves. Flowers yellow in simple or compound umbels; fruits laterally compressed; commisure broad; vittæ 1-5 in each groove; seed grooved, ribs conspicuous.

733. BUPLEURUM ROTUNDIFOLIUM L. The COMMON HARE'S EAR or THOROUGHWAX is an erect, almost simple annual about 9 in. (28 cm.) high which is found rarely as a cornfield weed in England. Lower leaves spathulate, petioled, upper elliptical, perfoliate, all glabrous; bracteoles suborbicular, exceeding umbels. Flowers 2 mm. diam.; umbels compound; calyx teeth absent; petals yellow with incurved acute tip. Fruit 3·2 × 2·7 × 1·2 mm., ovoid, with 5 slender ridges and a conspicuous apical collar.

Late June—late Aug. (Alresford, Hampshire.)

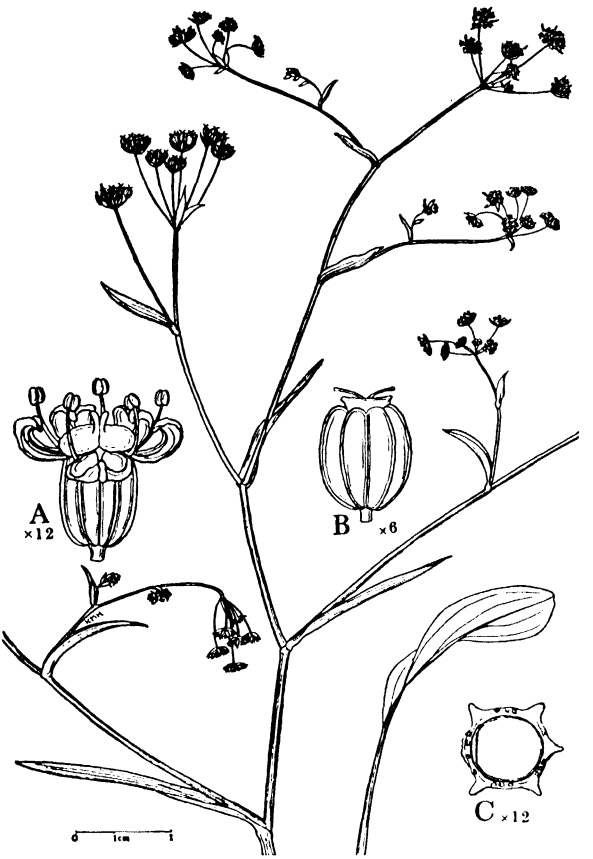
A. flower. B. fruit. C. carpel t.s.



734. BUPLEURUM TENUISSIMUM L. The SLENDER HARE'S EAR is a slender, erect, much-branched, glabrous annual 6-15 in. (15-38 cm.) high, which is usually found, though rarely, in salt marshes near the English and Welsh coasts. Leaves narrowed into a short petiole, linear-lanceolate, acute, glaucous; bracteoles linear, exceeding umbels. Flowers 1 mm. diam., umbels simple; calyx teeth absent; petals yellow with incurved, acute tip. Fruit 1·5 × 2·5 × 2·0 mm., suborbicular, tubercled; each carpel with 5 acute, wavy ridges and several small vittæ in each groove.

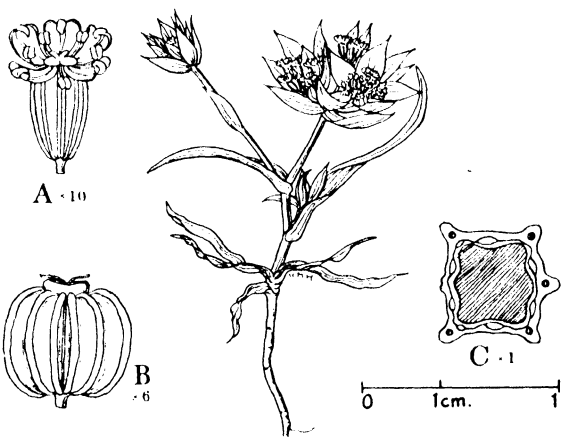
Late July—mid Sept. (Worthing, Sussex.)

A. flower. B. fruit. C. carpel t.s.



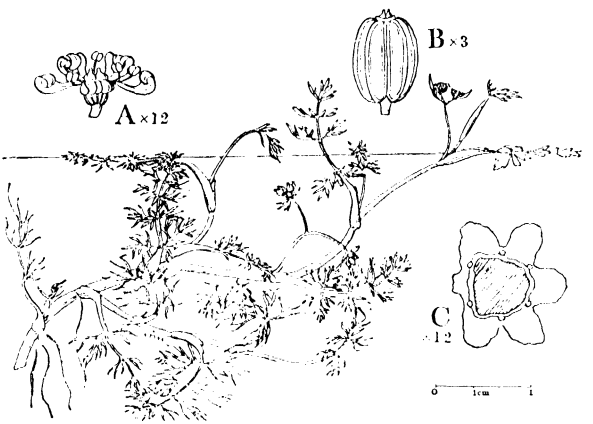
735. BUPLEURUM FALCATUM L. This SICKLE-LEAVED HARE'S EAR is a slender, erect, much-branched, glabrous perennial with smooth stems 12-40 in. (30-100 cm.) high. It occurs along fields and hedge banks in only two places in Essex and Surrey. Lower leaves petioled, elliptical, upper linear, sessile, semi-amplexicaul, green; bracts and bracteoles shorter than the flowers. Flowers 1·0-1·5 mm., in compound umbels; calyx teeth absent; petals yellow with incurved acute tip. Fruit 2·0 × 1·0 × 2·0 mm., ovoid, smooth, with an apical crown; each carpel with 5 prominent, acute ridges and 2-3 vittæ in each groove.

Early Aug.—mid Oct. (Hort., Worthing, ex Ongar, Essex.)
A. flower. B. fruit. C. carpel t.s.



736. BUPLEURUM BALDENSE Turra (*B. opacum* (Ces.) Lange). This DWARF HARE'S EAR is an erect, slender, somewhat branched annual about 2-3 in. (5-8 cm.) high, with smooth, striate stem. It is only found on rocky cliffs by the sea in Devon and Sussex. Leaves spathulate, acute, sessile, glaucous; bracteoles suborbicular, exceeding the flowers. Flowers 1·5 mm., in simple umbels; calyx teeth absent; petals yellow with incurved tip. Fruit 2·5 × 3·0 × 1·5 mm., ovoid, with 5 slender ridges and several irregular vittæ.

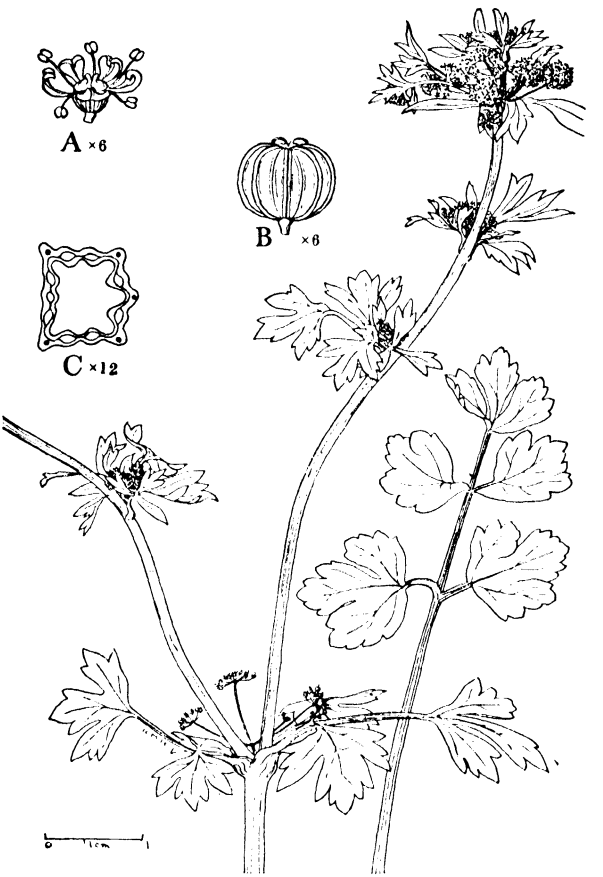
Early—late July. (Berry Head, Devon.)
A. flower. B. fruit. C. carpel t.s.



APIUM L. Perennial herbs with pinnate or ternate leaves. Umbels often lateral; bracts and bracteoles present or absent; fruit ovoid; commisure narrow; calyx teeth minute or wanting.

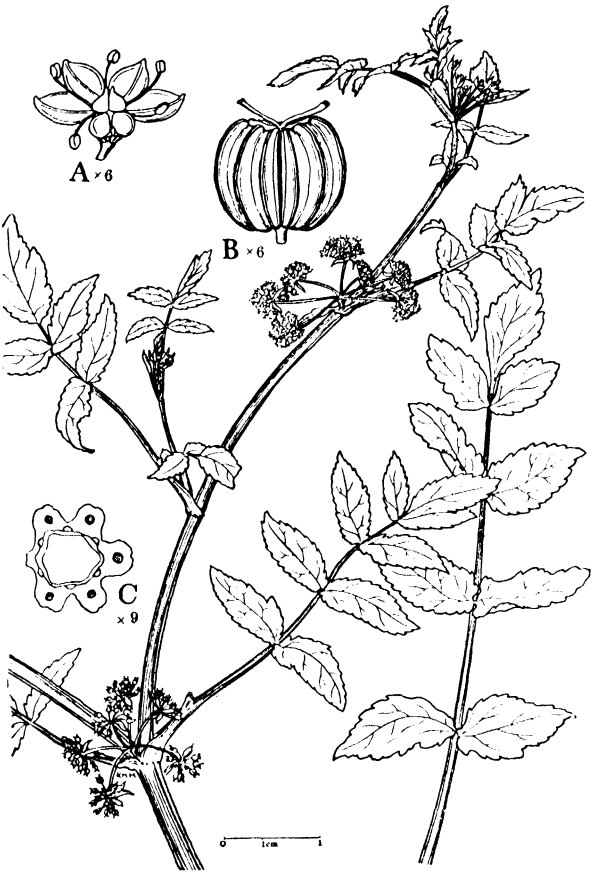
737. APIUM INUNDATUM (L.) Reichb. f. This FINE-LEAVED WATER CELERY is a small, usually submerged water plant with flaccid, branched stems 3-9 in. (8-23 cm.) long. It is found frequently in pools and ditches of soft water throughout the British Isles. Submerged leaves with capillary segments; floating leaves pinnate; bracts 0; bracteoles several, unequal. Flowers 1·7 mm. diam., in 2-3 rayed, compound umbels; petals white with incurved tip. Fruit 4·0 × 3·0 × 1·5 mm., ovoid, with 5 prominent ridges and a vitta in each groove.

Mid June—early Aug. (Misterton, Nottinghamshire.)
A. flower. B. fruit. C. carpel t.s.



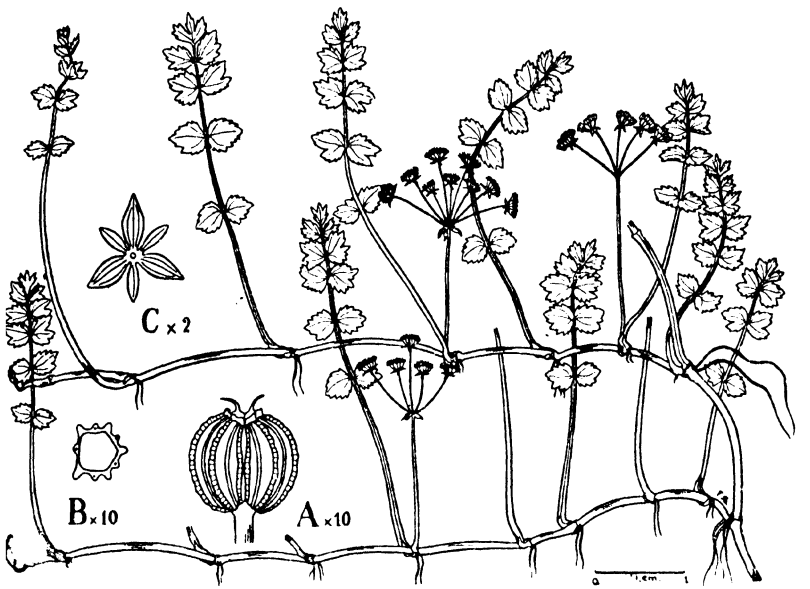
738. APIUM GRAVEOLENS L. The WILD CELERY is a rather stout biennial with several much-branched, ribbed, glabrous stems 9-30 in. (23-75 cm.) high. It is common in salt marshes and ditches near the sea except in N. Scotland. Lower leaves pinnate, upper ternate, leaflets lanceolate, crenate; bracts and bracteoles absent. Flowers 2 mm.; petals white, acute. Fruit 1·5 × 2·0 × 1·0 mm., orbicular, with 1 or sometimes 2 vittæ in each groove.

Mid June—late Aug. (Wainfleet, Lincolnshire.)
A. flower. B. fruit. C. carpel t.s



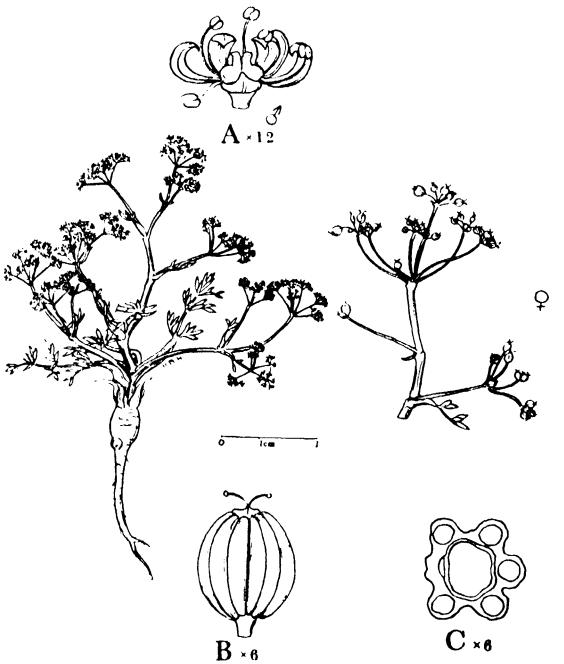
739. APIUM NODIFLORUM (L.) Lag. The PROCUMBENT MARSH-WORT is a very variable perennial with smooth, much-branched, straggling stems 9-24 in. (23-60 cm.) long. It is found very frequently in ditches, pond margins and shallow rivers throughout the British Isles northwards to Perth. Leaves all pinnate; leaflets lanceolate, dentate; bracts 0; bracteoles 2-6, entire, equal. Flowers 3 mm. diam., in 5-8 rayed umbels; petals white, acute. Fruit 2·0 × 3·0 × 1·5 mm., orbicular, with 5 prominent ridges and a vitta in each groove.

Mid July—late Aug. (Ashbourne, Derbyshire.)
A. flower. B. fruit. C. carpel t.s.



740. APIUM REPENS (Jacq.) Lag. This small CREEPING MARSHWORT is a rather slender perennial with procumbent, creeping and rooting stems 3-6 in. (8-15 cm.) long. It is a very rare plant of marshy and wet meadows in a few places in England. Leaves all pinnate; leaflets roundish, ovate, acutely and irregularly serrate; bracts usually 3-6, unequal; bracteoles usually 3 large and 3 small. Flowers 2 mm. diam., in 6-10, rayed umbels; petals white, acute. Fruit 1·2 × 1·6 × 1·0 mm., orbicular, reniform, with 9 alternately large and small ridges and a vitta under each small ridge.

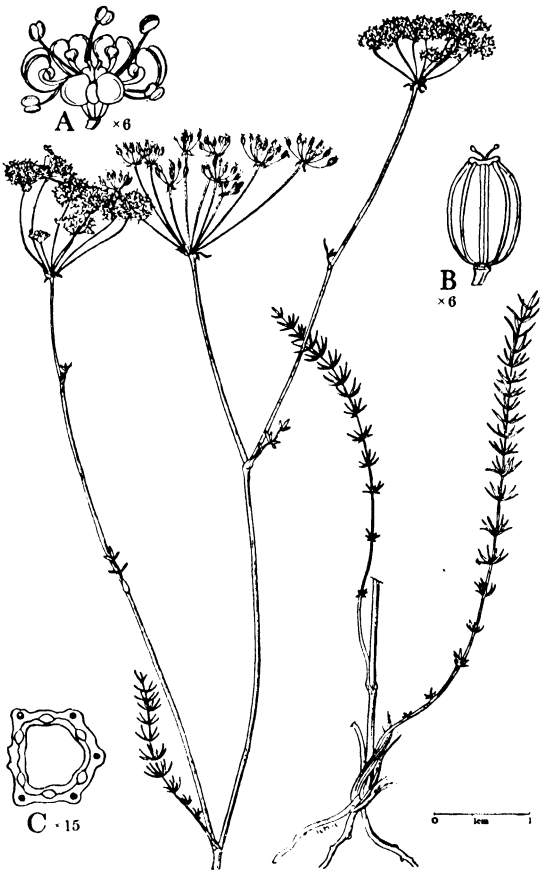
Mid July—late Aug. (Port Meadow, Oxford.)
A. fruit. B. carpel t.s. C. involucre.



TRINIA Hoffm. Slender herbs with bipinnate leaves, segments slender; flowers diœcious, in compound umbels; fruits laterally compressed, commisure narrow, vittæ one under each rib, ribs stout.

741. TRINIA GLAUCA (L.) Dum. The HONEWORT is an erect, glaucous perennial with much-branched, ribbed stems 2-6 in. (5-15 cm.) high, growing from a fusiform root crowned with the fibres of old leaves. It is a rare plant of limestone grassland in S.W. England. Leaves bipinnate; segments linear, acute. Flowers 1·5 mm., diœcious; petals white, acute. Fruit 2·5 × 2·0 × 1·0 mm., broadly ovoid; each carpel with 5 prominent ribs and a vitta under each rib.

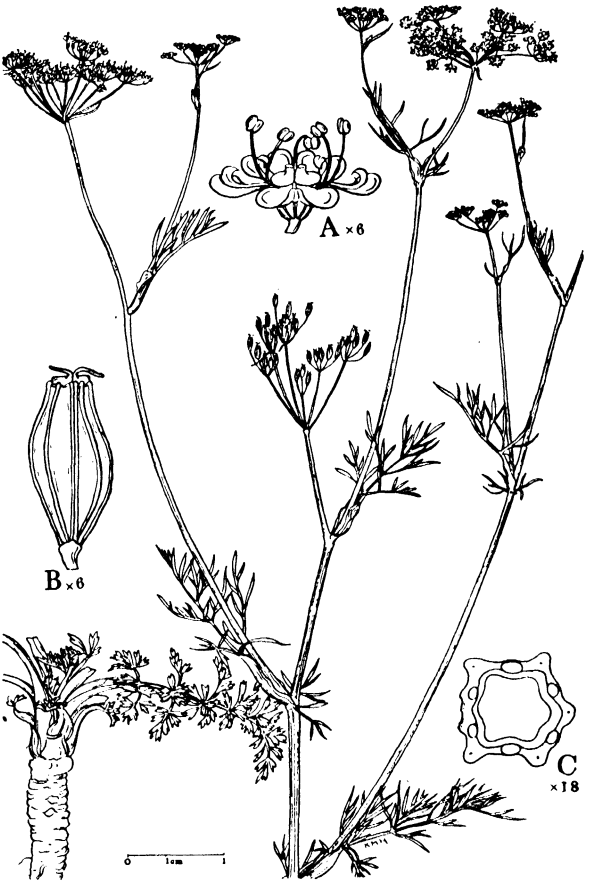
Mid May—late June. (Berry Head, Devon.)
A. flower. B. fruit. C. carpel t.s.



CARUM L. Rather slender annuals or perennials with pinnate, bipinnate or capillate leaves. Flowers in compound umbels; bracts and bracteoles usually several. Fruit ovoid to cylindrical; commisure narrow; calyx teeth minute or wanting; ridges slender; vittæ one in each groove.

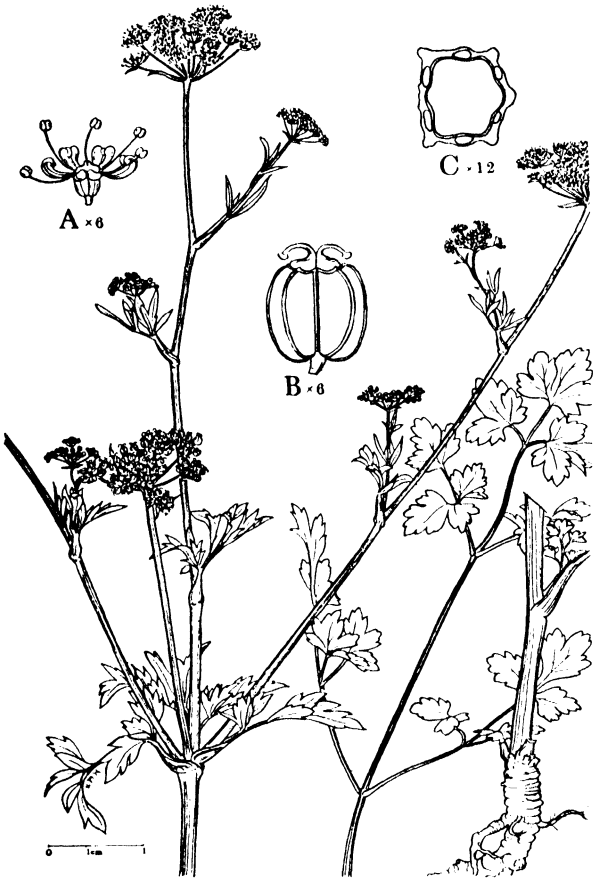
742. CARUM VERTICILLATUM (L.) Koch. The WHORLED CARAWAY is a glabrous perennial with round, slender, smooth stems about 12 in. (30 cm.) high, growing from a thick stock crowned by the old leaf bases. It is found rarely or at times abundantly in damp meadows in W. Britain. Leaves with short, capillate, whorled segments; bracts and bracteoles several, small, linear. Flowers 3 mm. diam.; petals white, bifid with an incurved tip. Fruit 2·5 × 1·5 × 0·8 mm., ellipsoid, with 6 prominent ridges and a wide vitta between each.

Early July—mid Aug. (Llangammarch Wells, Brecon.)
A. flower. B. fruit. C. carpel t.s.



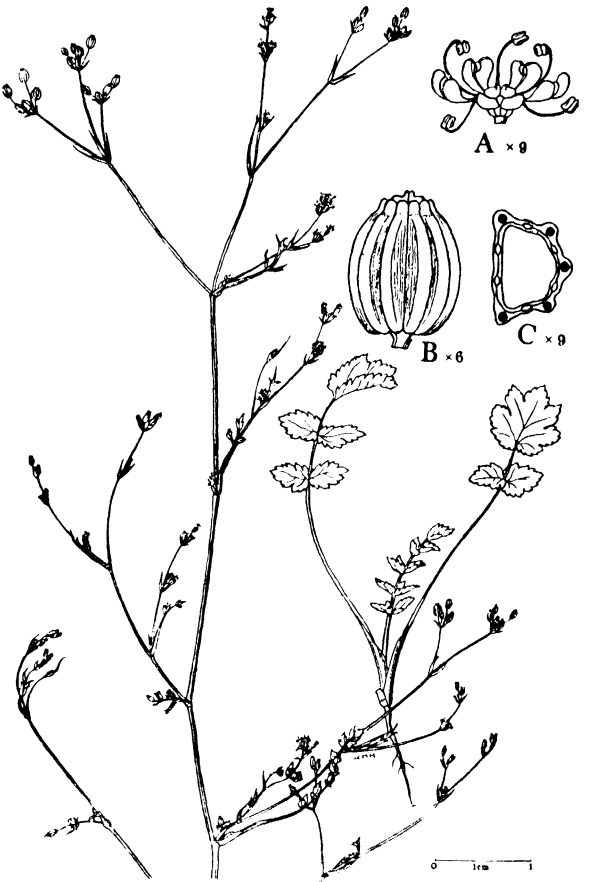
743. CARUM CARVI L. The COMMON CARAWAY is a slender biennial with glabrous, ridged, branched stems 12-24 in. (30-60 cm.) high, growing from a fusiform tap-root. It is sometimes cultivated for flavouring and found naturalized here and there throughout the British Isles. Leaves bipinnate; segments of root leaves cuneiform, of upper leaves linear, all acute; bracts and bracteoles 1 or 0. Flowers 3·5 mm. diam.; calyx teeth 0; petals white, bifid, with an incurved tip. Fruit 3·5 × 2·0 × 2·0 mm., narrowly ovoid; each carpel with 5 slender ridges and a conspicuous vitta between each.

Early June—mid July. (Hort. ex Corpach, Inverness.)
A. flower. B. fruit. C. carpel t.s.



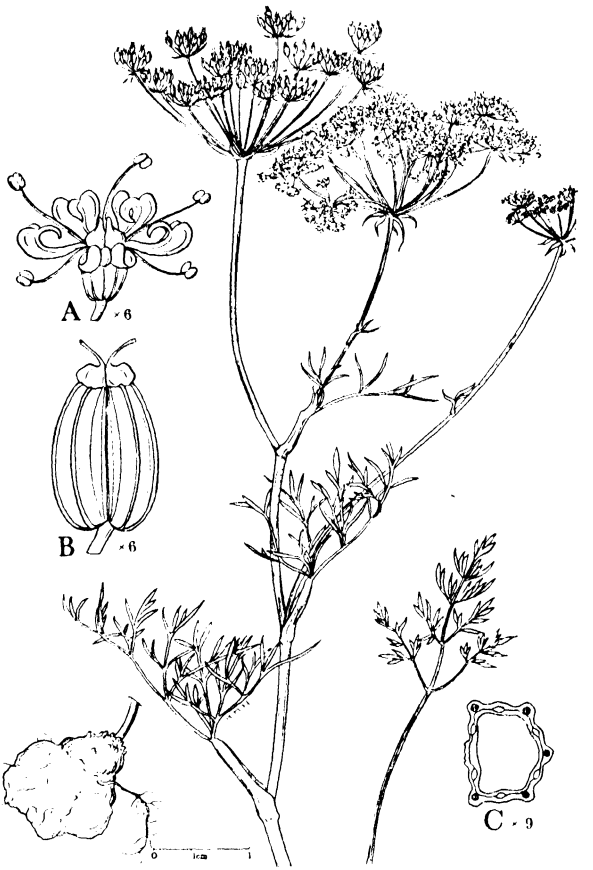
744. CARUM PETROSELINUM (L.) Benth. = P. CRISPUM (Mill.) Nym. The WILD PARSLEY is a stout biennial with ribbed, glabrous, branched stem 12-24 in. (30-60 cm.) high. It is much cultivated and found frequently established in rocky and waste places throughout the British Isles. Leaves bipinnate; segments broadly cuneate, subacute, dentate, bracts several, small. Flowers 2 mm. diam.; calyx teeth 0; petals yellowish, bifid, with an incurved tip. Fruit 2·5 × 2·5 × 1·0 mm., shortly ovoid; each carpel with 5 slender ridges and a conspicuous vitta in each groove.

Mid June—mid Aug. (Breedon-on-the-Hill, Leicestershire.)
A. flower. B. fruit. C. carpel t.s.



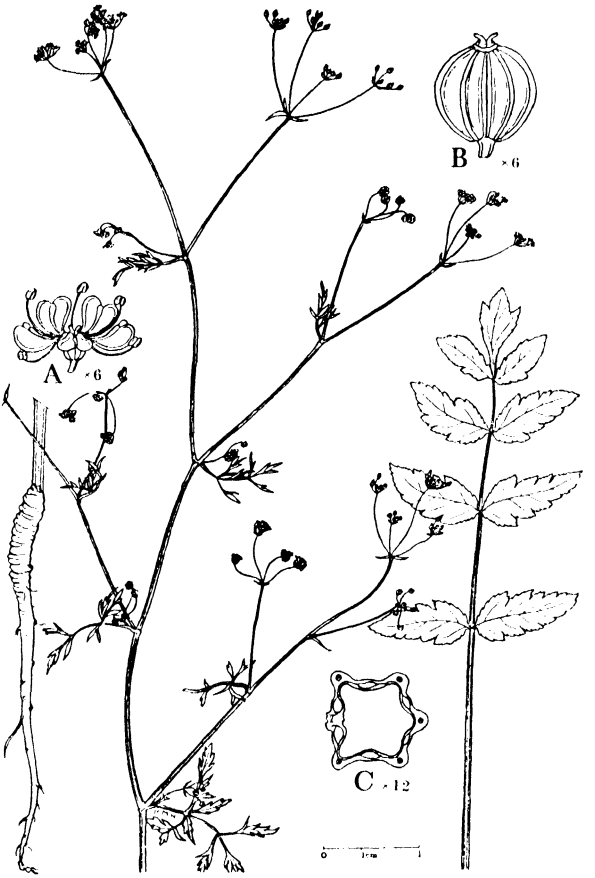
745. CARUM (PETROSELINUM) SEGETUM (L.) Koch. The CORN PARSLEY is a slender biennial with glabrous, striate, branched stems 12-30 in. (30-75 cm.) high. It occurs rather infrequently in hedges and grassy places on basic soils in England and Wales. Leaves pinnate; segments ovate, acute, dentate; umbels irregular; bracts and bracteoles 2-4. Flowers 1 mm. diam.; calyx teeth 0; petals white, bifid, with an incurved tip. Fruit 3·0 × 2·5 × 1·7 mm., ellipsoid; each carpel with 5 rather stout ridges and a vitta in each groove.

Late July—mid Sept. (Halling, Kent.)
A. flower. B. fruit. C. carpel t.s.



746. CARUM (BUNIUM) BULBOCASTANUM (L.) Koch. The PIG NUT is a rather slender perennial with glabrous stems 12-30 in. (30-75 cm.) high, growing from a globose tuber. It is a rare plant of chalky fields and grassland of E. England. Leaves bi- or tripinnate; segments linear, acute, entire; bracts and bracteoles several, linear. Flowers 4·5 mm. diam.; calyx teeth 0; petals white with an incurved tip. Fruit 3·5 × 2·5 × 1·5 mm., ellipsoid; each carpel with 5 slender ridges and 1-2 vittæ in each groove.

Mid June—late July. (Luton, Bedfordshire.)
A. flower. B. fruit. C. carpel t.s.



SISON L. Slender biennials with the lowest leaves pinnate; segments broad. Flowers in compound, terminal umbels; bracts and bracteoles few; calyx teeth none. Fruit laterally compressed; commisure narrow; each carpel sub-globular with 5 ridges and a vitta in each groove.

747. SISON AMOMUM L. The STONE PARSLEY is a slender biennial with much-branched, smooth, erect stems 10-30 in. (25-75 cm.) high, growing from a fusiform root. It is found commonly in hedgerows throughout central and S. England. Segments of lower leaves lanceolate, acutely toothed, of upper leaves, narrower, acute. Flowers 3 mm. diam.; petals white with an incurved point. Fruit 2·5 × 2·0 × 1·0 mm., orbicular, with 5 obvious ridges and a vitta in each groove.

Late July—late Aug. (Sudbury, Suffolk.)
A. flower. B. fruit. C. carpel t.s.

CICUTA L. Stout perennials with bi- or tripinnate leaves; segments long-linear. Flowers in compound umbels; bracts 0, bracteoles present; calyx teeth obvious. Fruit laterally compressed; commisure narrow; each carpel sub-globular with 5 broad, blunt ridges and a vitta in each groove.

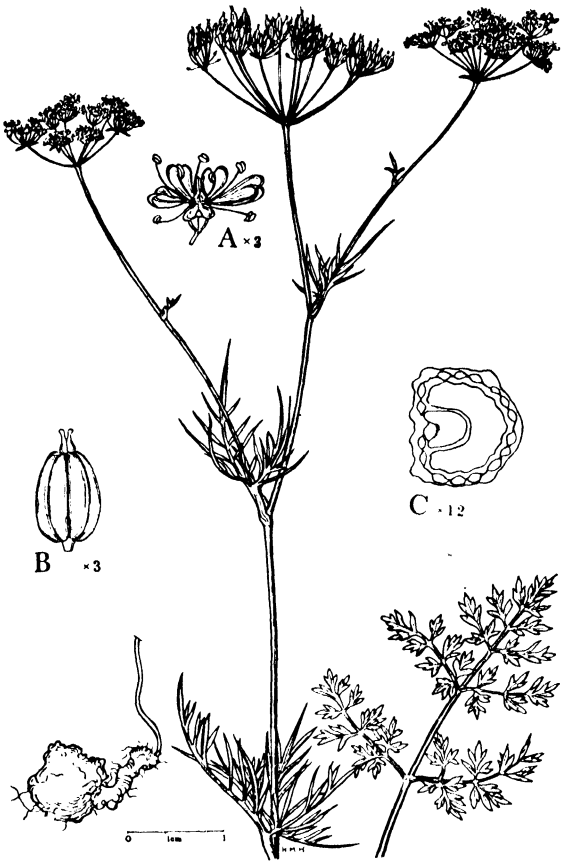
748. CICUTA VIROSA L. The COWBANE is a stout, glabrous, much-branched perennial with smooth, round stems 12-48 in. (30-120 cm.) high, growing from a tuberous stock. It is found in ditches, pool margins and fens here and there throughout the British Isles. Leaves with long, narrow, acute, serrate segments. Flowers 2 mm. diam.; petals white, with an incurved point. Fruit 2·5 × 3·5 × 1·8 mm., orbicular; calyx teeth acute; each carpel with 5 blunt ridges and a vitta in each groove.

Mid July—late Aug. (Sutton Broad, Norfolk.)
A. flower. B. fruit. C. carpel t.s.

FALCARIA Bernh. Slender perennials with biternate leaves; segments long, narrow. Flowers in compound umbels. Bracts and bracteoles usually conspicuous. Fruit oblong; commisure broad; ridges slender; vittæ one between each ridge.

749. FALCARIA VULGARIS Bernh. This FALCARIA is a stout, glabrous perennial with much-branched, smooth stems 10-24 in. (25-60 cm.) high, that is naturalized in a few places in E. England. Leaves biternate; segments long, narrow, sharply and finely serrate; upper leaves digitate or ternate. Flowers 2 mm.; petals white, emarginate. Fruit 3·0 × 1·0 mm., narrowly ovoid; each carpel with five slender ridges, a crown of small, distinct, calyx teeth, and a slender vitta in each groove.

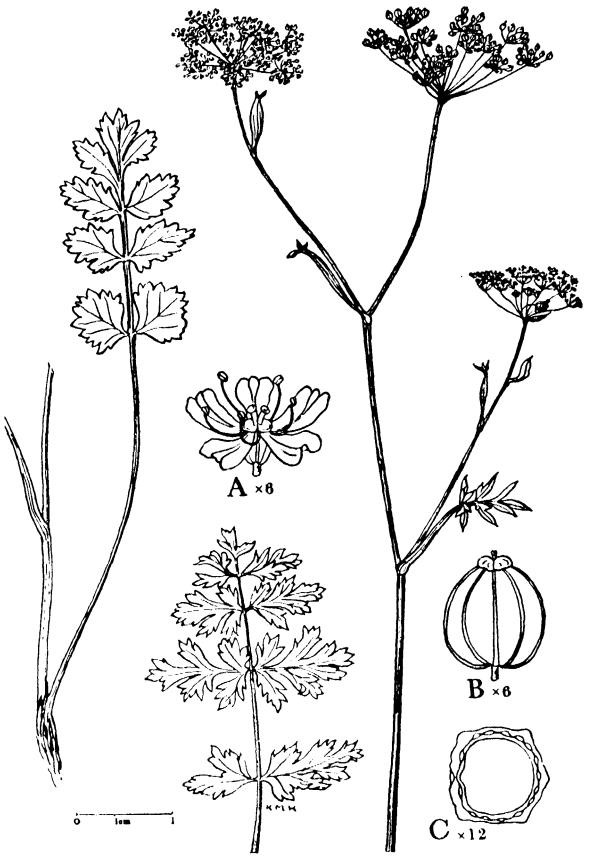
Early—late July. (Sandwich, Kent.)
A. flower. B. carpel t.s.



CONOPODIUM Koch. Rather slender perennials with tripinnate leaves; segments cuneate or linear. Flowers in compound umbels. Fruit laterally compressed; commisure broad; calyx teeth 0; ridges slight; vittæ several in each groove. Albumen furrowed.

750. CONOPODIUM MAJUS (Gouan) Loret. The COMMON EARTH-NUT is a slender plant with erect, glabrous stems 6-9 in. (15-23 cm.) high, growing from an irregular tuber. It is abundant in grassland, woods and waste places throughout the British Isles. Lower leaves tripinnate, segments cuneate; stem leaves with linear segments; bracts absent, bracteoles small. Flowers 5 mm. diam., in many-rayed umbels; petals white with an inflexed point; fruit 3·0 × 4·0 × 1·7 mm., ellipsoid; ridges scarcely visible; vittæ many.

Late May—early July. (Ashbourne, Derbyshire.)
A. flower. B. fruit. C. carpel t.s.

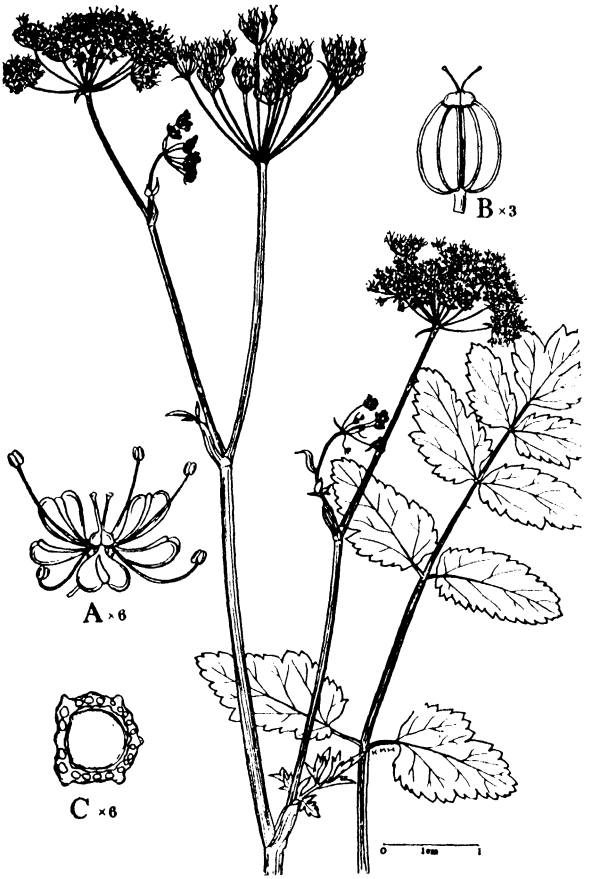


PIMPINELLA L. Rather slender perennials with pinnate or bipinnate leaves. Flowers in compound umbels; bracts and bracteoles 0 or few. Fruit ovoid, laterally compressed; commisure wide; calyx teeth minute or 0; ridges slender; vittæ several.

751. PIMPINELLA SAXIFRAGA L. The BURNET SAXIFRAGE is a slender perennial with glabrous, little-branched stems 12-20 in. (30-50 cm.) high, growing from a slender rootstock. It is abundant in dry, grassy places in most of Britain, though becoming rare in Scotland. Lowest leaves pinnate with suborbicular dentate segments; other lower leaves bipinnate with cuneiform, dentate segments; upper leaves pinnate with linear, entire segments. Flowers 3 mm. diam.; petals white or pink with an incurved point. Fruit 2·0 × 2·5 × 1·2 mm., broadly ovoid; each carpel with 5 slender ridges and many vittæ.

Late June—mid Sept. (Ashbourne, Derbyshire.)

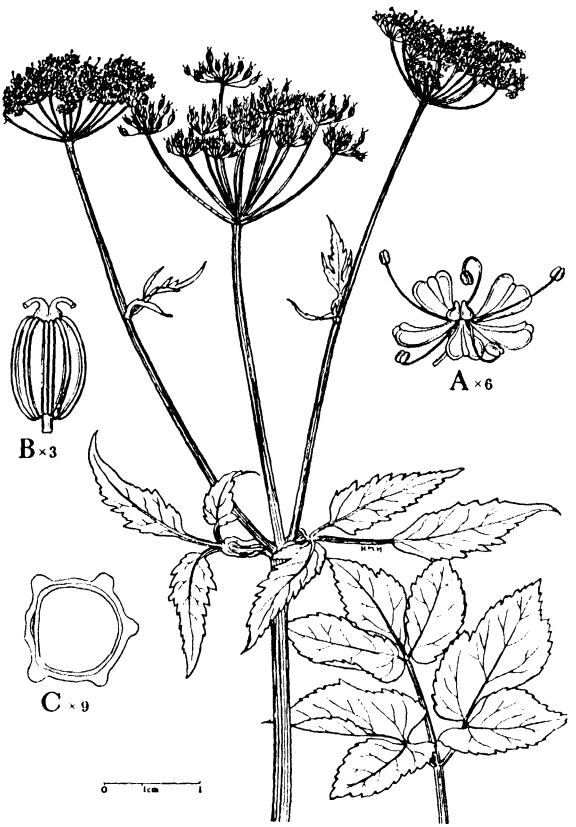
A. flower. B. fruit. C. carpel t.s.



752. PIMPINELLA MAJOR (L.) Huds. The GREATER BURNET SAXIFRAGE is a rather stout perennial with a glabrous, ridged, little-branched stem 12-24 in. (30-60 cm.) high, growing from a rather stout rootstock. It is often found in dry, grassy places on basic soils in most of the British Isles though rare in the north. Lower leaves all pinnate with ovate, lanceolate, dentate segments; stem leaves ternate, segments broad, acute, dentate. Flowers 3 mm. diam.; petals white or pink with an incurved point. Fruit 3·5 × 4·0 × 2·0 mm., broadly ovoid; each carpel with 5 slender ridges and numerous vittæ.

Late June—late Aug. (Empingham, Rutland.)

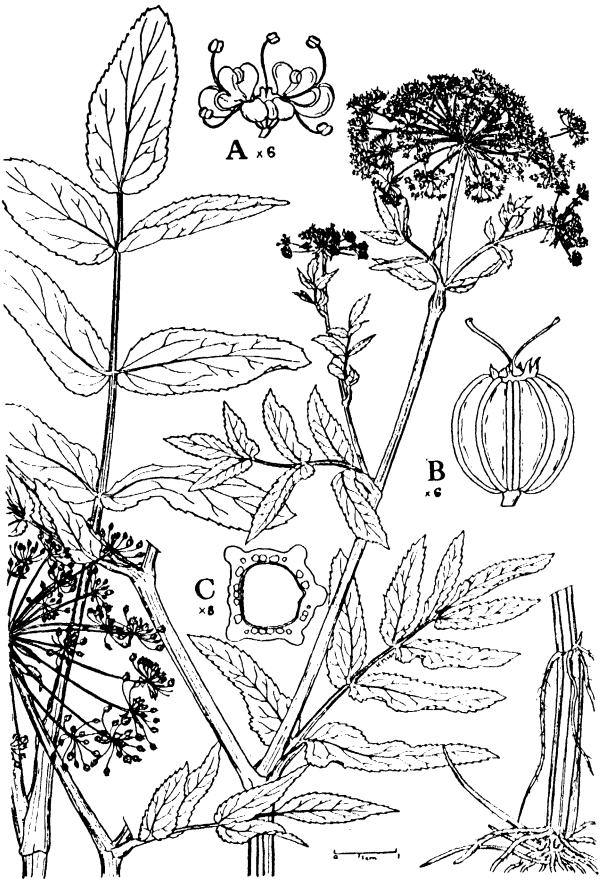
A. flower. B. fruit. C. carpel t.s.



ÆGOPODIUM L. Rather slender perennials with biternate leaves; segments large. Flowers in compound umbels; bracts and bracteoles 0. Fruit ovoid to cylindrical, not laterally compressed; commisure narrow; calyx teeth 0; ridges slender, vittæ absent.

753. ÆGOPODIUM PODAGRARIA L. The GOUTWEED or GROUND ELDER is a stout perennial with glabrous, erect, striate stems 12-20 in. (30-50 cm.) high, growing from a slender rhizome. It is often abundant in waste, shady places and woods throughout the British Isles. Leaves biternate; leaflets lanceolate, acute, toothed. Flowers 3 mm. diam.; petals white, subequal, with a short, incurved tip. Fruit 4·0 × 3·5 × 1·5 mm., narrowly ovoid; each carpel with 5 slender ridges.

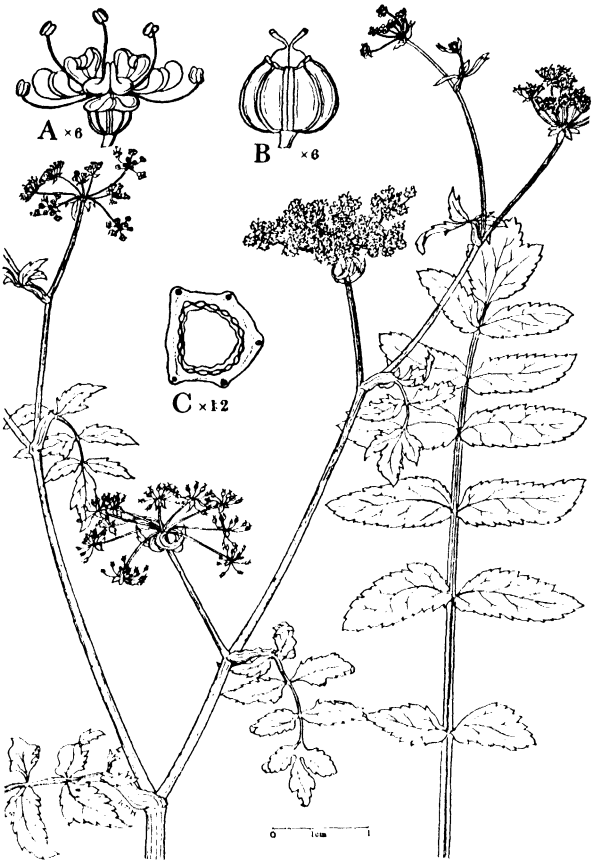
Mid June—mid Aug. (Ashbourne, Derbyshire.)
A. flower. B. fruit. C. carpel t.s.



SIUM L. Rather slender to stout perennials with pinnate leaves. Flowers in compound umbels; bracts variable. Fruit orbicular or somewhat laterally compressed; commisure narrow; calyx teeth small, acute; ridges prominent; vittæ many.

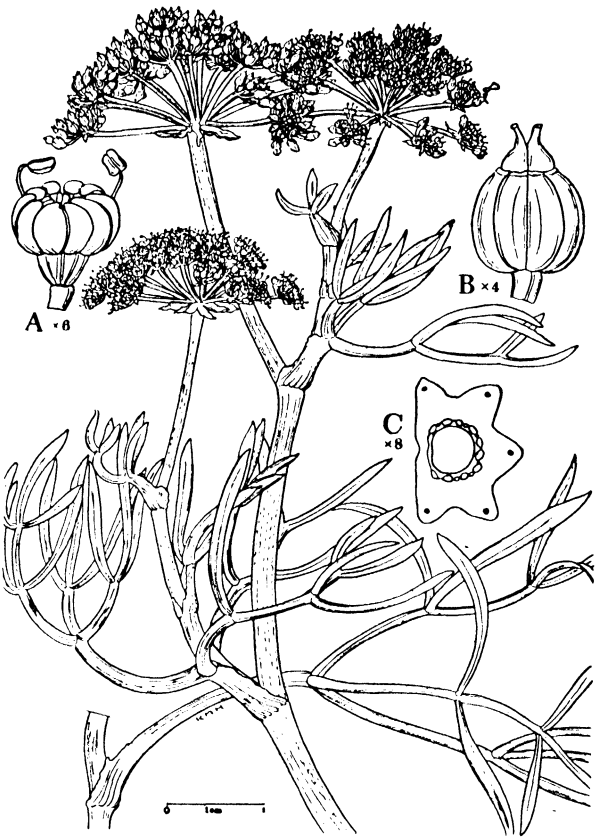
754. SIUM LATIFOLIUM L. The GREATER WATER-PARSNIP is a stout perennial with much-branched, erect, ribbed stems 12-48 in. (30-120 cm.) high. It is found in fens and wet places here and there in the lowlands of Britain northwards to S. Scotland. Lower leaves pinnate with 9-15 finely and regularly serrate, lanceolate lobes; bracts and bracteoles variable. Flowers 4 mm.; petals white with acute, incurved point. Fruit 3·0 × 3·0 × 1·5 mm., not compressed; each carpel with 5 obvious, acute ridges and many deep-seated vittæ.

Late July—late Aug. (Misson, Nottinghamshire.)
A. flower. B. fruit. C. carpel t.s.



755. SIUM (BERULA) ERECTUM Huds. The LESSER WATER-PARSNIP is a slender perennial with branched, erect or decumbent stems 9-30 in. (23-75 cm.) high. It is frequent in basic watery places throughout lowland Britain. Lower leaves pinnate with 11-20 lanceolate, serrate lobes; upper leaves pinnate with deep, acute lobes; bracteoles and bracts several, lanceolate. Flowers 3·0-3·5 mm. diam., petals white with acute, incurved point; fruit 1·7 × 2·0 × 1·0 mm., not compressed; each carpel with 5 obvious, acute ridges and many deep-seated, small vittæ.

Mid July—mid Sept. (Ashbourne, Derbyshire.)
A. flower. B. fruit. C carpel t.s.



CRITHMUM L. Stout, fleshy perennials with triternate leaves with thick, linear segments. Flowers in compound umbels; bracts and bracteoles several. Fruit ovoid, terete; commisure wide; calyx teeth 0; ridges acute; vittæ several in each groove.

756. CRITHMUM MARITIMUM L. The ROCK SAMPHIRE is a succulent perennial with a stout, branched stem 6-12 in. (15-30 cm.) high, growing from a thick rootstock. It is found on rocks and cliffs by the sea southwards from S.W. Scotland, Suffolk and in Ireland. Flowers 2·5 mm.; petals greenish-yellow, bifid, with an incurved point. Fruit 4·0 × 4·0 × 4·5 mm., sub-globose; each carpel with 5 stout ridges, a corky wall and several vittæ in each groove.

Mid July—mid Sept. (Gt. Orme, Caernarvonshire.)
A. flower. B. fruit. C. carpel t.s.

SESELI L. Stout perennials with bi- or tripinnate leaves. Flowers in compound umbels. Fruit ovoid; commisure broad; calyx teeth obvious; ridges prominent; vittæ one in each groove.

757. SESELI LIBANOTIS (L.) Koch. This MOUNTAIN MEADOW SAXIFRAGE is a stout perennial with a somewhat hairy, branched, ribbed stem growing from a stout rootstock crowned with a ring of fibres of old leaf bases. It occurs rarely in rough, chalky places in S.E. England. Leaves hairy, bipinnate, segments acute, cuneiform; bracts and bracteoles several, linear, pubescent. Flowers 2·5 mm. diam.; petals white, bifid with an incurved point. Fruit 3·2 × 4·0 × 3·0 mm., not compressed; each carpel with 5 broad, hairy ridges, a crown of sharp calyx teeth and a single vitta in each groove.

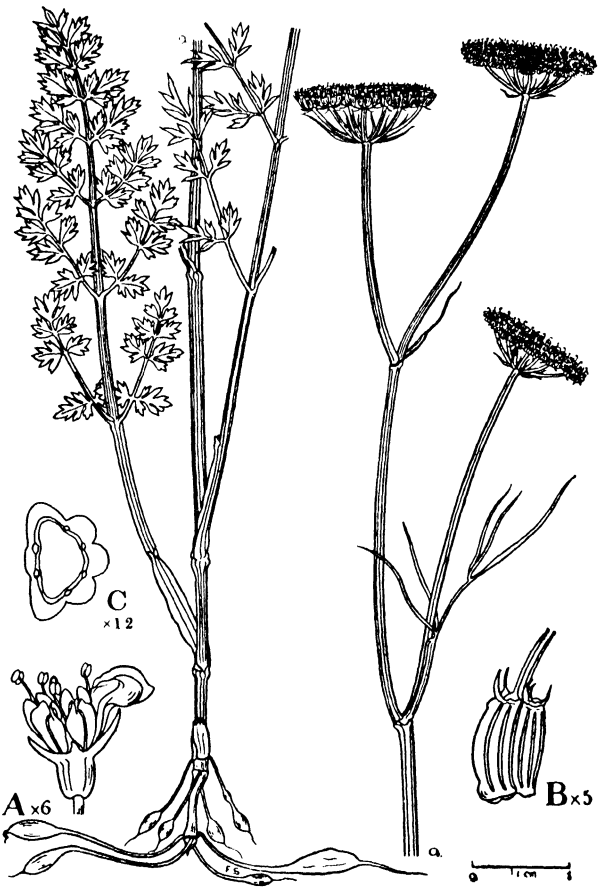
Mid July—early Sept. (Cherry Hinton, Cambridgeshire.)
A. flower. B. fruit. C. carpel t.s.

ŒNANTHE L. Rather slender to stout perennials with pinnate, bi- or tripinnate leaves. Flowers in compound umbels. Fruit ovoid to elliptical, dorsally compressed; commisure broad; calyx teeth obvious; ridges prominent; vittæ one in each groove.

758. ŒNANTHE FISTULOSA L. The COMMON WATER DROPWORT is a rather slender perennial with little-branched, smooth, wide, hollow stems 9-18 in. (23-45 cm.) high, growing from a creeping, tuberous rootstock. It is found, uncommonly, in marshy places and pond margins northwards to central Scotland. Leaves pinnate, with 5-9 hollow, linear segments; bracts 0-1, bracteoles small. Flowers 3 mm. diam.; petals white, unequal in the outer flowers, lobed, with a short, incurved point. Fruit 4·5 × 3·5 × 3·0 mm., contiguous in the umbels, almost cylindrical, with a crown of unequal calyx teeth; each carpel with 3 blunt ridges, 2 keeled edges and a deep-seated vitta in each groove.

Mid July—early Sept. (Twyford, Derbyshire.)

A. flower. B. fruit. C. carpel t.s.



759. ŒNANTHE PIMPINELLOIDES L. This BURNET WATER DROPWORT is a stout, green perennial with little-branched, erect stems 12-20 in. (30-50 cm.) high, growing from a root of fibres swollen at the far end into small, oblong knobs. Lower leaves bipinnate, segments narrow, elliptical, blunt; upper leaves pinnate with long, linear segments. Flowers 2·5 mm., petals white, of outer flowers unequal, lobed, with an incurved point. Fruit 2·5 × 2·0 × 2·0 mm., compact in the umbels, almost cylindrical, with a crown of unequal calyx teeth; each carpel with 3 stout, blunt ridges and 2 keeled edges, an enlarged corky base and a deep-seated vitta in each groove.

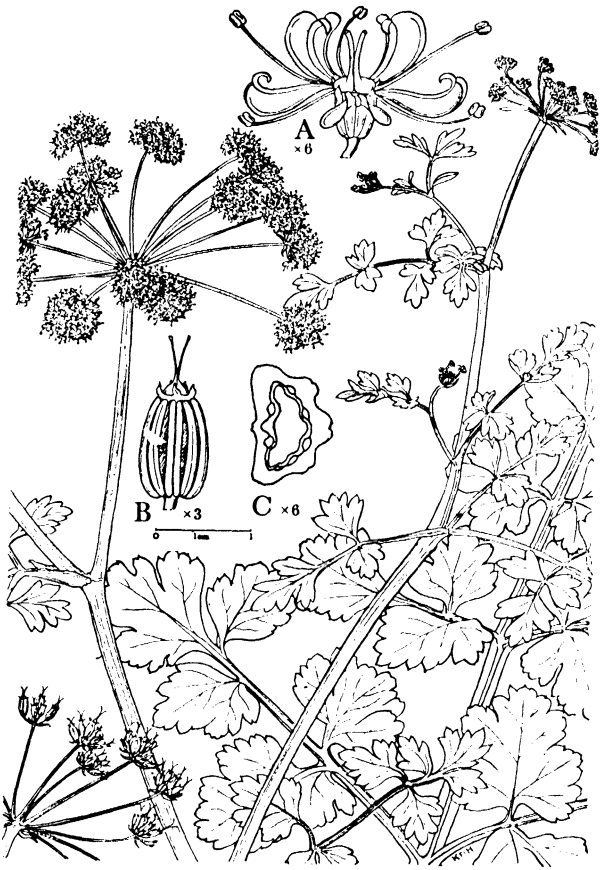
Mid July—mid Aug. (Lytchett Minster, Dorset.)
A. flower. B. fruit. C. carpel t.s.

760. ŒNANTHE SILAIFOLIA Bieb. This NARROW-LEAVED WATER DROPWORT is a stout green perennial with branched, striate, erect stems 12-20 in. (30-50 cm.) high, rising from a base of sub-clavate tubers. It is found infrequently in wet pastures in the southern half of England. Radical leaves bipinnate, upper pinnate, segments all linear, acute; bracts usually absent. Flowers 2·5 mm.; petals white, unequal, deeply lobed with an incurved point. Fruit 2·0×2·5×3·0 mm., loose in the umbels, which are open in fruit, cylindrical and rounded on top, with a crown of unequal calyx teeth; each carpel with 3 stout, blunt ridges, 2 keeled edges, a corky base and a deep-seated vitta in each groove.

Mid July—mid Aug. (Chertsey Meads, Surrey.)
A. flower. B. fruit. C. carpel t.s.

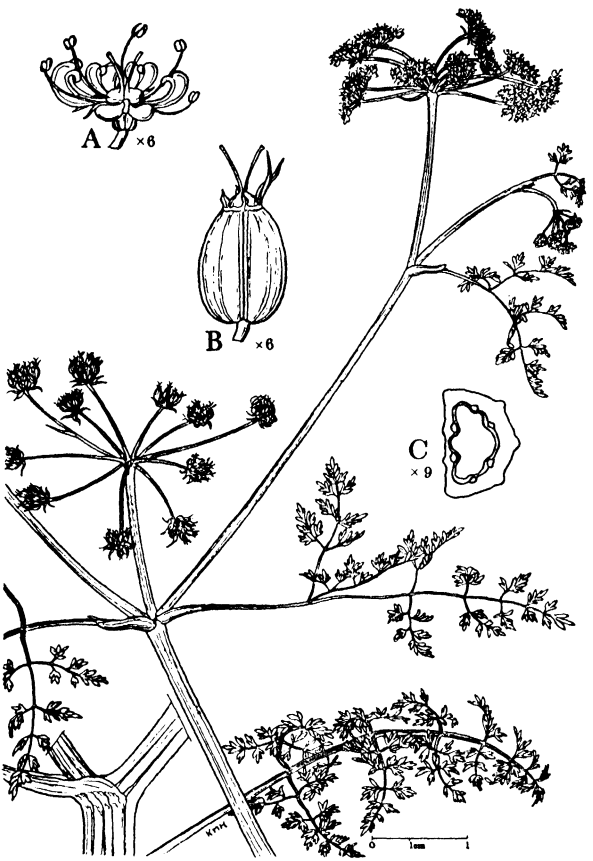
761. ŒNANTHE LACHENALII Gmel. This PARSLEY WATER DROPWORT is a stout, green perennial with a branched, glabrous, striate stem 12-20 in. (30-50 cm.) high, rising from a root of elliptical tubers. It is frequent in marshy places. Radical leaves bipinnate, segments narrow, elliptical, blunt; upper pinnate with long, linear segments; bracts usually present. Flowers 2·5 mm. diam.; petals white, subequal, deeply lobed with an incurved point. Fruit 3 × 3 × 2 mm., loose in umbels and open in fruit, ovoid, rounded and contracted at top, with a crown of calyx teeth; each carpel with 3 stout, blunt ridges, 2 keeled edges and a deep-seated vitta in each groove; base not corky.

Mid July—late Aug. (Arne Heath, Dorset.)
A. flower. B. fruit. C. carpel t.s.



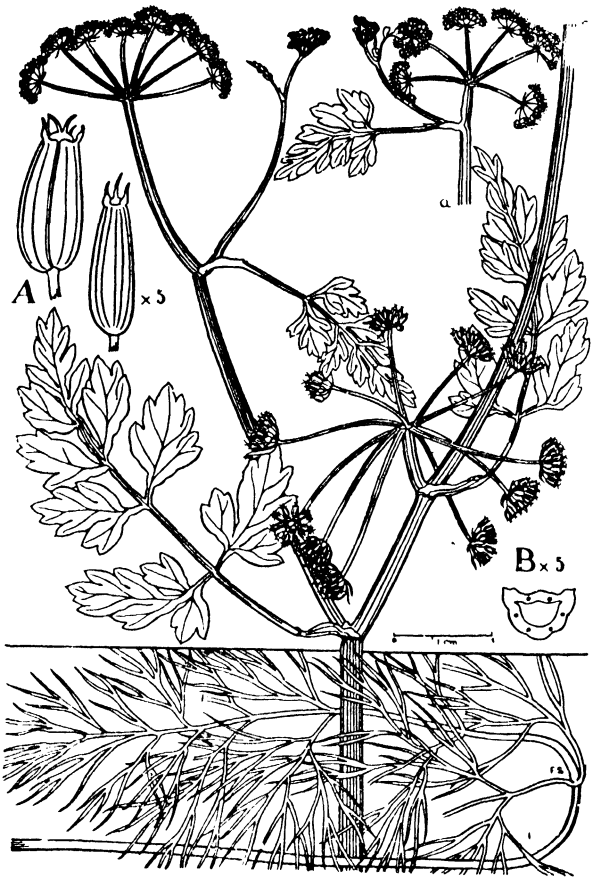
762. ŒNANTHE CROCATA L. The HEMLOCK WATER DROPWORT is a stout, green perennial with a much-branched, erect, glabrous, ribbed stem 12-36 in. (30-90 cm.) high, growing from a thick rootstock. It is found in ditches and by streams throughout the British Isles except the extreme north and usually in non-calcareous districts. Leaves bi- or tripinnate, segments broad with rather obtuse teeth; bracts and bracteoles small, linear. Flowers 4 mm. diam.; petals white, lobed with a short incurved point. Fruit 3·0 × 3·0 × 1·5 mm., nearly cylindrical; each carpel with 3 blunt ridges and 2 keeled edges, a crown of short calyx teeth and a deep-seated vitta in each groove.

Mid June—mid Sept. (Ambleside, Westmorland.)
A. flower. B. fruit. C. carpel t.s.



763. ŒNANTHE AQUATICA (L.) Poir. The FINE-LEAVED WATER DROPWORT is a stout, green perennial with much-branched stem 24-40 in. (60-100 cm.) high, rising erect from a submerged, creeping stock. It is found in ponds and ditches here and there in England and S. Scotland. Leaves tripinnate or ternate, segments fine, linear, acute. Flowers 3·5 mm. diam.; petals white, lobed, with a short, incurved point. Fruit 3 × 3 × 2 mm., narrowly ovoid, with a crown of unequal calyx teeth, each carpel with 3 blunt ridges, 2 keeled edges and a deep-seated vitta in each groove.

Mid July—mid Aug. (Crowfield, Suffolk.)
A. flower. B. fruit. C. carpel t.s.



764. ŒNANTHE FLUVIATILIS (Bab.) Coleman. The RIVER WATER DROPWORT is a glabrous perennial with very stout, branched, striate stems 12-48 in. (30-120 cm.) high, rising out of the water from a creeping rootstock, rooted in the river-bed. It grows in running hard waters in S. and central England. Submerged leaves tripinnate or ternate, flaccid, segments narrow, subulate, upper emergent leaves small, bipinnate. Flowers 3 mm. diam.; petals white, lobed, with a short, incurved point. Fruit 3·5 × 2·0 × 1·5 mm., narrowly ovoid, with a crown of unequal calyx teeth; each carpel with 3 blunt ridges, 2 keeled edges and a vitta in each groove.

Mid July—mid Aug. (R. Granta, Shelford, Cambridge.)
A. fruit (two views). B. carpel t.s.

ÆTHUSA L. Annuals with bi- or tripinnate leaves, segments narrow, cuneate. Flowers in compound umbels. Fruit dorsally compressed, almost globular; commisure wide; calyx teeth 0; ridges stout; vittæ one in each groove.

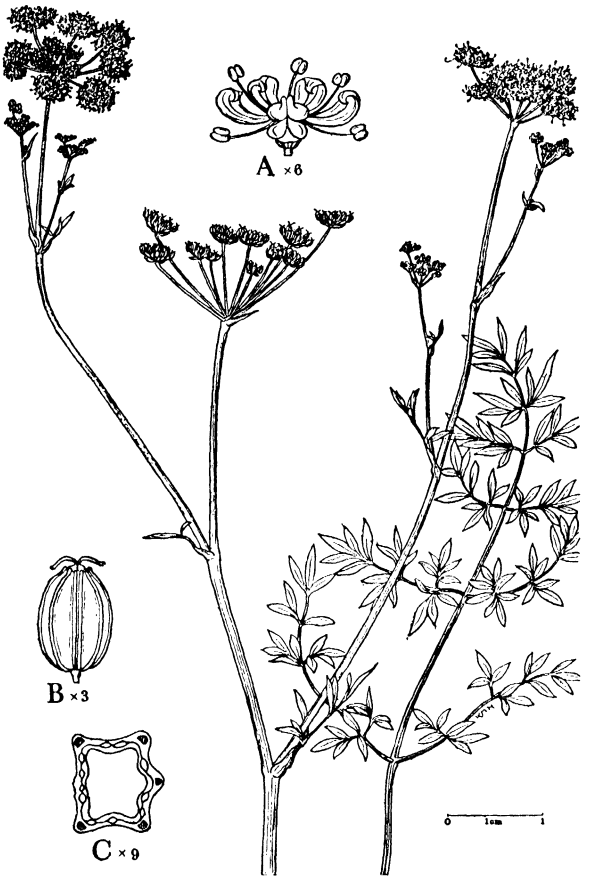
765. ÆTHUSA CYNAPIUM L. The FOOL'S PARSLEY is a much-branched, glabrous, erect annual 4-12 in. (10-30 cm.) high, which is abundant in waste places throughout the British Isles. Leaves triternate, segments cuneate, narrow; bracts absent, bracteoles long, deflexed. Flowers 3 mm. diam.; calyx teeth 0; petals white, bifid, with a narrow, curved, inflexed point. Fruit 3·5 × 4·0 × 3·5 mm., orbicular; each carpel with 5 broad, triangular ridges and a vitta in each groove.

Mid July—mid Aug. (Ashbourne, Derbyshire.)
A. flower. B. fruit. C. carpel t.s.

FŒNICULUM Mill. Stout perennials with tripinnate leaves, segments filiform to linear. Flowers in compound umbels. Fruit oblong, little compressed; commisure broad; calyx teeth 0; ridges stout; vittæ one in each groove.

766. FŒNICULUM VULGARE Mill. The FENNEL is a stout, strongly-scented perennial with much-branched, smooth, green, erect stems 12-30 in. (30-75 cm.) high, growing from a thick rootstock. It is found on sea cliffs and also as a relic of cultivation on waste ground elsewhere in central, S. England and Wales. Leaves tripinnate; segments of radical leaves filiform; of upper leaves linear; bracts and bracteoles absent. Flowers 1·5-2·0 mm. diam.; petals yellow, entire, with an obtuse, incurved point. Fruit 3·5 × 2·5 × 2·5 mm., elliptical; calyx teeth 0; each carpel with five thick, blunt ridges and a vitta in each groove. Mid July—late Sept. (Deganwy, Caernarvonshire.)

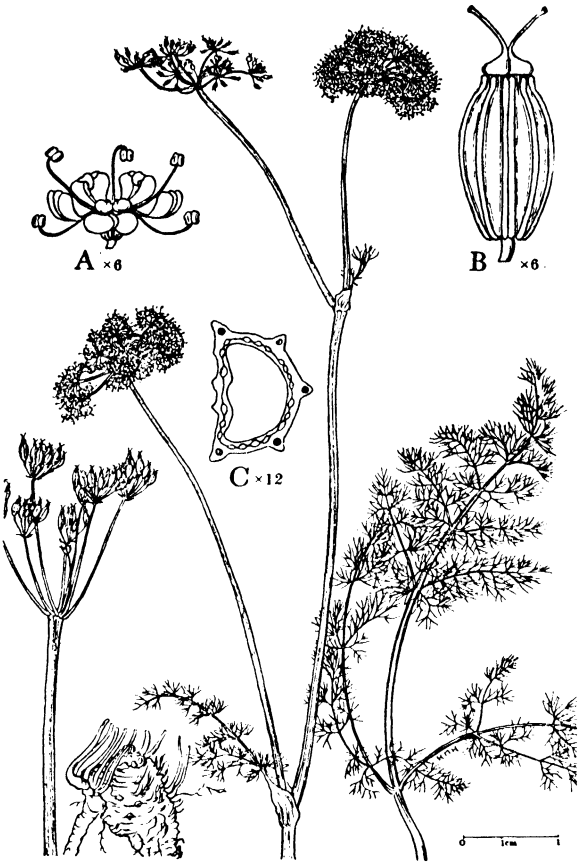
A. flower. B. fruit. C. carpel t.s.



SILAUM Mill. Rather slender to stout perennials with tripinnate leaves, segments cuneate. Flowers in compound umbels; bracts and bracteoles present; calyx teeth small. Fruit ovoid; commisure broad; ridges slender; vittæ several, irregular.

767. SILAUM SILAUS (L.) Schinz and Thellung. The PEPPER SAXIFRAGE is a rather stout perennial with somewhat branched, glabrous, striate stems 12-20 in. (30-50 cm.) high, growing from a stout, cylindrical tap root. It is found in pastures and hedgerows rather infrequently northwards to the Forth. Leaves 1-3 times pinnate, segments linear-lanceolate, acute, entire. Flowers 3 mm. diam.; petals pale yellow, entire, acute, incurved. Fruit 4·5 × 3·0 × 3·0 mm., each carpel with 5 slender ridges and many scattered vittæ.

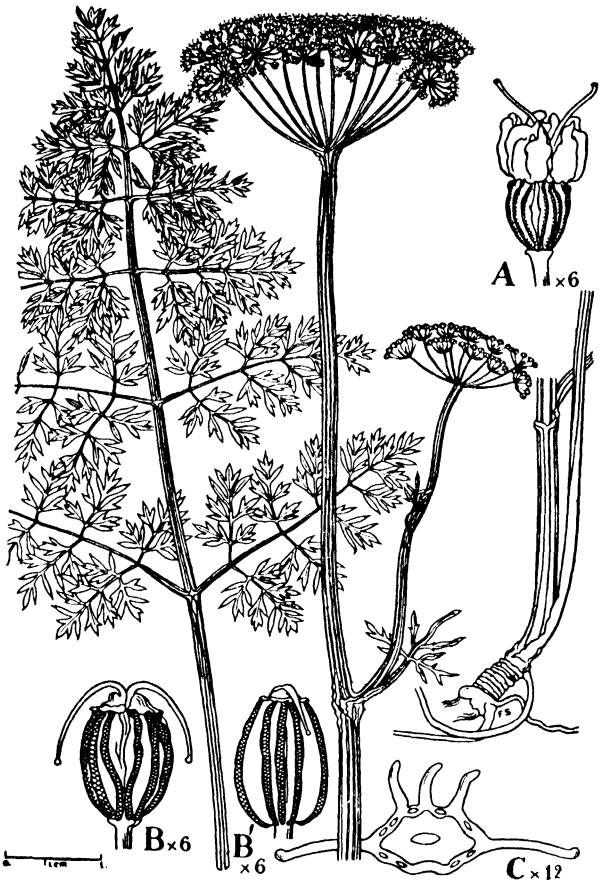
Late June—late Aug. (Stanton, Staffordshire.)
A. flower. B. fruit. C. carpel t.s.



MEUM Mill. Rather stout perennials with tripinnate leaves, segments filiform. Flowers in compound umbels; bracts and bracteoles absent; calyx teeth 0. Fruit ellipsoid; commisure broad; ridges stout, acute; vittæ several in each groove.

768. MEUM ATHAMANTICUM Jacq. The SPIGNEL or BALDMONEY is a stout, aromatic perennial with little-branched, erect, glabrous, striate stems 12-20 in. (30-50 cm.) high, growing from a thick rootstock crowned with fibrous remains of old petioles. It is found uncommonly in pastures and on banks in the mountainous parts of Britain. Leaves with capillary segments, numerous, in a crowded basal rosette. Flowers 2 mm. diam.; petals white or pink, entire, acute or with an incurved tip. Fruit 4 × 2 × 2 mm., ellipsoid; each carpel with 5 acute ribs and several vittæ between each ridge.

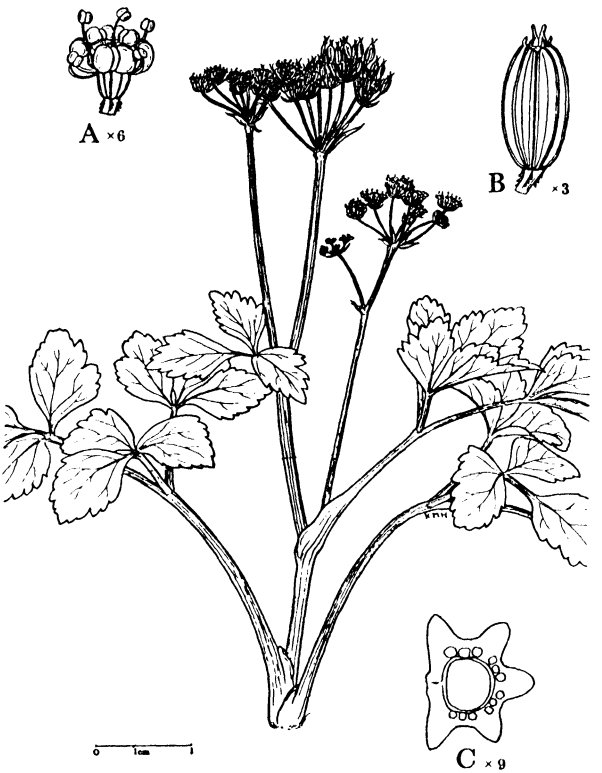
Early June—mid July. (Dolgelley, Merioneth.)
A. flower. B. fruit. C. carpel t.s.



SELINUM L. Stout perennials with tripinnate leaves. Flowers in compound umbels. Fruit dorsally compressed; commisure broad; calyx teeth 0; each carpel with 5 wings and a vitta in each groove.

769. SELINUM CARVIFOLIA (L.) L. This CARAWAY-LEAVED WATER PARSLEY is a glabrous perennial with an angular, furrowed, erect stem 12-30 in. (30-75 cm.) high, growing from a thick rootstock. It occurs rarely in a few wet places in E. England. Leaves tripinnate, segments narrow, mucronate; bracts absent, bracteoles many, linear. Flowers 3 mm.; petals white with an inflexed point. Fruit 2·5 × 2·0 × 3·0 mm., ovoid with 3 prominent dorsal wings and two longer marginal ones.

Mid July—mid Sept. (Chippenham Fen, Cambridgeshire.)
A. flower. B., B′. fruit (two views). C. carpel t.s.



LIGUSTICUM L. Small perennials with biternate leaves. Flowers in compound umbels; bracts and bracteoles several. Calyx teeth small or 0. Fruit ellipsoid; commisure broad; ridges stout, acute; vittæ several in each groove.

770. LIGUSTICUM SCOTICUM L. The SCOTTISH LOVAGE is a stout perennial with little-branched, erect, glabrous, ribbed stems 6-20 in. (15-50 cm.) high, growing from a stout rootstock. It is found rarely on the rocky coasts of N. Britain and Ireland. Leaves biternate, shining, segments large, ovate, toothed. Flowers 2 mm. diam.; calyx teeth small; petals greenish white, entire, incurved. Fruit 5 × 3 × 3 mm., ellipsoid; each carpel with 5 stout, acute ridges and several vittæ between each ridge.

Early—late July. (John o' Groat's, Caithness.)
A. flower. B. fruit. C. carpel t.s.

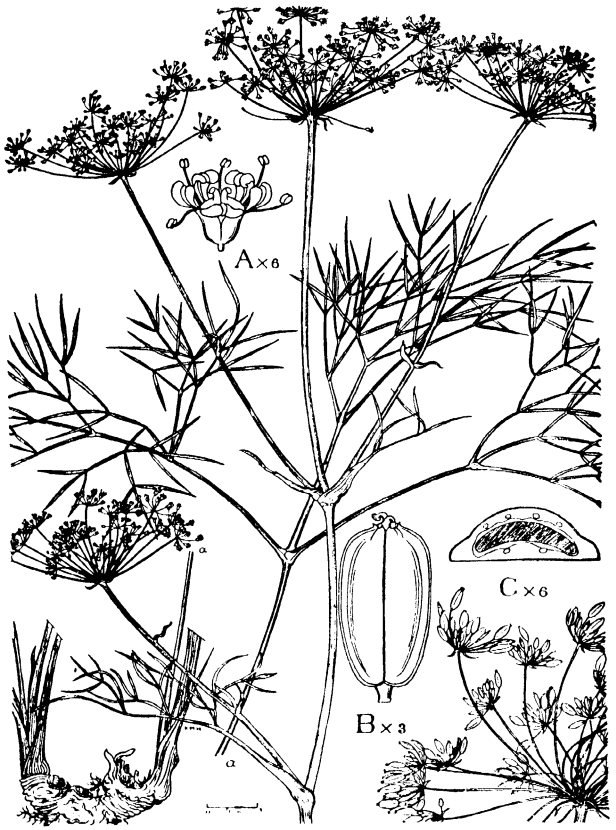
ANGELICA L. Stout biennial or perennial herbs with triternate leaves, segments broad. Flowers in compound umbels. Fruit dorsally compressed; commisure broad; calyx teeth small or 0; each carpel flattened, with 2 wide, lateral wings and 3 smaller, dorsal ridges and a vitta in each groove.

771. ANGELICA SYLVESTRIS L. The WILD ANGELICA is an erect, glabrous perennial with erect, branched, striate, partly pubescent stems 12-48 in. (30-120 cm.) high, growing from a thick rootstock. It is very common in marshes and damp woods throughout the British Isles. Leaves tripinnate; leaflets broadly lanceolate, subacute, serrate; bracts 0; bracteoles few, setaceous. Flower 3 mm. diam.; petals white or pink with a small, inflexed point. Fruit 9 × 7 × 4 mm., ellipsoid, dorsal ridges very close, lateral wings wide.

Late July—early Oct. (Ashbourne, Derbyshire.)
A. flower. B. fruit. C. carpel t.s.

772. ANGELICA ARCHANGELICA L. The GARDEN ANGELICA is an erect, scented, glabrous perennial with stout, much-branched, striate stem 12-40 in. (30-100 cm.) high, which is naturalized here and there in Britain, mostly on river banks. Leaves tripinnate, segments lanceolate, acute, sessile, some decurrent; bracts 0, bracteoles few, setaceous. Flowers 3·5 mm.; petals green with a small, inflexed point. Fruit 4·5 × 3·0 × 2·7 mm., ellipsoid, with 3 thick dorsal ridges and 2 corky marginal ones; calyx teeth small.

Late June—late July. (Woodlesford, Yorkshire.)
A. flower. B. fruit C. carpel t.s.

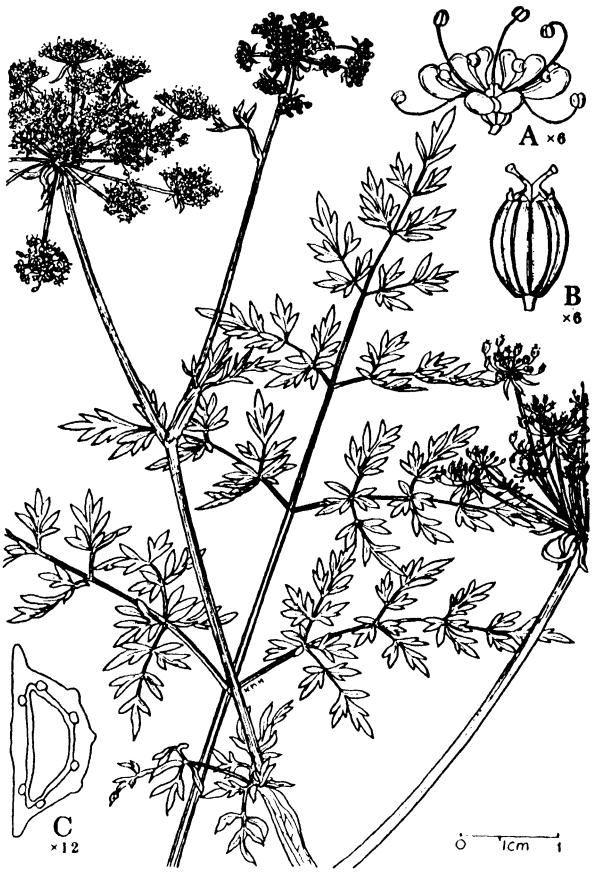


PEUCEDANUM L. Stout biennials or perennials with bi- or tripinnate or ternate leaves. Flowers in compound umbels; bracts and bracteoles several; calyx teeth small. Fruit dorsally compressed, flattened; commisure broad; ridges prominent or slender; vittæ slender, one in each groove.

773. PEUCEDANUM OFFICINALE L. The HOG'S FENNEL or SULPHUR WEED is a much-branched, glabrous perennial with erect, green, smooth stem 24-40 in. (60-100 cm.) high, growing from a stout, woody rootstock crowned by the fibres of old leaves. It is found only in a few places near the sea in E. Kent and Essex. Leaves 3-5 times ternate, segments linear or subulate; bracts few, bracteoles narrow. Flowers 4 mm. diam.; calyx teeth evident, petals yellow with a short, inflexed point. Fruit 2·5 × 2·0 × 2·0 mm., broadly oval; each carpel with a narrow lateral wing, 3 very slight dorsal ridges and a vitta in each groove.

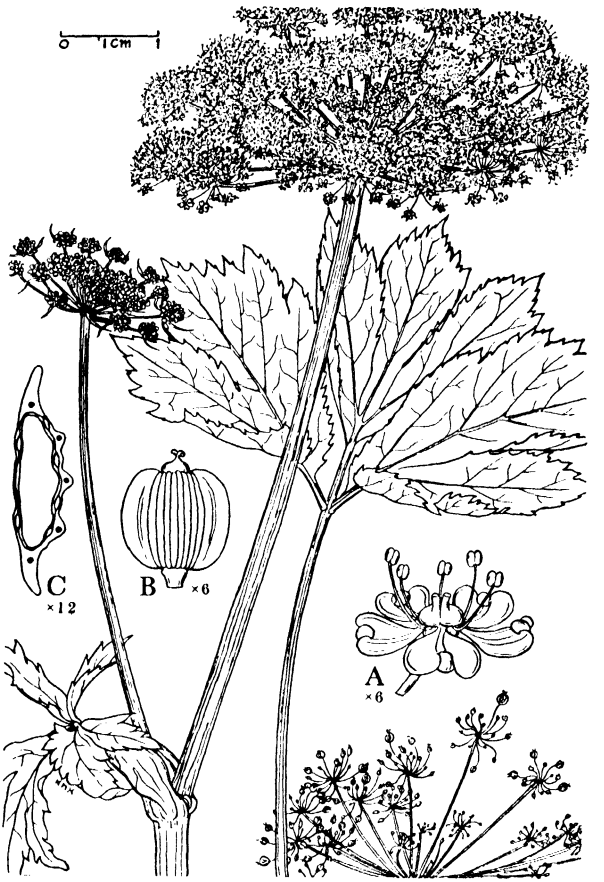
Early July—late Aug. (Whitstable, Kent.)

A. flower. B. fruit. C. carpel t.s.



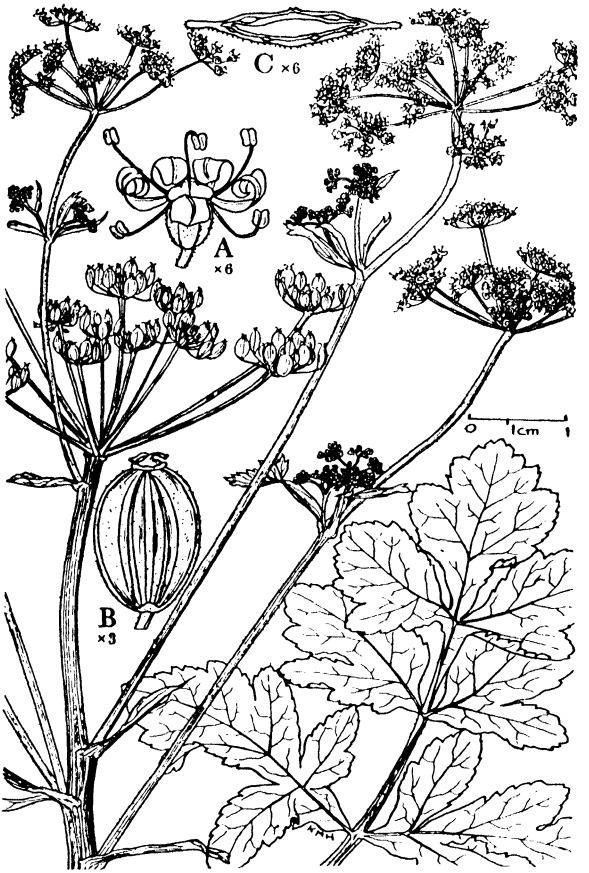
774. PEUCEDANUM PALUSTRE (L.) Mœnch. The MILK PARSLEY is a glabrous perennial with erect, green, ridged, little-branched stems 18-48 in. (45-120 cm.) high, growing from a tap root. It is found only in fens and marshes, chiefly in S. and E. England. Leaves tripinnate, segments narrow, cuneate, finely serrate; bracts many, lanceolate. Flowers 3·5 mm.; calyx teeth evident; petals white with a short, inturned point. Fruit 2·5 × 2·0 × 2·0 mm.; each carpel with a narrow lateral wing, 3 dorsal ridges and a vitta in each groove.

Mid July—mid Sept. (Sutton Broad, Norfolk.)
A. flower. B. fruit. C. carpel t.s.



775. PEUCEDANUM OSTRUTHIUM (L.) Koch. The MASTERWORT is a glabrous perennial with erect, green, striate stems 12-30 in. (30-75 cm.) high, growing from a tuberous rootstock. It was formerly cultivated as a pot herb and is naturalized near buildings, especially in N. Britain. Leaves biternate, segments large, lanceolate, deeply toothed. Flowers 4 mm.; calyx teeth absent; petals greenish, with a short, inflexed point; bracts absent; bracteoles few, very slender. Fruit 2·0 × 2·5 × 1·5 mm., orbicular; each carpel with a broad lateral wing, 3 dorsal ridges and a vitta in each groove.

Late June—late July. (Forest in Teesdale, Durham.)
A. flower. B. fruit. C. carpel t.s.

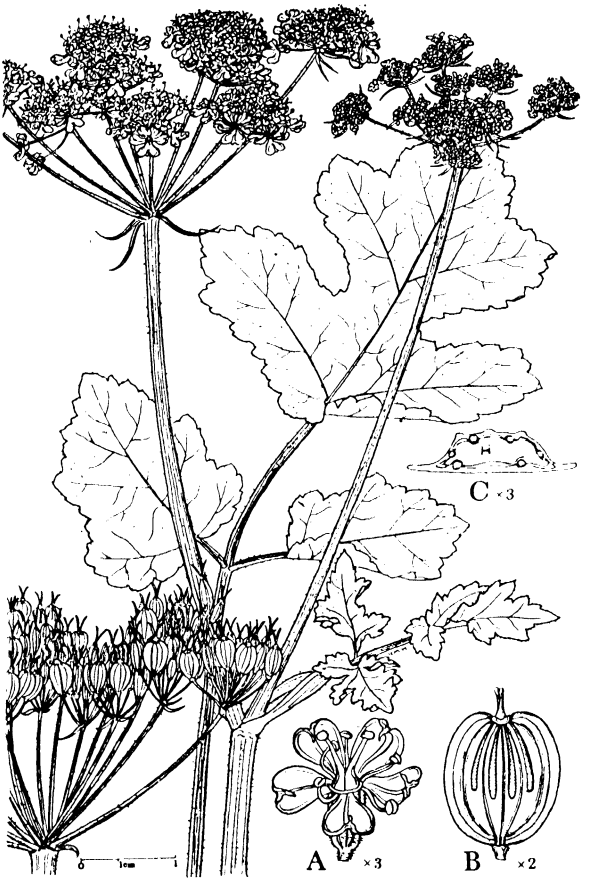


PASTINACA L. Rather stout biennials or perennials with pinnate leaves. Flowers in compound umbels, subequal; bracts and bracteoles 0; calyx 0. Fruit dorsally flattened and winged; commisure broad; ridges obscure; vittæ slender, one in each groove.

776. PASTINACA SATIVA L. The WILD PARSNIP is a rather stout, slightly hispid biennial with erect, green, ridged stems 12-36 in. (30-90 cm.) high, growing from a stout tap root. It is very common in hedgerows and pastures on basic soils in England, but almost absent in Scotland. Leaves pinnate with broad, toothed segments. Flowers 3·5 mm. diam.; petals yellow with an entire, acute, inturned tip. Fruit 8 × 4 × 2 mm.; calyx reduced to a ridge; each carpel with a broad, lateral wing, 3 very slender dorsal ridges and a vitta between each ridge and the wings.

Mid July—late Aug. (Althorne, Essex.)

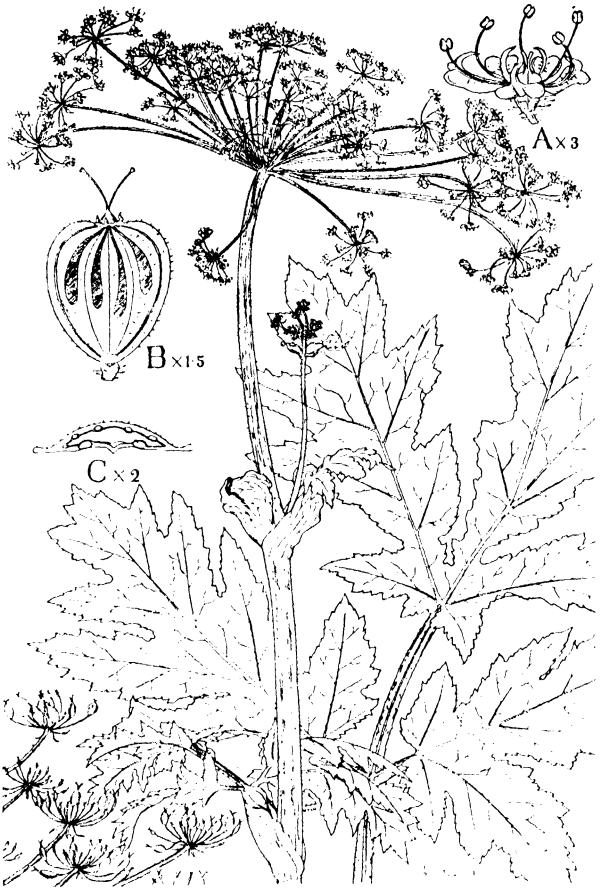
A. flower. B. fruit. C. carpel t.s.



HERACLEUM L. Stout perennials with leaves 1-3-pinnate, segments broad. Flowers in compound umbels. Bracts few or 0; bracteoles several. Fruit dorsally flattened; commisure broad; carpels winged; vittæ stout, one in each groove.

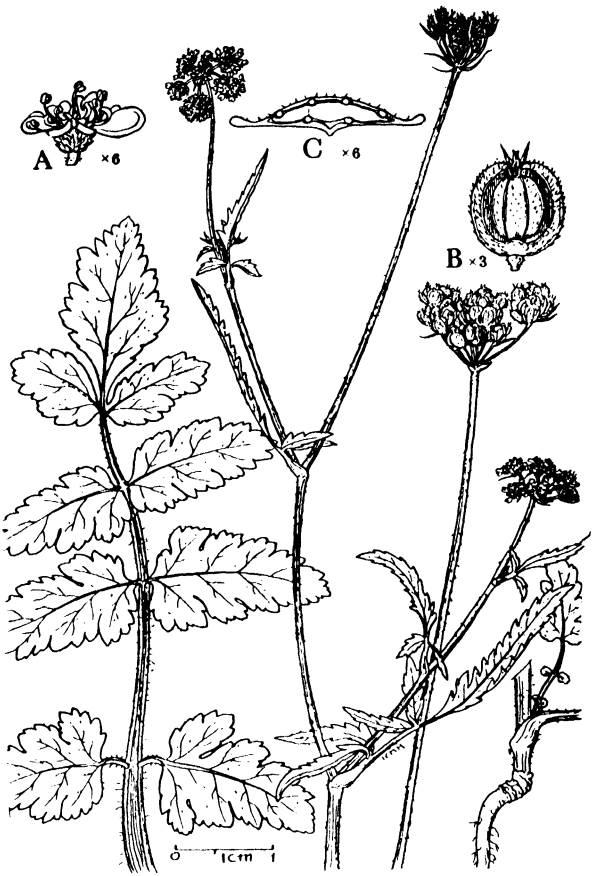
777. HERACLEUM SPHONDYLIUM L. The Cow Parsnip or Kek is a stout biennial with little-branched, ribbed, hispid stem 12-36 in. (30-90 cm.) high, growing from a slender tap root. It is found abundantly in meadows and hedgerows throughout the British Isles. Leaves pinnate, segments rounded (ovate-lanceolate in var. *angustifolia* (Hud.)). Flowers 6-8 mm.; calyx teeth minute; petals white, very unequal in outer flowers; apex acuminate, incurved. Fruit 8 × 8 × 2 mm., flattened, orbicular; each carpel with a broad wing, three slender dorsal ridges and a conspicuous, broad vitta between each ridge.

Early May—mid June and early-late Sept. (Ashbourne, Derbyshire.)
A. flower. B. fruit. C. carpel t.s.



778. HERACLEUM MANTEGAZZIANUM Som. and Lev. This GIANT COW PARSNIP is a very large biennial herb with little-branched, ribbed, hispid stems 4-9 ft. (1·5-3·5 m.) high. It occurs as a casual near habitations and has become established along river banks in a few places. Leaves pinnate, segments with lanceolate, rather sharply toothed segments. Flowers 10-15 mm. diam., forming compound umbels up to 500 mm. diam.; calyx teeth evident, triangular; petals white, very unequal in the outer flowers; apex acuminate, incurved. Fruit 12 × 12 × 2 mm., ovate, flattened, each carpel with a broad wing, 3 dorsal ridges and very prominent, large vittæ between the ridges.

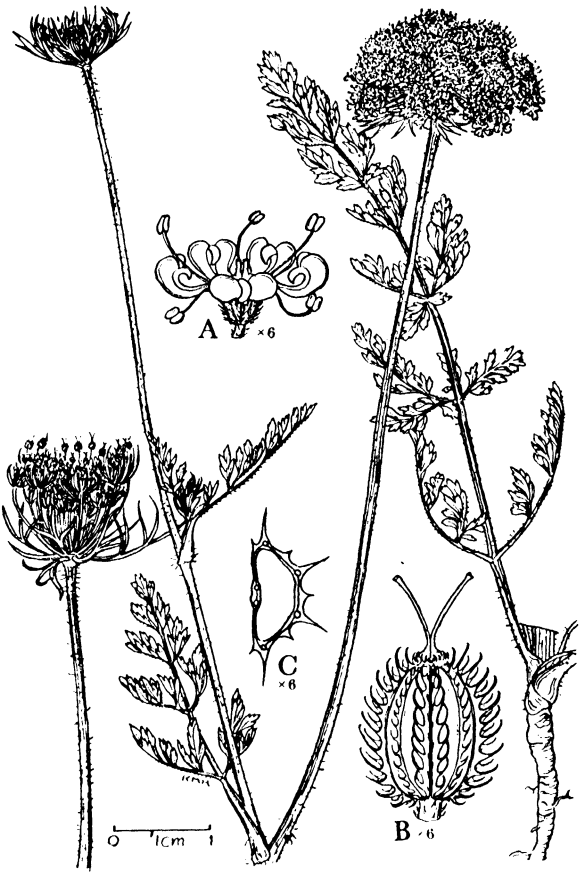
Mid June—mid July. (Radcliffe-on-Wreake, Leicestershire.)
A. flower. B. fruit. C. carpel t.s.



TORDYLIUM L. Rather slender, pubescent annuals with pinnate leaves, segments rather narrow. Flowers in compound umbels; bracts several. Fruit dorsally flattened; commisure wide; carpels winged, tubercled; ridges 0; vittæ 6, slender.

779. TORDYLIUM MAXIMUM L. The HARTWORT is a hispid annual with branched, striate, hairy stems 12-36 in. (30-90 cm.) high. It occurs only in one place in S.E. England and is casual occasionally elsewhere. Leaves pinnate, segments lanceolate, toothed. Flowers 2·7 mm. diam.; calyx teeth long, acuminate; petals white, very unequal apex acuminate. Fruit 4·0 × 4·0 × 1·6 mm., orbicular, flattened.

Mid June—mid July. (S.E. Essex.)
A. flower. B. fruit. C. carpel t.s.

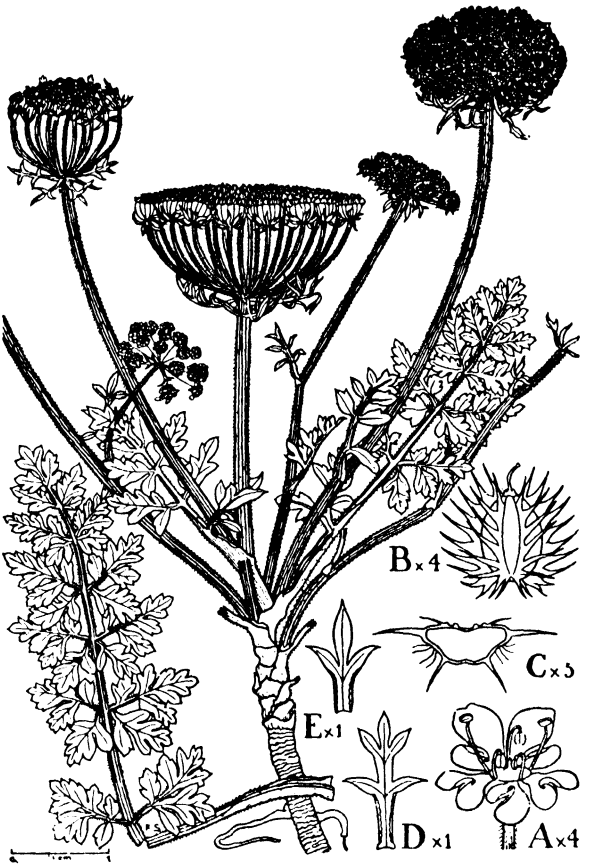


DAUCUS L. Hispid biennials with bi- or tripinnate leaves, segments narrow, cuneiform. Flowers in compound umbels. Bracts and bracteoles pinnate. Fruit covered with hooked bristles; ribs slender.

780. DAUCUS CAROTA L. The WILD CARROT is a stout biennial with branched, hairy, green, ribbed stems 12-24 in. (30-60 cm.) high, growing from a fusiform root. It is common and widespread in grassy places, especially near the sea, throughout lowland Britain. Leaves grey-green, hairy; segments narrow, acute, toothed, cuneiform; bracts and bracteoles linear, pinnate. Flowers 3·5 mm.; petals white, notched, with incurved point, unequal. Fruit 2·0 × 2·5 × 2·5 mm., in a concave umbel, ovoid, with 5 slender primary and 4 stouter secondary ridges, rows of curved spines and a vitta under each secondary ridge.

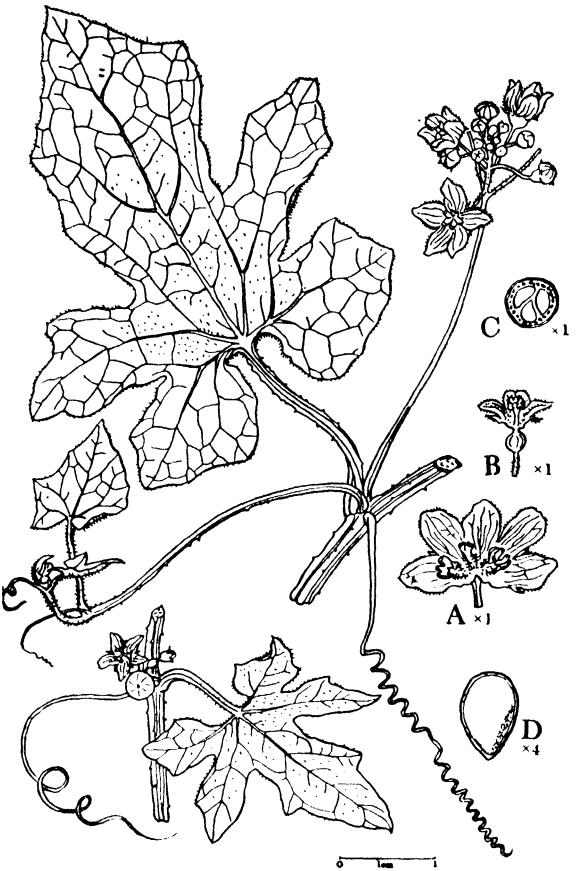
Mid July—early Sept. (Deganwy, Caernarvonshire.)

A. flower. B. fruit. C. carpel t.s.



781. DAUCUS GUMMIFER All. (*D. gingidium* auct.). This SEA-SIDE CARROT is a stout biennial with much-branched, erect, hispid, striate stems about 9 in. (23 cm.) high, rising from a fusiform root. It is found on sea cliffs in the southern portion of England and Wales. Leaves green, hispid; segments lanceolate, broad, obtuse; bracts pinnate. Flowers about 4·5 mm. diam.; petals white, unequal, notched with an incurved point. Fruit 4·0 × 3·0 × 2·5 mm., in a level-topped umbel, with 5 slender primary ridges and scarcely visible secondary ones, rows of curved spines and a vitta in each groove.

Early July—late Aug. (St. Margaret's Bay, Kent.)
A. flower B. fruit. C. carpel t.s. D., E. bracts.

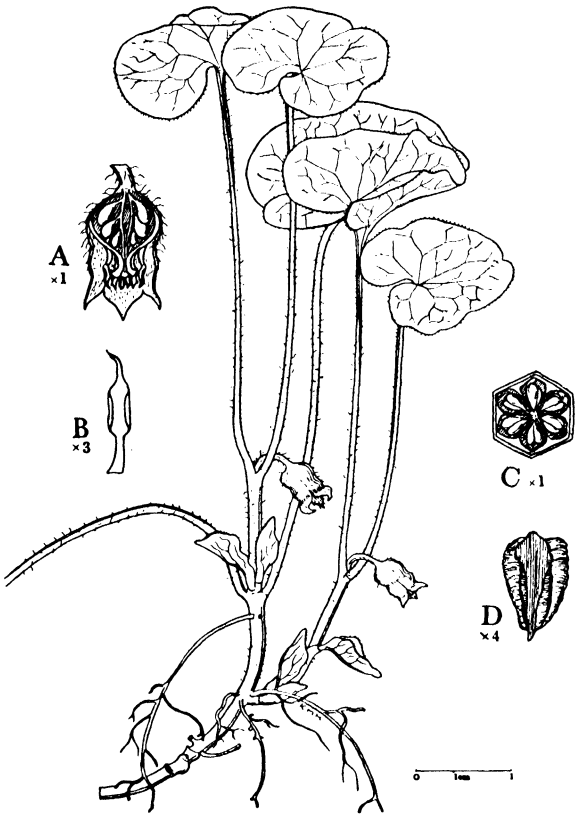


BRYONIA L. Climbing plants with unisexual flowers. Petals 5; stamens 5, 2 pairs united by filaments, 1 free. Ovary inferior; fruit a berry.

782. BRYONIA DIOICA Jacq. The WHITE BRYONY is a rather robust perennial, climbing by tendrils and with straggling, scabrid stems 24-60 in. (60-150 cm.) long, growing annually from a large tuber. It is found commonly in hedges in England, but rare in the north and absent from Scotland. Leaves palmate, lobes broad, obtuse, rough, remotely toothed. Flowers yellow-green, axillary; male 20 mm. diam., several together in a stalked raceme; females 10 mm. diam., only two together. Berry red, globular; seeds 3 × 2 mm., flat and broadly obovate, grey.

Early June—late Aug. (Quendon, Essex.)

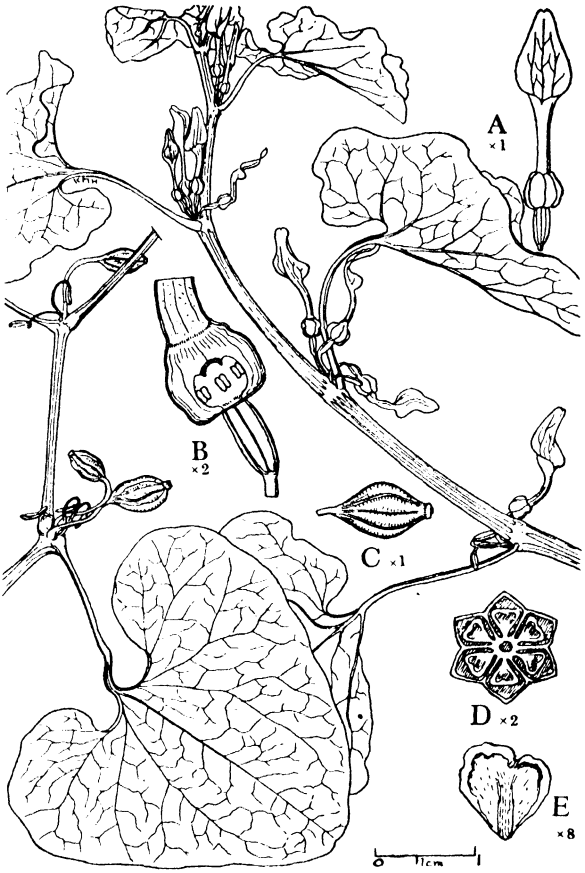
A. male flower split open. B. female flower l.s. C. ovary t.s. D. seed.



ASARUM L. Herbaceous perennials with alternate, simple, exstipulate leaves and rather conspicuous, regular flowers. Perianth campanulate, three-lobed; stamens 12; ovary inferior, six-celled, many-seeded.

783. ASARUM EUROPÆUM L. The ASARABACCA is a strongly scented perennial with large leaves and short stems 4-6 in. (10-15 cm.) high, growing erect from a far-creeping, white, fleshy stolon. It grows in woods and shady places in a few localities in S. England, Lancashire and Durham and it may or may not be a native plant. Leaves broadly cordate to reniform, obtuse, net-veined, margin ciliate; bracts 2 at the base of each stem, ovate, pale green. Flowers 15 mm. long, solitary, pendulous; perianth somewhat hairy, campanulate, purple-brown, basal swelling slight, tube cylindrical, limb three-lobed, ± erect; basal swelling, tube and limb all about equal length. Capsule about 10 mm. long, entirely enclosed within the perianth tube; seed 3 × 2 mm., ovoid-conical, flattened, horizontally ribbed, brown, radicle prominent.

Late April—late May. (Redlynch, Wiltshire.)
A. flower l.s. B. stamen. C. ovary t.s. D. seed.

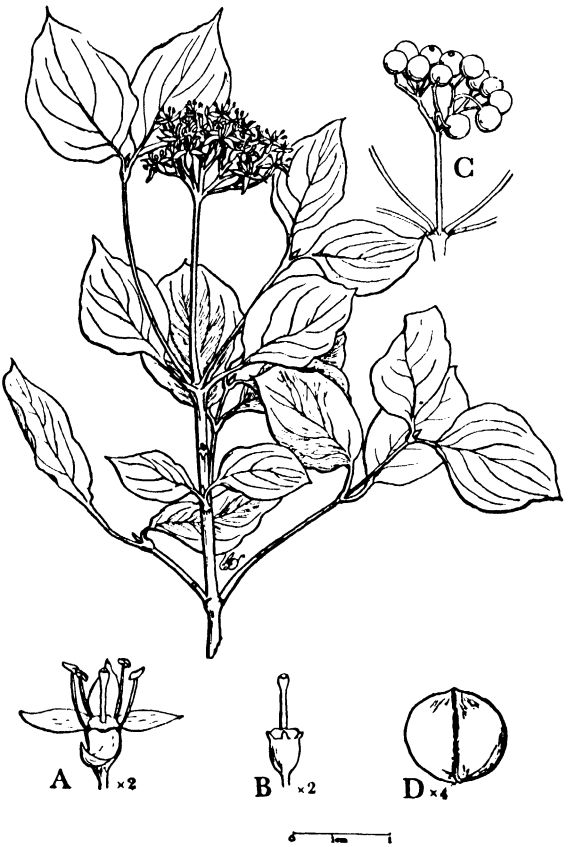


ARISTOLOCHIA L. Herbaceous plants or woody climbers with alternate, simple, exstipulate leaves and rather conspicuous, irregular flowers. Perianth tubular, entire, two- to three-lobed or three- to six-toothed; stamens 6, inserted on the stylar column; ovary five-celled, inferior; fruit a capsule.

784. ARISTOLOCHIA CLEMATITIS L. The BIRTHWORT is a strongly scented perennial with numerous simple, straggling stems 9-20 in. (23-50 cm.) high, growing from a long, creeping rhizome. It has long been cultivated as a medicinal plant and remains naturalized here and there throughout Britain. Leaves broadly cordate, obtuse, net-veined, minutely denticulate. Flowers 30 mm. long; perianth yellow with basal, globose swelling, rather long tube and oblong or spathulate, entire limb, about as long as tube. Capsule about 20 × 10 mm., pyriform, six-ribbed; seed 3 × 3 mm. flat, cordate, winged, dull, grey.

Late June—mid Sept. (Carow Abbey, Norfolk.)

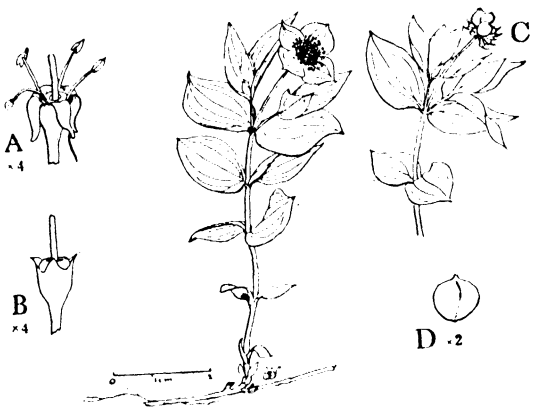
A. flower. B. part of flower l.s. C. capsule. D. ovary t.s. E. seed.



CORNUS L. Shrubs or undershrubs with rounded, entire leaves and cymose inflorescences. Calyx minute with 4 small teeth; corolla four-lobed; stamens 4, alternating with the petals; ovary inferior.

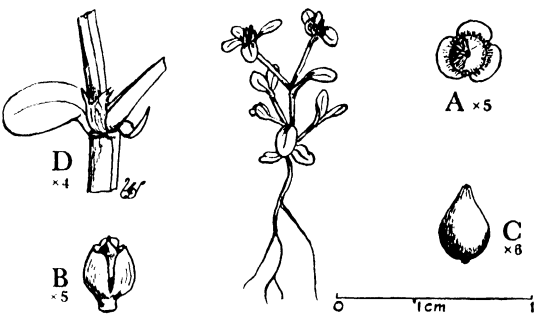
785. CORNUS (THELYCRANIA) SANGUINEA L. The COMMON DOGWOOD is a rather small, spreading shrub 36-72 in. (90-180 cm.) high, which grows in hedges and woods abundantly in southern Britain but rarely in the north. Leaves green, ovate, acute, entire, smooth. Flowers 8-10 mm. diam., in small, dense corymbs; corolla whitish, regular; petals narrow, acute. Berries 5-6 mm. diam., almost black, globular, juicy; nuts 3 mm. diam., globular, smooth, with a vertical furrow.

Mid June—late July. (Borrowash, Derbyshire.)
A. flower. B. pistil and calyx. C. fruits. D. nut.



786. CORNUS (CHAMÆPERICLYMENUM) SUECICA L. The DWARF DOGWOOD is a small perennial with simple herbaceous stems about 6 in. (15 cm.) high, growing from a perennial, creeping rootstock. It is a rare plant of heathy moors and mountains in Scotland and very rare in N. England. Leaves green, subacute, smooth. Flowers 2 mm. diam., in a small terminal umbel, which is surrounded by 4 white, ovate bracts; petals 4, purple, minute. Berries 3-4 mm., red, globular, juicy. Nut 2·5-3·0 mm., globular, apiculate, smooth, with a vertical channel.

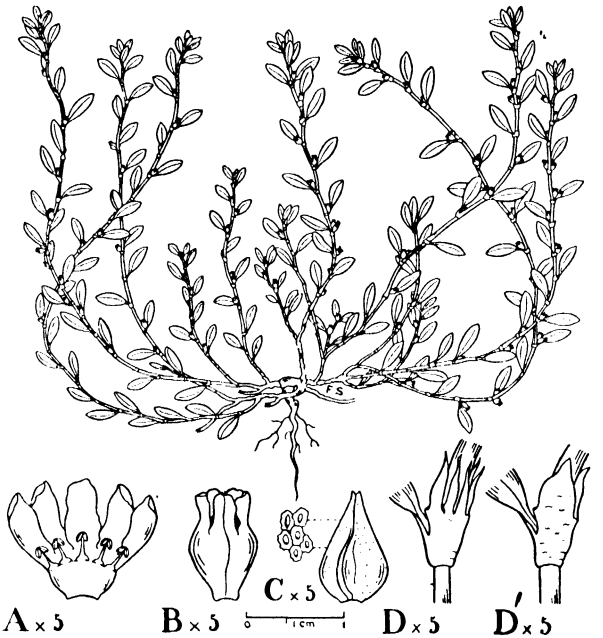
Mid June—late Aug. (Hole of Horkham, Yorkshire.)
A. flower. B. ovary and calyx. C. fruits. D. nut.



KŒNIGIA L. Dwarf annuals with inconspicuous flowers; perianth lobes not enlarged in fruit; stamens 3; fruit a biconvex nut.

787. KŒNIGIA ISLANDICA L. This ARCTIC KŒNIGIA is a dwarf, somewhat branched annual 2-8 in. (5-20 cm.) high that has recently been found in the Hebrides on wet, bare, stony places at high elevation. Leaves obovate, obtuse, glabrous, entire, often clustered below the inflorescence; ochrea short, laciniate. Flowers 1·5 mm. diam., pedicellate, in small clusters among the upper leaves; perianth lobes 3, green, free almost to the base; stamens 3; stigma sessile. Nut 1·5 × 1·0 mm., ovate, trigonous, acute, shining, brown.

Mid Aug.—mid Sept. (Isle of Skye.)
A. flower, top view. B. fruiting perianth and nut. C. nut.
D. node.

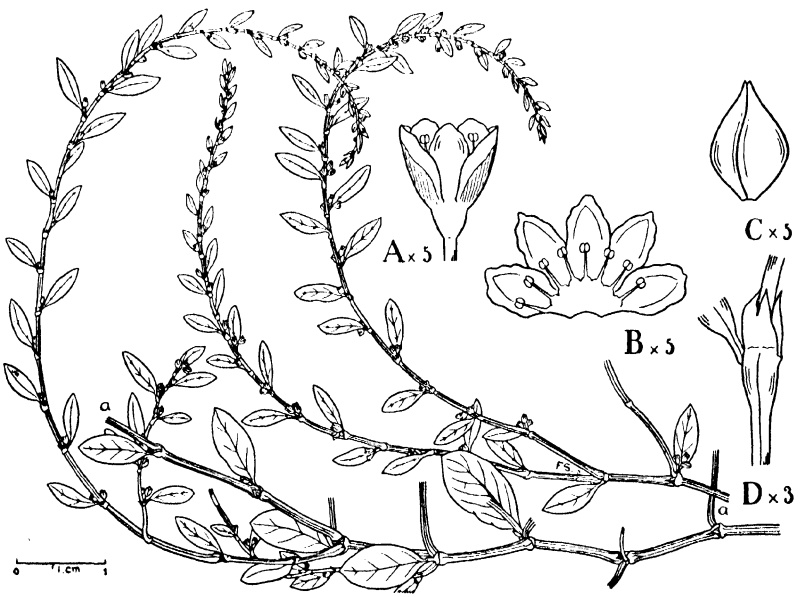


POLYGONUM L. Annual, biennial or perennial plants with small, inconspicuous pink or white flowers and alternate leaves with tubular stipules. Flowers usually racemose or spicate, but sometimes few, clustered. Perianth segments usually 5, but can be 3-6, not enlarging in fruit and not tubercled. Stamens 4-8; fruit a triquetrous or biconvex nut.

788. POLYGONUM ÆQUALE Lindman. This EQUAL-LEAVED COMMON KNOT-GRASS is a rather slender, much-branched, very variable annual, usually with many stems 3-12 in. (8-30 cm.) long. It is rather abundant in cultivated and waste places throughout the British Isles. Young stem erect, branches crowded, ascending; leaves on the main stem and the branches, subequal, crowded near the apex; ochrea long, entire or laciniate. Flowers 2·5-3·0 mm. diam., in clusters of 1-6, in the axils of the leaves; perianth lobes greenish-white or pink, united to half-way, subacute, entire, glabrous; pedicels glabrous; stamens usually about 5, shorter than perianth lobes; styles 2, short. Nut 3·0 × 2·5 mm., narrowly ovoid, trigonous, striate or punctate, dull, grey-black, not exceeding the perianth. Mid July—late Sept. (Cambridge.)

A. opened perianth. B. perianth and nut. C. nut. D., D′. stipules.

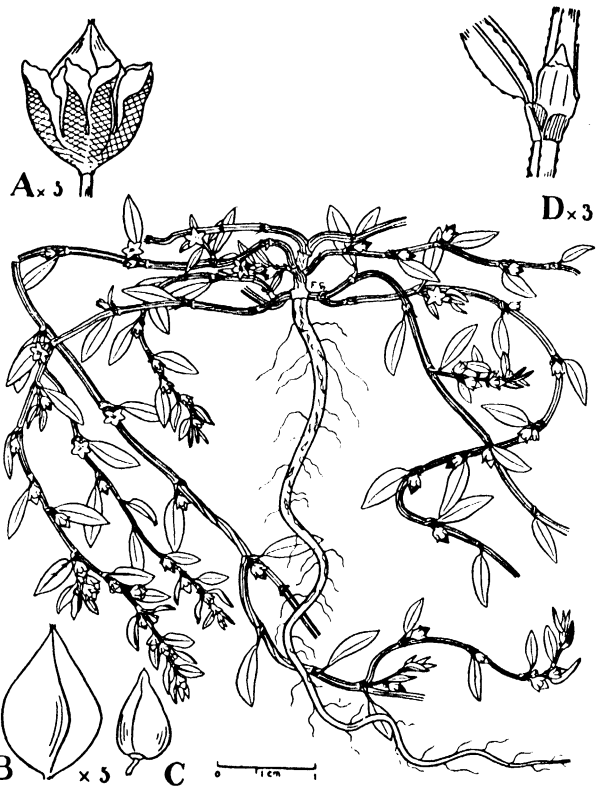
(*P. calcatum* Lindm. is like the above, but completely prostrate, with smaller leaves and smooth or punctate, shining fruit with one face narrower than the other two.)



789. POLYGONUM AVICULARE L. (*P. heterophyllum* Lindman). This VARIED-LEAVED COMMON KNOT-GRASS is a rather slender, much-branched, very variable annual, usually with many decumbent and spreading stems 3-20 in. (7-50 cm.) long. It is abundant in cultivated and waste places throughout the British Isles. Young stem erect, branches rather lax, decumbent or prostrate. Lower leaves of the main stem at least double the size of the upper ones; ochrea long, acute, usually entire. Flowers 3 mm. diam., in clusters of 1-6 in the axils of the upper leaves; perianth lobes pink or white, united to half-way, ovate, subobtuse, entire, glabrous; stamens usually 8, shorter than perianth lobes; styles 2, short. Nut 3·0 × 2·5 mm., ovoid or ellipsoid, trigonous, smooth, shining, black, not exceeding the perianth.

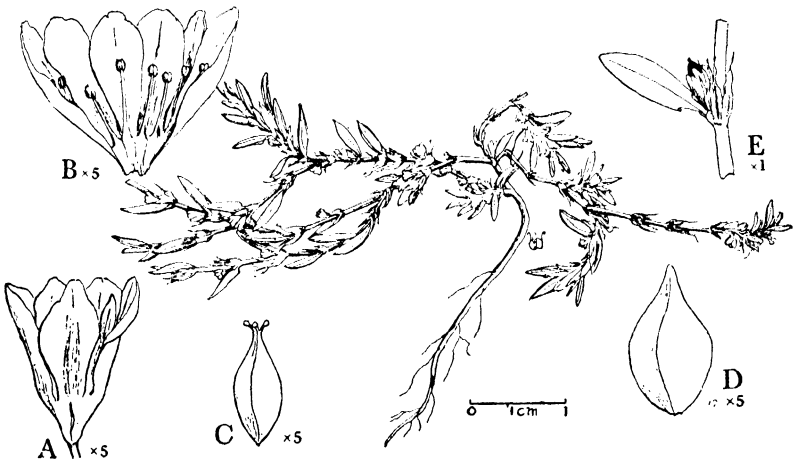
Mid July—late Sept. (Cambridge.)
A. flower. B. opened perianth. C. nut. D. stipule.

(*P. littorale* Link grows on sandy seashores. It differs from the above in the larger, striate, 4 mm. long nut and in being more robust.)



790. POLYGONUM RAII Bab. RAY'S KNOT-GRASS is a rather stout, much-branched, glabrous annual or perennial with many procumbent stems 9-24 in. (23-60 cm.) long. It grows rarely on sandy and shingly sea shores, chiefly in southern England, but also here and there on all sandy coasts of the British Isles. Branches of stem spreading in all directions from a central rootstock. Leaves subequal, crowded near the apex, margin flat, entire; ochrea long, lanceolate, acute, entire or torn, with a few simple veins. Flowers 3·5-4·0 mm. diam., in clusters of 1-6 in the axils of the leaves; perianth lobes pinkish or greenish-white, joined almost half-way, subobtuse, entire, glabrous; pedicels glabrous; stamens usually about 8, shorter than perianth lobes; styles 2, rather long. Nut 4 × 3 mm., broadly ovoid, trigonous, smooth, brown, exceeding the perianth.

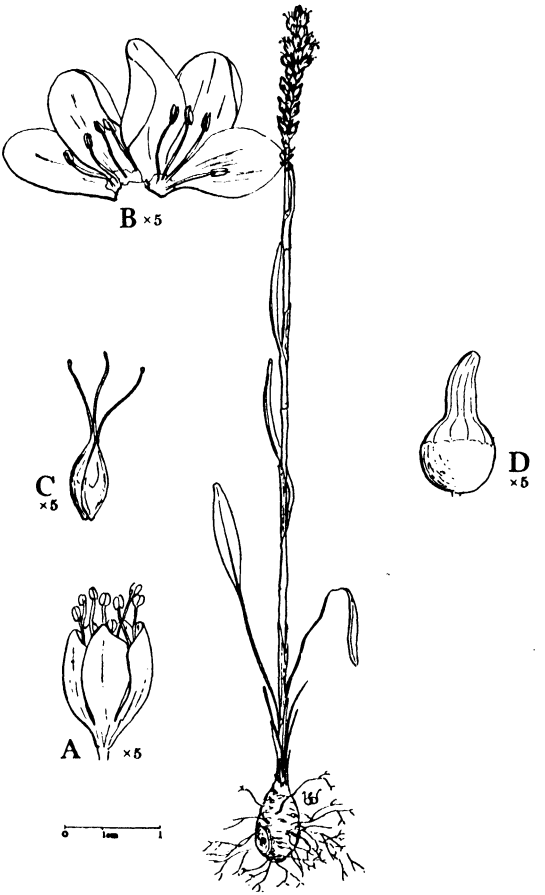
Mid July—mid Sept. (Gunwalloe Cove, Cornwall.)
A. perianth and nut. B. nut. C. seed. D. stipule.



791. POLYGONUM MARITIMUM L. The SEASIDE KNOT-GRASS is a stout, glabrous annual or perennial with several branched, procumbent stems 4-12 in. (10-30 cm.) long, growing from a central rootstock. It is a very rare plant on sea-sand or shingle in very few places in S.W. England. Branches of stem spreading in all directions from a woody stock. Leaves equal, ovate, obtuse, somewhat crowded near the apex, margin revolute, entire; ochrea long, lanceolate, acute, bifid, laciniate, silvery, veins numerous, branched. Flowers 4 mm. diam., in clusters of 1-4, in the axils of the leaves and crowded at the ends of the branches; perianth lobes pink or greenish-white, joined almost half-way, ovate, subobtuse, entire, glabrous; stamens usually about 8, shorter than perianth lobes; styles 2, rather long. Nut 4·5 × 3·5 mm., broadly ovoid, trigonous, smooth, brown, much exceeding the persistent perianth.

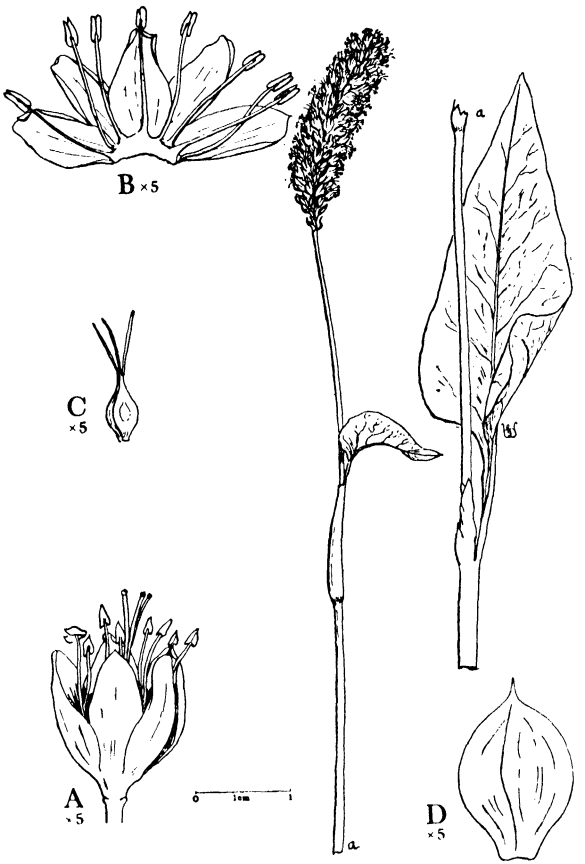
Mid July—mid Sept. (Gunwalloe, Cornwall.)

A. flower. B. perianth, opened. C. pistil. D. nut. E. stipule.



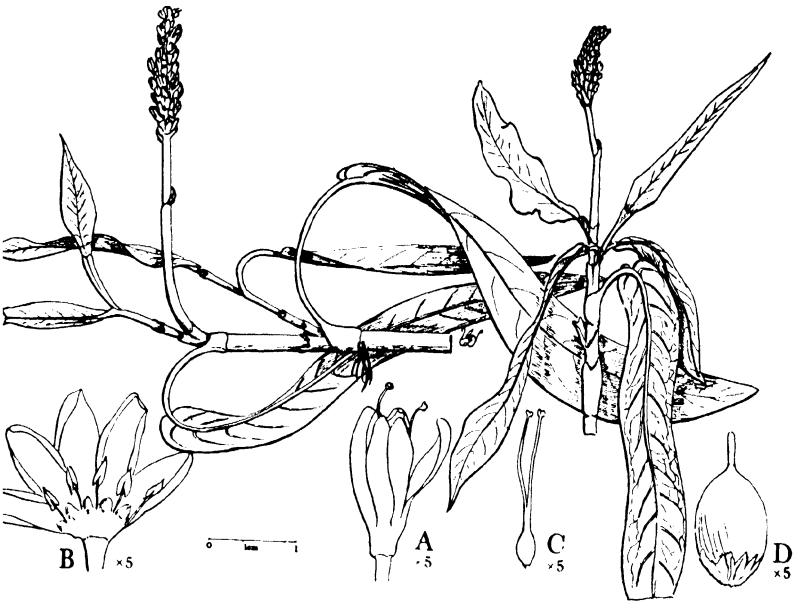
792. POLYGONUM VIVIPARUM L. The ALPINE BISTORT is a slender, glabrous perennial with a simple flowering scape 3-8 in. (8-20 cm.) high, growing erect from a stout, swollen, simple rootstock. It occurs in alpine meadows and on mountain rocks in the highland parts of the British Isles, somewhat frequently. Radical leaves small, linear-lanceolate, with tapering base, subacute apex and entire margin; stem leaves few, linear, with sessile, transversely truncate stipules. Flowers 2 mm. diam., in lax terminal, solitary spikes 8-10 mm. wide, at the base of which the flowers are replaced with brownish, top-shaped bulbils; perianth lobes pale pink or whitish, lanceolate, pedicels glabrous; stamens longer than the lobes; styles 2, short; seed hardly ever produced.

Mid June—mid Aug. (Forest in Teesdale, Co. Durham.)
A. flower. B. opened perianth. C. pistil. D. bulbil.



793. POLYGONUM BISTORTA L. The SNAKE-ROOT or BISTORT is a glabrous perennial with simple flowering scapes 9-18 in. (23-45 cm.) high, growing erect from a very stout, irregular rhizome. It occurs in damp meadows and grassy roadsides throughout the British Isles, but nowhere very commonly. Radical leaves, large, ovate, subobtuse, with truncate or subcordate base, entire margin and petioles winged in the upper part; stem leaves few, triangular, acute, with sheathing petiole and transversely truncate stipule, glabrous. Flowers 3-4 mm. diam., in dense, terminal, solitary spikes about 17 mm. diam.; perianth lobes pink, ovate; stamens longer than the lobes. Nut 4 × 5 mm., ovoid, apiculate, brown.

Early May—late June. (Holmes Chapel, Cheshire.)
A. flower. B. open perianth. C. pistil. D. nut.

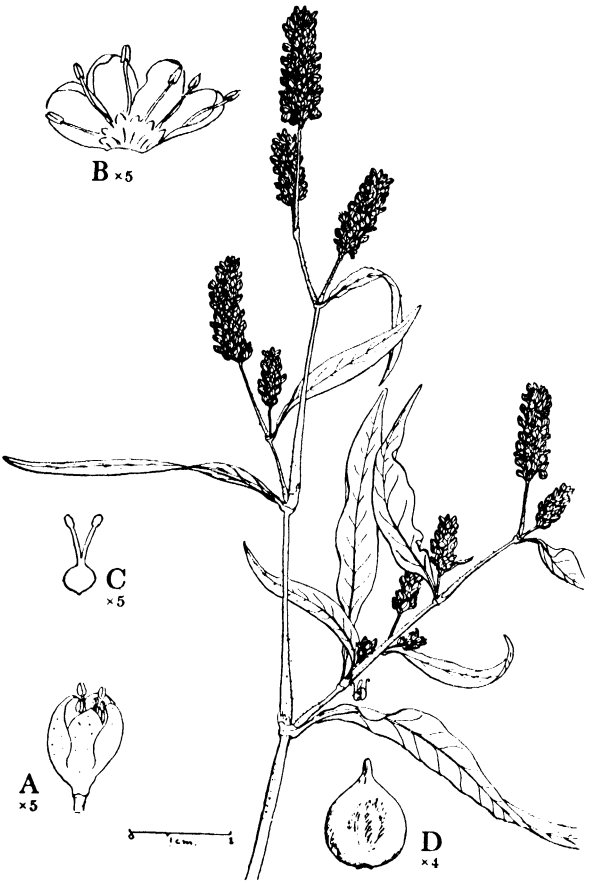


794. POLYGONUM AMPHIBIUM L. The AMPHIBIOUS BISTORT is a very variable, rather stout perennial with two distinct vegetative forms: when it grows in water it is glabrous and has floating leaves and a submerged stem 6-24 in. (15-60 cm.) long; when it grows in the wet ground beside the water it has spreading leaves and an erect, somewhat tomentose stem 9-15 in. (23-38 cm.) high. It is common in pools, slow rivers and wet places throughout the British Isles. Leaves usually lanceolate, acute, with a cordate or subtruncate base and entire margin; upper leaves shortly stalked with winged petioles and an obliquely truncate stipule, glabrous or tomentose. Flowers 2·5-3·0 mm. diam., in rather lax and irregular, terminal, solitary spikes 10 mm. diam.; perianth lobes deep pink or whitish, narrowly lanceolate, without glands; stamens 5, becoming longer than the lobes; styles 2. Nut 3×2 mm., ovoid, somewhat two-keeled, smooth, shining, brown.

Mid July—early Sept. (Hadleigh, Suffolk.)
A. flower. B. opened perianth. C. pistil. D. nut.

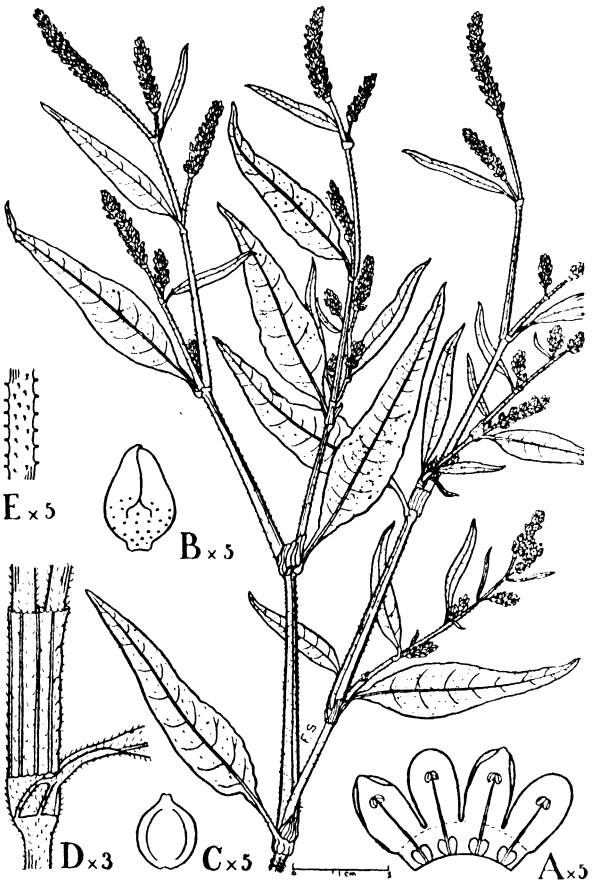
795. POLYGONUM PERSICARIA L. The COMMON PERSICARIA is a slender to rather stout branched, erect, almost glabrous, or at times pubescent annual 6-20 in. (15-50 cm.) high, which grows abundantly and frequently in arable land and waste places and on pond margins throughout the British Isles. Leaves narrowly lanceolate with acute apex, tapering base and entire margin; stipules funnel-like, fringed; nodes often very swollen. Flowers 1·5-2·0 mm. diam., in rather short, close or somewhat interrupted spikes 6-9 mm. wide; perianth lobes pink or red, ovate, glabrous; pedicels without glands; stamens about 6, equalling the perianth lobes; styles 2, united below. Nut 4 × 3 mm., ovoid, bluntly trigonous, smooth, shining, black.

Late July—mid Oct. (Creeksea, Essex.)
A. flower. B. opened perianth. C. pistil. D. nut.



796. POLYGONUM LAPATHIFOLIUM L. The PALE PERSICARIA is a slender to stout, branched, erect, rather pubescent annual 6-20 in. (15-50 cm.) high, which grows abundantly in arable land and waste places commonly throughout the British Isles. Leaves lanceolate, with acute apex and base and a somewhat undulate margin, ciliate and sometimes woolly beneath, often blotched with black; stipules truncate, only the upper ones fringed; nodes swollen. Flowers 1·5-2·0 mm. diam., in short, close spikes 10-12 mm. wide; perianth lobes greenish-white, ovate, sparsely glandular; pedicels glandular; stamens about 6, equalling the perianth lobes, styles 2, almost free to the base. Nut 3·0 × 2·5 mm., roundly ovoid, blunt, with acute apex, usually biconvex, rarely trigonous, smooth, shining brown.

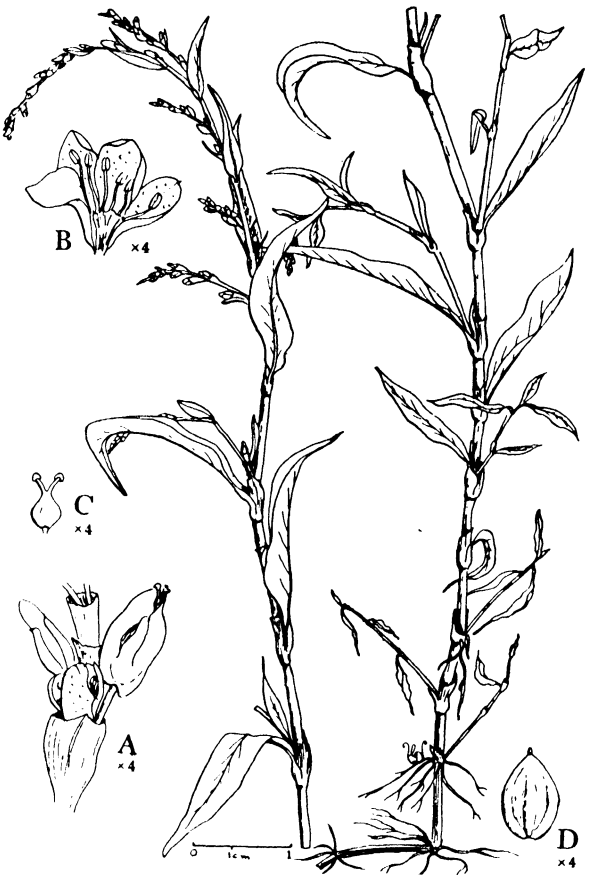
Late July—mid Oct. (Woodham Ferrers, Essex.)
A. flower. B. opened perianth. C. pistil. D. nut.



797. POLYGONUM NODOSUM Pers. (*P. maculatum* S. F. Gray). This SPOTTED PERSICARIA is a rather stout to slender, very variable, much-branched, erect or decumbent annual 9-20 in. (23-50 cm.) high, which grows, rather infrequently, on pond margins throughout the British Isles, except in the north of Scotland. Leaves lanceolate, apex acute and gradually narrowed at the base, margin wavy, blade somewhat hairy and glandular beneath; stipule loose, truncate, shortly fringed, hairy. Flowers 2 mm. diam., in short, erect, rather slender, regular racemes 5-6 mm. wide; perianth lobes pink, lanceolate, glandular; pedicels glandular; stamens 4-8, filaments dilated at base, shorter than perianth lobes; styles 2, short. Nut 2·0 × 1·6 mm., roundly ovoid, compressed, two-keeled, smooth, shining, black.

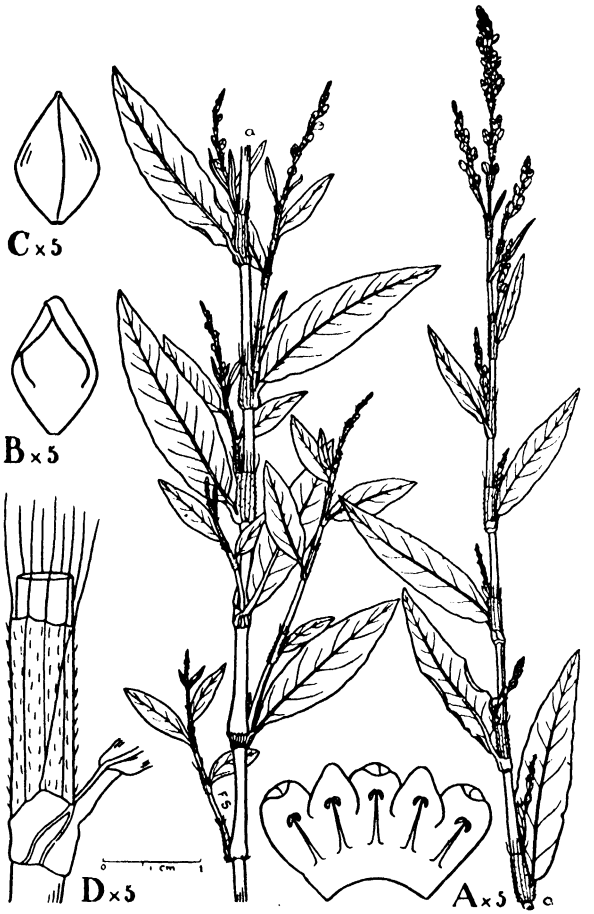
Late July—mid Sept. (Reigate, Surrey.)

A. opened perianth. B. fruiting perianth. C. nut. D. stipule. E. pedicel.



798. POLYGONUM HYDROPIPER L. The WATER PEPPER is a rather slender, much-branched, erect, almost glabrous annual 6-20 in. (15-50 cm.) high, with an acrid and burning taste. It grows very frequently on the margins of ponds and in wet mud throughout the British Isles, except the extreme north. Leaves narrowly lanceolate, with acute apex and base and a somewhat undulate, ciliate margin; stipule funnel-shaped, truncate, finely serrate. Flowers 1·7-2·0 mm. diam., in long, filiform, curved, almost linear spikes 4-5 mm. wide; perianth lobes pink or greenish-white, ovate, glandular; pedicels without glands; stamens about 6, shorter than perianth lobes; styles 2, short. Nut 2·5 × 2·0 mm., ovoid, somewhat trigonous or two-keeled, smooth, shining, brown.

Late July—mid Sept. (Creeksea, Essex.)
A. flowers and stipule. B. opened perianth. C. pistil. D. nut.



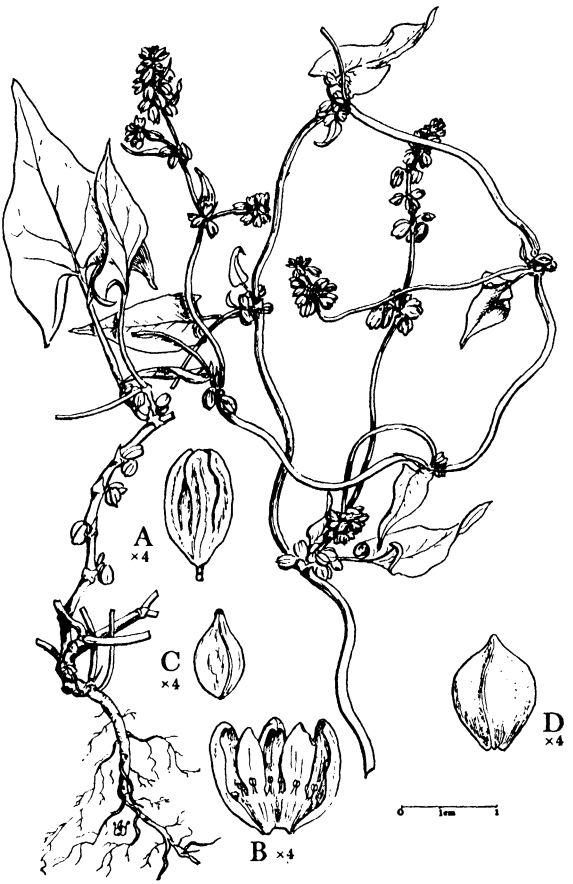
799. POLYGONUM MITE Schrank. This MARSH PERSICARIA is a rather slender, little-branched, almost glabrous annual 6-20 in. (15-50 cm.) high, with a mild taste, which grows rather infrequently by pond margins and in ditches in the British Isles as far north as the Forth. Leaves narrow, lanceolate with acute apex, suddenly tapering base, and wavy margin, blade glabrous; stipule funnel-shaped, fringed with bristles, hairy. Flowers 1·7-2·0 mm. diam., in a rather long, filiform, interrupted, usually erect raceme 4-5 mm. wide; perianth lobes pink, ovate, without glands; pedicels without glands; stamens about 5-6, shorter than perianth lobes; styles 2, short. Nut 3·0 × 2·5 mm., ovoid, trigonous or two-keeled, shining, smooth, brown.

Early July—late Sept. (Wareham, Dorset.)

A. opened perianth. B fruiting perianth. C. nut. D. stipule.

800. POLYGONUM MINUS Huds. The LESSER PERSICARIA is a rather variable, slender, glabrous annual with a branched, erect or spreading stem 6-10 in. (15-25 cm.) high. It grows in wet places and on pond margins here and there throughout lowland Britain. Leaves all linear-lanceolate, tapering at both ends, glabrous, subsessile or somewhat ciliate; stipule fringed or laciniate. Flowers 1·5-2·0 mm. diam., in short, filiform, interrupted spikes 3-5 mm. diam., perianth lobes pink, ovate; stamens rather shorter than the lobes. Nut 2·0 × 1·5 mm., ovoid, acuminate, biconvex, shining, black.

Early Aug.—late Sept. (Ham Common, Surrey.)
A. flower and stipule. B. opened perianth. C. pistil. D. nut.



801. POLYGONUM CONVOLVULUS L. The BLACK BINDWEED or CLIMBING PERSICARIA is a slender, glabrous annual with many twining stems up to 24 in. (60 cm.) long. It grows abundantly in arable land and waste places throughout the British Isles. Leaves sagittate, acuminate, glabrous, margin entire, blade mealy below; stipules obliquely truncate, laciniate. Flowers 2 mm. diam., in long, interrupted, few-flowered spikes 10 mm. wide; perianth lobes 5, greenish-white or suffused with pink, the three outer keeled, glabrous; pedicels jointed, glabrous; stamens about 8, very short; stigmas sessile. Nut 4 × 3 mm., trigonous, ovoid, minutely punctate, dull black.

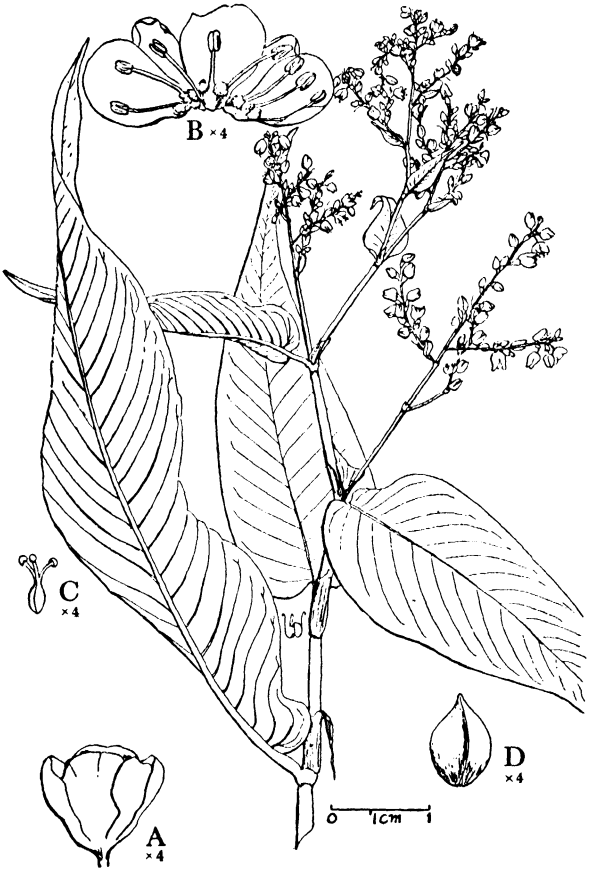
Late July—mid Oct. (Burnham-on-Crouch, Essex.)
A. flower. B. opened perianth. C. pistil. D. nut.

802. POLYGONUM DUMETORUM L. The Copse Buckwheat is a slender, glabrous annual with many twining stems up to 60 in. (150 cm.) long. It grows here and there, sometimes commonly, in woods and shady places in the southern part of England. Leaves sagittate, acuminate, glabrous, margin entire, blade usually glabrous; stipules obliquely truncate, laciniate. Flowers 2-3 mm. diam., in long, interrupted, few-flowered spikes 10 mm. wide; perianth lobes 5, greenish or reddish-white; the three outer winged. Fruiting perianth with the wings decurrent into the pedicel; pedicels jointed at or below the middle, up to 8 mm. long; stamens about 8; stigmas very short, sessile. Nut 4·5-5·0 × 3·0 mm., trigonous, ovoid, smooth, shining, black.

Late July—mid Oct. (Worthing, Sussex.)
A. flower. B. opened perianth. C. pistil. D. nut.

803. POLYGONUM CUSPIDATUM Sieb. and Zucc. This BROAD-LEAVED POLYGONUM is a large plant with stout, red, erect, annual stems 36-60 in. (90-150 cm.) high, growing from a thick, creeping root-stock. It is a native of Japan and grows extensively in waste places throughout most of England and Wales and it is still spreading. Leaves broadly ovate with a truncate base and acute apex, margin wavy, blade glabrous, veins reddish; ochrea fringed, much shorter than the internodes, glabrous. Flowers 4 mm. diam., long stalked, in terminal and axillary panicles; perianth lobes 5, white, ovate, suberect; stamens 6-8, becoming longer than the lobes; styles 3, rather long; outer perianth winged in fruit. Nut 4 × 2 mm., triquetrous with a broad wing, yellow.

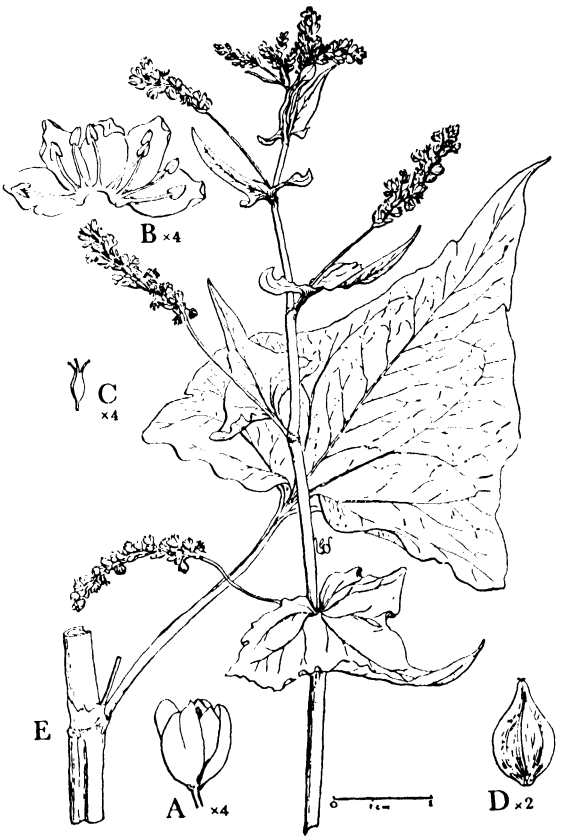
Mid Aug.—late Sept. (Burnham-on-Crouch, Essex.)
A. flower. B. perianth, opened. C. pistil. D. nut.



804. POLYGONUM POLYSTACHYUM Wall. ex Meisn. This INDIAN GIANT POLYGONUM is a large plant with stout, erect, annual stems 36-60 in. (90-180 cm.) high, growing from a thick, creeping rootstock. It is a native of Assam and now grows in several waste places in the S.W. of England and Wales and is still apparently spreading. Leaves lanceolate with a short petiole and a subcordate to cuneate base, acute apex, entire margin and green veins; ochrea of upper leaves nearly as long or even longer than the internode. Flowers 4 mm. diam., in terminal and axillary panicles, the lower exceeding the petioles; perianth lobes white, broadly ovate, truncate, suberect; stamens 6-8 with a basal appendage, equalling lobes; styles 3. Nut 3 × 2 mm., trigonous with blunt angles, ovoid, acute, smooth.

Late July—late Aug. (Lynton, Devon.)
A. flower. B. opened perianth. C. pistil. D. nut.

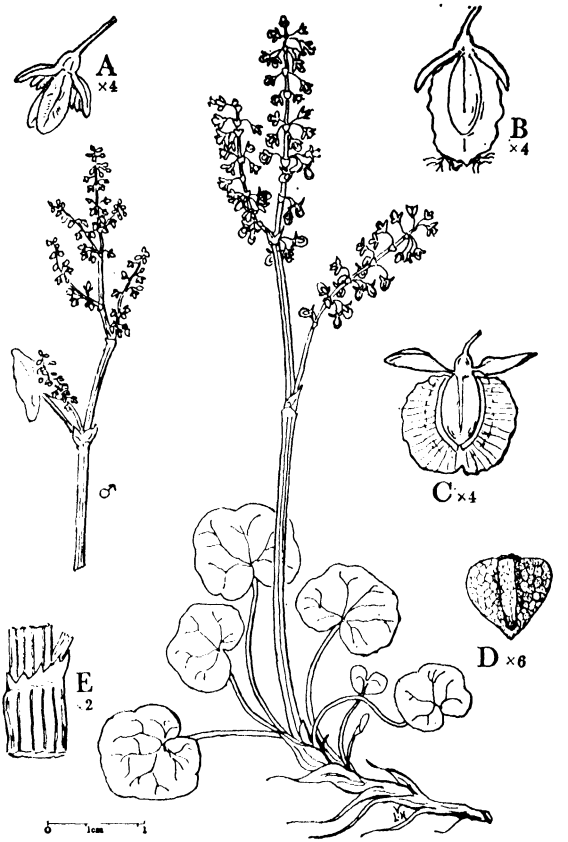
P. *sagittatum* L., the *American Tear-thumb* with weak, prickly stems and sagittate leaves, is naturalized in Co. Kerry.)



FAGOPYRUM Mill. Small annual or perennial herbs with rather conspicuous pink or white bisexual flowers and alternate cordiform leaves with tubular stipules. Flowers in branched cymes; perianth five-lobed; stamens 8; styles 3; fruit a triquetrous nut greatly exceeding the perianth lobes.

805. FAGOPYRUM ESCULENTUM Mœnch. The BUCKWHEAT is a rather stout, little-branched annual with glabrous stems 6-20 in. (15-50 cm.) high, which is frequently cutivated as a crop and remains for a few years as a relic on field borders and waste places in lowland England. Leaves cordate, deltoid, acute, with undulate margin; stipules narrow, fringed. Flowers 3 mm. diam., forming interrupted, dense, lateral cymes; perianth with 5, almost free, pink or white lobes; styles 3, short. Nut 7 × 4 mm., triquetrous with pointed apex and almost winged edges. Mid July—lateAug. (Fambridge, Essex.)

A. flower. B. open perianth. C. pistil. D. nut. E. stipule.

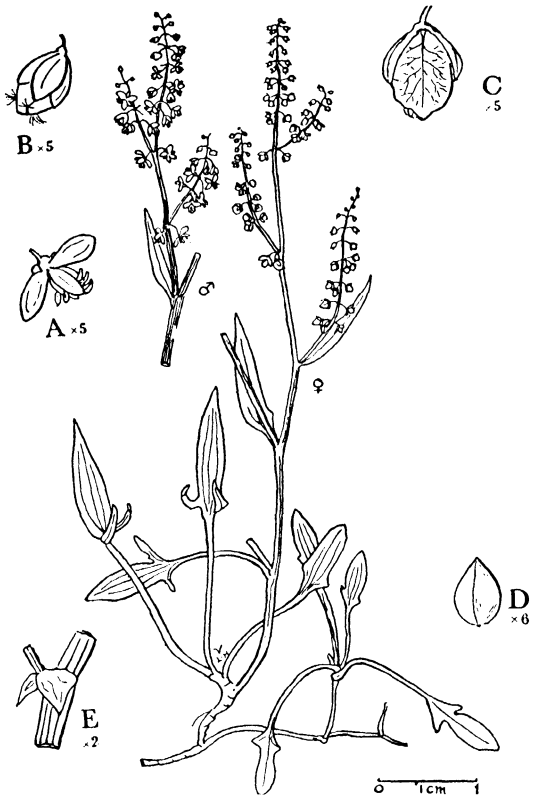


OXYRIA Hill. Small perennial herbs with inconspicuous, reddish flowers, leaves mostly radicle with tubular stipules or ochreæ. Flowers arranged in whorls on a simple or branched stem, diœcious; perianth of 2 inner and 2 outer segments, the inner enlarging in fruit and not tubercled; stamens usually 6; stigmas 2; fruit a broadly-winged, lenticular nut.

806. OXYRIA DIGYNA (L.) Hill. The MOUNTAIN SORREL is a small perennial with glabrous stems 2-12 in. (5-30 cm.) high, growing erect from a thick rootstock. It is rather abundant on damp rocks and by small streams on mountains and in most of Scotland, N.W. England and N. Wales. Leaves on long petioles, reniform, entire, glabrous, almost fleshy. Flowers about 3 mm., on slender jointed pedicels, in small clusters on a lax raceme; outer segments of perianth spreading, linear. Inner segments of fruiting perianth 4 × 4 mm., rhomboid or spathulate. Nut 3·5 × 3·2 mm., pyramidal, netted, brown.

Mid July—mid Aug. (Meallna Soane, Perthshire.)

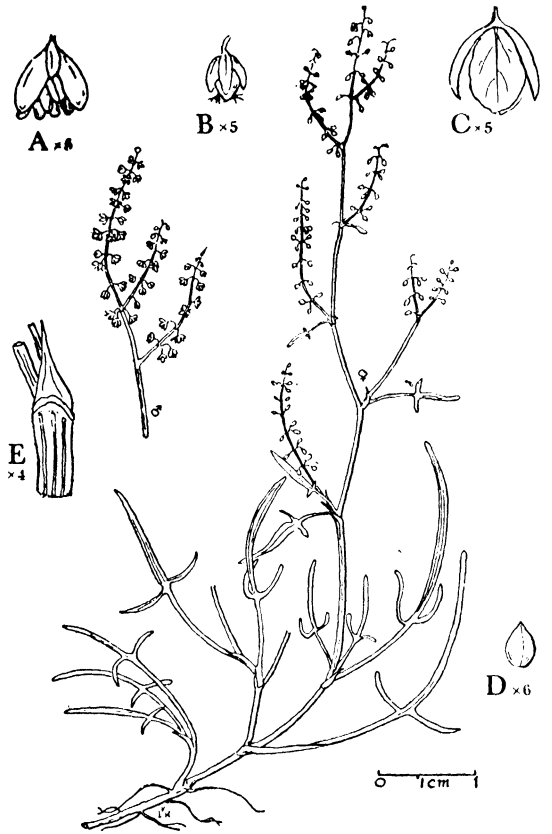
A. male, B. female flower. C. fruiting perianth. D. seed. E. stipule.



RUMEX L. Annual, biennial or perennial herbs with inconspicuous, greenish flowers and alternate leaves with tubular and usually laciniate stipules. Flowers arranged in whorls on a simple or branched stem, hermaphrodite or dicœcious; perianth of 3 outer and 3 inner lobes which usually enlarge in fruit; stamens 6; fruit a triquetrous or biconvex, woody nut.

807. RUMEX ACETOSELLA L. The SHEEP'S SORREL is a small, erect or decumbent perennial with numerous flowering stems 3-9 in. (8-23 cm.) high, growing from a slender, underground stock. It is a very abundant and widespread plant on sandy heaths and bare, acid soils throughout the British Isles. Leaves 30-40 mm. long, lanceolate, acute, hastate or with a single pair of basal teeth, upper leaves not clasping. Flowers dicœcious, in lax, leafless whorls on a leafless panicle; male 2-3 mm. diam., drooping; female 3-4 mm. diam.; sepals red. Fruiting perianth segments 3 × 2 mm., not greatly enlarged, ovate, acute. Nut 1·5 × 1 mm., ovoid, shining, dark brown.

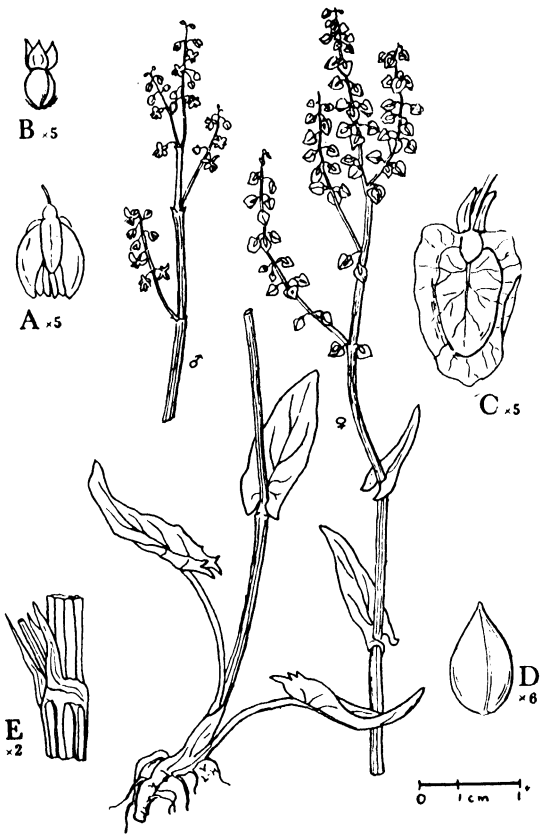
Mid June—mid July. (Bramcote, Nottinghamshire.)
A. male flower. B. female flower. C. fruiting perianth. D. nut. E. stipule.



808. RUMEX TENUIFOLIUS (Wallr.) Löve. This LINEAR-LEAVED SHEEP'S SORREL is a small, ± erect or decumbent perennial with numerous flowering stems 1-8 in. (3-20 cm.) high, growing from a slender, underground stock. It occurs commonly on very poor, sandy land throughout lowland Britain. Leaves 30-50 mm. long, almost linear, with a pair of spreading lobes at the base and an inrolled margin; upper leaves not clasping. Flowers dioœcious in lax, leafless whorls on a leafless panicle with ascending branches; male 2 mm. diam., red, drooping; female 0·7 mm. diam., lobes spreading, dark red; branches suberect. Fruiting perianth segments 3 × 2 mm., not enlarged, not appressed to the nut, ovate-acute. Nut 1·0 × 0·8 mm., ovoid, trigonous, smooth, light brown.

Mid June—mid July. (Icklingham, Suffolk.)

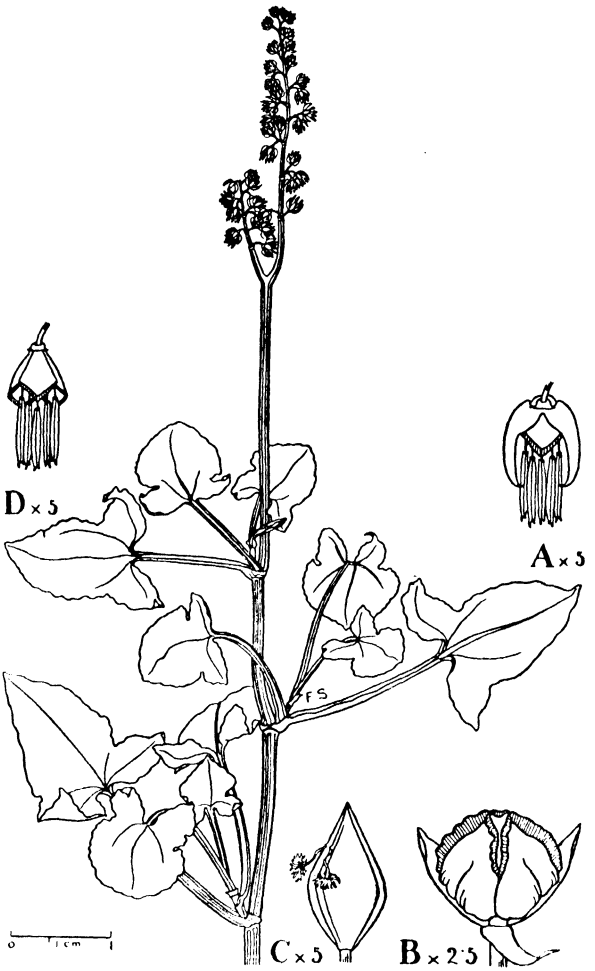
A. male flower. B. female flower. C. fruiting perianth. D. nut. E. stipule.



809. RUMEX ACETOSA L. The SORREL or SOUR DOCK is an erect perennial 12-30 in. (30-75 cm.) high, with short, lax branches to the inflorescence. It is a very common plant of grassland and open woods throughout the British Isles. Lower leaf blades 40-50 mm. long, ovate-oblong, acute, base hastate or truncate, margin entire; upper leaves clasping with obvious auricles. Flowers diœcious, red, drooping, on rather slender pedicels and forming small clusters on a lax raceme or panicle; outer perianth segments of female flower reflexed after flowering. Inner fruiting perianth segments 4·0 × 2·5 mm., cordate, each with a broad wing and a small basal tubercle. Nut 2·0 × 1·5 mm., ovoid, acute, shining, black.

Mid May—early July. (Romsey, Hampshire.)

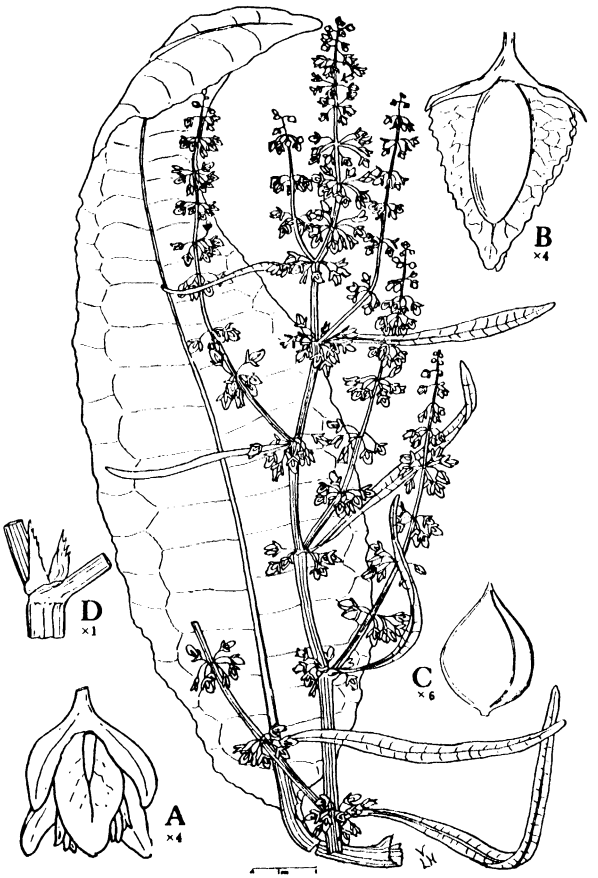
A. male flower. B. ovary and outer perianth. C. fruiting perianth. D. nut. E. stipule.



810. RUMEX SCUTATUS L. This GARDEN SORREL is a small, glabrous perennial with a few, little-branched flowering stems 9-12 in. (23-30 cm.) high, growing from a slender stock. It is sometimes cultivated and has become naturalized here and there on a few old walls and pastures. Leaves rather glaucous, about 40 mm. long, all stalked, hastate or broadly ovate, apex obtuse or subacute, margin entire. Flowers hermaphrodite, in lax, leafless clusters on a strict panicle, greenish-yellow; inner segments of fruiting perianth 5 × 4 mm., cordate; outer linear, acute, nearly as long as inner and appressed to them. Nut 4 × 2 mm., ellipsoid, acute, smooth, brown.

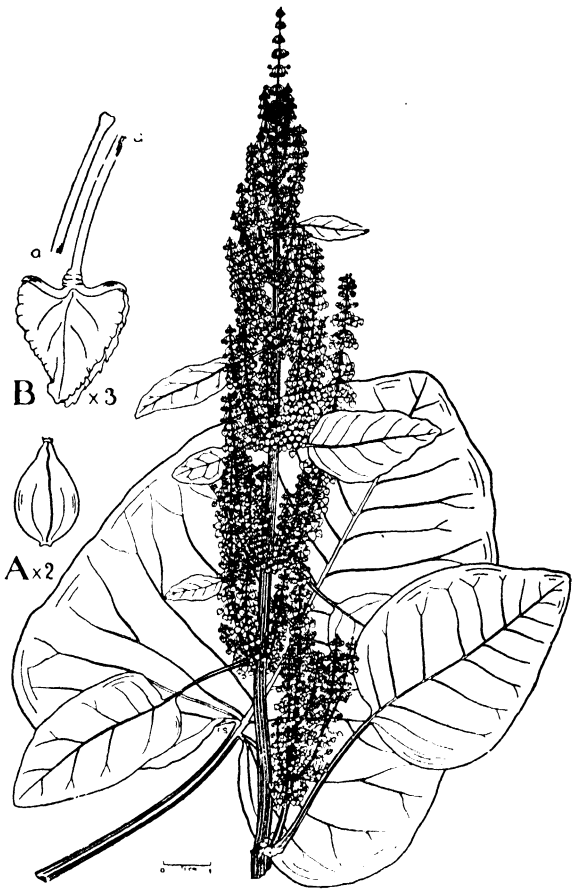
Early July—late Aug. (Bolton by Bowland, Yorkshire.)

A. flower. B. fruiting perianth. C. nut. D. barren flower.



811. RUMEX HYDROLAPATHUM Huds. The COMMON WATER DOCK is a stout, erect, much-branched perennial 12-60 in. (30-150 cm.) high. It is very common in marshes on the edges of streams and pools in the lowland parts of the British Isles, northwards to the Forth and Clyde. Branches many, spreading, inflorescence broad, rather leafy. Radical leaves 300-500 mm. long, broadly lanceolate, acute, base cuneate, margin wavy, crenate. Flowers hermaphrodite, green, spreading on rather long pedicels, forming large, lax whorls. Inner fruiting perianth segments about 5 × 3 mm., ovate, acute, with truncate base, each with a long, ovate tubercle. Nut 2·4 × 5·5 mm., broadly ovate, trigonous, somewhat apiculate, light brown.

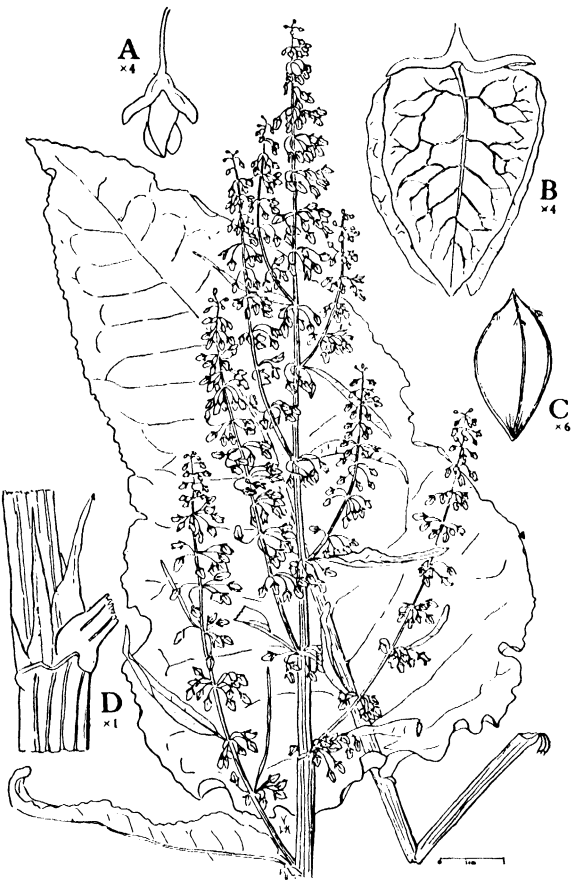
Mid June—late Sept. (Romsey, Hampshire.)
A. flower. B. fruiting perianth. C. nut. D. stipule.



812. RUMEX ALPINUS L. The MONK'S RHUBARB is a very stout perennial 12-50 in. (30-125 cm.) high, with many erect branches to the inflorescence, growing from a stout rhizome. It grows on waste ground and along streams near farms in N. England and Scotland, where its leaves are said to have been used to wrap the butter. Blade of lower leaves 200-300 mm. long, cordate, obtuse, the margin entire. Flowers hermaphrodite, reddish, spreading on rather short, slender pedicels; whorls dense, rather crowded in a long, erect, branched panicle. Inner fruiting perianth segments 6 × 5 mm., cordate-ovate, margin wrinkled, entire; tubercles 0. Nut 7 × 4 mm., elliptical, acute, shining, brown.

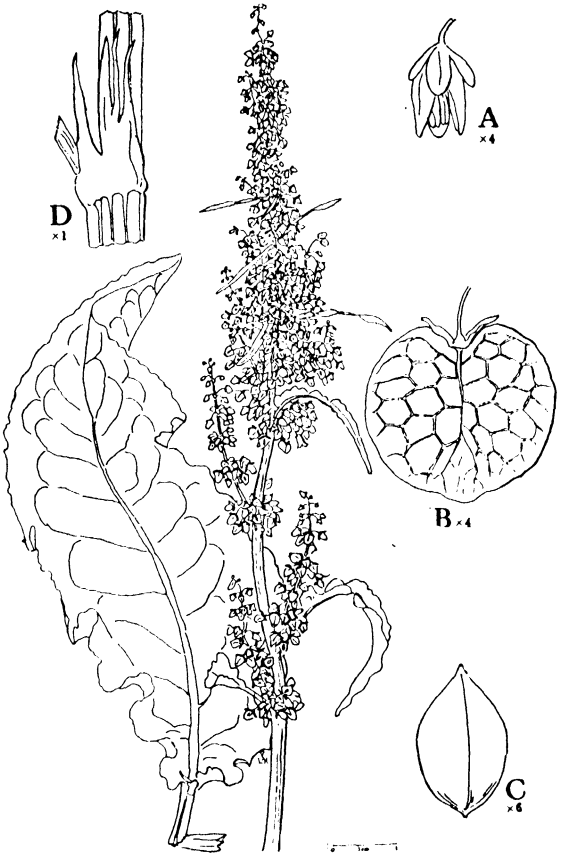
Late June—late July. (Adel, Leeds.)

A. nut. B. fruiting perianth.



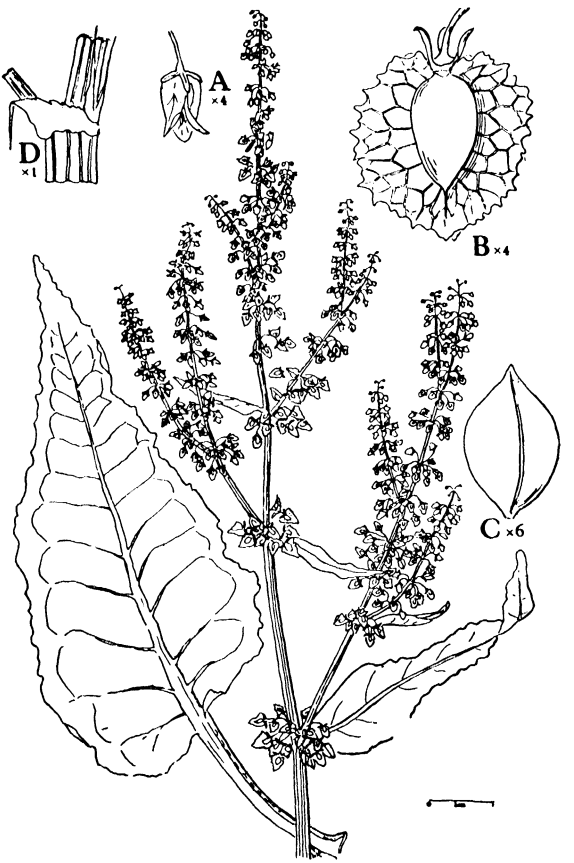
813. RUMEX AQUATICUS L. This LARGER WATER DOCK is a very stout, erect biennial or perennial 60-72 in. (150-180 cm.) high. It grows on the waterside in one or two places in Scotland. Branches many, erect, inflorescence narrow. Lower leaves 300-500 mm. long, broadly ovate with a more or less cordate base, margin slightly crenate. Flowers hermaphrodite, green, pendulous, on long, slender pedicels and forming rather dense, crowded whorls. Inner fruiting perianth segments 6 × 4 mm., roundly ovate, with rounded apex, strongly net-veined and with no tubercles. Nut 5·0 × 2·5 mm., narrowly ovoid, pointed at both ends, shining, brown.

Late July—early Sept. (by Loch Lomond, Dumbartonshire.)
A. flower. B. fruit. C. nut. D. stipule.



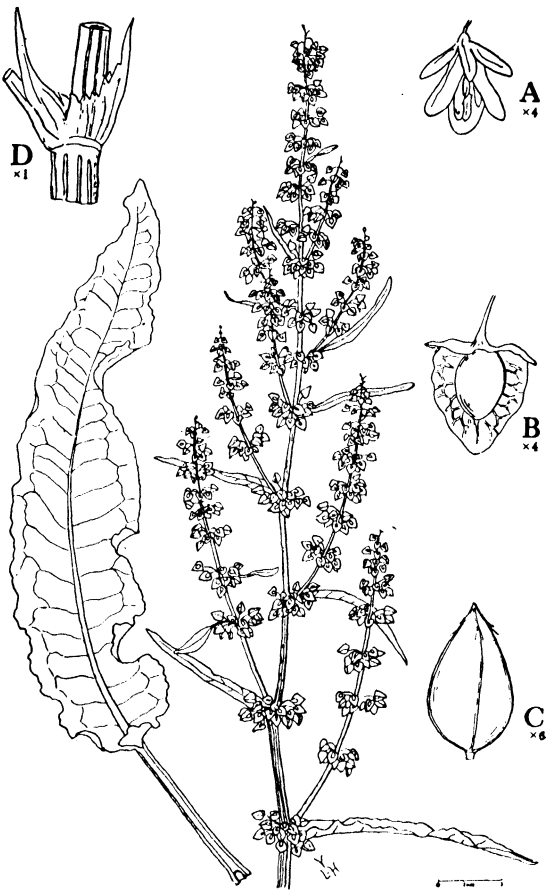
814. RUMEX LONGIFOLIUS DC (R. *domesticus* Hartm.). The GRAINLESS WATER DOCK is a stout, erect, much-branched biennial 12-30 in. (30-75 cm.) high, with many erect branches to the inflorescence. It is rather frequent in damp places by rivers and in ditches in N. Britain as far south as Yorkshire. Branches many, erect, inflorescence dense, narrow. Blade of lower leaves 300-600 mm. long, broadly to narrowly ovate, obtuse or subacute, the base subcordate, margin slightly crenate. Flowers hermaphrodite, green, very crowded, drooping, on rather short, stout pedicels and forming dense whorls. Inner fruiting perianth segments 5 × 7 mm., reniform, with entire margin, weak veins and no tubercles. Nut 3 × 2 mm., narrowly ovoid, pointed at both ends, hard, shining, brown.

Late July—early Sept. (Crathie, Aberdeen.)
A. flower. B. fruiting perianth. C. nut. D. stipule.



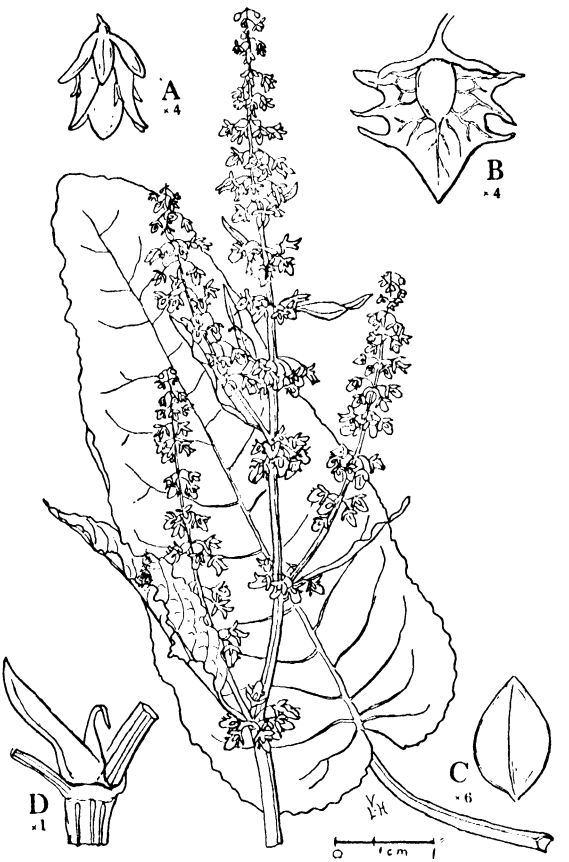
815. RUMEX ORIENTALIS (Bernh.) Danser. This WESTERN DOCK is a stout perennial 12-30 in. (30-75 cm.) high, with many ascending branches to the inflorescence. It is an adventive plant and is established on waste ground here and there in S. England. Blade of lower leaf 250-300 mm. long, oblong, ovate, acute, base truncate or subcuneate, margin undulate. Flowers hermaphrodite, green, pendulous, on rather short pedicels and crowded in a long, suberect panicle. Inner fruiting perianth segments 12 × 10 mm., broadly ovate or cordate, margin entire or denticulate, one with a very large tubercle, the others without or sometimes with smaller ones. Nut 2·5 × 2·0 mm., ovoid, shining, brown.

Mid June—mid Sept. (Hadleigh, Essex.)
A. flower. B. fruiting perianth. C. nut. D. stipule.



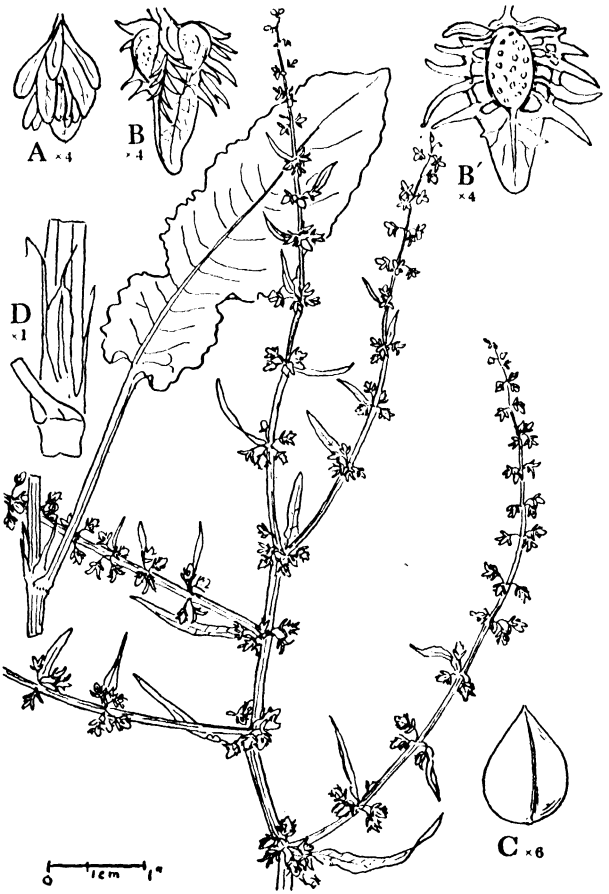
816. RUMEX CRISPUS L. The CURLED DOCK is an erect, much-branched biennial 12-30 in. (30-75 cm.) high. It is a very abundant weed in waste places, arable ground and on the seashore throughout the British Isles. Branches few, usually erect, sometimes ± spreading. Lower leaves with blade about 200 mm. long, narrowly lanceolate, margin usually wavy. Flowers hermaphrodite, green, spreading on short, rather stout pedicels and forming crowded and dense whorls. Inner fruiting perianth segments 4 × 3 mm., green, cordate or truncate, margin entire, at least one lobe with a large tubercle. Nut 3·5 × 3·0 mm., ovoid, pointed, shining, brown.

Mid June—mid Sept. (Totton, Hampshire.)
A. flower. B. fruiting perianth. C. nut. D. stipule.



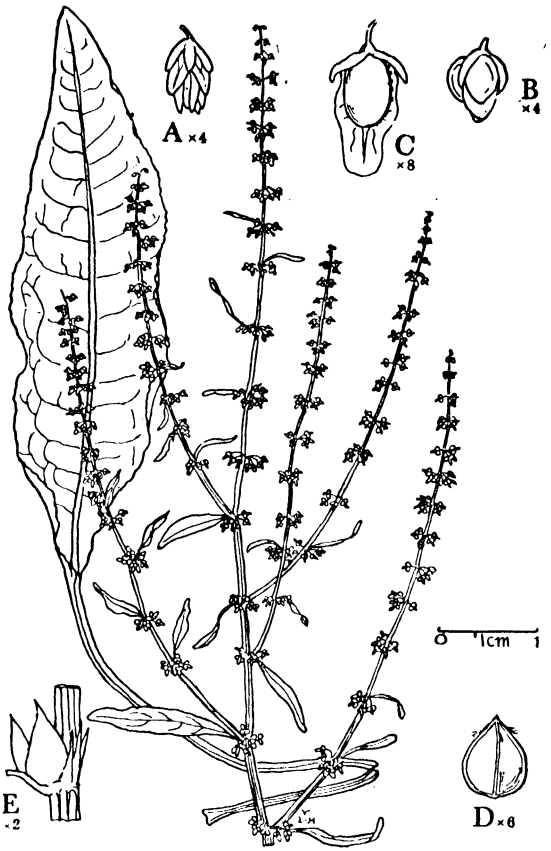
817. RUMEX OBTUSIFOLIUS L. The BROAD-LEAVED DOCK is a rather stout biennial 9-24 in. (23-60 cm.) high, with few, ascending branches to the inflorescence. It is abundant in waste places and in fields throughout the British Isles. Blade of radical leaves 150-200 mm. long, oblong-ovate, obtuse, base cordate, margin crenate. Flowers hermaphrodite, green, spreading on rather long, slender pedicels and in rather lax and distant whorls on the short, ascending branches. Inner fruiting perianth segments 5 × 3 mm., triangular, acute, margin of segments with 3-5 long, aristate teeth on each side, one segment usually tubercled. Nut 3·0 × 1·5 mm., ovate, acute, shining, brown.

Mid June—late Aug. (New Forest, Hampshire.)
A. flower. B. fruiting perianth. C. nut. D. stipule.



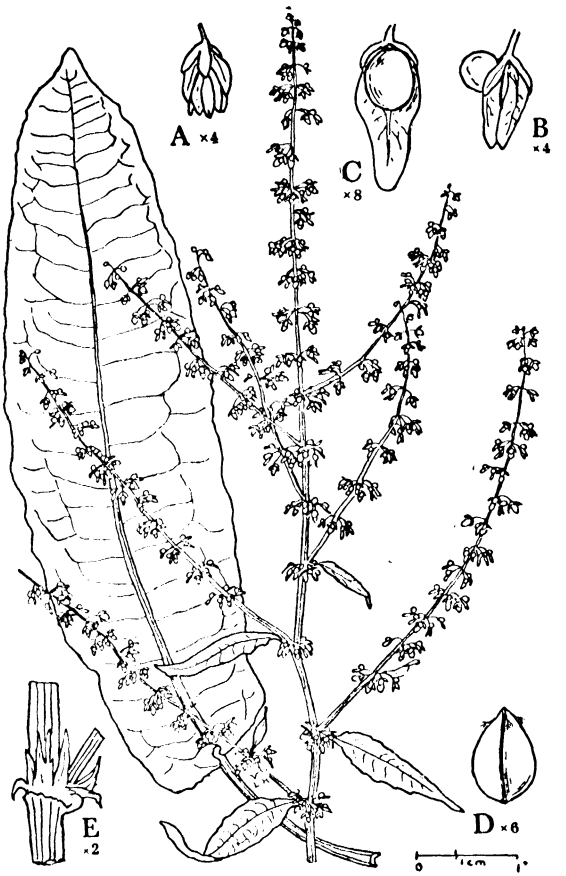
818. RUMEX PULCHER L. The FIDDLE DOCK is a stiff biennial or perennial 9-15 in. (23-38 cm.) high, with a few, almost horizontal, branches to the inflorescence. It occurs in waste places and grassland, especially near the sea in south, west and E. England to the Humber and the Severn and in Wales. Leaf blades 50-100 cm. long, lanceolate, but constricted in the middle (i.e. panduriform), obtuse; base cordate, margin undulate. Flowers hermaphrodite, green, pedulous on rather long, slender pedicels and forming rather dense but distant whorls on long, spreading or horizontal branches. Inner fruiting perianth segments 6 × 3 mm., triangular, acute or obtuse, each segment with an ovoid, rough tubercle and about 4 rather short teeth on each margin. Nut 2·5 × 2·0 mm., ovoid, acute, shining, dark brown.

Mid June—late July. (Creeksea, Essex.)
A. flower. B., B′. fruiting perianths. C. nut. D. stipule.



819. RUMEX SANGUINEUS L. (R. *nemorosus* Schrad.). The RED-VEINED or WOOD DOCK is a rather slender perennial 9-15 in. (23-38 cm.) high with few, spreading or ascending leafy branches to the inflorescence. It is abundant in woods, waste ground and shady places in the southern part of Britain, but rare in the northern half. Leaf blade 150-200 mm. long, lanceolate, subacute, base truncate or cuneate, margin undulate, veins usually green (var. *viridis* Sibth.), but rarely red (var. *sanguineus*). Flowers hermaphrodite, reddish, spreading on rather slender, short pedicels and forming lax and distant whorls on spreading branches; inner fruiting perianth segments 3 × 1 mm., ovate, acute, margin entire, one segment with an almost globular tubercle, the others with none. Nut 1·7 × 1·2 mm., ovate, acute, shining, brown.

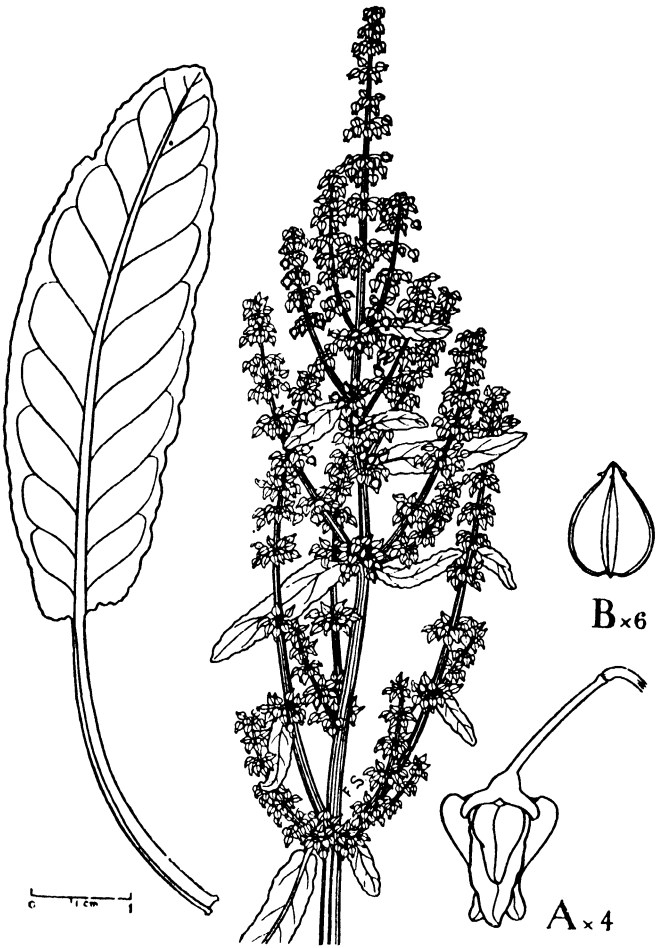
Late June—mid Aug. (Fambridge, Essex.)
A. flower. B. older flower. C. fruiting perianth. D. nut. E. stipule.



820. RUMEX CONGLOMERATUS Murr. The LESSER MARSH DOCK is a rather slender perennial 9-15 in. (23-38 cm.) high with many spreading or almost horizontal, rather leafy branches to the inflorescence. It is abundant in damp, grassy places throughout lowland Britain, but rare in Scotland. Leaf blades 150-200 mm. long, lanceolate, oblong or sometimes constricted in the centre, acute, base cuneate or sometimes truncate, margin undulate. Flowers hermaphrodite, reddish, spreading, on short, slender pedicels and forming lax and distant whorls on spreading branches. Fruiting perianth segments 3·5 × 1·5 mm., ovate, subacute, margin entire, each outer segment with an ovoid tubercle. Nut 2·7 × 1·5 mm., ovate, acute, shining, brown.

Late June—mid Aug. (Gloddaeth, Caernarvonshire.)

A. flower. B., C. fruiting perianth (two views). D. nut. E. stipule.



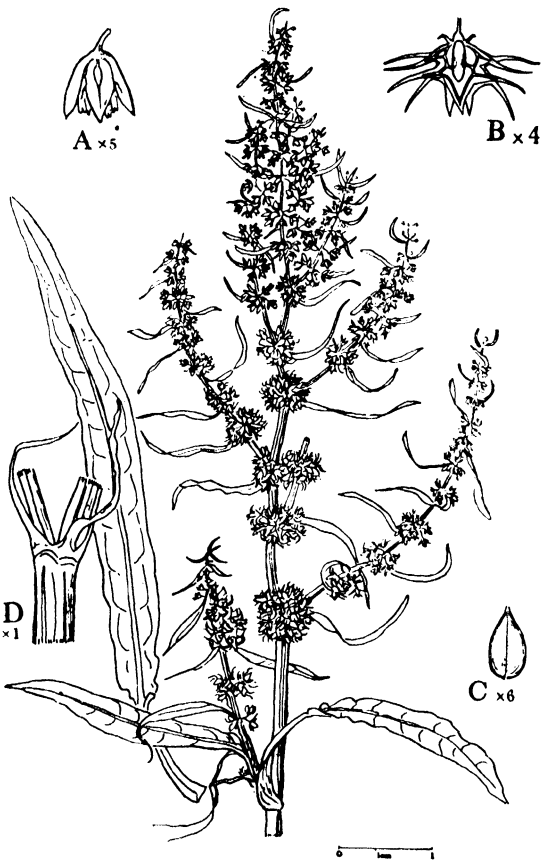
821. RUMEX RUPESTRIS Le Gall. This SEASIDE DOCK is a rather stout perennial 12-24 in. (30-60 cm.) high, with many ascending branches to the inflorescence, growing from a simple tap root. It occurs rarely on sea-cliffs and in the damp places among sand dunes in the S.W. of England and Wales. Blade of lower leaves 70-80 mm. long, lanceolate, subobtuse, the base truncate, margin undulate. Flowers hermaphrodite, green, drooping, on rather long, stout pedicels, forming rather distant whorls and a lax panicle. Inner fruiting perianth segments 5 × 4 mm., ovate, acute, with ± parallel sides, the base rounded, margin entire; each with a large, ovoid tubercle. Nut 2·5 × 2·0 mm., ovate-conical, shining, brown.

Late June—late July. (Polperro, Cornwall.)

A. fruiting perianth. B. nut.

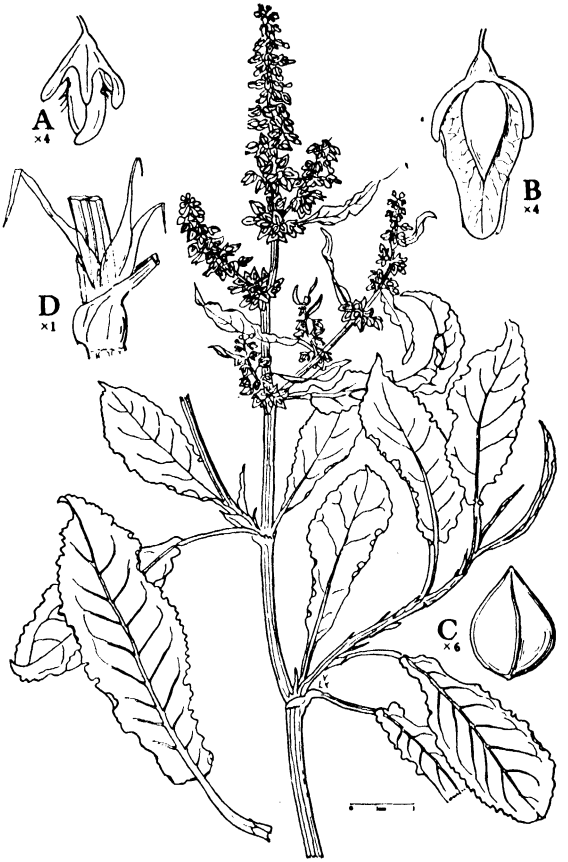
822. RUMEX PALUSTRIS Sm. (*R. limosus* auct.). The MARSH DOCK is a stiff, erect biennial or perennial 9-24 in. (23-60 cm.) high, with numerous ascending, rather dense-flowered branches to the inflorescence. It is a rather rare plant and occurs here and there on wet, muddy ground around pools in most of lowland England to the Tees and Eden. Leaf blades 200-250 mm. long, oblong-lanceolate, subacute, base cuneate or subtruncate, margin almost entire. Flowers hermaphrodite, brownish-yellow, spreading, on rather long, slender pedicels and forming very dense, rather distant whorls and a rather lax panicle with ascending branches. Fruiting perianth segments 5 × 2 mm., lanceolate, acute, each segment with an ovoid tubercle and about three teeth each side, not much longer than the width of the lobe. Nut 2·0 × 1·5 mm., narrowly ovoid, acute at both ends, shining, light brown.

Mid July—late Aug. (Teversham, Cambridge.)
A. fruiting perianth. B. single lobe of perianth. C. nut.



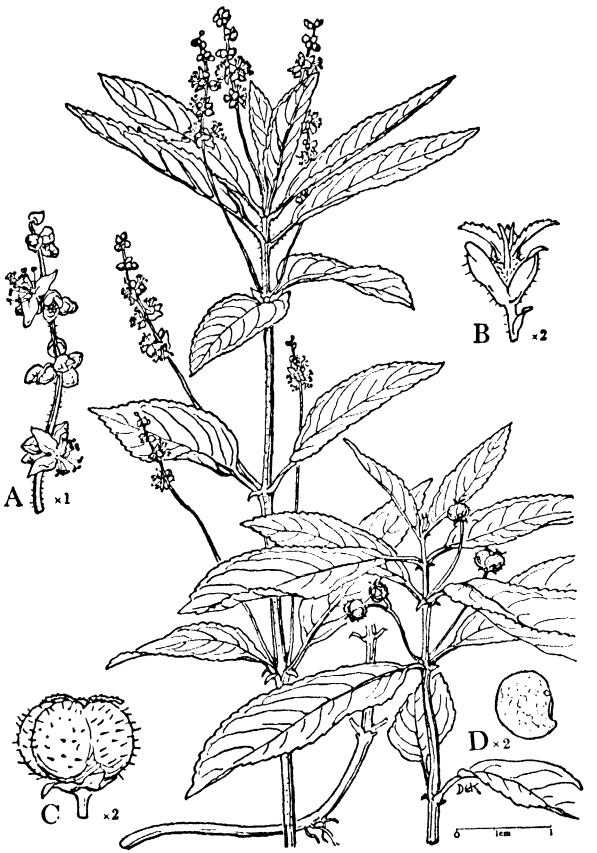
823. RUMEX MARITIMUS L. The GOLDEN DOCK is a stiff, erect biennial or perennial 9-15 in. (25-38 cm.) high, with numerous, spreading, dense-flowered branches to the inflorescence. It is an uncommon plant and occurs here and there on wet, muddy ground around pools and wet grassland in most of lowland Britain to the Forth. Leaf blades 120-200 mm. long, oblong-lanceolate, subacute, base cuneate or subtruncate, margin almost entire. Flowers hermaphrodite, golden yellow, spreading, on rather long, slender pedicels and forming very dense, almost contiguous whorls; branches spreading. Inner fruiting perianth segments 3 × 2 mm., lanceolate, acuminate, each segment with an ovoid tubercle and two teeth each side which are longer than the width of the perianth. Nut 1·0 × 1·5 mm., narrowly ovoid, trigonous, acute at both ends, brown, shining.

Late June—mid Sept. (Droitwich, Worcester.)
A. flower. B. fruiting perianth. C. nut D. stipule.



824. RUMEX FRUTESCENS Petit-Thouars. This S. AMERICAN DOCK is a rather stout perennial with a branched, flowering stem 9-15 in. (23-38 cm.) high, growing from a far-creeping rhizome with a few short, simple, rather lax-flowered branches to the inflorescence. It is naturalized in sandhills and near ports in W. England and S. Scotland Blade of the lower leaves 120-150 mm. long, coriaceous, lanceolate or obovate, obtuse or pointed, base cuneate, margin undulate, curled. Flowers hermaphrodite, green, in rather loose whorls in a dense raceme, a secondary inflorescence often growing from a lower axis and ultimately overtopping the primary one; pedicels short, spreading. Inner fruiting perianth segments 6·0 × 3·5 mm., ovate-acute, coriaceous, entire, all 3 tuberculate. Nut 2·0 × 1·7 mm., ovoid, acute at both ends, shining, brown.

Mid June—mid July. (Braunton, Devon.)
A. flower. B. fruiting perianth. C. nut. D. stipule.

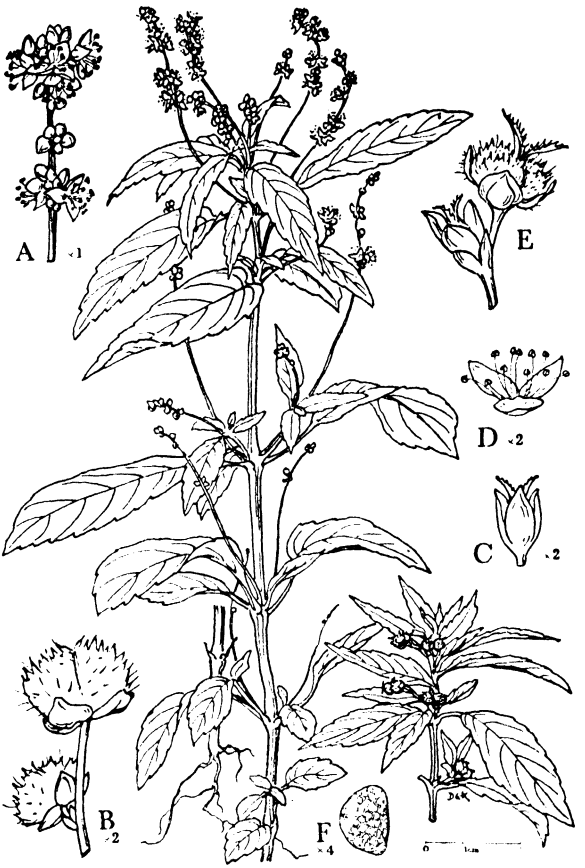


MERCURIALIS L. Small annual or perennial, diœcious herbs with inconspicuous green flowers. Perianth segments 3, almost free, rotate; stamens 8-15, free; ovary of two one-seeded cells; styles 2, free.

825. MERCURIALIS PERENNIS L. The DOG'S MERCURY is a perennial herb with a simple stem 6-12 in. (15-30 cm.) high, growing erect from a slender, creeping stolon. It is abundant and often dominant in woods and shady places throughout the British Isles. Leaves opposite, stalked, elliptical-lanceolate, acute, toothed, dark green, those on the female plant larger and wider than those on the male. Male flowers 4 mm. diam., in several-flowered clusters on long, axillary peduncles; female appearing some time after the male, 5 mm. diam., 1-3 on each long, axillary peduncle; perianth green, spreading in the male, suberect in the female. Fruit 5 × 8 mm., hairy; seed 3·0 × 2·5 mm., irregularly globular, smooth and finely hairy, grey.

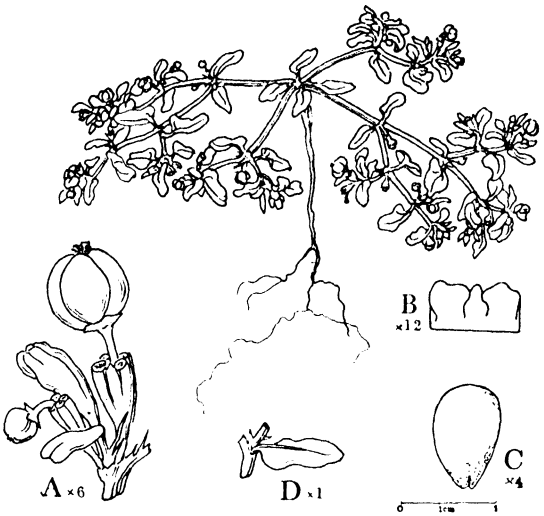
Mid Feb.—mid April. (Bethersden, Kent.)

A. male inflorescence. B. female flower. C. fruit. D. seed.



826. MERCURIALIS ANNUA L. The ANNUAL DOG'S MERCURY is a small annual 6-12 in. (15-30 cm.) high, which is found abundantly in arable and waste land in certain places in S. England and less commonly northwards to the Tyne and Ribble. Leaves opposite, shortly stalked, elliptical-lanceolate, acute, toothed, light green, of similar appearance on both plants. Male flowers 7 mm. diam., in several-flowered clusters on long axillary peduncles; female appearing about the same time as the male, 5 mm. diam., 1-5 subsessile in the leaf axils; perianth green, spreading on the male, suberect on the female. Fruit 3 × 4 mm., hispid, irregular; seed 2·5 × 2·0 mm., irregularly ovoid, honeycombed, grey.

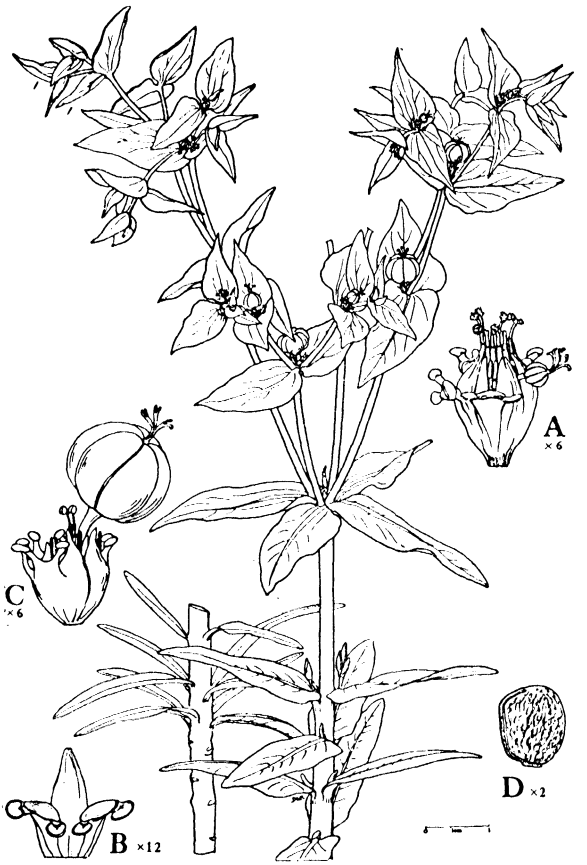
Mid July—mid Oct. (Burnham-on-Crouch, Essex.)
A. male inflorescence. B. fruits. C. female flower. D. male flower. E. female inflorescence. F. seed.



EUPHORBIA L. Leafy annual or perennial herbs with a milky juice, simple leaves and green, inconspicuous flowers. Inflorescence usually umbellate; partial inflorescence (the cyathium) of a cup-shaped involucre with 4-5 small teeth alternating with horizontal glands, within which are 10-15 male flowers consisting each of a single jointed stamen and a central, usually long stalked, female flower comprising a single, three-celled, three-seeded ovary with 3 styles. Fruit a capsule.

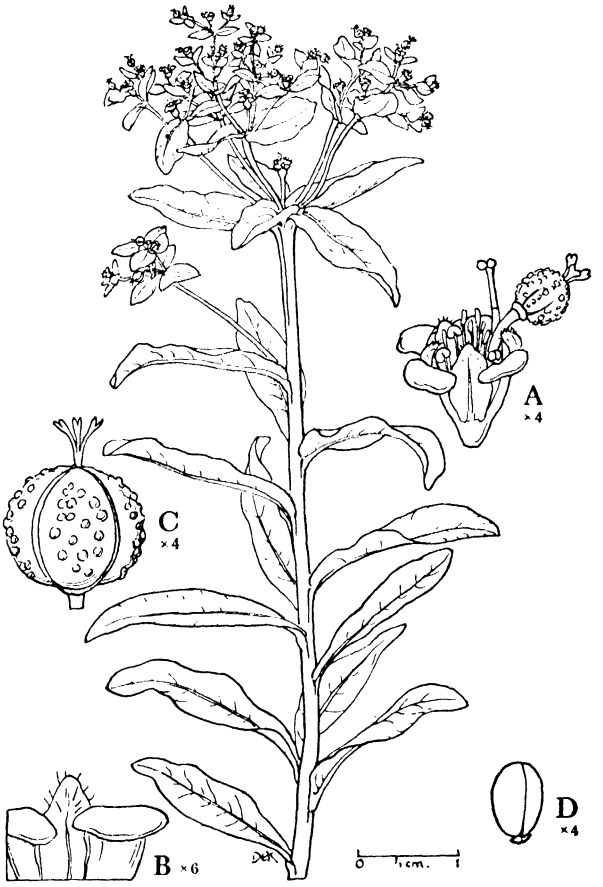
827. EUPHORBIA PEPLIS L. The PURPLE SPURGE is a small, glabrous plant with several, much-branched, prostrate, purple stems 3-8 in. (8-20 cm.) long, growing from a very short central axis. It occurs very rarely in shingle in a very few places on the south coast of England. Leaves opposite, spathulate, obtuse, entire, purple; bracts similar; stipules minute. Inflorescence repeatedly forked, flowers (i.e. the cyathium) 2 mm. diam., in the axis of each branch; involucral glands 4, horse-shoe shaped, whitish or purple. Capsule 3 mm., glabrous, smooth; seed 3 mm., ovoid, smooth, pale grey.

Mid July—early Sept. (Alderney.)
A. flower and capsule. B. gland. C. seed. D. bract.



828. EUPHORBIA LATHYRUS L. The CAPER SPURGE is a stout, glabrous and glaucous biennial with a simple, thick stem 12-30 in. (30-75 cm.) long. It grows in woods in a few places in England and Wales and more frequently in waste places as a casual or a semi-permanent weed of cultivation. Lower leaves often in four series, otherwise opposite, purplish green, sessile, narrowly to broadly lanceolate, acute, upper with auricles at base, margin entire; bracts triangular-ovate, green. Inflorescence of about 5 repeatedly branched rays, very much longer than the subtending leaves; flower 2·2 mm. diam., green, involucre glabrous, glands crescent-shaped with rounded, blunt, lateral points. Capsule 10-12 mm., trigonous, glabrous, smooth; seed 5·0 × 4·5 mm., broadly ovoid, wrinkled, grey.

Mid June—late Aug. (Deganwy, N. Wales.)
A. flower. B. gland. C. capsule. D. seed.

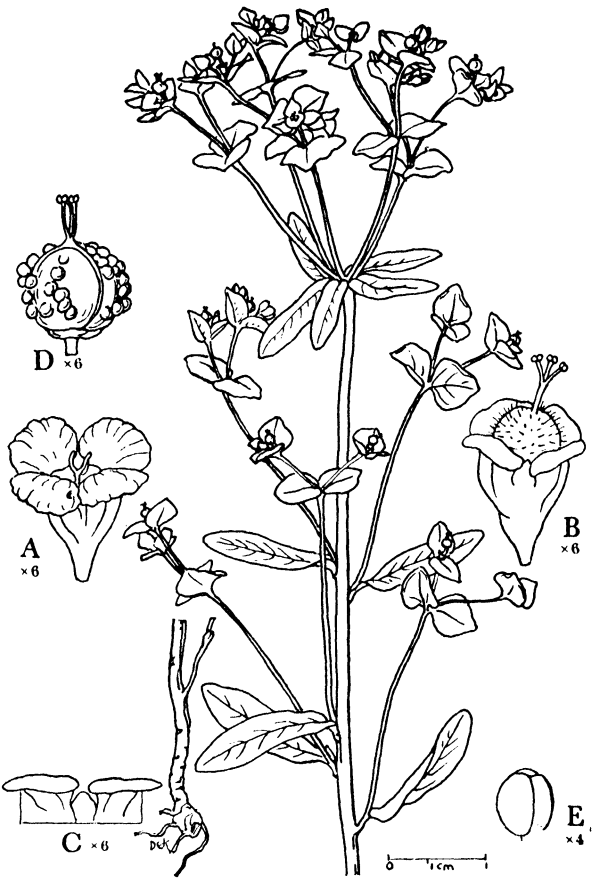


829. EUPHORBIA HYBERNA L. The IRISH SPURGE is a stout, glabrous or slightly hairy perennial with several, simple stems 12-18 in. (30-45 cm.) high, growing from a stout rootstock. It grows in woods and shady places in the south and west of Ireland and in N. Devon. Leaves mostly alternate, linear-lanceolate, sessile, with a somewhat auricled base, apex subacute, margin wavy; bracts ovate, similar to the leaves but more acute. Inflorescence of 5 rays, compact, a little longer than the subtending leaves; flowers 4 mm. diam., pale green; involucral glands ovate, rounded, yellow-green. Capsule globose, 2 mm. diam., warted, glabrous; seeds 2·5 × 1·7 mm., ovoid, glabrous, smooth, grey.

Mid May—early June. (Lynton, Devon.)

A. flower. B. gland. C. capsule. D. seed.

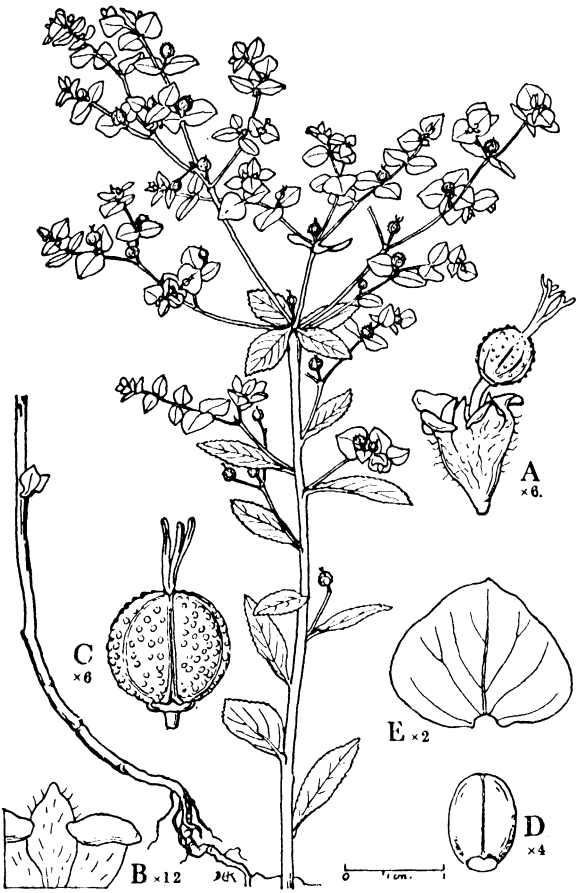
(*E. pilosa* L., somewhat similar to the above, but hairy, grew near Bath, but now possibly extinct.)



830. EUPHORBIA DULCIS L. This SLENDER SPURGE is a green perennial with many stems 6-18 in. (15-45 cm.) high, growing erect from a far-creeping rhizome. It is an introduced plant, naturalized in several hedgerows and shady places, especially in Wales and Scotland. Leaves alternate, lanceolate, obtuse, sessile, with slightly tapered base; margin entire or finely serrate at apex, green; bracts broadly ovate, free at base. Inflorescence of about 6 rays and several others below, twice forked, two to three times as long as subtending leaves; flower 3 mm. diam., green; involucral glands obovate, entire, becoming reddish. Capsule 15 mm., sub-globose, hairy when young, warted and naked when ripe; seed 2·0 × 1·7 mm , ovoid, glabrous, smooth, grey.

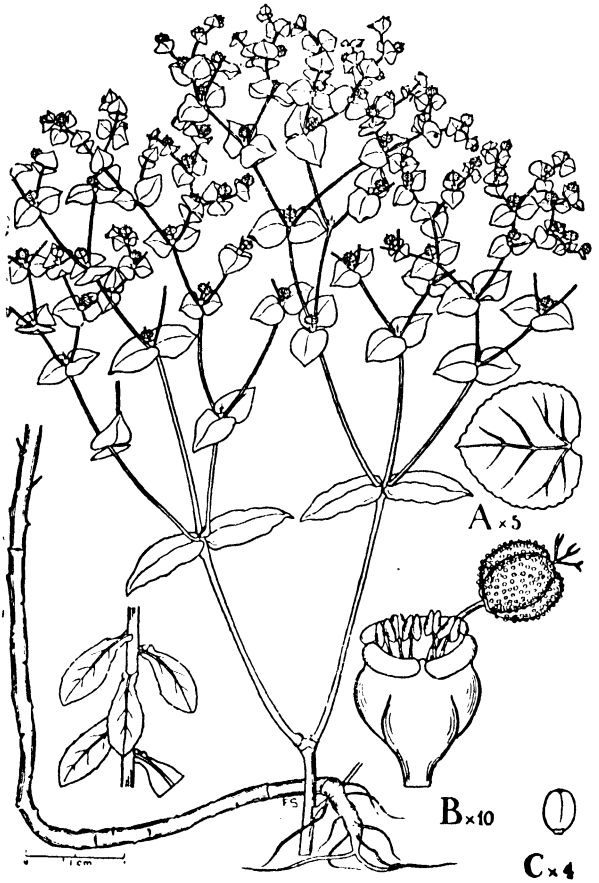
Mid May—early July. (Llandwrog, Caernarvon.)
A. young flower. B. mature flower. C. gland. D. capsule. E. seed.

(*E. coralloides* L. with reddish involucral glands and a woolly fruit is naturalized in Sussex.)



831. EUPHORBIA PLATYPHYLLOS L. The BROAD-LEAVED SPURGE is a slender, glabrous or somewhat downy annual or perennial with a simple stem 9-24 in. (23-60 cm.) high. It grows uncommonly in cultivated ground and waste places in the southern part of England southwards from Gloucester and Yorkshire. Leaves mostly alternate, lanceolate, sessile, with acute base, scarcely dilated, apex acute, margin serrate; bracts broadly ovate to subcordate, entire. Inflorescence of 5 principal rays with others below, open and much-branched and greatly exceeding the subtending leaves; flowers 2·5 mm. diam., green; involucre hairy, glands ovate, rounded or subacute, pale green. Capsule 5 mm. diam., sub-glubose, with hemispherical warts, glabrous; seed 3·0×2·2 mm., ovoid, smooth, grey.

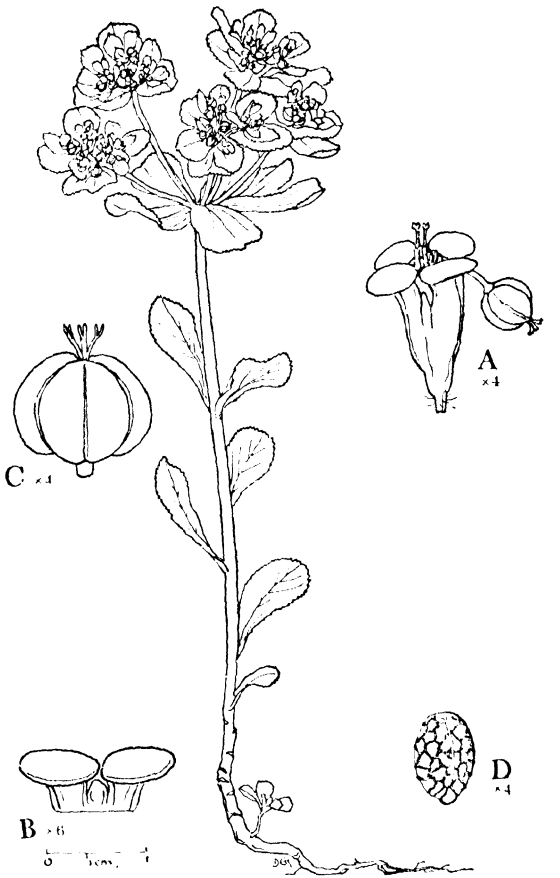
Mid July—early Sept. (Market Rasen, Lincolnshire.)
A. flower. B. gland. C. capsule. D. seed. E. bract.



832. EUPHORBIA STRICTA L. This UPRIGHT WARTED SPURGE is a rather slender, glabrous annual or perennial with a stem 9-20 in. (23-50 cm.) high, branched in the upper part. It grows only in limestone woods and banks in Monmouthshire and W. Gloucester. Leaves mostly alternate, lanceolate, sessile, acute, base slightly dilated, apex acute, margin of uppermost leaves serrate; bracts broadly ovate to subcordate, lower ones narrower and becoming like the leaves of the stem. Inflorescence of 5 principal rays with others below, open and much branched, and greatly exceeding the subtending leaves; flowers 2·2 mm. diam., green; involucre glabrous, glands ovate, rounded or subacute, pale green. Capsule 3 mm. diam., sub-globose, with cylindrical warts, glabrous; seed 1·5 × 1·0 mm., ovoid, smooth, red-brown.

Mid July—early Sept. (Tintern, Monmouth.)

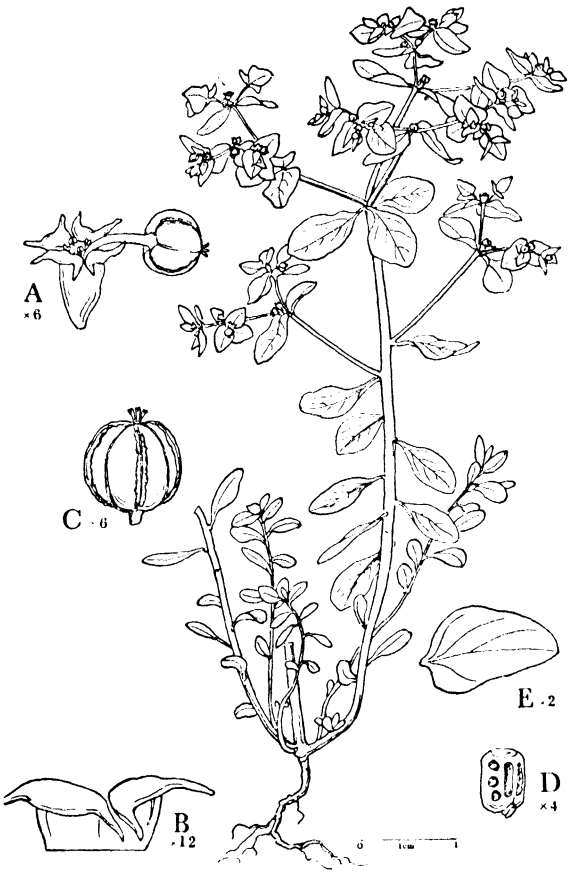
A. bract. B. flower. C. seed.



833. EUPHORBIA HELIOSCOPIA L. The SUN SPURGE is a small, glabrous, erect annual with a simple stem, branched only at the inflorescence, 3-12 in. (8-30 cm.) high. It grows very commonly in cultivated ground throughout the British Isles. Leaves alternate, obovate, very obtuse, base cuneate, margin finely serrate; bracts similar; stipules absent. Inflorescence five-rayed, compact, the primary branches somewhat longer than their subtending bracts; flowers 3-4 mm. diam., green; involucral glands ovate, entire, pale green. Capsule 3-5 mm. diam., sub-globose, smooth, glabrous; seed 3 × 2 mm., ovoid, glabrous, honeycombed, black.

Mid May—late Oct. (Bethersden, Kent.)

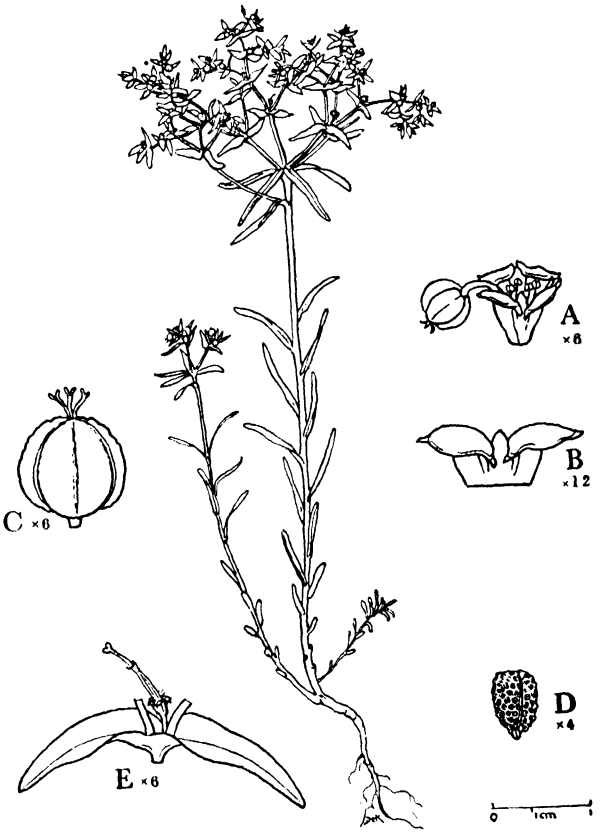
A. flower. B. gland. C. capsule. D. seed.



834. EUPHORBIA PEPLUS L. The PETTY SPURGE is a small, glabrous, erect annual with a much-branched stem 3-12 in. (8-30 cm.) high. It grows very commonly in cultivated ground throughout the British Isles. Leaves mostly alternate, lower ovate, upper ovate-spathulate, with base narrowed into a very short petiole, apex acute, margin entire; bracts somewhat broader. Inflorescence not in the form of a compact umbel, 2-6 rayed, much-branched and exceeding the bracts; flowers 2 mm., green; involucral glands 4, crescent-like, the horns narrow, acuminate, each about equalling the length of the gland, green. Capsule 2·0-2·5 mm. diam., sub-globose, smooth, glabrous; seed 1·2 × 1·5 mm., ovoid, tubercled, black.

Mid June—late Oct. (Bethersden, Kent.)

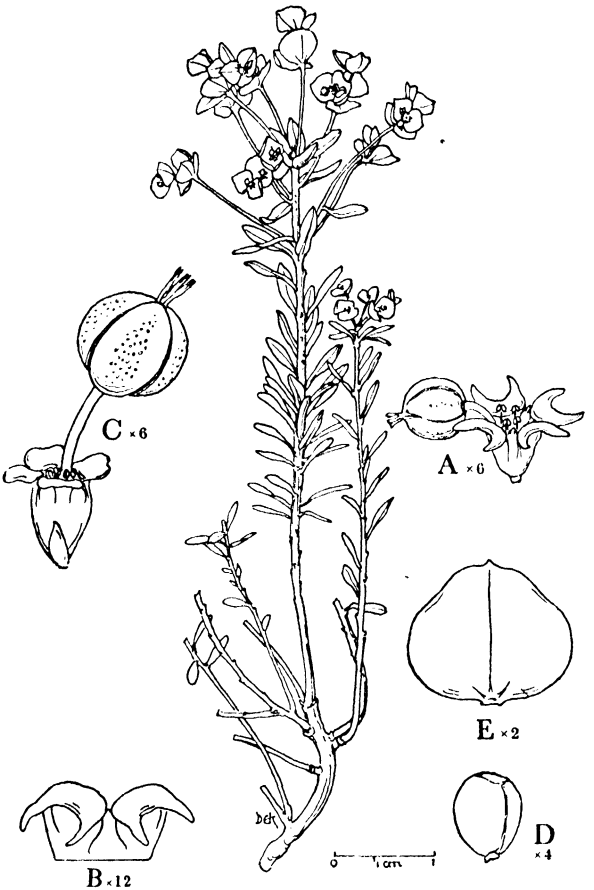
A. flower. B. gland. C. capsule. D. seed. E. bract.



835. EUPHORBIA EXIGUA L. The DWARF SPURGE is a very small, glabrous, erect, green annual with a slender stem 2-8 in. (5-20 cm.) high, branched from the base. It grows commonly in cultivated ground and waste places throughout the British Isles except in the extreme north of Scotland. Leaves mostly alternate, all alike, small, linear, sessile, apex subacute, margin entire; bracts similar but connate. Inflorescence fairly compact or loose, 3-5 rayed, much branched and twice as long as subtending leaves; flowers 1·8-2·0 mm. diam., green; involucral glands 4, ovate to crescent-shaped, with short, acuminate, lateral points, yellow-green. Capsule 2·0-2·5 mm., sub-globose, smooth or nearly so, glabrous; seed 2·0 × 1·5 mm., ovoid, deeply wrinkled, grey.

Early May—late Sept. (Stow-on-the-Wold, Gloucester.)

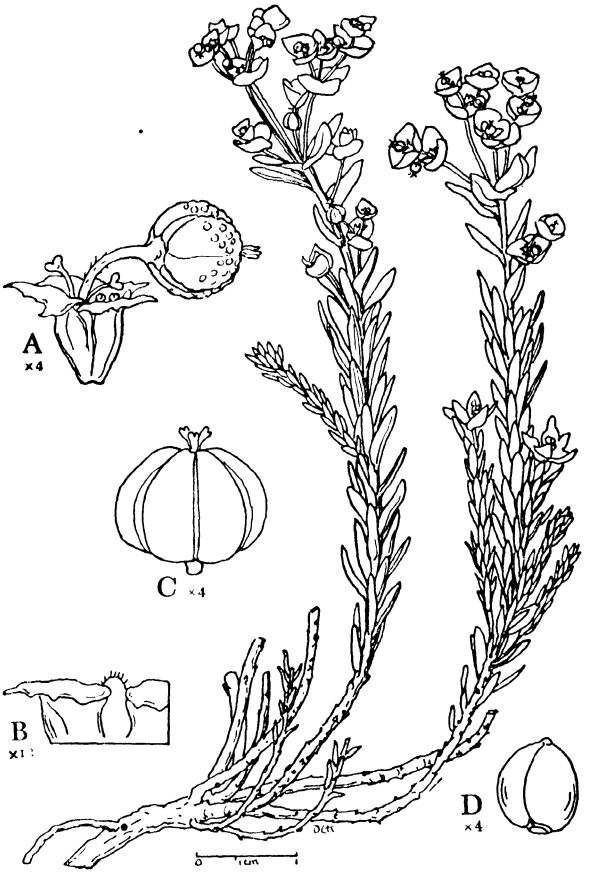
A. flower. B. gland C. capsule. D. seed. E. bracts.



836. EUPHORBIA PORTLANDICA L. The PORTLAND SPURGE is a rather stout, glaucous perennial with slender, glabrous stems 6-12 in. (15-30 cm.) high, rising from a woody base, some barren and others flowering. It grows among sand dunes on the S. and W. coasts of Britain. Leaves crowded in the centre of the stem, sessile, narrowly obovate or lanceolate, subacute and mucronate, upper leaves becoming rather wider; margin entire, midrib often reddish; bracts suborbicular, free at base. Inflorescence of 3 principal rays, with several others below, little branched and about4 times as long as the subtending leaves; flowers 1 mm. diam., reddish-green; involucre glands glabrous, crescent-shaped, narrow, with long, subacute lateral points, green. Capsule 2·5 mm. diam., trigonous, granulate on the keels; seed 3·0 × 2·5 mm., ovoid, pitted, grey.

Late May—mid Sept. (Hoylake, Cheshire.)

A. flower. B. gland. C. capsule. D. seed. E. bract.



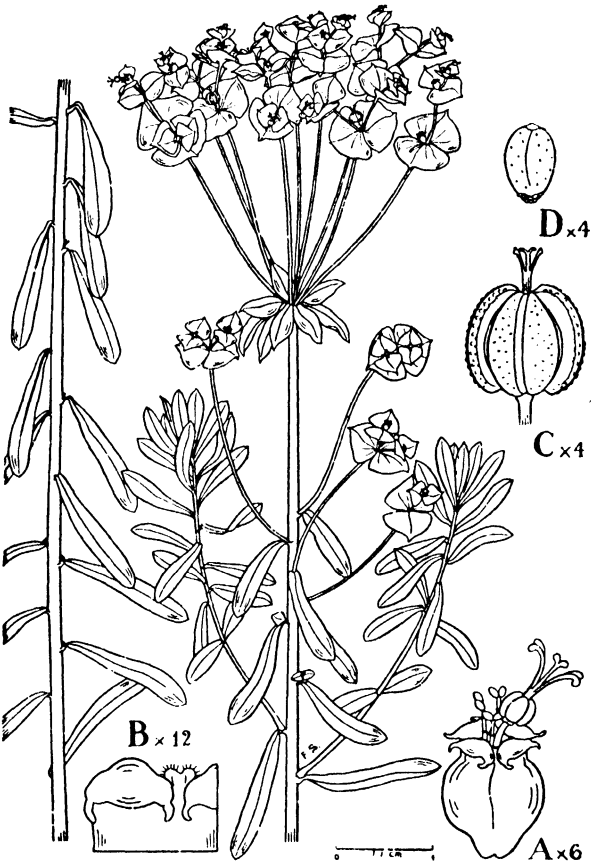
837. EUPHORBIA PARALIAS L. The SEA SPURGE is a stout perennial with several leafy, woody stems 8-18 in. (20-45 cm.) high, growing erect from a decumbent base, some barren and others flowering. It grows frequently among sand dunes on the coasts of Great Britain, southwards from Norfolk and Wigtown and all around Ireland. Leaves crowded on the stem, alternate, sessile, lanceolate, acute but not mucronate, margin entire, midrib obscure; bracts somewhat wider. Inflorescence of 5 principal rays and a few short ones below, little branched and about twice as long as the subtending leaves. Inflorescence rather small, flowers 2·2 mm. diam., green; involucre glabrous, glands crescent-shaped, rather wide, with short, triangular, acute lateral points. Capsule 4-5 mm. diam., trigonous, with deciduous tubercles, glabrous; seed 3·0 × 2·5 mm., broadly ovoid, smooth.

Mid July—late Sept. (Harlech, Merioneth.)

A. flower. B. gland. C. capsule. D. seed.

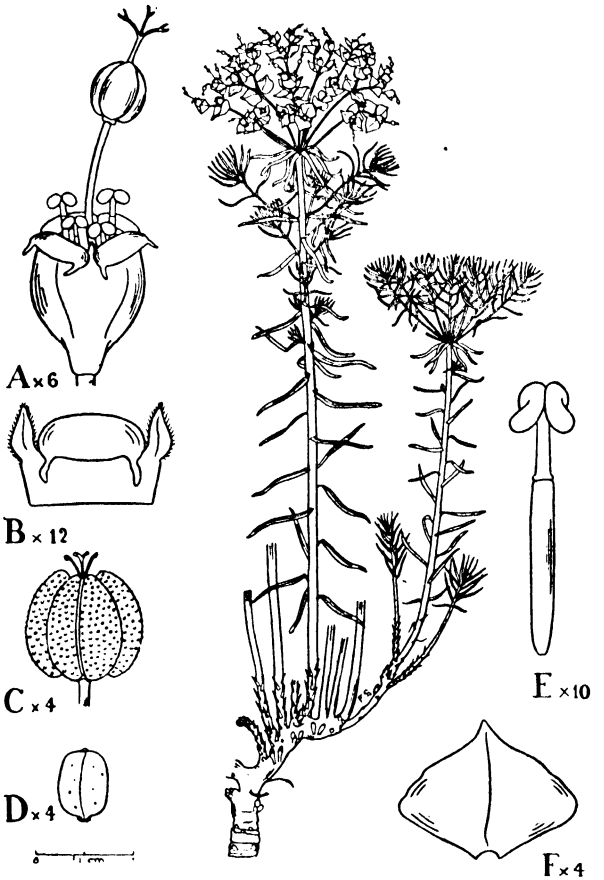
838. EUPHORBIA URALENSIS Fisch. ex Link (*E. virgata* W. and K. non Desf). This TWIGGY SPURGE is a stout, rather bushy, glabrous perennial with a branched flowering stem 9-24 in. (22-60 cm.) high, growing erect from a long, creeping rhizome. It occurs somewhat rarely on river banks and in waste places in England and S. Scotland. Flowering stem with some axillary leafy branches; leaves linear-lanceolate, alternate, sessile, narrowed at the base and gradually narrowed to an acute apex; outer bracts ovate, inner rhomboidal. Inflorescence of 8-12 rays, fairly compact, with some axillary flowering branches below, longer than the subtending leaves. Flowers 2-3 mm. diam., pale green; involucral glands roundish, horns thick, longer than the breadth of the lobe, alternating with a conspicuous bifid lobe, yellow-green. Capsule 3-4 mm. diam., trigonous, with many small tubercles, glabrous; seed 3 × 2 mm., ovoid, smooth, glabrous, greenish-brown.

Early June—late July. (Evesham, Worcester.)
A. flower. B. gland. C. capsule. D. seed.



839. EUPHORBIA ESULA L. This LEAFY SPURGE is a stout, rather bushy, glabrous perennial, with a branched, flowering stem 9-24 in. (20-60 cm.) high, growing erect from a long, creeping rhizome. It occurs very rarely in a few waste places here and there in various parts of Britain. Flowering stem with a few short, axillary, leafy branches; leaves linear-lanceolate, alternate, sessile, broadest portion above the middle, subobtuse and sometimes mucronate. Outer bracts oval-acute, inner triangular or cordate. Inflorescence of 8-13 rays, fairly compact, with a few axillary flowering branches below, much longer than the subtending leaves. Flowers 2-3 mm. diam., pale green; involucral glands roundish, horns short, narrow, alternating with bifid lobes, yellow-green. Capsule 3-4 mm. diam., trigonous, with few small tubercles, glabrous; seed 1·5 × 1·0 mm., ovoid, finely tubercled, glabrous, greenish.

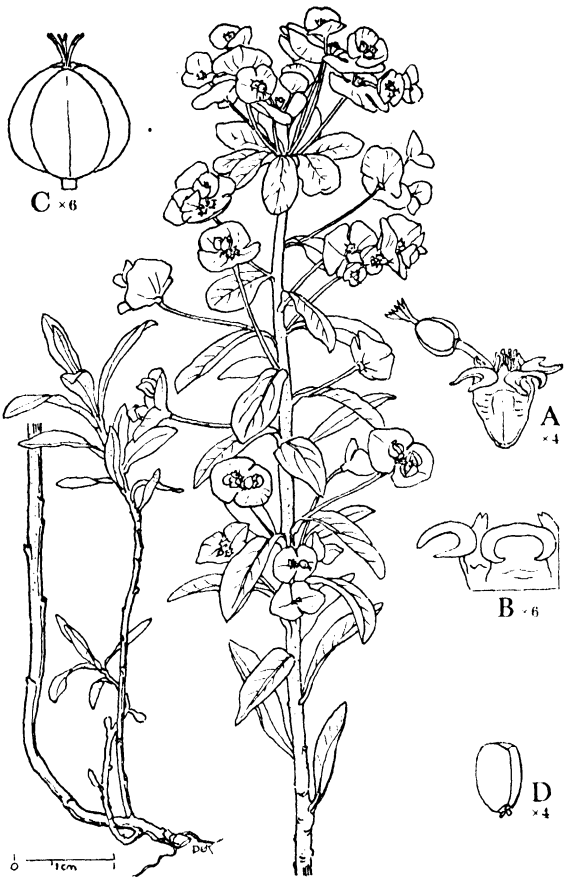
Early June—late July. (Selkirk, Scotland.)
A. flower. B. involucral glands. C. capsule. D. seed.



840. EUPHORBIA CYPARISSIAS L. The CYPRESS SPURGE is a rather slender, bushy, glabrous perennial with many erect, branched stems 6-12 in. (15-30 cm.) high, growing from a short, creeping rhizome. It occurs rather frequently as a casual weed, particularly in E. England, and it may be native in chalk grassland and scrub in some places. Plant with barren, leafy shoots growing from, or additional to, the flowering stem; leaves linear, alternate, sessile, with a dilated base, apex acute. Inflorescence of 10-15 rays, compact and much longer than the subtending leaves; outer bracts linear, inner rhomboidal; flower heads rather small. Flowers 2·5 mm. diam., yellow-green; involucral glands ovate, with very short horns. Capsule 4 mm. diam., trigonous, tubercled, glabrous; seed 2·0 × 1·7 mm., squarely ovoid, smooth, glabrous, brown.

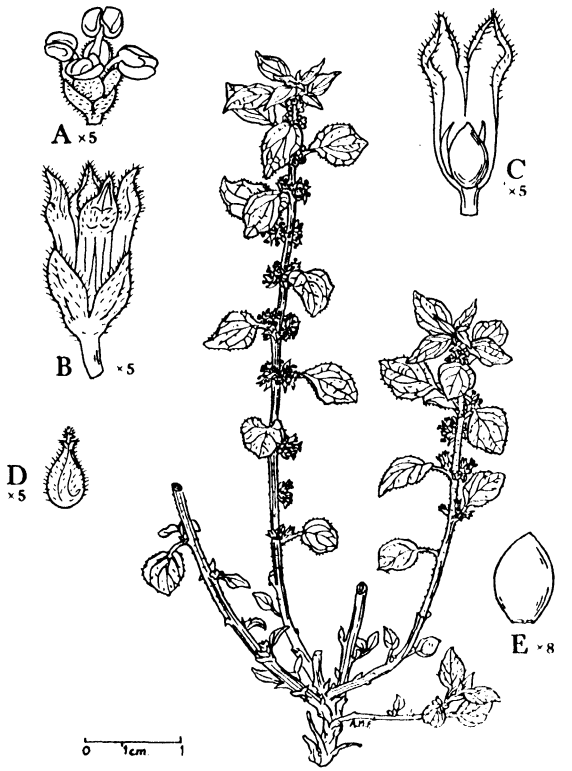
Late May—early Aug. (Freckenham, Suffolk.)

A. flower. B. involucral gland. C. capsule. D. seed. E. stamen. F. bract.



841. EUPHORBIA AMYGDALOIDES L. The WOOD SPURGE is a stout perennial with several thick, woody, rather hairy stems 9-20 in. (22-50 cm.) high, growing from a thick rootstock. It grows in damp woods throughout England and Wales, commonly in the south and rarely in the north. Leaves crowded in the middle of the stem, oblong, lanceolate, becoming wider upwards, acute, sessile, margin finely serrate; bracts rounded, connate, yellow-green. Inflorescence of 5-7 rays with others below, little branched and about twice as long as the subtending leaves; flowers 2 mm. diam., pale green; involucral glands glabrous, crescent-shaped, narrow, with long, acute, incurved lateral points, pale green. Capsule 4 mm., sub-globose, smooth, glabrous; seed 2·0 × 1·7 mm., ovoid, glabrous, smooth, light grey.

Mid May—mid June. (Woodham Walter, Essex.)
A. flower. B. gland. C. capsule. D. seed.

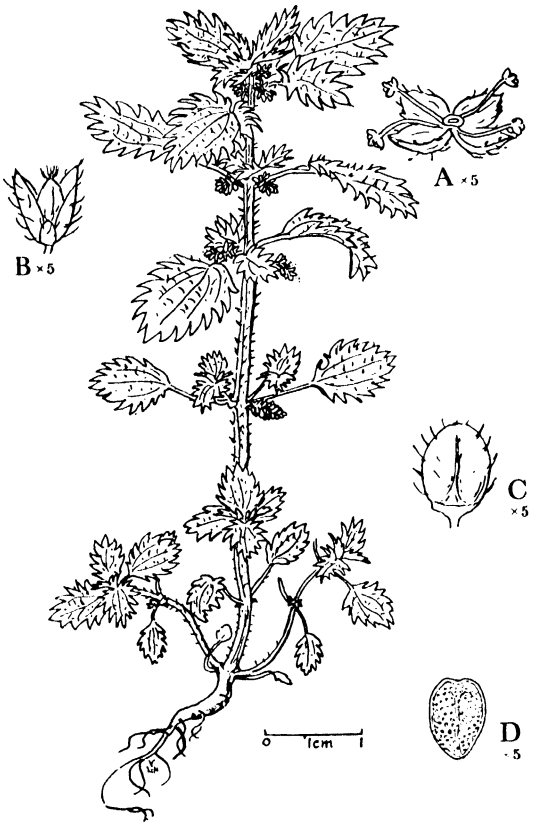


PARIETARIA L. Perennial herbs with alternate leaves and small hermaphrodite or unisexual flowers in cymes. Perianth 4-fid; stamens 4; style brush-like; fruit a 1-seeded nut.

842. PARIETARIA DIFFUSA Mert. and Koch. The PELLITORY-OF-THE-WALL is a small, softly hairy perennial herb with a cluster of several decumbent or spreading stems 6-10 in. (15-25 cm.) high, growing from the base of the plant. It is widespread and sometimes common on walls and rocks in England, Wales and Ireland and very rare in Scotland. Stem terete, hairy. Leaves roundly to narrowly ovate, apex acute or obtuse, margin undulate, blade wrinkled, hairy. Flowers in axillary clusters, usually unisexual; male 2 mm. diam., subtended by an involucre of 1 bract and 2 united bracteoles, perianth lobes obtuse, hairy; female flower 2·5 mm. diam. at the apex of the cluster; perianth lobes lanceolate, acute, united at the base, hairy at the top; ovary hairy. Nut 1·5 × 1·0 mm., ovoid with a truncate base, smooth, shining, black.

Mid June—mid Oct. (Althorne, Essex.)

A. male flower. B. female flower. C. female flower l.s. D. pistil. E. nutlet.

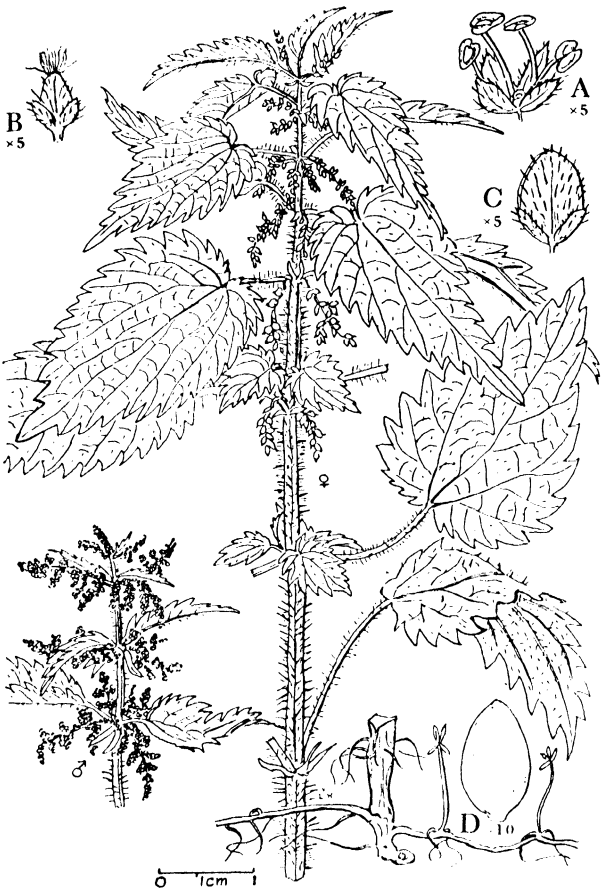


URTICA L. Annual or perennial herbs with opposite leaves covered with stinging hairs. Flowers green, inconspicuous, hermaphrodite or unisexual; perianth four-lobed, campanulate or stellate; stamens 4, styles many, brush-like; ovary one-celled, fruit a one-seeded nut.

843. URTICA URENS L. The LESSER STINGING NETTLE is a small, little-branched annual 6-24 in. (15-60 cm.) high, found, often abundantly, in cultivated ground in parts of lowland Britain, but not generally distributed. Stems quadrangular with stinging hairs. Leaves light green, ovate, deeply and sharply toothed, somewhat wrinkled. Flowers 2·5 mm. diam., unisexual, monœcious, in dense, nearly simple, axillary spikes 100 mm. long; male flowers at the base, perianth lobes green, ovate-obtuse, scabrid; female flowers 1·5 mm. diam. at the top of the clusters, perianth lobes 2 large and 2 small, lanceolate, acute, scabrid, the former longer than the nut. Nut 2·0 × 1·5 mm., ovate, truncate or cordate, compressed, margined, tuberculate, light green.

Early July—late Sept. (New Forest, Hampshire.)

A. male flower. B. female flower. C. nutlet. D. seed.

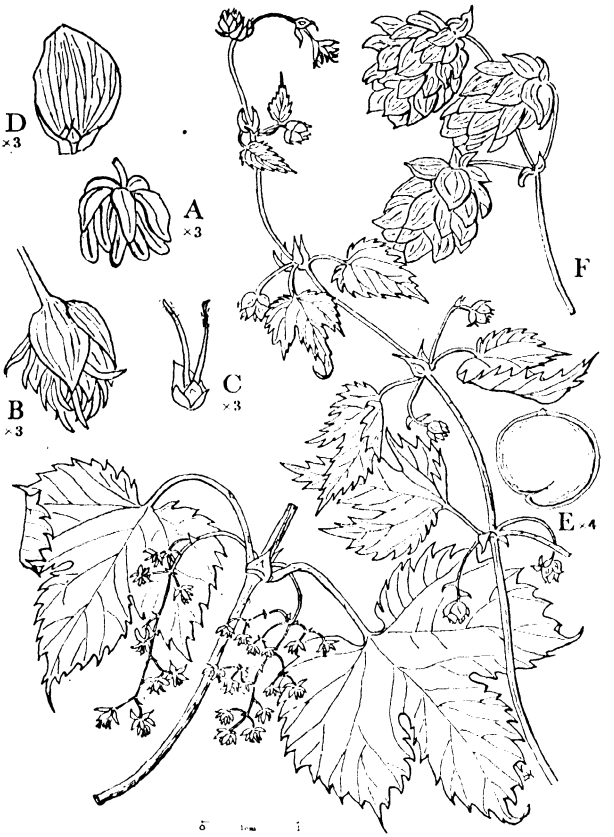


844. URTICA DIOICA L. The GREATER STINGING NETTLE is a robust perennial with simple annual stems 12-60 in. (30-150 cm.) high, growing erect from a strong, creeping, branched stock. It is abundant everywhere on rich, bare or disturbed soil. Stems quadrangular with stinging hairs (except var. *angustifolia*, in which they are absent). Leaves deep green, ovate-cordate or narrowly lanceolate, acute, rather deeply and acutely toothed, somewhat wrinkled. Flowers dioecious; male 2 mm. diam., in spreading, paniculate, axillary clusters, perianth lobes ovate, fimbriate; female flowers about 1·2 mm. diam., in almost simple, long, drooping, axillary panicles, lobes 4, 2 larger than the other 2, the former about half as long as the ovary. Nut 1·5 × 1·0 mm., ovoid, not compressed, almost smooth, dark green.

Early July—mid Sept. (Ower, Hampshire.)

A. male flower. B. female flower. C. fruiting perianth. D. seed.

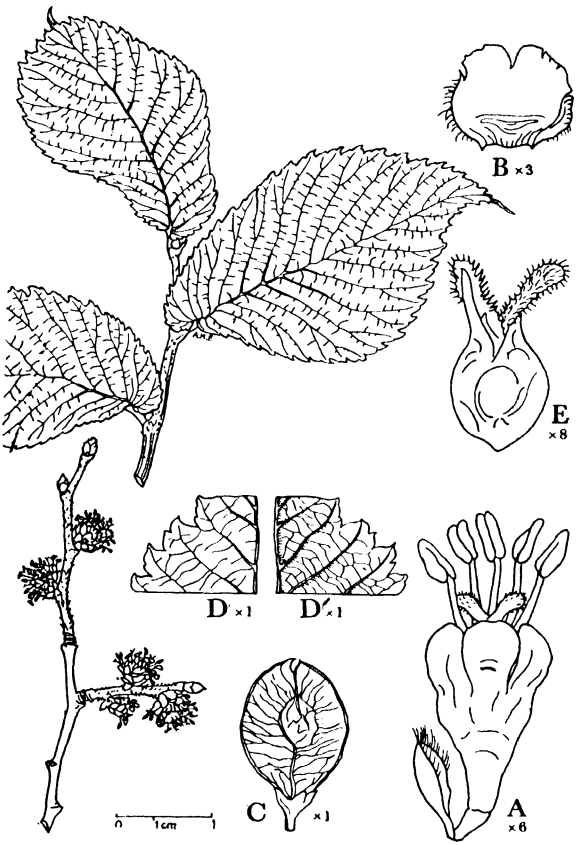
(*Urtica pilueifera* L., the Roman nettle, occurs as a very rare casual.)



HUMULUS L. Climbing herbs with diœcious flowers and conspicuous clusters of fruits. Perianth 5-lobed; stamens 5 in male flowers; styles 2 in female; fruit dry, 1-seeded, enclosed in the enlarged perianth.

845. HUMULUS LUPULUS L. The COMMON HOP is a climbing plant with annual stems up to 10 ft. (300 cm.) long, growing from a thick, perennial rootstock. It is common in hedges throughout England, but very rare in Scotland. Leaves palmate or cordate in outline, deeply three- or five-lobed, sharply toothed and very rough, with hardened hairs; stipules triangular, large. Male flowers about 5 mm. diam., in axillary panicles, very numerous; perianth reddish, five-lobed; lobes acute, spreading; female flowers numerous, 2 mm. diam., in small heads, two to six together, in shortly stalked, axillary clusters; styles 2, long, linear; fruit formed of the enlarged scales or bracts which develop into a foliaceous cone, completely concealing the seed-like fruits; nutlet 6 mm., globose, winged. Late July—mid Sept. (Caistor, Lincolnshire.)

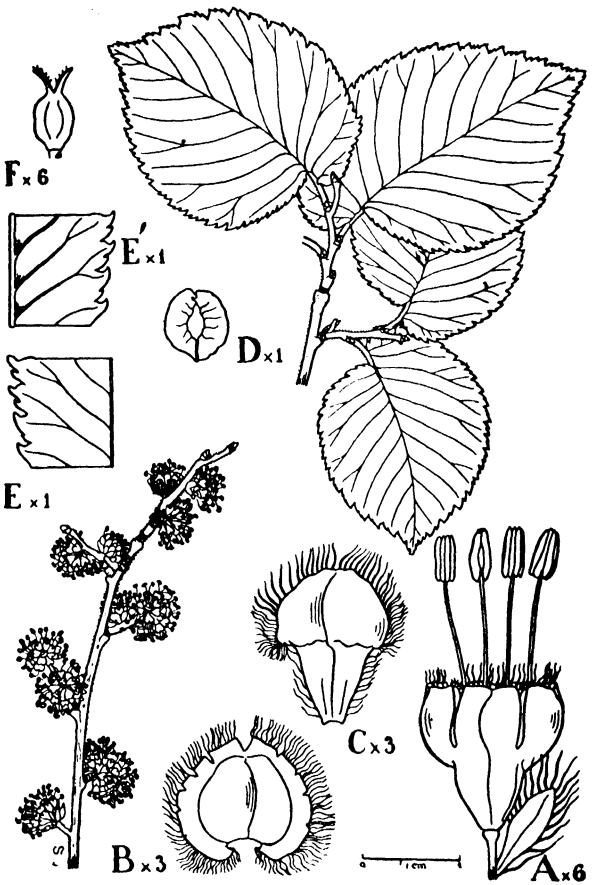
A. male flower. B. female inflorescence. C. female flower. D. bract. E. nutlet.



ULMUS L. Trees with toothed, ovate leaves and hermaphrodite flowers in globular clusters appearing first. Perianth campanulate, 5-lobed; stamens 5; ovary 1-celled; fruit a flattened, winged, seeded nut.

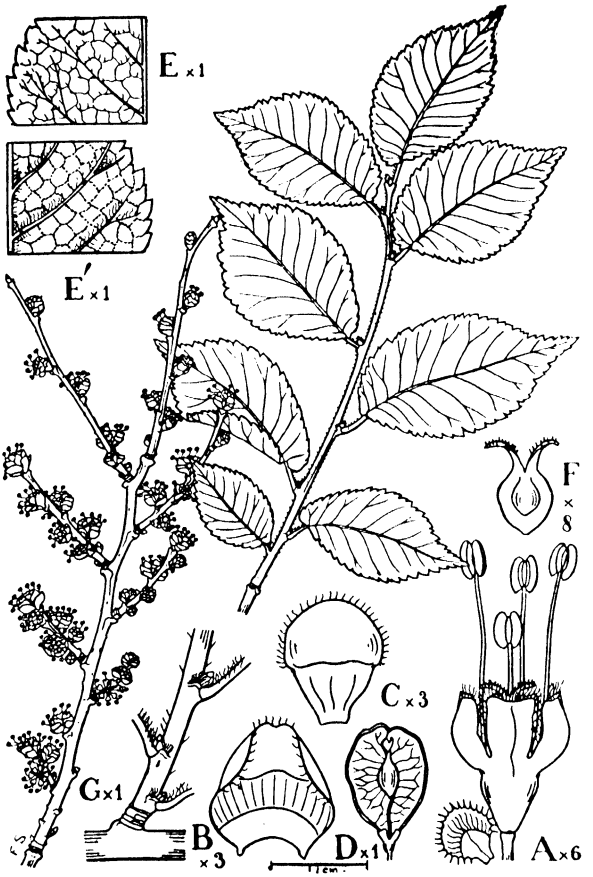
846. ULMUS GLABRA Huds. (*U. montana* Stokes). The WYCH ELM is a rather large tree up to 120 ft. (40 m.) high, with a broadly rounded outline. It grows rather commonly throughout the British Isles, but more abundantly in the west and north. Branches ascending and spreading, forming a closed canopy, twigs coarsely pubescent. Leaves large, 80-160 mm. long, scabrid, narrowly ovate, apex acuminate, base markedly asymmetric, the longer side with a rounded auricle, lateral veins numerous, margin markedly biserrate. Flowers 3 mm. diam., forming large 10-12 mm. clusters; bracts ovate, ciliate; perianth lobes red, entire. Fruit 15 × 20 mm., broadly ovate; seed central, notch distant from and not reaching the seed.

Early—late March. (Bramcote, Nottinghamshire.)
A. flower. B. outer scale. C. fruit. D. leaf, upper, and D′. lower surface. E. pistil.



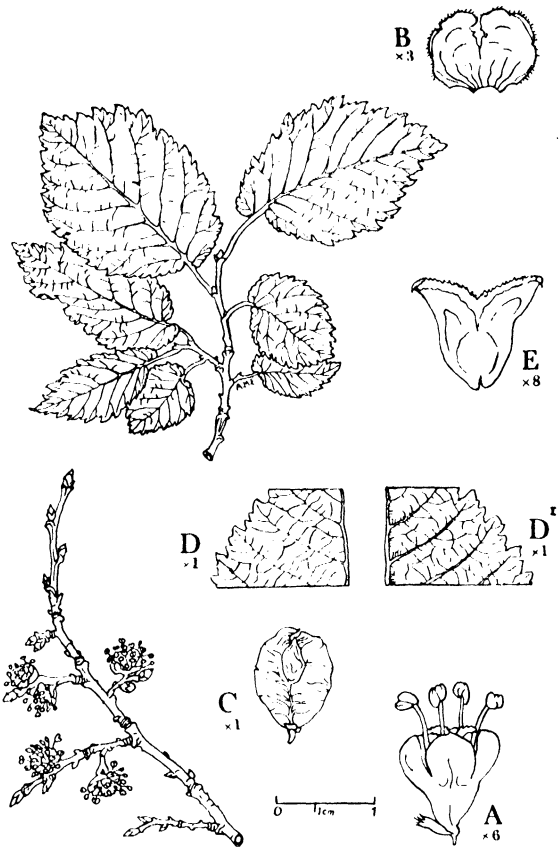
847. ULMUS PROCERA Salisb. (*U. campestris* auct.). The COMMON ELM is a large tree up to 90 ft. (25 m.) high with a rather cylindrical and interrupted outline. It grows abundantly in hedgerows and woods throughout England, though much less frequently in the north. Branches spreading and forming a close canopy and terminal crown, with other interrupted lobes below; twigs rather stout, permanently finely pubescent. Leaves 50-90 mm. long, scabrid above, pubescent below, broadly ovate, apex suddenly acute, base somewhat asymmetric but with no auricle; lateral veins 10-12 pairs, margin sharply biserrate. Flowers 2·5 mm. diam., forming rather large clusters (10-12 mm.); scales longer than broad, bracts ovate; perianth lobes red, entire, ciliate. Fruit 10 × 8 mm.; seed between the centre and the closed notch which nearly reaches the seed. Early—late March. (Kew, Surrey.)

A. flower and bract. B. outer scale. C. inner scale. D. fruit. E. leaf, upper, and E′. lower surface. F. pistil.



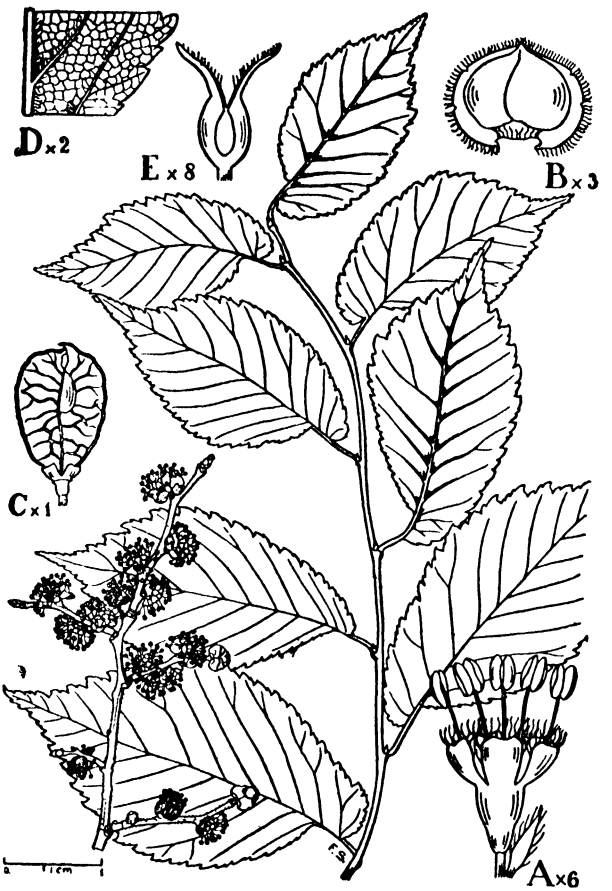
848. ULMUS ANGUSTIFOLIA (Weston) Weston (*U. stricta* Lindl.). The CORNISH ELM is a rather tall tree up to 60 ft. (18 m.) high, with a narrow, somewhat conical and cylindrical outline. It occurs mainly in the three S.W. counties of England. Branches short, lower spreading, upper ascending, forming a rather open, tufted, canopy; twigs rather slender, short, hairy. Leaves 30-60 mm. long, scabrid and nearly glabrous, narrowly to rather broadly ovate, apex acute, base slightly asymmetric; lateral veins 10-12 pairs, margin doubly and obtusely biserrate. Flowers 2 mm. diam., forming rather small (5-7 mm.) clusters; scales longer than broad, bracts roundish; perianth lobes tinged with red, entire, ciliate. Fruit 15 × 10 mm., seed between the centre and the curved open notch, which almost reaches the seed.

Mid March—early April. (nr. the Lizard, Cornwall.)
A. flower and bract. B. outer scale. C. inner scale. D. fruit.
E. leaf, upper, and E′. lower surface. F. pistil. G. twig.



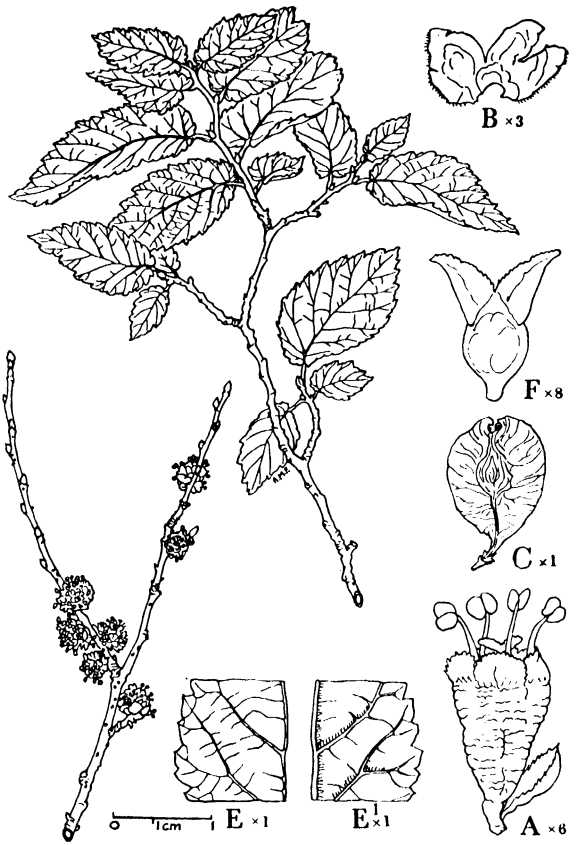
849. ULMUS CORITANA Melville. This CORITANIAN ELM is a rather tall tree up to 60 ft. (20 m.) high, with a broad, rather cylindrical outline. It occurs rather uncommonly in the alluvial valleys of the midland and eastern counties of England. Branches of the tree rather long and forming an open canopy; twigs rather thin, glabrous. Leaves 30-90 mm. long, coriaceous, bright green, glabrous except for a few tufts on under side, broadly ovate, apex acute, base very asymmetric but with no auricle; lateral veins 8-12 pairs, margin bluntly biserrate. Flowers 2 mm. diam., forming rather lax, medium (10-12 mm.) clusters; scales longer than broad; bracts ovate, serrate; perianth lobes red, entire. Fruit about 15 × 10 mm.; seed between the centre and the closed notch which reaches the seed.

Late March—mid April. (Sharnbrook, Bedfordshire.)
A. flower and bract. B. outer scale. C. fruit. D. leaf, upper, and D'. lower surface. E. pistil.



850. ULMUS CARPINIFOLIA Gleditsch (*U. nitens* Mœnch). The SMOOTH-LEAVED ELM is a large, erect tree up to 90 ft. (30 m.) high, with a wide, rounded outline. It grows in hedges and by roads in the S.E. counties of England. Branches spreading and ascending, forming a wide, rather open, canopy; twigs slender, pendulous, glabrous. Leaves 60-90 mm. long, almost smooth, glabrous and shining above, glandular and with tufts of hairs on the veins beneath, ovate-lanceolate, apex acuminate, base very asymmetric but scarcely auricled, lateral veins 9-12 pairs, margin doubly and bluntly serrate. Flowers 3 mm. diam., in medium (7-10 mm.) clusters; scales broader than long; bracts small, lanceolate; perianth lobes tinged with red, entire, ciliate. Fruit 15 × 12 mm.; seed between the centre and the conspicuous open notch which reaches the seed Mid March—mid April. (Beccles, Suffolk.)

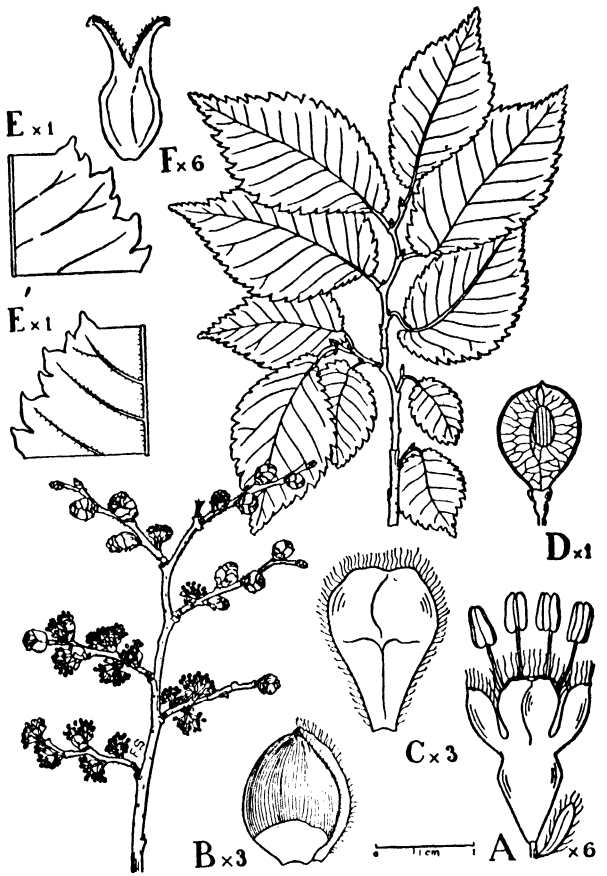
A. flower and bract. B. scale. C. fruit. D. portion of leaf. E. pistil.



851. ULMUS PLOTII Druce. PLOT'S ELM is a large tree up to 90 ft. (30 m.) high, with a wide, irregular, rounded outline. It grows in hedgerows chiefly in the western region of central England. Branches almost horizontal and curving upwards at the ends, forming an open canopy twigs slender, pendulous, glabrous. Leaves 30-60 mm. long, glabrous and somewhat scabrid above and glandular, with a few axillary tufts below, narrowly ovate, apex acute, base somewhat asymmetric and obliquely truncate, lateral veins 7-10 pairs, margins bluntly and irregularly serrate. Flowers 2·7 mm. diam., in medium (7-10 mm.) clusters; scales rather longer than broad; bracts medium, ovate; perianth lobes red, dentate; fruit 14 × 12 mm.; seed between the centre and the open notch, which reaches the seed.

Late March—early April. (Farndon, Nottinghamshire.)

A. flower. B. scale. C. fruit. E. leaf, upper, and E'. lower surface. F. pistil.



852. ULMUS DIVERSIFOLIA Melville (*U. minor* auct.). The SMALL-LEAVED ELM is a rather large, erect tree up to 60 ft. (20 m.) high with a narrow, cylindrical outline. It grows in hedgerows in the eastern counties of England. Branches short, lower spreading, upper ascending, forming an open canopy; twigs slender, spreading, hairy. Leaves 40-80 mm. long, of varied shape, usually ovate, scabrid above, glandular and shortly pubescent beneath with axillary tufts, apex acute, base in some leaves asymmetric and almost auricled, in others symmetric with cuneate base; lateral veins 5-10, fewer on the symmetric leaves, margin bluntly and doubly serrate. Flowers 3 mm. diam. in small (5-7 mm.) clusters, scales rounded; bract small, ovate; perianth lobes tinged with red, ciliate. Fruit about 12 × 10 mm.; seed between centre and the curved open notch, which reaches the seed.

Mid March—early April. (Hertford.)

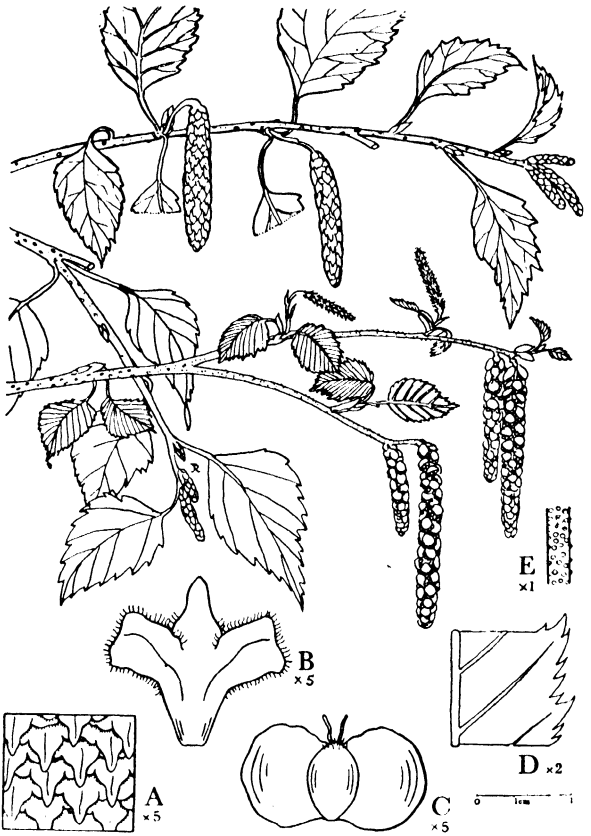
A. flower. B. outer scale. C. inner scale. D. fruit. E. leaf upper, and E′. lower surface. F. pistil.

MYRICA L. Small shrubs with diœcious flowers appearing before or with the resinous leaves. Catkins erect; stamens 4-8, almost sessile; styles 2; ovary single; fruit a small, resinous, drupe-like nut with one seed.

853. MYRICA GALE L. The SWEET GALE or BOG MYRTLE is a small shrub up to 6 ft. (2 m.) high, which grows, often abundantly, in bogs and wet moors throughout the British Isles, though it is rare in the drier parts. Branches ascending, slender, erect, tough, glandular, red. Leaves glaucous, with scented glands, oblanceolate, obtuse or subacute, base cuneate, margin serrate in upper part, glabrous. Male catkins about 10 mm. long, appearing before the leaves, narrowly ovoid, erect; bracts cup-like, glabrous, red-brown, bracteoles absent, stamens sessile; female about 6-7 mm. long, bracts green, ovate, bracteoles 2, styles linear, red. Drupe 3·2 × 2·2 mm., ovoid, glandular, green; stone 3 × 2 mm., ovoid, smooth.

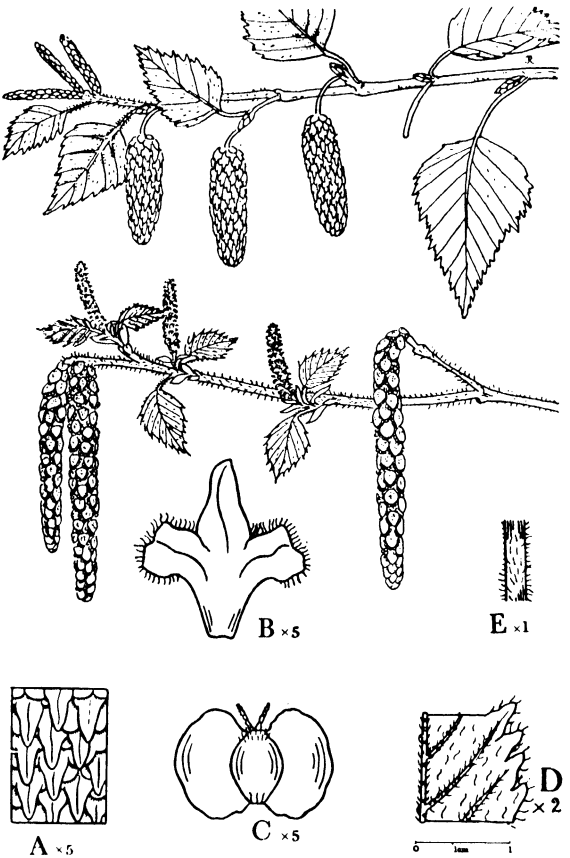
Mid April—late May. (New Forest, Hampshire.)

A. male flower. B. female flower. C. cluster of drupes. D. stone.

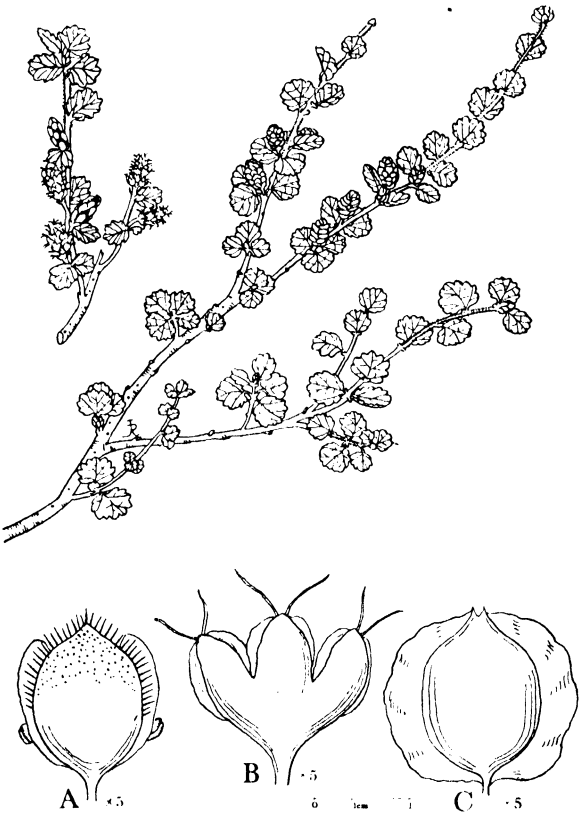


BETULA L. Deciduous monœcious trees or shrubs. Male catkins pendulous or suberect; perianth minute, stamens 2, bifid below the anthers; female cylindrical with 3-lobed scale and 2 persistent styles.

854. BETULA PEDULA Roth (*B. verrucosa* Ehr. *B. alba* auct.). The COMMON SILVER BIRCH is a small to tall tree up to 70 ft. (23 m.) high, with slender branches and a rounded outline. It grows commonly in woods and heaths throughout the British Isles and especially in the drier parts and soils of the country. Branches pendulous, twigs slender, glabrous, with conspicuous warts. Leaves ovate, deltoid, apex acuminate, base broadly cuneate, margin doubly serrate with acute, upcurved teeth, blade glabrous. Catkins appearing before the leaves; male about 80 mm. long, subtended by a glabrous, ovate-lanceolate bract; female about 20 mm. long, slender, erect, scale trifid, acute, the terminal lobe about the same length as the larger, squarish lateral ones. Fruit 5 × 2 mm. each; wings about 1·5 times as wide as achene and much shorter than the stigma. Mid April—mid May. (Cheddleton, Staffordshire.)
A. portion of female catkin. B. catkin scale. C. fruit. D. portion of leaf. E. part of twig.



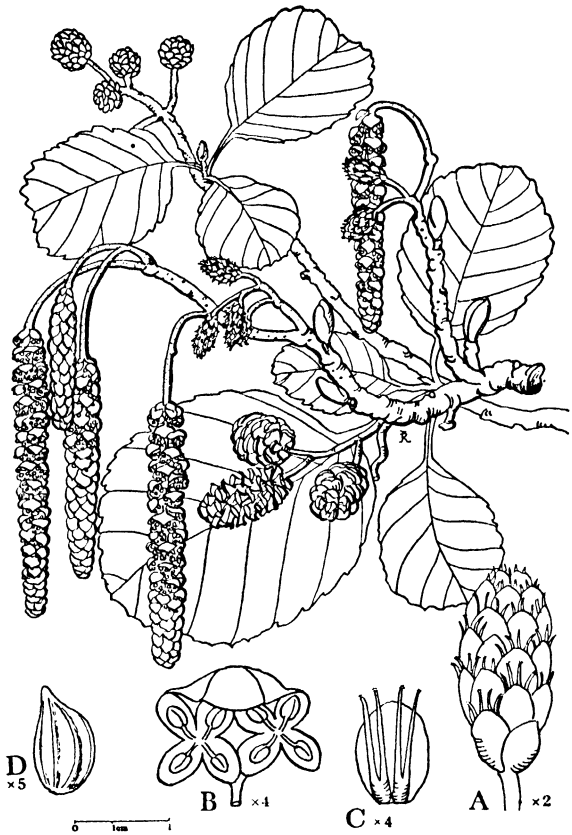
855. BETULA PUBESCENS Ehrh. This HAIRY-TWIGGED SILVER BIRCH with pubescent twigs is a small to tall tree up to 60 ft. (20 m.) high, with a smooth grey bark of uniform texture and sometimes deep grooves, slender branches and a rounded outline. It grows commonly in woods and heaths throughout the British Isles, and especially in the wetter parts and soils of the country. Branches spreading or ascending, pubescent. Leaves very variable, ovate to rhomboidal, subacute to acute, coarsely and irregularly serrate; teeth straight, blade pubescent on the veins below. Male catkins up to 80 mm. long, obvious throughout the winter, opening with or just before the leaves, pendulous, flowers 2-3 mm. diam., subtended by a glabrous, ovate bract; female catkins 20 mm. long, slender, erect, scale trifid, acute, the terminal lobe longer than the squarish lateral ones. Fruit 4 × 2 mm.; wings of fruit about 1·5 times as wide as the achene and usually shorter than the stigmas. Mid April—mid May. (Layer Marney, Essex.)
A. part of female catkin. B. catkin scale. C. fruit. D. part of leaf. E. part of twig.



856. BETULA NANA L. The DWARF BIRCH is a dwarf shrub with spreading branches up to 40 in. (100 cm.) high, which grows rarely on mountain moors in Scotland and in Northumberland. Branches spreading, twigs pubescent. Leaves orbicular to broadly ovate, rounded at both ends, deeply and irregularly crenate, blade becoming glabrous. Male catkins about 8 mm. long, opening with the leaves, pendulous; flowers subtended by an ovate bract; female 5-10 mm. long, erect; scale trifid, all three lobes narrow, acute. Fruit 4·0 × 2·5 mm.; wings of fruit very narrow and shorter than the stigmas.

Early—late May. (Clova, Forfar.)

A. catkin scale. B. female flower. C. fruit.

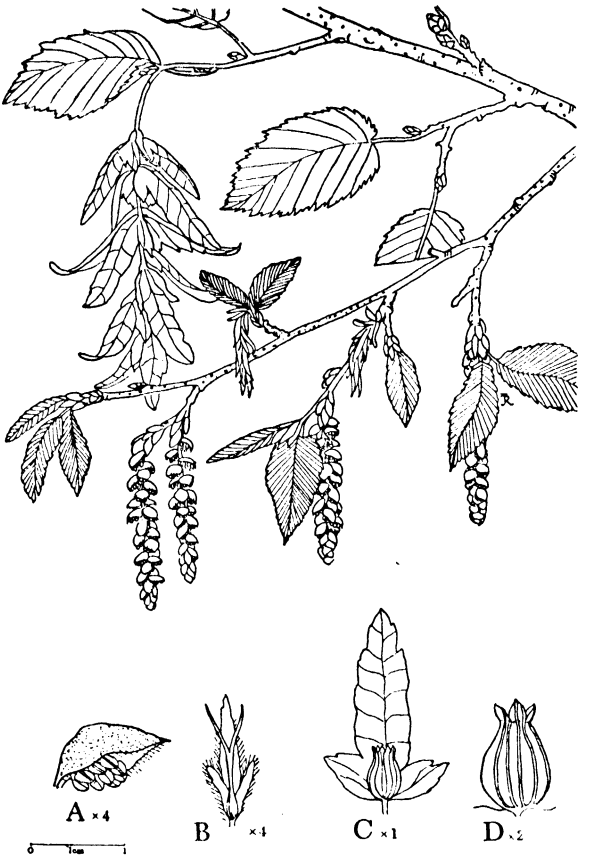


ALNUS L. Small, monœcious shrubs or trees. Flowers appearing before the leaves, perianth absent; male flowers in a cylindrical, pendulous catkin; female in a short, ovoid cone. Stamens 4-12; styles 2; ovaries 2 in each scale, each two-seeded; fruiting catkin with woody scales.

857. ALNUS GLUTINOSA (L.) Gærtn. The COMMON ALDER is a shrub or small tree up to 70 ft. (24 m.) high, which grows commonly on stream sides and in damp woods throughout Britain. Branches spreading, bark fissured, dark brown. Leaves broadly ovate, apex truncate, obtuse, base cuneate, margin crenate-dentate, glabrous, somewhat wrinkled; petiole glabrous. Male catkins 70 mm. long; female 12-17 mm., bracts ovate, entire, glabrous; styles filiform. Fruiting bracts woody, black, forming an ovoid, cone-like fruit of many seeds; seed 1·5 × 2·5 mm., half-ovoid, pointed, with 6-8 vertical ribs, chestnut-brown.

Late Feb.—early April. (Billericay, Essex.)

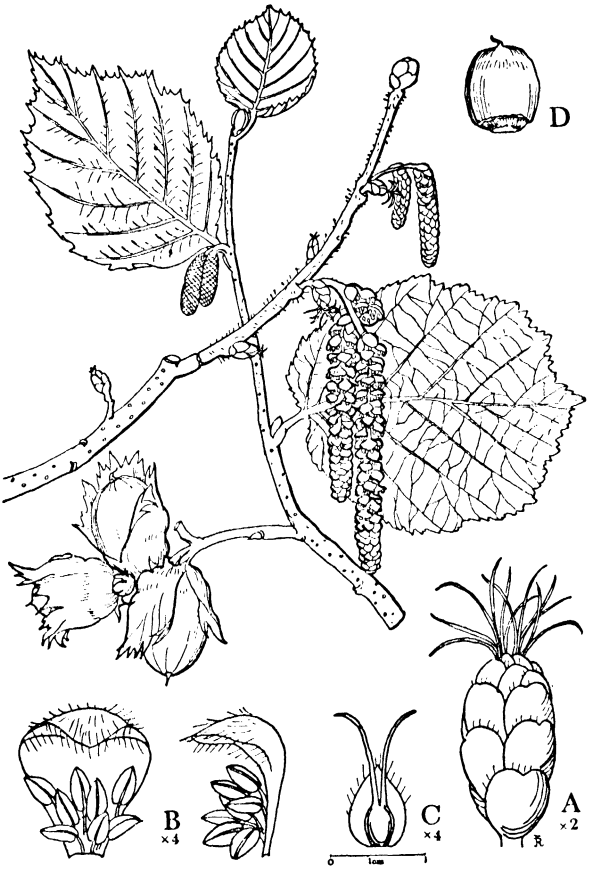
A. female catkin. B. male bract with two flowers. C. female bract and flowers. D. nut.



CARPINUS L. Trees, or sometimes shrubs, with monœcious flowers appearing with the leaves; male and female on separate cylindrical, pendulous catkins. Stamens about 10; fruit a nut, subtended by a unilateral lobed bract.

858. CARPINUS BETULUS L. The HORNBEAM is a small tree up to 80 ft. (28 m.) high, which grows in woods and on stream sides, chiefly in S.E. England and occasionally in other places in the south. Branches slender, arching or drooping, bark smooth, grey; buds pointed. Leaves ovate, acute, base truncate to cuneate, finely and rather irregularly toothed; blade glabrous with tufts of hairs on veins; petiole glabrous. Male catkins about 40 mm. long; bracts ovate, ciliate; female 20 mm long; stigma long, styles filiform, green. Nut 4·5 × 7·9 mm., ovoid, compressed, with obvious longitudinal striæ, crowned by the persistent perianth. Late April—late May. (Billericay, Essex.)

A. male flower. B. female flower. C. fruit. D. nut.

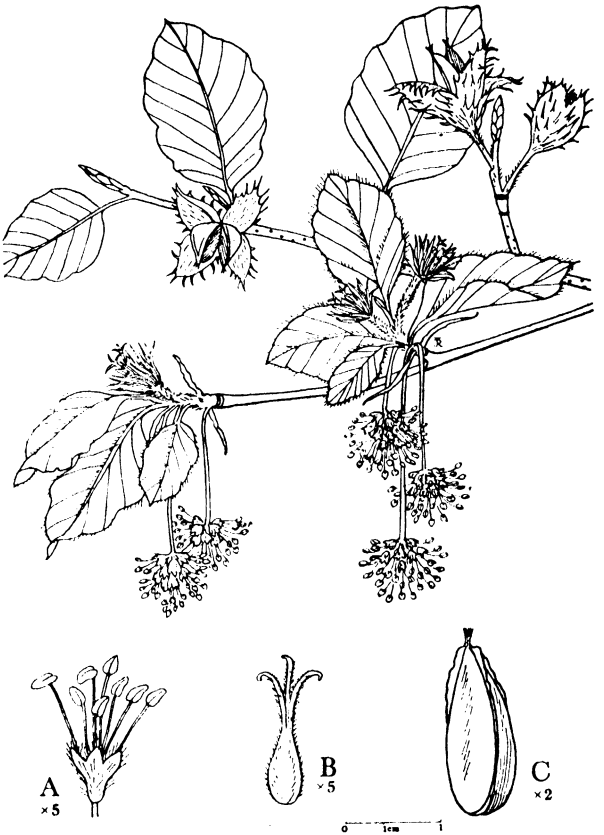


CORYLUS L. Shrubs with monœcious flowers which appear before the leaves; male on cylindrical, pendulous catkins; female in a small cluster within a bud-like spike. Stamens bifid below the anthers; styles 2; ovary single; fruit a nut within a foliar cup.

859. CORYLUS AVELLANA L. The HAZEL is a bush or very small tree up to 18 ft. (6 m.) high, which grows, often abundantly, in woods, scrub and hedges on all except very acid soils throughout the British Isles. Branches rather erect to spreading, bark smooth, brown. Leaves broadly ovate, apex suddenly acute, base truncate or cordate, finely and irregularly toothed, net-veined and somewhat pubescent; petiole hispid. Male catkins up to 70 mm. long, yellow; female inflorescence 8-10 mm. long; bracts ovate, peltate, entire, ciliate; styles long, filiform, red. Nut about 20 mm., rounded, apiculate; involucral cup laciniate, pale yellow, about as long as nut.

Late Jan.—early March. (Billericay, Essex.)

A. female inflorescence. B. male, C. female flower. D. nut.



FAGUS L. Usually large, deciduous trees with monœcious flowers. Catkins globular; male pendulous with campanulate perianth and 8-16 stamens to each flower; female globular, sessile, with 2-3 flowers in the centre of numerous bracts; styles 3; fruit a cluster of 2-3 nuts within a prickly involucre opening by 4 valves.

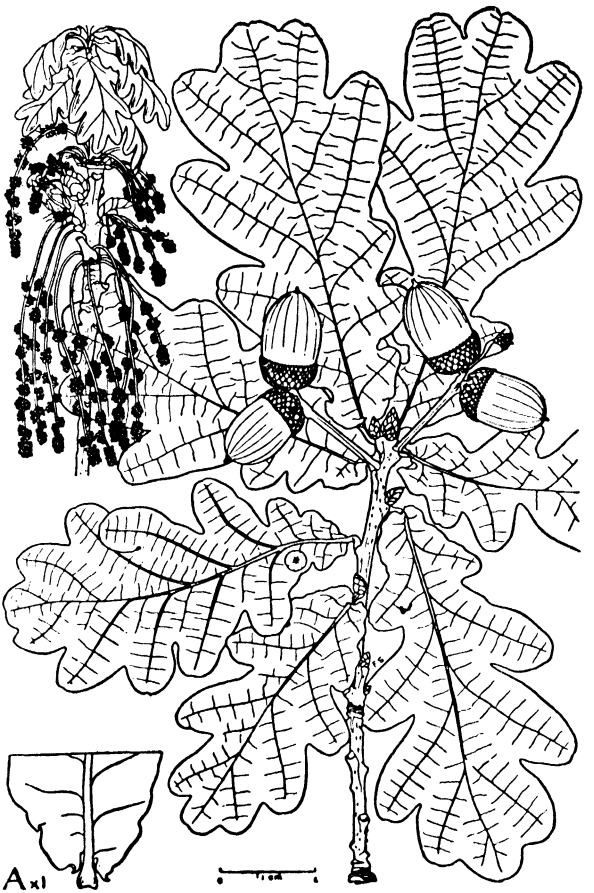
860. FAGUS SYLVATICA L. The BEECH is a large tree up to 100 ft. (33 m.), which forms indigenous woods on basic soils in the southern part of England and is frequently planted elsewhere. Branches spreading, bark smooth, grey; buds narrow, fusiform. Leaves ovate, elliptic, acute, base cuneate, margin entire, ciliate, veins bearing silky hairs, petiole hairy. Male catkins numerous, peduncle 60-70 mm. long. Fruit 20 × 15 mm., ovoid; involucre four-valved, prickly; bracts numerous, linear, glabrous. Nut about 12 mm. long, triquetrous, keeled, brown.

Mid May—early June. (Billericay, Essex.)
A. male flower. B. female flower. C. nut.

CASTANEA Mill. Usually large, deciduous trees with bisexual flowers. Catkins linear, erect, upper portion male, perianth six-lobed, stamens 16-20; female flowers at the base, ovary six-celled; fruit a number of nuts enclosed within a prickly involucre opening by several valves.

861. CASTANEA SATIVA Mill. The SWEET CHESTNUT is a large tree up to 100 ft. (33 m.) high, which has been frequently planted in woods and fields throughout Britain. Branches stout, spreading or ascending; bark dark brown, fissured; buds ovoid, obtuse. Leaves oblong, lanceolate, acute or acuminate, base subcordate or cuneate, margin dentate, teeth large pointed, pubescent when young, later glabrous; petiole, smooth. Catkins up to 300 mm. long; male flowers in the upper part, distant, pale green to white; female few at base; bracts lanceolate. Nuts about 30 mm., irregularly rounded, with remains of style at apex, 1-4 together, borne in an irregular involucre covered with stiff, branched spines.

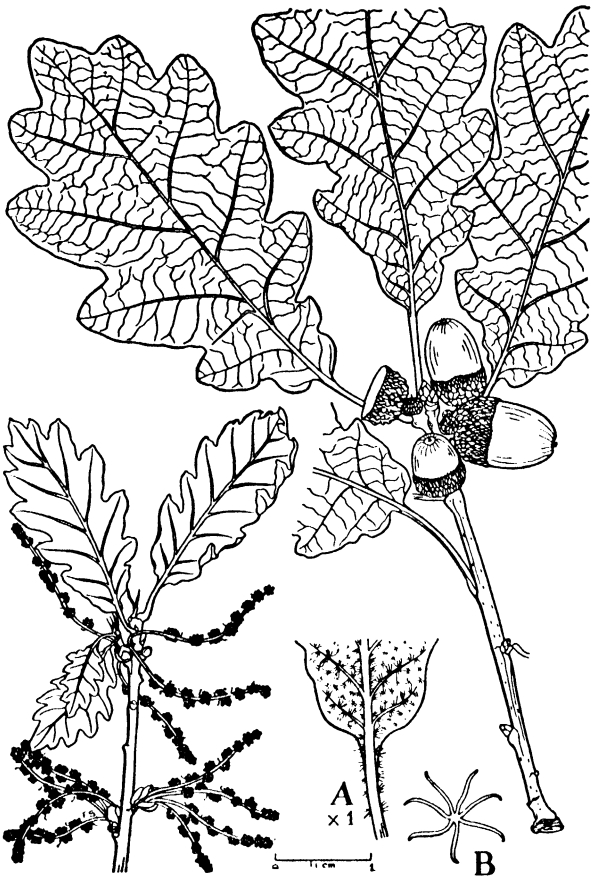
Late June—late July. (Burnham-on-Crouch, Essex.)
A. male flower. B. female flower. C. female inflorescence. D. nut.



QUERCUS L. Usually large deciduous or evergreen trees with bisexual flowers. Male flowers in rather distant clusters on a slender pendulous catkins; female few together in axillary clusters. Ovary single, fruit (the acorn) a nut within a woody entire cup.

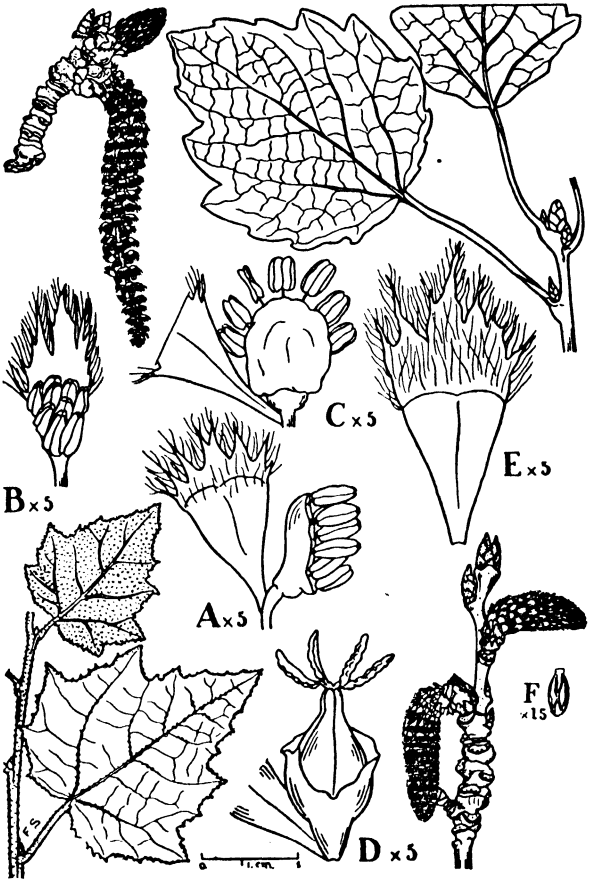
862. QUERCUS ROBUR L. (Q. *pedunculata* Ehrh.). The COMMON OAK is a large, deciduous tree up to 100 ft. (35 m.) high with a broad crown and horizontal branches. It is common in hedges and woods on heavy, basic and moist soils throughout the British Isles. Young branches glabrous. Leaves glabrous, almost sessile, obovate, with a few rounded lobes, base strongly auricled; petioles short. Male flowers 2 mm., in rather distant clusters, on pendulous stalks, very numerous; female flowers 2 mm., forming a one- to five-flowered, stalked spike; styles 3; fruit, the acorn, about 22 mm. long, cup 15 mm. diam., covered with small, ovate scales. Late April—mid May. (Icklingham, Suffolk.)

A. leaf base.



863. QUERCUS PETRÆA (Mattuschka) Liebl. (Q. *sessiliflora* Salisb.). The DURMAST OAK is a large, deciduous tree up to 100 ft. (35 m.) high, with spreading branches and a rather narrow crown. It is common in hedgerows and in woods, mainly on acid and sandy soils throughout the British Isles. Young branches pubescent. Leaves covered below with stellate hairs, distinctly stalked, obovate, with a few rounded lobes, base gradually narrowed into the long petiole. Male flowers 2 mm. diam., in rather distant clusters on spreading or rather pendulous stalks, very numerous; female flowers 2 mm. diam., forming a one- to five-flowered sessile cluster; stigmas subsessile; fruit an acorn, sessile on the twigs, about 25 mm. long; cup 15 mm. diam., covered with small, ovate scales.

Late April—mid May. (Ampfield, Hampshire.)
A. leaf base. B. stellate hair.

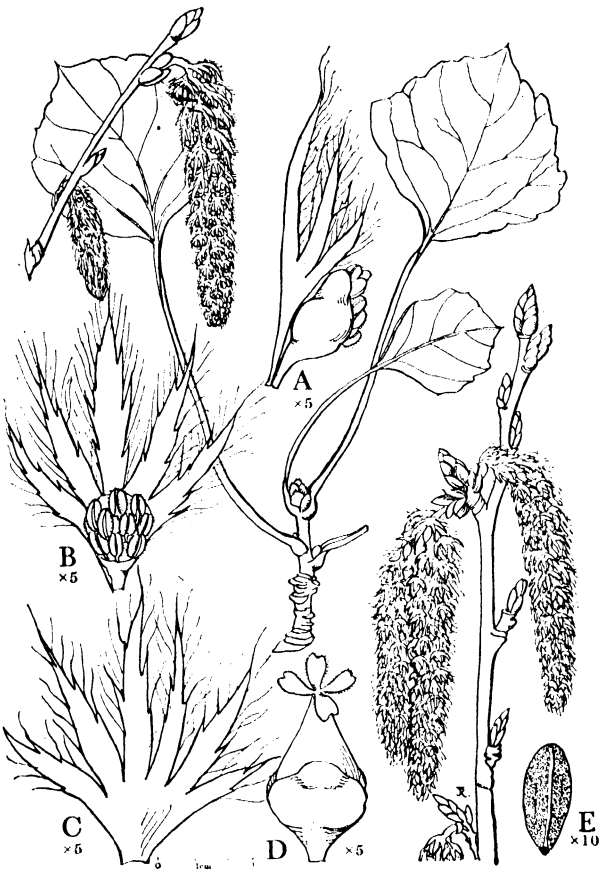


POPULUS L. Small or large, diœcious, deciduous trees. Flowers appearing before the leaves on long, cylindrical, usually pendulous catkins; scales toothed. Stamens numerous. Fruit a two-valved capsule, seeds with many silky hairs.

864. POPULUS CANESCENS (Ait.) Sm. The GREY POPLAR is a tall, spreading tree up to 100 ft. (33 m.) high, which occurs rather commonly on damp soils throughout south and central England. Tree producing many suckers; bark grey, rather smooth. Young twigs and buds rather downy. Sucker leaves deltoid, acutely lobed, white on both sides; other leaves roundly ovate or orbicular with few irregular teeth, cottony beneath. Catkins 70 mm. long, scales deltoid, hairy, laciniate, grey; ovary pyriform, glabrous, stigmas two-lobed, lobes spreading, greenish; seed 0·04 × 0·02 mm., fusiform.

Mid Feb.—mid March. (Kingsworthy, Hampshire.)

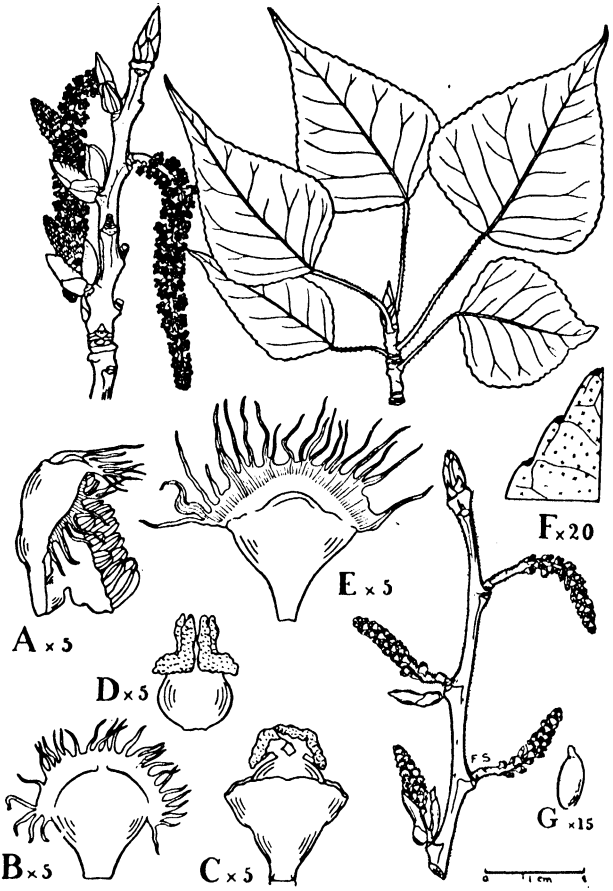
A. male flower, side view. B. front view. C. back view. D. ovary. E. bract of female catkin. F. seed.



865. POPULUS TREMULA L. The ASPEN is a bush or spreading tree up to 70 ft. (24 m.) high, which occurs in woods and on heaths commonly in Scotland and Wales but more rarely in England. Tree producing suckers; bark grey, smooth; young twigs and buds slender, glabrous. Sucker leaves ovate, acute, pubescent, petioles hairy; other leaves orbicular, acute or obtuse, crenate, dentate, pubescent when young, soon glabrous, petiole flattened. Catkins 70 mm. long; scales palmate, apiculate, hairy, grey; ovary conical, glabrous; stigmas broad, purple; seed 1·5 × 0·5 mm., ovoid, keeled, finely honeycombed, black.

Early March—early April. (Danbury and Little Binstead, Essex.)
A. male flower, side view. B. front view. C. bract. D. ovary. E. seed.

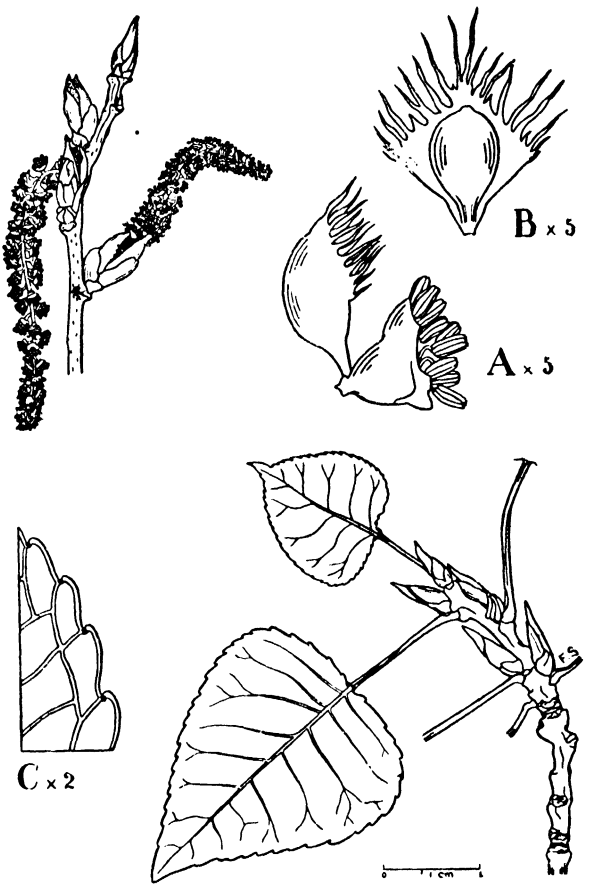
(*P. alba* L., the White Poplar, is sometimes found obviously planted in S. England, and is distinguished by the ± palmate upper leaves, which are tomentose throughout the season.)



866. POPULUS NIGRA L. The BLACK POPLAR is a large tree up to 100 ft. (33 m.) high, with arching branches, which occurs, rather infrequently, on wet, rich soils in E. and S. England. Tree without suckers, bark fissured, with large bosses, light brown. Young twigs pubescent; buds rather viscous, glabrous. Leaves deltoid with a cuneate base, dentate, teeth truncate; petioles without glands, rounded, hairy. Male catkins 30 mm. long, pendulous; female 15 mm. long, spreading; scales fimbriate, deltoid, glabrous, deciduous; ovary orbicular, glabrous; stigmas L-shaped, yellow; seed 0·03 × 0·03 mm.

Early—late April (Icklingham, Suffolk, and Hertford.)

A. male flower. B. male bract. C. pistil and perianth. D. pistil. E. female bract. F. portion of leaf. G. seed.

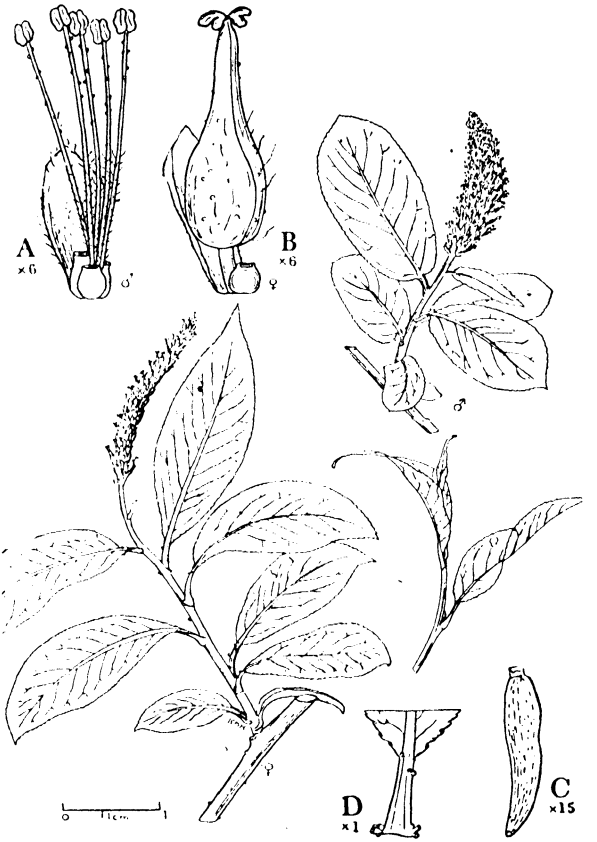


867. POPULUS CANADENSIS Mœnch (P. *deltoides* auct.). This CANADIAN BLACK POPLAR is a large tree up to 80 ft. (27 m.) high, with ascending branches. It is extensively planted, especially in England. Tree without suckers; bark fissured but without bosses. Young twigs glabrous; buds rather viscous, glabrous. Leaves deltoid, with a cordate or truncate base, dentate, teeth obtuse; petioles somewhat flattened, glabrous with glands near the junction of leaf and petiole. Male catkins 35-40 mm. long, pendulous; bracts rhomboid, as long as broad, fimbriate, glabrous. Only the male tree occurs in this country.

Mid April—early May. (Cambridge.)

A. male flower. B. bract. C. portion of leaf.

(Other extensively planted poplars are the Lombardy (*P. italica* L.), with pyramidal branches; the Balsam (*P. gileadensis* Rouleau, with odorous, viscous buds and shining leaves.)



SALIX L. Deciduous trees, shrubs or woody perennials with simple, ovate leaves and unisexual, dioecious flowers in cylindrical catkins. Scales entire. Stamens 2 (usually), 3 or 5; fruit a two-valved capsule with many minute seeds bearing silky hairs. Hybridization is frequent in this genus, and many plants intermediate in leaf-shape or having some characters of two or three species are often found.

868. SALIX PENTANDRA L. The BAY WILLOW is a large shrub or small tree 6-20 ft. (2-7 m.) high, found chiefly in hedges and stream sides in the hilly part of N. England and S. Scotland. Leaves sweetly scented, shining, ovate to lanceolate, acute or subacute, finely serrate, glabrous; stipules inconspicuous. Catkins 30-50 mm. long, coeval with the leaves, cylindrical on slender stalks; scales with only a few hairs, green. Stamens usually 5, filaments hairy, nectary orbicular. Ovary shortly stalked, pyriform, stigmas sessile, flattened; seed 1·5 × 0·8 mm., cylindrical, striate, yellow.

Late May—late June. (Skelwith and Blubberhouses, Yorkshire.)
A. male, B. female flower. C. seed. D. petiole and stipule.

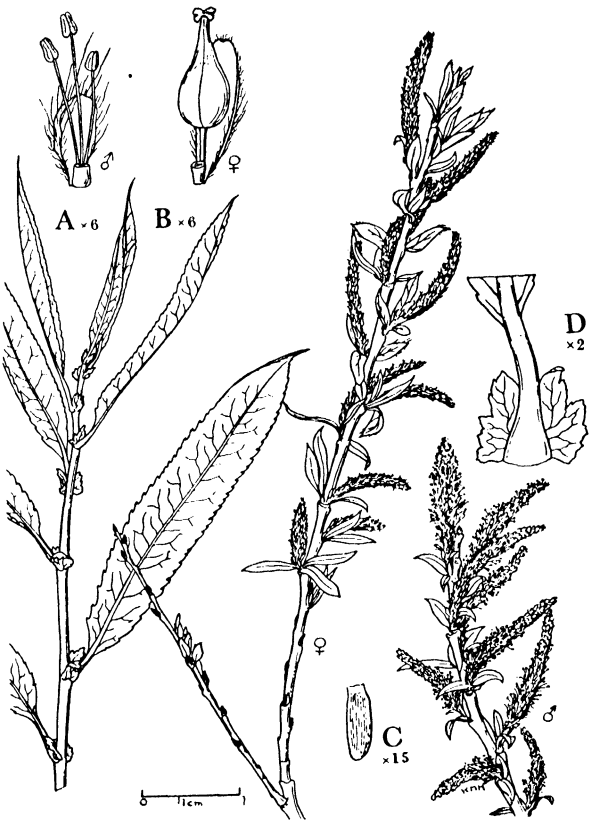
869. SALIX ALBA L. The WHITE WILLOW is a small to tall tree 30-75 ft. (10-25 m.) high, found rather commonly by streamsides and other damp places throughout England, and rarely in Scotland and Ireland. Twigs olive-green (golden yellow in var. *vitellina* L.), hairy only when young and not brittle at the joints. Leaves narrowly lanceolate, acute or acuminate at both ends, covered with persistent silky hairs below and hairy above. Catkins 30-50 mm. long, coeval with the leaves, the male rather stout, the female slender, all shortly stalked; scales straw yellow with silky hairs at base and upper portion, glabrous inside, ovate. Stamens 2, filaments glabrous or hairy in lower part; nectary quadrate. Ovary glabrous, subsessile, the stalk shorter than the quadrate nectary; stigmas 4, subsessile, thick, deeply divided; seed 0·15 × 0·2 mm., ovoid, keeled, yellow. Early May—early June.

(Thorpe, Derbyshire, and Burnham-on-Crouch, Essex.)

A. male flower. B female flower. C. seed. D. leaf base and stipules.

870. SALIX FRAGILIS L. The CRACK WILLOW is a small to tall tree 30-75 ft. (10-25 m.) high, found commonly on streamsides and other damp places throughout England, but very rarely in Scotland and Ireland. Twigs usually glabrous, brittle at the joints. Leaves glabrous or somewhat hairy, narrowly lanceolate-acute at both ends, finely serrate; stipules small, sublinear. Catkins coeval with the leaves, 50-60 mm. long, the male rather stout, the female very slender, cylindrical; all shortly stalked; scales green, covered with many long, silky hairs, male ovate, truncate; female linear, acute. Stamens 2, filaments glabrous, nectary tubular, truncate. Ovary with pedicel no longer than nectary, narrowly acuminate, slender; stigmas 4, linear, style short; seed 0·5 × 0·2 mm., narrowly ovoid, keeled, yellow.

Early—late May. (Clifton, Derbyshire, and St. Asaph, Flint.)
A. male flower. B. female flower. C. seed. D. leaf base.



871. SALIX TRIANDRA L. The ALMOND WILLOW is a large shrub or small tree up to 30 ft. (10 m.) high, found rather infrequently in wet places and streamsides throughout lowland Britain, though it is usually planted. Twigs glabrous, rather brittle. Leaves variable, but usually lanceolate, acute or narrowed at both ends, evenly serrate, glabrous, dark green and shining above, often glaucous below; stipules broad, roundish, persistent. Catkins coeval with the leaves, 25-30 mm. long, rather slender, on short, leafy stalks; scales yellowish, glabrous, or hairy at base or ciliate, ovate. Stamens 3, filaments pilose just at base; nectary double, quadrate. Ovary glabrous, stalked, conical; stigmas sessile, thick, deeply divided; seed 0·7 × 0·2 mm., cylindrical, striate, grey.

Late April—mid May. (Clifton and Borrowash, Derbyshire.)
A. male flower. B. female flower. C. seed. D. stipules.

(Hybrids between this and the next three are recorded.)

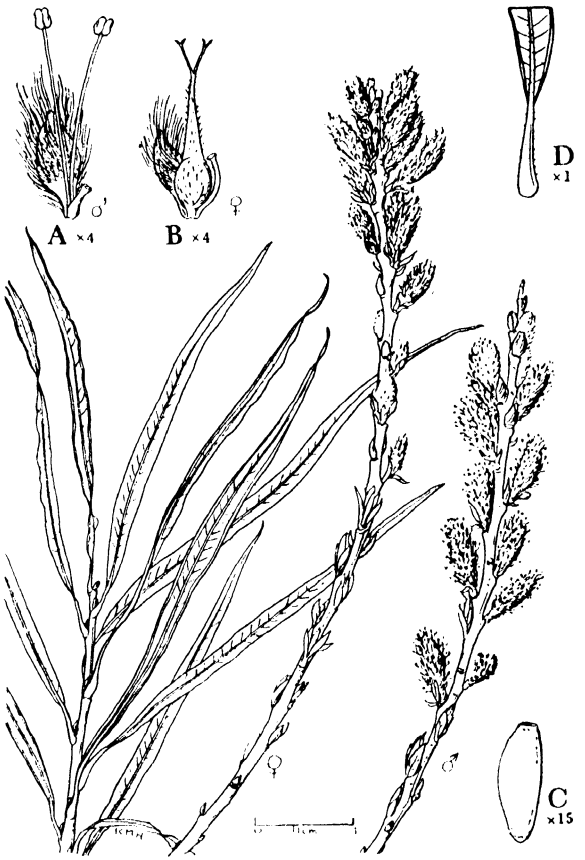
872. SALIX PURPUREA L. The PURPLE OSIER is a small shrub 4-10 ft. (1·5-3·5 m.) high, found quite commonly by riversides and in hedges in E. and central Britain northwards to Aberdeen, and in Ireland. Twigs glabrous, purple or yellow, rather tough. Leaves variable, often opposite, oblanceolate, base cuneate, apex acute, finely serrate or almost entire, glaucous or pale green; stipules small, oblong, soon deciduous. Catkins appearing before the leaves, 15-30 mm. long, slender, at first erect, afterwards spreading, subsessile; scales obovate, very hairy, reddish below the black tip. Stamens 2, but the filaments united and anthers adnate; filaments hairy, nectary short, cuneate. Ovary hairy, sessile, ovoid; stigmas sessile, usually scarcely divided; seed 0·7 × 0·4 mm., cylindrical, with fine longitudinal ribs, grey.

Late March—mid April.

(Ashbourne and Marston Montgomery, Derbyshire.)

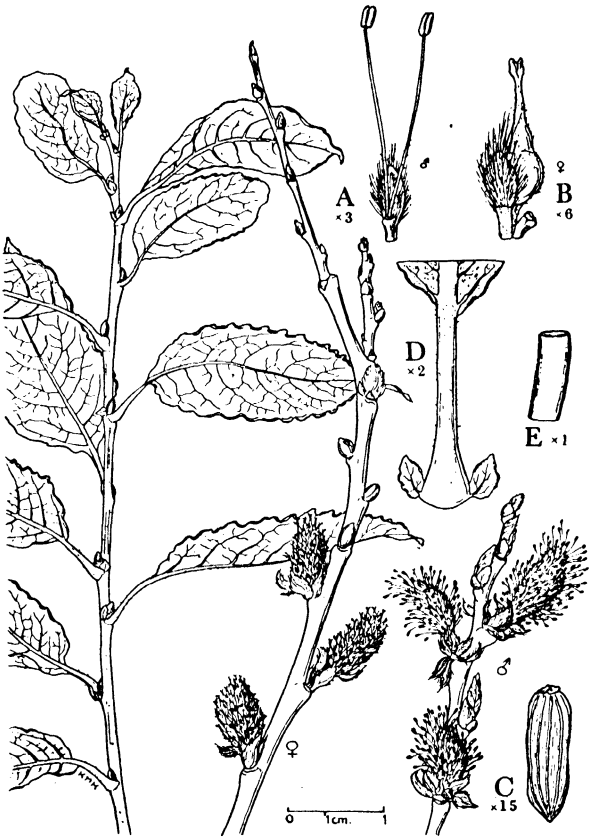
A. male flower. B. female flower. C. seed. D. leaf base.

(Hybrids between this and the next five species are recorded.)



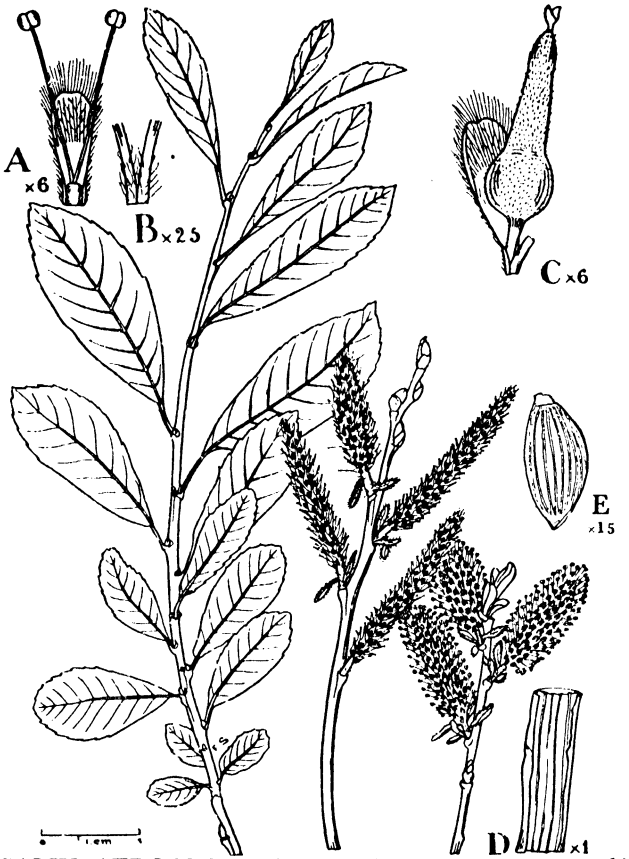
873. SALIX VIMINALIS L. The COMMON OSIER is a bush or small tree, usually 8-12 ft. (3-4 m.) high, but sometimes up to 30 ft. (10 m.) high, which is found very commonly by riversides, in copses and in hedges throughout lowland Britain except the extreme north. Twigs at first pubescent, later glabrous, pliant. Leaves linear-lanceolate, attenuate upwards, the base cuneate with entire, undulate, revolute margins; blade green and glabrous above, grey, tomentose beneath; stipules small, lanceolate, soon deciduous. Catkins 15-20 mm. long, appearing before the leaves, erect, rather stout, cylindrical-ovoid, subsessile; scales ovate, acute or spathulate, pilose, brownish below the black upper half. Stamens 2, filaments long, glabrous; nectary long, linear, incurved, exceeding the pedicels. Ovary subsessile, narrowly ovoid, tomentose, grey; styles long, slender; stigmas filiform, little divided; seed 1·0 × 0·5 mm., narrowly ovoid, almost smooth, light yellow.

Early April—early May. (Borrowash, Derbyshire.)
A. male flower. B. female flower. C. seed. D. base of leaf.

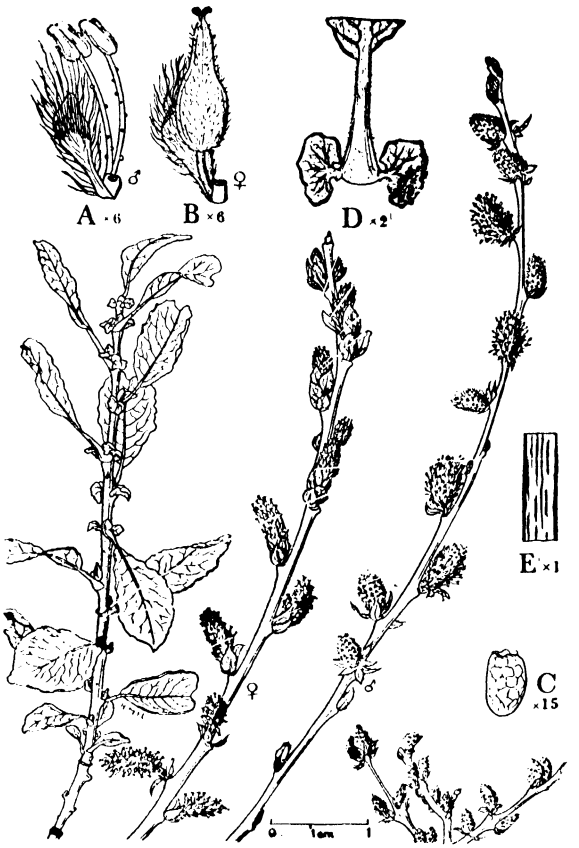


874. SALIX CAPREA L. The SALLOW or GOAT WILLOW is a small tree 10-30 ft. (3-10 m.) high, common and widespread throughout the British Isles. Twigs at first pubescent, later glabrous, reddish or dark brown, without raised striæ on the young wood beneath the epidermis. Leaves large, broadly ovate to ovate-oblong, often with an acute, twisted tip and a rounded, cordate or cuneate base, margin undulate, crenate or entire, blade netted but hardly rugose, ± glabrescent and green above, softly pubescent beneath; stipules half-cordate, acuminate, often dentate. Catkins appearing before the leaves, 20-45 mm. long, at first erect, later spreading, subsessile; male ovoid; female broadly cylindrical; scales narrowly ovate, subacute, with long, silky hairs, brownish below the black upper portion. Stamens 2, filaments glabrous or slightly hairy, nectary cylindrical, short. Ovary hairy, ovoid-conical, pedicel slender, much longer than the nectary; stigma small, undivided, style usually shorter than the stigmas; seed 1·0 × 0·4 mm., cylindrical, with fine vertical ridges, grey. Late March—late April. (Alsop and Newhaven, Derbyshire.)

A. male, B. female flower. C. seed. D. stipules. E. twig without bark.



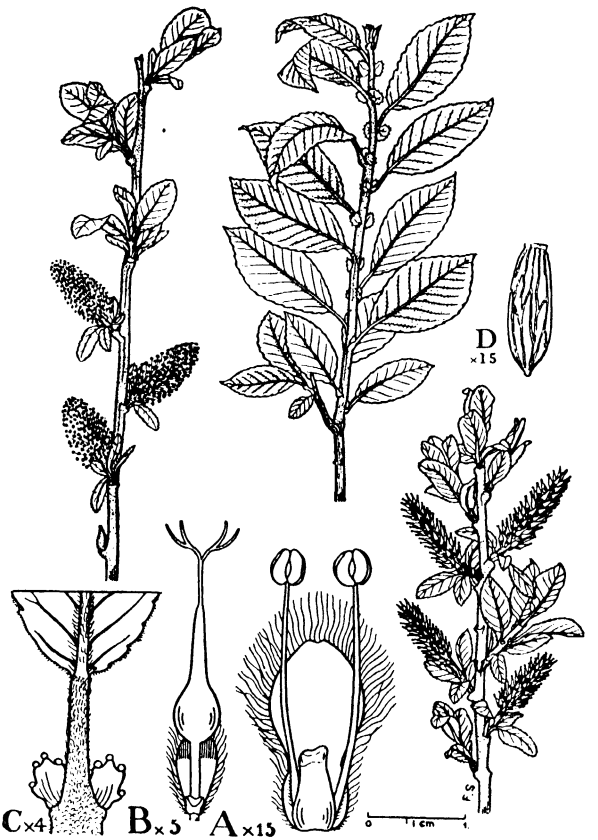
875. SALIX ATROCINEREA Brot. (*S. cinerea* auct. angl.). The GREY-LEAVED SALLOW is a bush 15-30 ft. (5-10 m.) high, common in waste places and hedges throughout the British Isles. Twigs usually pubescent, blackish, with raised striæ under the bark. Leaves variable, narrowly obovate, acuminate or oblanceolate, with an acute, sometimes twisted, apex and a narrow or cuneate base, margin crenate-serrate in the upper part, blade netted or somewhat wrinkled. ± pubescent, dull or greyish-green above, ashen green below and harshly pubescent with brownish hairs; stipules rounded and usually entire. Catkins 20-30 mm. long, appearing before the leaves, at first erect, later spreading, subsessile; male ovoid, female cylindrical; scales ovate, subacute or obtuse, clothed with silky hairs. Stamens 2, filaments pilose in their lower half, nectaries quadrate, oblong, short. Ovary hairy, ovoid-conical, grey-tomentose; pedicel slender, three to five times as long as nectary, stigmas rather short, styles usually very short; seed 1·0 × 0·4 mm., cylindrical, with fine vertical ridges, grey. Late March—mid April. (Follifot, Yorkshire.) A. male flower. B. filaments. C. female flower. D. twig without bark. E. seed.



876. SALIX AURITA L. The ROUND-LEAVED SALLOW is a small bush 3-8 ft. (1-3 m.) high, which is common and widespread in damp places and low-lying woods and roadsides throughout the British Isles. Twigs at first pubescent, later glabrous, reddish-brown, with raised striæ under the bark. Leaves roundly and broadly ovate, rather small, with a short, acute, somewhat twisted tip and narrowed or often cuneate base, margin undulate, coarsely serrate, partly reflexed; blade rugose, dull green or grey above, grey pubescent beneath; stipules large, reniform, dentate. Catkins appearing before the leaves, 15-20 mm. long, ovoid, at first erect, later spreading, subsessile, male ovoid, female cylindrical; scales narrowly oblong, obtuse, thinly hairy, ferruginous below the blackening tip. Stamens 2, filaments almost glabrous or somewhat glandular; nectaries cylindrical, very short. Ovary hairy, ovoid-conical, pedicels slender, much longer than nectary; stigmas small, sessile or almost so; seed 0·5 × 0·3 mm., ovoid, truncate, finely netted, grey.

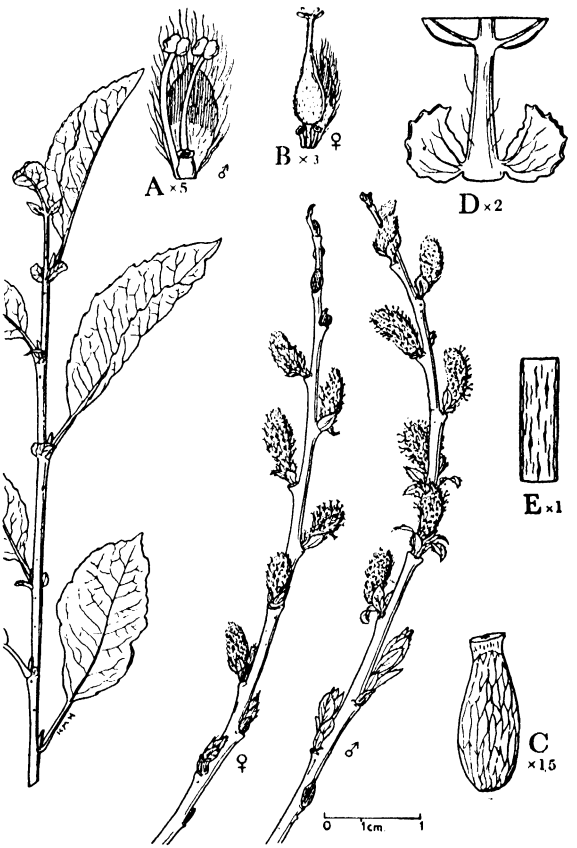
Early—late April. (Harrogate, Yorkshire.)

A. male, B. female flower. C. seed. D. stipules. E. twig without bark.



877. SALIX NIGRICANS Sm. This BLACKENING-LEAVED WILLOW is a small shrub 2-12 ft. (0·5-4·0 m.) high. It grows on steamsides, usually in hilly or mountainous districts in Scotland and N. England to the Tees and Lune. Twigs and buds tomentose at first, later glabrescent, dull brown, without striæ under the bark. Leaves variable, oblong-lanceolate to ovate-oblong, shortly acuminate, serrate, with teeth crowded at the top, blade thin, at first pubescent, later glabrescent on upper side, green, blackening when dry; stipules frequent, half-cordate, dentate. Catkins 15-25 mm. long, appearing just before or coeval with the leaves, suberect, narrowly ovoid; male subsessile, female on short stalks; scales oblong to ovate, subobtuse, ciliate, brownish below and with a rather black tip. Stamens 2, filaments pilose below. Ovary glabrous, pyriform; pedicel three to four times as long as ovate nectary, styles long, stigmas long, divided; seed 1·0 × 0·3 mm., ellipsoid, with elongated network, grey.

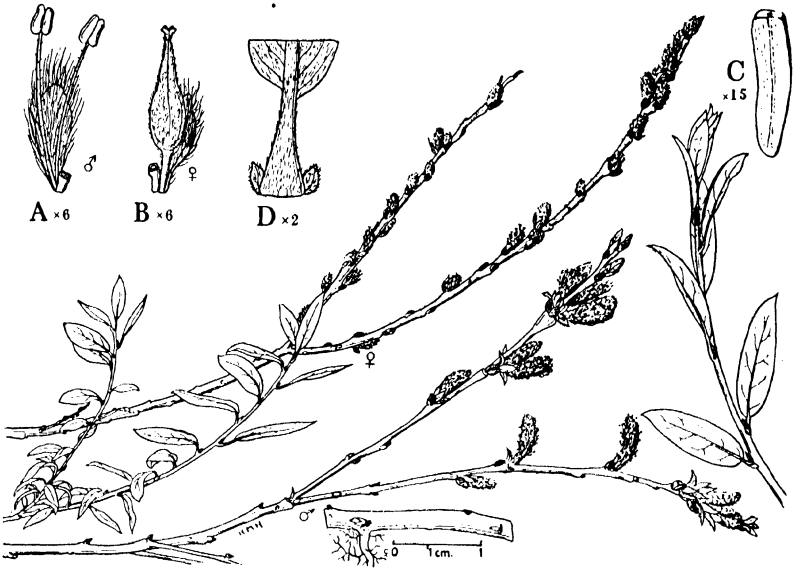
Early—late May. (Rievaulx Abbey, Yorkshire.)
A. male flower B. female flower. C. portion of leaf and stipules.
D. seed.



878. SALIX PHYLICIFOLIA L. The TEA-LEAVED WILLOW or SALLOW is a small shrub with branches from the base 2-12 ft. (0·5-4·0 m.) high. It grows on streamsides in the hilly and mountainous parts of Scotland and N. England. Twigs and buds usually glabrous or slightly pubescent when young, tough, brown, with short, faint striæ under the bark. Leaves variable, ovate to lanceolate, acute or acuminate, margin crenate-serrate, but subentire and tapering at both ends, blade somewhat wrinkled, green and shining above, glabrous or nearly so, and glaucous beneath, not blackening when dry; stipules infrequent, cordate, acuminate. Catkins appearing before the leaves, 15-25 mm. long, narrowly ovoid, suberect or subsessile, spreading; scales oblong to ovate, acute, hairy, brownish below the rather black tip. Stamens 2, filaments glabrous. Ovary pyriform, hairy; pedicel distinct and equalling, or at length exceeding, the oblong or quadrate nectaries; stigmas short, divided, style long; seed 1·1 × 0·4 mm., ovoid, netted, grey.

Early to late May. (Teesdale, Yorkshire.)

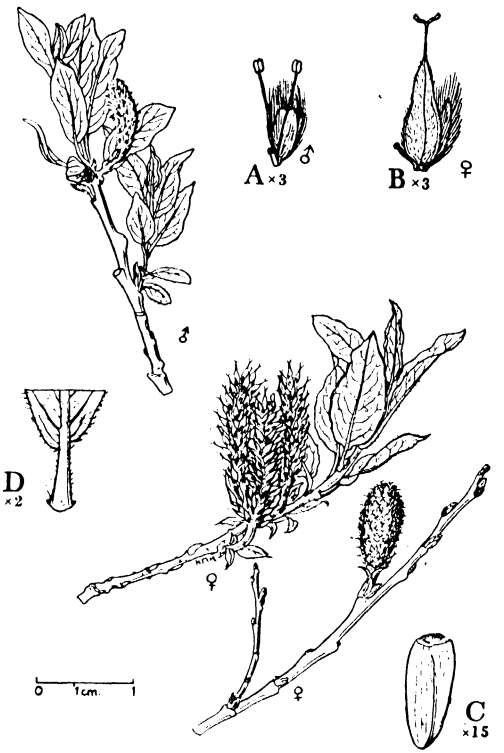
A. male, B. female flower. C. seed. D. stipules. E. stem without bark.



879. SALIX REPENS L. The CREEPING or SILVER WILLOW is a small shrub branching from the base, with prostrate or ascending, rooting branches 12-36 in. (30-90 cm.) long. It is common in damp spots among sandhills, on sandy commons and moors, but absent on heavy soils throughout the British Isles. Twigs pubescent, brown, smooth under the bark. Leaves very variable, narrowly to broadly lanceolate or more rarely ovate, with curved, acute tip and a narrowed base, margin entire or with small, distant teeth, blade netted, green or grey, pubescent above and with silky, appressed, often deciduous hairs below; stipules lanceolate, acute, but often absent. Catkins appearing before or with the leaves, 10-15 mm. long, cylindrical, at first erect, later spreading or recurved, subsessile; scales ovate, obtuse, clothed with silky hairs. Stamens 2, filaments glabrous, nectaries short, broad. Ovary narrowly ovoid-conical, tomentose; pedicel slender, 3 times as long as the hairy, broad nectary; stigmas small or large, styles usually short; seed 1·0 × 0·4 mm., quadrate, cylindrical, finely striate, grey.

Mid April—mid May. (Danbury, Essex.)

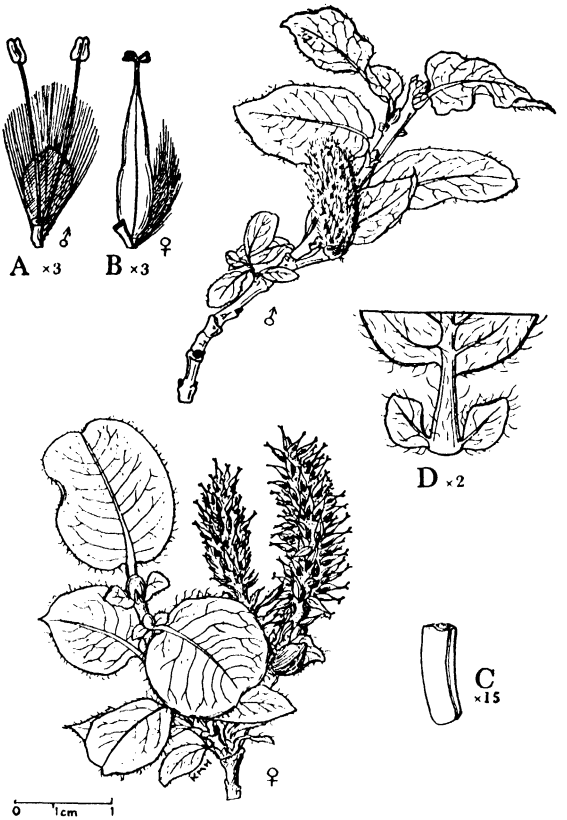
A. male flower. B. female flower. C. seed. D. stipules. E. base of stem.



880. SALIX LAPPONUM L. This DOWNY MOUNTAIN SALLOW is a small, subprostrate or creeping shrub with ascending branches 12-60 in. (30-150 cm.) long. It occurs rather frequently on mountain cliffs in the Highlands of Scotland, in Dumfries and Westmorland. Twigs at first pubescent, afterwards brown, shining, tough. Leaves narrowly ovate, attenuate upwards, the base rounded or cuneate, margin entire, undulate, softly pubescent, grey-green above, white or grey-tomentose below; stipules minute or 0, fugitive. Catkins appearing before the leaves, 20-30 mm. long, ovoid, rather stout, subsessile; scales ovate, obtuse or acute, villous, grey. Stamens 2, filaments slender, glabrous; nectaries linear, rather long. Ovary ovoid-conical, white-tomentose, subsessile; stigmas long, simple or divided; style slender, long; seed 1·0 × 0·4 mm., quadrate, truncate, finely striate, buff.

Early June—mid July. (Meall na Soane, Perthshire.)
A. male flower. B. female flower. C. seed. D. base of leaf.

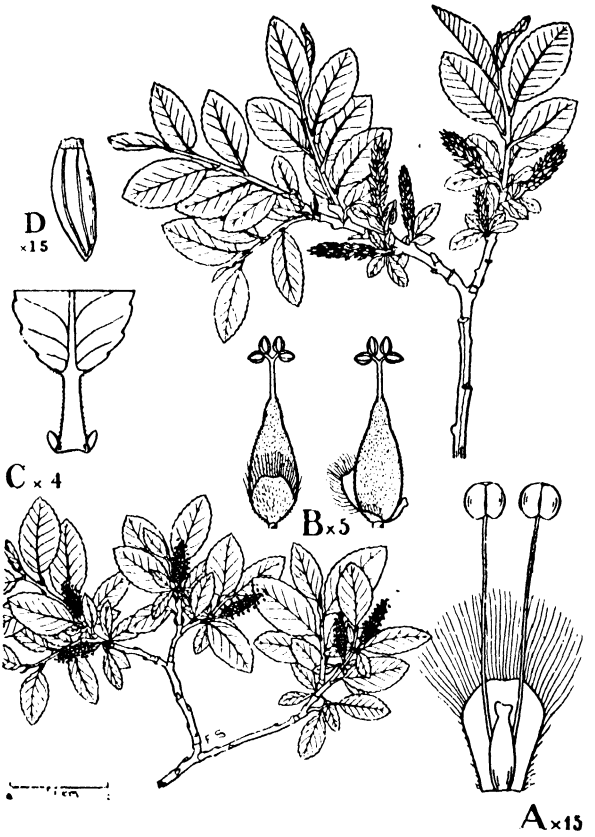
(Numerous hybrids between this and the other Sallows are recorded.)



881. SALIX LANATA L. This WOOLLY-LEAVED MOUNTAIN WILLOW is a dwarf, low-growing shrub 2-4 in. (5-10 cm.) high, which grows on mountain cliffs in a few places on the high mountains of central Scotland. Twigs and buds woolly, pubescent; old branches dark brown, usually dull, tough. Leaves roundly ovate or obovate, base truncate or cordate, apex often with a twisted tip, margin entire, undulate, blade softly hairy at first, later glabrescent, dull green above, glaucous-green below, reticulate; stipules often large, ovate, entire and covered with silky hairs. Catkins coeval with the leaves, the male 30-35 mm. long, sessile, ovoid, the female 40-60 mm. long, stalked, cylindrical; scales obovate to ovate, subobtuse, clothed with long, silky hairs, pale, with a brownish tip. Stamens 2, filaments glabrous. Ovary subulate, attenuate, glabrous, subsessile or lower shortly stalked; nectaries linear, reaching above the base of the ovaries; stigmas flat, little divided; style long; seed 1·2 × 0·3 mm., tetragonous, truncate, smooth, grey.

Early June—mid July. (Meall na Soane, Perthshire.)

A. male, B. female flower. C. seed. D. stipules.



882. SALIX ARBUSCULA L. This GLABROUS MOUNTAIN WILLOW is a dwarf shrub with many trailing branches 12-24 in. (30-60 cm.) long. It grows rarely on rocky mountain ledges in the Central Highlands of Scotland. Twigs pubescent when very young, but polished, dark brown when older, tough; buds glabrous. Leaves usually ovate, acute or obtuse, margin serrate, blade almost smooth, shining and glabrous above, slightly pubescent beneath. Catkins 18-22 mm. long, coeval with or sometimes opening before the leaves, on slender pedicels, spreading, cylindrical; scales spathulate, obtuse, clasping the ovary, pubescent, pale with brown tips. Stamens 2, filaments glabrous. Ovary pubescent, ovate-conical, subsessile or the lower ones on shortly stalked pedicels, much shorter than the linear or lingulate nectaries; stigmas large, deeply divided; style long; seed 1·5 × 0·5 mm., tetragonous, oblong, truncate, grey.

Mid May—late June. (Ben Laiough, Perthshire.)

A. male flower. B. female flowers. C. stipules D. seed.