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BRITISH FLORA

GASTON BONNIER

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CHEVALIER DE LA LÉGION D'HONNEUR

AUTHOR OF
"NAME THIS FLOWER"
ETC., ETC.

BRITISH FLORA

By GASTON BONNIER

TRANSLATED & ADAPTED
FROM THE FRENCH BY
ETHEL MELLOR
DOCTEUR ÈS SCIENCES, ETC.



WITH 2300 TEXT FIGURES

1925
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so that the reader might appreciate at a glance the differences between plants, and as a further aid he intercalated many figures in the text. Gaston Bonnier illustrated his texts freely and would quote from the philosopher Bersot's *Lettre sur la Botanique*: "If the features of a person are described in detail, he is not recognised; the face is seen, the person is recognised always. The minute description of a plant is not sufficient for its determination; when the plant is seen, the observer experiences a security which is not given by the description."

It was the intention of Gaston Bonnier to follow closely the preparation of the present work, but on the eve of his collaboration he passed away.

The translation and adaptation of *La Flore du Nord de la France et de la Belgique* has entailed a thorough revision. The natural order *Asclepiadaceæ* and some species not found in this country have been removed; the natural orders *Frankeniaceæ*, *Tamaricaceæ*, *Polemoniaceæ*, *Eriocaulaceæ* and *Salviniaceæ* have been included. The increase in the number of species by about seventy is chiefly due to the more extensive and varied littoral of the British Isles, and to the greater range in altitude and latitude than in the north of France and Belgium. Quite a number of plants found only in cultivation in this country have been retained in the Flora, but in each case the species is indicated as being cultivated or planted; their retention is contrary to botanical usage but has a common-sense basis. Such plants as the Sun-flower and Sweet Chestnut are just as likely to attract the attention of the ordinary observer as are the indigenous plants, consequently there appears no reason why the figures and descriptions of cultivated species should be removed from this Flora; the indication given below the name of the species should be sufficient demarcation. The Flora as here given comprises about 1750 plants, including varieties, of which comprehensive indexes are given at the end of the book.

The material changes in the text are few and have in no case been made without due consideration being given to what I judged, from my personal knowledge of Gaston Bonnier, would have been his wishes. Before making the changes I consulted his widow and daughter, Madame Bonnier and Madame Combes,

also Monsieur R. Douin, Docteur ès Sciences, who is continuing the compilation of the important *Flore de la France* on which Gaston Bonnier had been working for some years.

The translation of *La Flore du Nord de la France* was begun by the late G. S. Boulger, and some of his work is embodied in the first and last sections outside the main text.

For the adaptation of the whole Flora and the translation of the main text, glossary, and indexes I am entirely responsible. The description of the distribution of plants in the British Isles and the accompanying map have been specially prepared by me for the present book.

E. MELLOR.

UNIVERSITY COLLEGE, READING.
January, 1924.

EXTRACTS FROM THE PREFACE

TO

LA FLORE DU NORD DE LA FRANCE ET DE LA BELGIQUE.

When we have made a beginning in the study of botany by simply proposing to ourselves to find out the name of a plant, we find ourselves faced with numerous difficulties. What little knowledge we may have previously been able to acquire by reading elementary books on botany, will be almost useless for the purpose we have in hand. The authors of Floras in most cases write in a language of their own, so bristling with technical terms that we require to turn every minute to a glossary for their meaning. Their descriptions bear on all sides the inherited traditions of scientific Latin and old-world medical expressions. A new language has thus to be learned and it is not even the same in each work. This is the chief obstacle that faces all who wish to take up botany.

It must also be frankly admitted that the longest and most detailed descriptions are insufficient to impart a precise notion of the distinctive characters of a species. For this purpose, nothing can replace drawings from nature. Figures representing the characters of all species have, however, never been published except in very costly illustrated works.

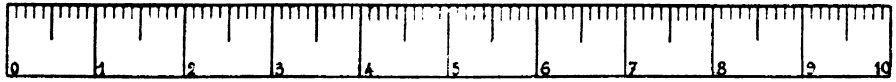
Recognising these numerous difficulties which we have ourselves had to meet in using Floras, we have endeavoured to present here a new, clearer and simpler method.

The characteristics of plants are so described as to avoid as far as possible all technical terms; while, thanks to the very numerous figures inserted throughout, the text is not too lengthy. This allows of the grouping of the plants in synoptical tables so that their resemblances and differences can be appreciated at a single glance. We hope that in this manner we have

secured the advantages of the dichotomous keys commonly used in Floras while avoiding those drawbacks which are familiar to all who have employed such keys.

This book is not a compilation from keys already in existence. All the descriptions, all the figures and the arrangement of the tables are the result of the study of the plants themselves, as we have been able to obtain numerous specimens from standard collections.

We owe the faithful delineation of the specific characters of the plants, drawn from nature, to Madame Bergeron-Hérincq who has been good enough to lend the assistance of her talent for the illustration of this Flora.



10 centimetres or 100 millimetres.

(4 inches approximately).

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INTRODUCTION

The reader who has not made any previous study of botany will do well to begin by reading the INTRODUCTION TO THE STUDY OF PLANTS, pp. 235-41. *If he then meets with a word the precise meaning of which in botany is not known to him, he should consult the glossary, pp.* 242-60, *where these words are arranged alphabetically and accompanied by examples and explanatory figures.*

In this introduction we shall show how the illustrated synoptical tables in this book are to be used, and give some advice to beginners as to the collecting and preservation of specimens.

I. HOW TO USE THE ILLUSTRATED SYNOPTICAL TABLES.

In the first instance specimens should be chosen with large flowers and with all their parts conspicuous. After the names of such plants have been determined, it will be possible to pass on gradually to others with smaller flowers or to those which may be otherwise more difficult to examine.

We can begin with some plant well known to everybody and decide to find out its name by means of the keys. Suppose, for example, that we have a flowering branch of the common Strawberry.[1]

We open the book at page XIX where we find the GENERAL KEY with which the beginner should always start in his analysis. To the left of the first bracket we there read: *Plant with flowers*, and below, in a corresponding position : *Plant without flowers*. That is to say, we have to choose between the two alternatives or questions :

Plant with flowers?
Plant without flowers?

We have to find out which of these two alternatives agrees with the plant that we are analysing. Our plant has flowers; it is therefore the first alternative that agrees. The second would be applicable to a Fern, for example. We therefore ignore the second alternative and take the first, which brings us to a bracket where we find ourselves faced by two new questions. They are:—

Flowers not collected in a head?
Flowers collected in a head?

1. The beginner may not understand such simple words as "stamens" and "pistil." He will find them explained, with illustrations and examples, in the *Glossary*, pp. 242-60.

From the explanation that accompanies this last question we see clearly that the plant we are analysing comes under the first category, its flowers being isolated from one another and not collected into a compact mass, nor surrounded by a collarette of bracts as are the heads of a Cornflower or a Daisy. Taking, therefore, the first question, we find it followed by another bracket with the two following questions:—

Flowers with two envelopes (calyx and corolla) differing in colour and texture?
Flowers with only one envelope or with two envelopes of similar colour and texture, or without any floral envelope?

If we look at the flower that we have in our hands we shall see in it five white petals, which collectively constitute the *corolla*, and, outside these petals, another envelope made up of little green leaves or *sepals*. This outer envelope is the *calyx*. The flower that we are examining has two envelopes (calyx and corolla) differing in colour and texture. It is, therefore, the first question that fits our plant. This brings us to the two following questions, between which we have to choose:—

Corolla not papilionaceous?
Corolla papilionaceous?

We see that the corolla of a flower on our plant in no way resembles the figure representing a papilionaceous corolla, nor does it correspond to the description given of such a corolla. This brings us to the last two questions in the GENERAL KEY:—

Petals free from one another down to their base?
Petals united to one another, at least at their base?

In removing one of the white petals of our flower we find that we can easily detach it without tearing the other petals even at their base, so that it is clear that the five petals are free from one another down to the base. We are thus directed to key **A.—PLANTS WITH SEPARATE PETALS**, p. XX.

Turning to the next page we find this key or table and go on from bracket to bracket as we have just been doing. We can make out, without difficulty, that the Strawberry flower has more than 12 stamens; and it is, therefore, the upper bracket that fits it. In detaching the sepals of the calyx down to their bases we find that the petals and some of the stamens are removed at the same time. We choose, therefore, the first of the three questions enclosed in this bracket, and as the leaves of the Strawberry are not thick and fleshy, we find ourselves directed to the *natural order* ROSACEÆ, p. 54, as that to which our plant belongs.

We have thus found out that the Strawberry is a Rosacea. Let us now find out to what *genus* this plant belongs. To do this we open the book at the page to which we have been directed, i.e. page 54.

As the Strawberry is neither a tree nor a shrub we are directed to the next page. The flower has both calyx and corolla; the calyx is doubled by an epicalyx formed of little supplementary sepals as shown in Fig. P; the receptacle is swollen and fleshy (it is this that when ripe constitutes the strawberry); the leaves have each three leaflets and the petals are rounded. This brings us to Genus VII. **Fragaria**, commonly called *Strawberry*.

Our plant is thus a member of the natural order Rosaceæ and of the genus Fragaria. There are, however, two species in that genus; to which of them does the plant with which we are concerned belong?

At page 58 we find Genus VII. **Fragaria**. In examining withered blossoms, we see that the calyx is spreading and that the stalks of the flowers bear hairs pressed flat as is shown in Fig. FV This shows the plant to be the **Fragaria vesca** or *Strawberry*. Under the name of the species we see the words "Woods and hedges", which means that this plant is ordinarily found in these places; "May-June", which signifies that the strawberry most often flowers from May to June; the letter "p" indicates that the plant is a perennial. The letters "VC" show that the plant is very common, and the sign ✠ means that it has "uses." [1] These various uses are indicated in the alphabetical index of Latin names where the word **Fragaria** must be looked for and, following this generic name, the word "vesca", the specific name.

A useful exercise for the beginner will be to take some plants, the names of which are known to him, look out the name of each of them in the index and trace the plant back step by step to its natural order, noting how all the characteristics enumerated apply to it. Then, starting with the general key as we have just done in the case of the strawberry, the beginner can trace how the names of plants which he does not know can be determined.

II. SUGGESTIONS AS TO THE COLLECTION AND PRESERVATION OF PLANTS.

1. The collection of plants.—All parts of a plant are useful for study, and the underground stems and roots often serve as characters for determining species. If we wish to get a complete knowledge of a plant it is not enough to gather its flowers; the whole plant with its underground parts must be collected. This does not apply to trees or shrubs, of which we must content ourselves with branches bearing flowers or fruit.

For collecting plants with their underground stems and roots we can either use a moderately large knife with the blade fixed firmly in the handle, or a trowel which can be carried in a sheath slung from a shoulder-strap or belt. For the collection of aquatic or submerged plants which are difficult to reach, a useful instrument is a ring armed with

1. The explanations of signs and abbreviations used, notes, etc., will be found on p. XIV.

hooks such as anglers use to unhook their lines. This ring at the end of a tolerably long string can be thrown into the middle of a pond or stream on to a mass of floating or submerged plants ; when the string is hauled-in, a certain number of specimens will be secured.

The collected plants may be surrounded by grass and closely wrapped in newspaper. On a botanical excursion, however, iti s more convenient to carry them in a metal *vasculum*, such as can be obtained from any natural-history dealer ; the vasculum is slung across the shoulders. Some botanists prefer to use a satchel or portable press. This can be made of two pieces of stout cardboard, slit at the four corners ; straps of webbing or leather are passed through the slits and fastened with a buckle. Between the two sides of the press some doubled sheets of grey paper or even of common pale brown paper are placed ; when a plant is gathered it is put at once between two of these sheets, its different parts being carefully spread out.

We must add that it is essential to have a pocket knife and a pocket lens; these two instruments are a great aid in the determination of species.

At the beginning ot the book, on p. VI, is a four-inch or 10-centimetre scale wich will be found useful for mesauring plants or their various parts.

When possible, plants should be collected with both flowers and fruits, because the latter organs are sometimes indispensable for the determination of the species. Many plants still retain some flowers open when on other branches the fruit is almost completely formed or even ripe. It is for this reason very often better to collect specimens of plants somewhat late in their flowering season rather than when the first blossoms begin to open.

2. **Preparation of plants.**—If we wish to compare different plants with one another, it is most important to be able to preserve them, since they do not flower or fruit at the same time of year and as the members of the same genus grow in very different places.

The most convenient way of doing this is by dyring collected specimens. It is a simple matter on returning from an excursion to place them carefully betwen the pages of an old book, such as an out-of-date dictionary. On the top of this is put a pile of other books or a weight of some fifty or sixty pounds, such as a heavy stone. From time to time the plants are shifted from one page to another until they are quite dry.

If a considerable number of plants has been collected, this plan is no longer convenient beeause of the number of books required and the time taken in moving the plants from one page to another. Nor is the method of drying plants between the pages of a book very expeditious. A more rapid and inexpensive method of preparing a large number of plants is as follows:—

A considerable quantity of non-absorbent paper is obtained, the best and cheapest is the pale brown paper commonly used in shops for wrapping up parcels. As soon as possible after they have veen gathered, the plants are carefully placed between the two halves of a folded sheet of this

paper[1]. The specimens from the vasculum or portable press are spread out one by one so as not to lie one on top of the other within the same sheet. It is extremely useful to put in with each specimen a label stating where it was collected, the date, and, if it has been determined, the name of the plant.

When the first sheet of paper has been filled, three or four other folded sheets one within the other are placed under it in an inverse position, i.e. with their folded side opposite to that of the sheet containing the specimens. Another three or four sheets are similarly placed on top; then another doubled sheet with another set of specimens each with its tickets and so on. When all the specimens gathered have been thus arranged, the whole is put under a board on which a heavy stone or other weight is placed. On the following day, the packet of plants is spread out on the ground or on boards in a dry place in such a way that each series rests upon and covers half of the preceding series. An hour later the whole can be collected together and put back under the press. Most plants can be soon dried in this way; those that remain moist must be treated for a longer time.

The best known method, however, consists in using grey blotting-paper; but this paper is more expensive and dries more slowly when the plants are put in it. It is, therefore, necessary to examine the specimens at frequent intervals, and to change and dry those sheets that are damp—a process which takes up a great deal of time without giving any better result.

Some specimens, such as fleshy and tuberous plants, are particularly difficult to dry. All succulent parts should be plunged into boiling water and wiped dry before being put into the folded paper for pressing. Some parts that are too thick, such as bulbs, the flower-heads of thistles, etc., may be split longitudinally, only one half being thus preserved. Some flowers that are very difficult to dry, such as those of orchids, will retain their colours if, after the lower end of the plant has been soaked in boiling water, a hot iron is passed carefully and not too heavily over the rest of plant a fex sheets of tissue-paper are spread over the plant during the latter process.

3. **Preservation of plants and the formation of a herbarium.** — Once the specimens are dry, the simplest way to keep them is to leave them between the sheets of paper, or, perhaps preferably, between other sheets of the same size and perfectly dry, care being taken to separate different species if they have been pressed in the same folded sheet. To avoid the loss of specimens or labels it is well to fasten them to the paper. This is readily done with little strips of gummed paper 2-4 millimetres wide, adherent at each end, and crossing over the stems, leaf-stalks, branches or roots of the specimens. Narrow bands of non-adhesive paper can be fastened with a pin passing under the and securing both ends of the bands to the sheet. The labels can be similarly fixed, i. e. with

1. The most convenient size for these doubled sheets is 16-18 inches by 10-12 inches.

gum or pins; it is customary to place them at the bottom right-hand corner of the sheet.[1]

Sheets for preservation in the herbarium can be arranged according to the classification in a Flora; it is useful to intercalate sheets bearing the names of the natural orders and genera, or the single sheets on which the plants are mounted may be placed within slightly larger folded sheets —often of coloured paper—for each genus or order.

Almost all dried plants deteriorate fairly rapidly as they are liable to be attacked by insects. To preserve the specimens, the destruction by insects must be made impossible. The methods employed for rendering the plants poisonous or for destroying any larvæ present are somewhat dangerous and lengthy.[2] The simplest plan is to put the herbarium sheets in cardboard or wooden boxes, or preferably in a cabinet, together with pieces of camphor or crude commercial naphthaline, or carbolic acid if placed in a suitable receptacle. If the insecticide be renewed from time to time the collections will be preserved.

1. The best gum is made by dissolving gum arabic in water, and adding a few drops of carbolic acid to keep off mould.

2. Plants are treated with mercury bichloride, a very active poison which it is dangerous to handle. It is dissolved in alcohol at 75° C., 40 grams to a litre, and the solution is then put in a large bath of glazed earthenware. The specimens are each dipped separately, removed with long-armed wooden tongs and put on sheets of paper where they are left to dry. Another method consists in destroying the insects every third or fourth year by putting the bundles of herbarium sheets in a big wooden box lined with zinc continued round the top to form a gutter to hold water. In this box is placed a saucer containing carbon bisulphide and the lid is then closed hermetically, its edges being submerged in the water in the gutter. The packets are left in the box for two days. Carbon bisulphide gives off so explosively inflammable a vapour that the box must be kept out of doors during the whole process.

EXPLANATION

OF THE SIGNS AND ABBREVIATIONS

in the Synoptical Tables and Indexes.

In the synoptical tables which are the keys to the genera and species, the name of the natural order or family is printed in heavy-type capitals at the left-hand side of the page, e.g. (p. 2):—

RANUNCULACEÆ.

It is often followed by certain information applicable to the plants belonging to the order.

The Latin name of each genus is printed in heavy type and preceded by a number indicating its sequence in the natural order. Following it and printed in italics is the English name of the genus which in some cases is identical with the Latin name, e.g. (p. 4):—

1.—Ranunculus L. *Ranunculus.*

The letter "L." accompanying the Latin name is that of its author Linnæus. These generic names are found in the right-hand column of those keys in which the natural order is broken up into its genera, and are repeated on the left-hand side where each is at the head of the key in which it is broken up into its species.

The names of the species are on the right-hand side of the page. The Latin name is in heavy type and followed by the abbreviated name of its author in ordinary type. Below is the English name of the species in italics, and certain letters in ordinary type capitals indicating whether the plant is common or rare. The habitat or place where the plant usually grows, the months in which it flowers, and the duration of the plant are given in small type. Example (p. 4):—

R. repens L.
Creeping Buttercup. VC.
Fields; waste places: Apr.-Sept. P.

This without abbreviation means:—

Ranunculus repens Linnæus.
Creeping Buttercup. Very Common.
Fields; waste places; flowers April to September. Perennial.

The common or local name of the plant is in small type and enclosed in brackets below or after the description, e.g. (p. 4):—

[Pilewort.] after the description of **R. Ficaria**.

Each plant has two names, that of the genus and that of the species. The generic name is placed second in English but first in Latin. The author of the name is indicated in order to prevent confusion; this is necessary as some plants have been given different names by different botanists, and, in some cases, the same name has been applied to different plants. A list of the abbreviations of authors' names is given on pp. 261-3.

The habitat given below the name of the species is only a general indication of the places in which the plant can usually be found, and does not as a rule preclude its being found in other situations.

The months in which a plant flowers cannot be stated absolutely as in some localities certain plants have a very early flowering period and may come into flower a second time later in the year.

An index number above and to the right of a species refers to a foot-note where the name of a variety is given together with the characters which distinguish it from the species, e.g. (p. 58):—

R. rubiginosa L.[4]

Sweet Briar.

Hedges; thickets; June-July. P.

The index number "4" refers to the foot-note on p. 59 which is as follows:—

4. Var. *micrantha* Sm.: leaves faintly aromatic, styles almost glabrous.

Botanists are not always in agreement as to whether a plant should be considered a distinct species or a variety of a species. Some describe but few species and refer to them as varieties all forms more or less similar, while others describe all these forms as species and thus add greatly to their number. The first method is the more simple as the second often renders the determination of a plant almost impossible. Those who adopt the first point of view write *Rosa rubiginosa* L. var. *micrantha*, while the others write *Rosa micrantha* Sm.

I.—SIGNS AND ABBREVIATIONS.

1. Frequency of plant.—If a plant is confined to certain parts of the British Isles, the districts in which it is found are given in the index of Latin names (p. 264).

Following the English name of the plant in the keys to the species are the abbreviations given below:—

VC.—Very common or abundant in most districts.
C.—Common or to be found in most districts.
Loc.—Local or found only in certain districts.
R.—Rare or found only in a few places.
VR.—Very rare or found only in one or two places.

2. Time of flowering.—As already shown, the months during which a plant is in flower are indicated below the name of the species.

Jan.—January.	July—July.
Feb.—February.	Aug.—August.
Mar.—March.	Sept.—September.
Apr.—April.	Oct.—October.
May—May.	Nov.—November.
June—June.	Dec.—December.

3. Duration of plant.—The time of flowering is followed by a letter indicating the number of seasons during which the species usually lives.

A.— Plant annual, i.e. lives only for one season.
B.— „ biennial, i.e. lives for two seasons.
P.— „ perennial, i.e. lives for more than two seasons, or indefinitely.

4. Properties and uses of plant.—When a plant has any peculiar properties, useful or harmful, or is employed in industry, medicine or agriculture, its name is followed by a cross:—

✠.—Plant having peculiar properties or uses.

The cross is repeated in the alphabetical index of Latin names where the properties or uses of the plant are stated.

5. Nectar and pollen yielding plants.—The most important of these plants are indicated by an asterisk in the alphabetical index of Latin names as being of interest to bee-keepers. The same species in different districts is not equally visited by bees.

*—Plant much sought by bees.

6. Dimensions of plants.—The average height or length of a plant above the soil is given in feet and inches at the end of the description of the species. The length and breadth of parts of a plant are sometimes inserted in the text and, if small, they are stated in centimetres or millimetres. The dimensions are not absolute but are the ones usually found in the plant or its parts. The abbreviations used are as follows:—

ft.—foot; feet.
in.—inch; inches.
cm.—centimetre; centimetres.
mm.—millimetre; millimetres.

Note.—At the beginning of the book is a ten centimetre scale; each centimetre is divided into ten millimetres. The scale is approximately equal to four inches.

7. Names of authors.—The abridged name of the author follows the Latin name of the plant; the full name is given in the list on pp. 261-3.

The name following a variety is that of the author who has considered and described the plant as a species, not as a variety.

8. Other signs and abbreviations.—A small asterisk preceding the name of a plant [e.g. ***T. europæa** L., p. 34] indicates that the plant is not truly native or indigenous to the British Isles. "Fig." means figure; "p." means page; "N.O." means natural order.

II.—INDEXES.

1. Latin names, pp. 264-96.—In this index the names of the natura orders and genera are arranged in alphabetical order. Under each genus are enumerated the species belonging to it, likewise in alphabetical order. *Synonyms* are shown in italics. The same plant may be described under different names in different floras; these names or synonyms in italics and connected by the sign = (equals) are given in the table, the one adopted in this flora always being placed last. For example, under the genus **Mibora** Adans. is found *minima Desv.* = *verna Adans.*; the species is given the former name in some floras and the latter name in this and other floras. Again, the common ox-eye daisy has the synonyms *Pyrethrum Leucanthemum Coss. and Germ.*, *Leucanthemum vulgare Lam.*, *Chrysanthemum Leucanthemum L.*; it is the last name that is adopted in this flora.

The existence of synonyms is sometimes due to the same plant having been described by different botanists under various names, and sometimes to a lack of agreement amongst the authors as to the characters limiting a species, genus, or natural order.

Occasionally two authors have given the same name to two different plants. Thus in the index is seen *Trifolium agrarium G. G. (not L.)*, which means that it is the plant that Grenier and Godron have called *Trifolium agrarium* and not the one designated under this same name by Linnæus.

The name of the genus is followed by its etymology and by the properties, if any, common to all the species of the genus. Useful or harmful plants are marked by a cross, and the properties of the plant are indicated.

2. English names, pp. 297-302.—In this index are given the English names of genera and species corresponding to the Latin names. The common names of the genera and species, if differing from the botanica names, are shown in italics.

3. French and English names, pp. 303-8.—The French names of genera and species are given in alphabetical order and followed by the corresponding English names.

III.—ABRIDGED KEY TO THE PRINCIPAL NATURAL ORDERS (pp. 314-15).

This key summarises in a few simple phrases the outstanding characters of about twenty of the principal natural orders. A knowledge of the key

is sufficient to enable three-quarters of the plants in the British flora to be placed at once in their natural orders without reference being made to the general key on pp. XIX-XXXIV. For example, a flower has *numerous stamens fixed on the calyx*; without further analysis, the plant can as a general rule be correctly placed in the natural order *Rosaceæ*.

An excellent exercise for students is to learn the key and habituate themselves to use it on their excursions.

GENERAL KEY

Plants with flowers, in which there are stamens, or a pistil, or both.

Flowers *not collected into a head* with a circlet of bracts.

Flowers with two envelopes (*calyx and corolla*) differing in colour and texture.

Corolla not papilionaceous.

Petals free from one another, down to their base..... **A. Plants with separate petals**, p. XX.

Petals united to one another, at least at their base ..... **B. Plants with united petals**, p. XXIV.

Corolla papilionacecus [i. e. irregular with one upper petal *c* (*standard*), two side petals, *a*, *a* (*wings*) and two lower petals united *c c* (*keel*).]



Leguminosæ, p. 42.

Flowers with only one envelope, or with two envelopes of similar colour and texture, or without any floral envelope.

Trees or shrubs, resinous; flowers without stigmas... **F. Gymnospermous plants**, p. XXXIV.

Plants which are *not resinous trees or shrubs*; flowers with stigmas.

Leaves with parallel veins (as seen by transmitted light) *and the similar parts of the flower arranged in 6's. 3's or less than 3.* **D. Monocotyledonous plants**, p. XXXI.

Plants not exhibiting both these characters; *leaves* generally *with more or less branching veins forming a net-work*..... **C. Plants with only one floral envelope**, p. XXVI.

Flowers collected into a head, that is to say, packed close together, without stalks, terminating a stem or branch, and *surrounded with a circlet of bracts* (involucre). [Familiar examples: what are commonly called the "flowers" of the Daisy, Dandelion, Thistle and Cornflower are in reality heads (*capitula*) of flowers.] ..... **E. Plants with their flowers in heads**, p. XXXIII.

Plants without flowers, never having either stamens, or pistil..... **G. Cryptogamic plants** p. XXXIV.

A.—PLANTS WITH SEPARATE PETALS.—

Flower having *more than 12 stamens*.

Stamens and petals *attached to the sepals by their bases*. [When the sepals are removed from their base, the stamens and petals come away with them.]

- *Leaves thick and fleshy*; 6-20 petals..... — *Crassulaceæ*, p. 66.
- Leaves *not fleshy*, often toothed; 4-5 petals. — **ROSACEÆ**, p. 54.

Stamens *united to one another* at least at the base.

- *Tree*; flower-stalk united to the bract TI;  5 sepals, 5 petals: 1 style.... — **TILIACEÆ**, p. 34.
- *Herbaceous* plants.
  - Leaves *opposite*, entire; 3-5 styles; stamens in groups H, A.   — **HYPERICACEÆ**, p. 38.
  - Leaves *alternate*.
    - *Flowers in an elongated raceme* LL; petals much divided;  calyx simple..... — **RESEDACEÆ**, p. 23.
    - *Flowers in the axils of the leaves, singly or in clusters;* petals entire or indented; calyx double MS, AO.   — **MALVACEÆ**, p 35.

Stamens *free from one another down to their bases, and not attached to the sepals.*

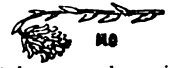
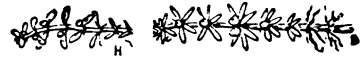
- Stamens *More than 16 petals* NL, NA;   plants with floating leaves, heart-shaped at the base.... — **NYMPHÆACEÆ**, p. 7.
- *Less than 16 petals.*
  - Petals *crumpled* or very much twisted in the bud; pistil with *a single ovary.*
    - *4 petals* P, C; 2 sepals falling very early; PA, C.    — **PAPAVERACEÆ**, p. 8.
    - *5 petals* H, 3 sepals, or 5 sepals of which 2 are small V;  leaves entire, often opposite.. — **CISTACEÆ**, p. 21.
  - Petals *not crumpled* or twisted in the bud; pistil generally of *numerous carpels.*
    - *3 sepals, 3 petals;* leaves arrowhead-shaped. — *Alismaceæ*, p. 163.
    - Flower *not having both 3 sepals & 3 petals.* — **RANUNCULACEÆ**, p. 2.

Flower having *12 stamens or less*, at the base.

Pistil with *carpels entirely free, or united by their inner margin.*

- *3 sepals, 3 petals.*
  - *6 stamens*; sepals very different from the petals ..... — *Alismaceæ*, p. 163.
  - *9 stamens*; sepals coloured almost like the petals..... — *Alismaceæ*, p. 163.
- *5 sepals*; 5 or more petals.
  - Flowers *pink*; *5 carpels*, 5 stigmas. [GE; flower with the calyx and corolla removed.]  — **GERANIACEÆ**, p. 36.
  - Flowers *yellow*;  carpels numerous, forming a long cone..... — *Ranunculaceæ*, p. 2.

Flowers with *no stamens or less* than 4 stamens; Calyx with sepals *completely separate from one another*, or slightly united; Pistil of *carpels united into a single ovary*, or pistil not developed. Flowers *regular*. Plant *not having the preceding characters*.

- *6 stamens, of which 2 are shorter* C;  4 petals, 4 sepals; flowers in racemes.... **CRUCIFERÆ**, p. 10.
- *Plant not green*; leaves reduced to scales MO.  ..... **MONOTROPACEÆ**, p. 111.
- *Leaves of 3 leaflets* O;  10 stamens; 5 styles more or less united.  **OXALIDACEÆ**, p. 41.
- Leaves *neither opposite, nor whorled.* — *Shrub.* — *Spinous*; flowers stalked B ..... **BERBERIDACEÆ**, p. 7.
- *Not spinous*; flowers sessile. — Flowers *axillary* E; leaves short, thick.....  **EMPETRACEÆ**, p. 153.
- Flowers in *long spikes*; leaves fine, branches feathery. **TAMARICACEÆ**, p. 64.
- *Herbaceous* plant. — Leaves *floating*, heart-shaped; *plant floating* on water..... *Hydrocharidaceæ*, p. 178.
- Leaves *vertical*, sharply toothed, all springing from base; *plant rooted*..... .
- Leaves *all along the stem.* — *Sepals 2* ..... *Papaveraceæ*, p. 8.
- *Sepals 4* ..... *Cruciferæ*, p. 10.
- *Sepals 5* ..... **LINACEÆ**, p. 34.
- Leaves *all at the base* of the plant..... **DROSERACEÆ**, p. 25.
- *Tree*; leaves with veins radiating like a fan. ..... **ACERACEÆ**, p. 40.
- *Marsh plant with rooting prostrate stem*: H, E; 3-4 petals.  **ELATINACEÆ**, p. 33.
- Leaves *opposite, or whorled.* — *Herbaceous* plant unlike Figs. H, E. — Leaves *in whorls of 4*, at least at the base..... *Paronychiaceæ*, p. 65.
- Leaves *opposite* — Calyx *with 8-10 divisions*; 4 petals..... *Linaceæ*, p. 34.
- Calyx *with 4-5 sepals.* — Petals *yellowish at base, entire*; sepals with glandular hairs..... *Paronychiaceæ*, p. 65.
- Petals *not both yellowish at base and entire* — Petals *reduced to small threads*; fruit 1-seeded... **FRANKENIACEÆ**, p. 25.
- Petals *not reduced to small threads*; fruit more than 1-seeded — Seeds *attached to fruit wall*..
- Seeds *attached to a central axis* ..... **CARYOPHYLLACEÆ**, p. 26.
- Flowers *irregular.* — *4 sepals*, petals *free from one another*; flowers without a spur..... *Cruciferæ*, p. 10.
- *3 sepals*, petals *united in pairs*; flowers prolonged into a curved spur..... **BALSAMINACEÆ**, p. 40.
- *5 sepals*, 5 unequal petals O, T; leaves entire..... .....  **VIOLACEÆ**, p. 22.
- *2 sepals*, flowers in racemes; leaves much divided..... **FUMARIACEÆ**, p. 9.

Calyx with sepals *more or less united throughout their length, or even calyx united to the ovary, so that it appears above the flower* (see Figs. B, U, p. XXII), *or calyx hardly visible*. (See next page.)

Continuation of key of plants with separate petals.

Tree or shrub.

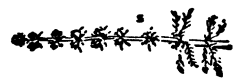
- **Leaves, or at least the lower ones, divided.**
  - *Tree*; flowers irregular, with 7 stamens H, rarely 5 or 6; leaves opposite, with leaflets arranged palmately..... .....  **HIPPOCASTANACEÆ**, p. 40.
  - *Shrub; climbing or prostrate*; leaves alternate.
    - *Flowers not in an umbel*; petals greenish, upper parts united V.  ..... **AMPELIDACEÆ**, p. 40.
    - *Flowers in an umbel* H; plant climbing by roots or trailing on ground.  **ARALIACEÆ**, p. 82
  - *Shrub not climbing; leaves opposite; flowers in a raceme*; petals smaller than the sepals R, U.   **RIBESIACEÆ**, p. 67.
- **Leaves *entire or toothed*.**
  - Leaves *not opposite*; petals much smaller than the sepals R.  **RHAMNACEÆ**, p. 41.
  - Leaves all or mostly *opposite*.
    - Leaves *finely toothed* EV  with veins far apart. ..... **CELASTRACEÆ**, p. 41.
    - Leaves *entire*, with veins approaching one another at the apex CS, appearing before or after the flowers.  **CORNACEÆ**, p. 82.

Herbaceous plant; flowers *in umbels* DC, F, CY;  *leaves alternate*; stamens 5 SA, or absent; styles 2 SA, or absent.  **UMBELLIFERÆ**, p. 70.

Herbaceous plant *not having both its flowers in umbels and its leaves alternate.*

Plant *not* having the above characters.

Water plant *submerged, or floating.*

- Flowers *in whorls* S; leaves much divided.  — *Haloragaceæ*, p. 61.
- Flowers *not in whorls*; leaves heart-shaped ..... — *Hydrocharidaceæ*, p. 178.

Water plant with *leaves all at the base and spinously toothed* .....

6-10 stamens, or 2 stamens, or 10 stamens 5 of which are modified as scales bearing yellow glandular filaments (Grass of Parnassus).

Pistil with *separate carpels* ; leaves fleshy ..... — *Crassulaceæ*, p. 66.

Pistil with *compound ovary* not deeply cleft.

Calyx with *8-12 teeth* LY;  6-12 stamens L, ovary free. — **LYTHRACEÆ**, p. 61.

Calyx *with 2-5 teeth.*

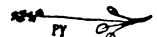
2-5 styles.

- Ovary *free*; leaves opposite ..... — **CARYOPHYLLACEÆ**, p. 26.
- Ovary *united at its base to the calyx*; leaves in rosettes, alternate, or rarely opposite ..... — **SAXIFRAGACEÆ**, p. 68

1 style with 1-5 stigmas.

Flowers *hardly noticeable* O, F; leaves more or less fleshy.  — **PORTULACEÆ**, p. 64.

Flowers *very evident*

- *5 petals*; leaves all at the base PY.  — **PYROLACEÆ**, p. 111.
- *2 or 4 petals* C, H; leaves not all at the base. .....  — **ONAGRACEÆ**, p. 62.

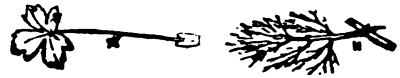
3, 4 or 5 stamens.

Pistil with *3, 4 or 5 separate carpels*; leaves sometimes fleshy. — **CRASSULACEÆ**, p. 66.

Leaves *entire.*

Pistil with *compound ovary not deeply cleft.*

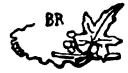
- *4 sepals* ..... — *Linaceæ*, p. 34.
- *5 sepals* ..... — **PARONYCHIACEÆ**, p. 65.

Leaves *lobed* SE, *or much divided* H.....  — *Umbelliferæ*, p. 70.

B.—PLANTS WITH PETALS UNITED TO ONE ANOTHER.—

Stamens not attached to the corolla.

No stamens.

- Plant *climbing by tendrils* BR.  ..... *Cucurbitaceæ*, p. 64.
- Plant *not climbing.*
  - Leaves *opposite* ..... *Valerianaceæ*, p. 86.
  - Leaves *all at the base* and with spinous teeth...  *Hydrocharidaceæ*, p. 178.

Shrub.

- *Ovary attached to the calyx*; leaves oval M, V..... ...  VACCINIACEÆ, p. 109.
- *Ovary not attached to the calyx*; leaves narrow, C, EC, rarely oval.   ERICACEÆ, p. 109.

Herbaceous plant.

Flower *regular.*

- Leaves *all at the base* L;  water plant with hardly visible flowers.. *Plantaginaceæ*, p. 142.
- Leaves *alternate*, all along the stem; ovary attached to calyx...  CAMPANULACEÆ, p. 107.

Flower *irregular*

- Leaves *entire or toothed.*
  - Flowers *blue*, without spur D; calyx green..
  - Flowers *yellow*, spurred I; petals united in pairs; calyx coloured.  *Balsaminaceæ*, p. 40.
- Leaves *much divided.*
  - *Sepals 2*, sometimes minute CO, FO; petals slightly united. .....   *Fumariaceæ*, p. 9.
  - *Sepals 5, coloured*, one with a pointed spur (Fig. D, p. 3) ..... *Ranunculaceæ*, p. 2.

5 stamens in 3 bundles; plant climbing by tendrils (Fig. BR, above)..... *Cucurbitaceæ*, p. 64.

3 stamens or a single stamen.

- Calyx *regular, of 2 or 3 sepals* F; *leaves slightly fleshy.*  flowers small, hardly visible, in clusters F..... *Portulaceæ*, p. 64.
- Calyx *attached to the ovary.*
  - Plant *climbing*; petals not united in a tube. CUCURBITACEÆ, p. 64.
  - Plant *not climbing*; petals united in a tube OA, C.  VALERIANACEÆ, p. 86.

4 stamens small.

- *Tree or shrub*; 2 stamens; 4 petals united in a tube; leaves opposite..... OLEACEÆ, p. 116.
- Plant *not green*, with leaves reduced to scales, parasitic on roots ..... OROBANCHACEÆ, p. 132.
- with Ovary *divided into 4 distinct parts* A, B. [Look at the base of the calyx-tube of a withered flower.]  leaves opposite; stem often 4-angled.... LABIATÆ, p. 134.

[*base. come away with it.*]

Stamens attached to the corolla, at least at the [When the corolla is removed at its base,' the stamens

2 stamens or of which 2 are

Plant *herbaceous*, green leaves.

Ovary *not divided externally into 4 parts.*

Flowers almost regular V; lilac coloured, in a long spike; leaves opposite, deeply lobed VE; fruit separating into 4 parts when ripe.....  **VERBENACEÆ**, p. 142.

Leaves all at the base and without stalks P; or a *submerged plant with leaves cut up* into narrow thongs V.....  **LENTIBULARIACEÆ**, p. 112.

Plant not having the above characters; fruit dry with many seeds..... **SCROPHULARIACEÆ**, p. 126.

4 equal stamens or more than 4 stamens.

More than 12 stamens; petals hardly united at their bases;  calyx double MS. *Malvaceæ*, p. 35.

Plant without leaves, not green; twining round other plants CS.....  **CUSCUTACEÆ**, p. 119.

Sepals free, 2 of them large, PV, *coloured*;  8 stamens united n 2 bundles.... **POLYGALACEÆ**, p. 24.

4 or 5 stamens and green leaves.

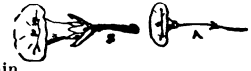
Leaves *neither opposite, nor whorled, nor all at the base.*

Leaves not spinous.

Shrub with spinous leaves I, or at least the lower ones; flowers white.  **AQUIFOLIACEÆ**, p. 41.

Ovary not divided externally.

Ovary divided externally into 4 parts [look at the base of the calyx-tube]; plant hairy. **BORAGINACEÆ**, p. 120.

Twining plant, with *stamens free* and funnel-shaped corolla S, A.....  **CONVOLVULACEÆ**, p. 119.

Leaves with 3 leaflets; petals bearded within..... *Gentianaceæ*, p. 117.

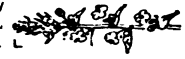
Plant *not* having the above characters.

Ovary *united to calyx*; stigmas 2-5 ..... **CAMPANULACEÆ**, p. 107.

Stigmas 3..... **POLEMONIACEÆ**, p. 119.

Ovary free [within the corolla].

Stigma 1

Flowers in a *very long* raceme L or spike.....  *Scrophulariaceæ*, p. 126.

Flowers *not* in a long raceme or spike.

Sepals 5; *stamens 5*..... **SOLANACEÆ**, p. 124.

Sepals 4; *stamens 4*..... *Primulaceæ*, p. 113.

Leaves *opposite or whorled*, or *all at the base*. (See continuation of key on the following page.)

Continuation of key of plants with their petals united to one another.

Leaves *whorled* GS, M, at least towards the base of the plant.
- Ovary *united to the calyx* (that is to say, apparently situated below the flower); stamens *alternating* with the petals; leaves entire, GS, M. .....   **RUBIACEÆ**, p. 84.
- Ovary *free* (within the flower); stamens *opposite* to the petals. ..... *Primulaceæ*, p. 113.

Leaves *opposite, or all at the base.*

Flowers *not membranous.*

Flowers with a *membranous* calyx or corolla.
- Flowers *whitish or greenish*, in a simple spike ..... **PLANTAGINACEÆ**, p. 142.
- Flowers *pink or lilac*, in globose heads or loosely branched spikes. ..... **PLUMBAGINACEÆ**, p. 143.

Ovary *deeply cleft into 4 parts* (look at the base of the calyx-tube of a withered flower); stem 4-angled; stamens 4. ..... *Labiatæ*, p. 134.

Ovary *not deeply cleft.*

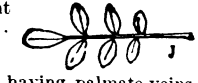
Leaves *not fleshy.*
- Leaves *thick*. *rather fleshy*; flowers small, hardly noticeable, O, F.   **PORTULACEÆ**, p. 64.
- *Shrub*, erect or climbing; or plant herbaceous; ovary united to calyx; flowers coloured or green. ..... **CAPRIFOLIACEÆ**, p. 82.

Plant *herbaceous*; ovary free; flowers *coloured.*
- Stamens *opposite the petals*. ..... **PRIMULACEÆ**, p. 113.
- Stamens *alternating with the petals.*
  - Stem *trailing*; corolla with spreading lobes, MI.  **APOCYNACEÆ**, p. 116
  - Stem *not trailing* ..... **GENTIANACEÆ**, p. 117.

C.—PLANTS WITH ONLY ONE FLORAL ENVELOPE.—

Plant *climbing*.
- Flowers *white* with numerous stamens C;  plant climbing by means of the leaf stalk; leaves made up of distinct leaflets. ..... *Ranunculaceæ*, p. 2.
- Flowers *green* with 5 stamens; plant climbing by tendrils; venation palmate. ..... *Ampelidaceæ*, p. 40.

Leaves or buds
- *Calyx rose-coloured*; corolla small, globular, within the calyx. ..... *Ericaceæ*, p. 109.
- *Calyx and corolla greenish or yellowish*; leaves with palmate veins. ..... *Aceraceæ*, p. 40.

- *Tree or shrub.*
  - Plant *not climbing.*
    - Leaves or buds *not in opposite pairs.*
      - *opposite*, at least at the top of the branches; AC, AP, PP (p. 40); F.
        - Plant *not having both calyx and corolla.*
          - Leaves *compound*, F;  flowers in dense clusters..... *Oleaceæ*, p. 116.
          - Leaves *simple.*
            - *Spinous* shrub with leaves silvery underneath HI.....  **ELÆAGNACEÆ**, p. 152.
            - *Not spinous.*
              - Plant *whitish or silvery*..... *Chenopodiaceæ*, p. 144.
              - Plant *not whitish or silvery.*
                - Leaves *persistent*, oval; flowers *in dense clusters*..... *Euphorbiaceæ*, p. 153.
                - Leaves *not persistent*; flowers *in a long spike*..... *Salicaceæ*, p. 159.
      - Tree or shrub *not scented.*
        - Tree or shrub with leaves *not in balls.*
          - Tree or shrub *scented* either because of resinous wood or of leaves smelling strongly when rubbed.
            - Small *shrub*, with oval leaves, *not in whorls*, MY.  **MYRICACEÆ**, p. 162.
            - *Shrub* with *whorled* sharply pointed leaves..
            - *Tree.*
              - *Resinous*, with simple, usually persistent leaves..... *Coniferæ*, p. 222.
              - *Not resinous*, with compound fragrant leaves, J. .....  **JUGLANDACEÆ**, p. 157.
          - Flowers *collected in a ball* PL;  tree with leaves having palmate veins **PLATANACEÆ**, p. 162.
        - Flowers *not in balls.*
          - Flowers with *one floral envelope* (calyx or calyx and corolla).
            - Floral leaves *quite distinct.*
              - *Shrub.*
                - *Tree*; *stamens numerous*..... *Tiliaceæ*, p. 34.
                - *Not spinous.*
                  - *Spinous*; *stamens 6*..... *Berbidaceæ*, p. 7.
                  - Leaves *flat.*
                    - Leaves *revolute*; *stamens 3*..... *Empetraceæ*, p. 153.
                    - *Stamens 8*..... *Thymeleaceæ*, p. 152.
                    - *Stamens 4 or 5*.....  *Rhamnaceæ*, p. 41.
            - Sepals *almost completely united*, U; 2 styles..... **ULMACEÆ**, p. 156.
          - *No floral envelope*; some flowers staminate, others pistillate; dicœcious or monœcious.
            - Leaves *leathery*, entire, narrow, long, apex pointed, arranging themselves in two opposite rows..... *Coniferæ*, p. 222.
            - Leaves *not having these characters.*
              - Bud scales *1 large, 1 small*; flowers *dicœcious.* ..... **SALICACEÆ**, p. 159.
              - Bud scales *many*; flowers *monœcious.*
                - Pistillate flowers *in a dense spike or catkin* (tree with white bark, or with leaves slightly cut and rounded at the top). **BETULACEÆ**, p. 162.
                - Pistillate flowers *solitary or 2-5 together, or in a loose spike* (tree with bark not white; leaves pointed or cut irregularly). **CUPULIFERÆ**, p. 158.

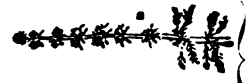
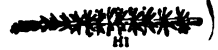
Plant neither a tree nor a shrub. (See continuation on next page.)

Continuation of key of plants with only one floral envelope.

Plant *attached to the branches of trees*, green or yellowish; flowers with parts in 4's; leaves opposite, VI.  **LORANTHACEÆ**, p. 82.

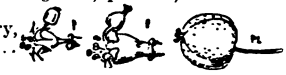
Plant *with flattened, green, leaf-like stems or fronds* T, M;  floating on the water, with slender roots..... **LEMNACEÆ**, p. 182.

Leaves *whorled.*

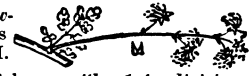
- **Leaves** *deeply cut.*
  - Flowers *solitary.*
    - Flowers *conspicuous, coloured*; leaves *3 in a whorl*..... *Ranunculaceæ*, p. 2.
    - Flowers *hardly visible*; leaves *6-10 in a whorl*..... **CERATOPHYLLACEÆ**, p. 156.
  - Flowers *collected in clusters* in upper part S; leaves 4 in a whorl S.....  **HALORAGACEÆ**, p. 61.
- **Leaves** *entire.*
  - Plant *aquatic*; flowers hardly visible HI; stamen 1..... 
  - Plant *not aquatic.*
    - *Stamens 8*; plant with 4 broad leaves PA.....  *Liliaceæ*, p. 164.
    - *Stamens 4-5*; petals united at least at base..... *Rubiaceæ*, p. 84.

Leaves *not developed*, or reduced to scales.

- *No corolla*; plant fleshy, maritime..... *Chenopodiaceæ*, p. 144.
- Corolla with *petals united.*
  - Plant *not twining*..... *Orobanchaceæ*, p. 132.
  - Plant *twining round others*, with slender stems bearing suckers..... *Cuscutaceæ*, p. 119.
- Corolla with *petals separated* to the base (See Fig. MO, p. XXI)..... *Monotropaceæ*, p. 111.

Stem with a white liquid which exudes when the stem is broken; ovary, of 3 united carpels, borne on a short stalk, P, E, PL.....  **EUPHORBIACEÆ**, p. 153.

Leaves *with stipules united to the petiole*, and more or less sheathing the stem. [Examples:—H, V, T, AV.] 

- Leaves *much divided*, or toothed and palmate; stamens many.
  - Flowers *greenish or purple*; lobes or leaflets not compound..... *Rosaceæ*, p. 54.
  - Flowers *yellowish*; leaflets compound M.  *Ranunculaceæ*, p. 2
- Leaves *entire* or nearly so; stamens 4-8.
  - Calyx *with 1-4 divisions*; greenish or absent..... *Naiadaceæ*, p. 178.
  - Calyx *with 5-6 divisions*; white, greenish, reddish or pink. *Polygonaceæ*, p. 148.

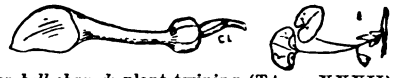
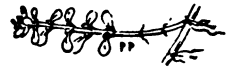
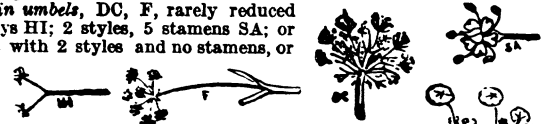
and not attached to the branches of trees. *whorled.* *without a white liquid.*

Plants *with stems* and usually leaves, or at least *leaf-scales*,

Leaves *not*

Plants *with leaves developed, and*

Leaves *without stipules, or with stipules not united to the petiole*, sheathing or non-sheathing.

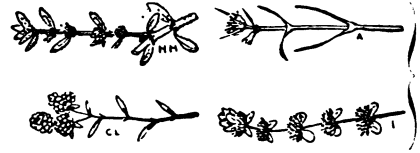
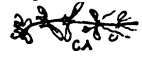
- ***More than 12 stamens.***
  - Flowers numerous, *enclosed in a large horn-like bract* AR; the whole is the inflorescence and not the flower; inflorescence a spike; flowers without either calyx or corolla.  ..... *Araceæ*, p. 182.
  - *No horn-like bract.*
    - Pistil *not divided*, i.e. carpels united; 4 petals, (2 sepals in the bud-stage) ..... *Papaveraceæ*, p. 8.
    - Plant *not having these characteristics* ..... *Ranunculaceæ*, p. 2.
- ***6-12 stamens.***
  - Flowers *united into a globular mass* A,  stamens with filaments divided into two, so as to appear 8-10 ..... *Caprifoliaceæ*, p. 82.
  - Flowers *not in a globular mass* and *leaves not heart-shaped* at the base.
    - Leaves *heart-shaped* at the base E.
      - Calyx *horn-like* CL, or *bell-shaped* E.  **ARISTOLOCHIACEÆ**, p. 152.
      - Calyx *neither horn-like, nor bell-shaped*; plant twining (TA, p. XXXII) **DIOSCOREACEÆ**, p. 169.
    - Ovary *not divided.*
      - Carpels many, *forming an elongated cone in the middle of the flower* ..... *Ranunculaceæ*, p. 2.
      - *4-5 short styles*; leaves opposite, without stalks ..... *Caryophyllaceæ*, p. 26.
      - *2 styles.*
        - Calyx *yellow, or greenish-yellow*, of 4-5 sepals ..... *Saxifragaceæ*, p. 68.
        - Calyx *green*, of 3 sepals ..... *Euphorbiaceæ*, p. 153.
      - *1 style*; flowers greenish; leaves oval, opposite PP.  *Lythraceæ*, p. 61.
- ***0-5 stamens.***
  - Plant climbing by its twining stems.
    - Leaves *not lobed*, heart shaped at base (TA, p. XXXII) ... *Dioscoreaceæ*, p. 169.
    - Leaves *lobed* H .....  **CANNABINACEÆ**, p. 156.
  - Plants *not having these characteristics.*
    - Leaves compound; palmate C ....
    - Flowers *in umbels*, DC, F, rarely reduced to 2 rays HI; 2 styles, 5 stamens SA; or flowers with 2 styles and no stamens, or with 5 stamens and no styles.  *Umbelliferæ*, p. 70.
    - Leaves *peltate* H ....
  - Plants having neither their flowers in umbels, nor their leaves peltate.
    - Flowers *enclosed in a large, horn-like bract* (Fig. AR, above) ..... *Araceæ*, p. 182.
    - Not. (See continuation on following page.)

Continuation of key of plants with only one floral envelope.

Flowers *not green* (calyx coloured or indistinct, corolla absent or coloured).

- Flowers *yellow*, irregular; calyx coloured, with a spur; stamens 5; petals coloured 4, united 2 and 2.... *Balsaminaceæ*, p. 40.
- Flowers *bluish, white or pink.*
  - Calyx coloured; corolla absent; *stamens 5*.... *Primulaceæ*, p. 113.
  - Calyx indistinct; corolla coloured; *stamens 1-3*.... *Valerianaceæ*, p. 86.

Flowers *greenish, at least outside, not having both calyx and corolla.*

- Flower *with a single stigma*, or with no pistil developed.
  - *Water* plant; stamens 4; calyx with united sepals I.....  ..... *Onagraceæ*, p. 62.
  - Plant *not aquatic.*
    - Plant *without hairs; leaves very narrow*; flowers in a raceme, TH, T;  stigma *not tufted*; flowers yellowish white inside. **SANTALACEÆ**, p. 152.
    - Plant *hairy*, often with stinging hairs; stigma tufted, or absent..... **URTICACEÆ**, p. 157.
    - Plant *silvery white*, with entire leaves..... *Chenopodiaceæ*, p. 144.
- Flowers *with several stigmas.*
  - 5 stamens *and 5 little threads, seldom fewer*, representing the petals; plant usually having several prostrate stems; leaves united in pairs or with membranous stipules. [Examples: HH, A, CL, I.]  *Paronychiaceæ*, p. 65.
  - 1-5 stamens *not accompanied by thread-like petals.*
    - Plant aquatic; *submerged or floating.*
      - *4 stamens*; calyx *of 4 sepals*; flowers in a spike..... *Naiadaceæ*, p. 178.
      - *1-2 stamens*; calyx *of 2 sepals*; flowers solitary CA.....  **CALLITRICHACEÆ**, p. 156.
    - Plant *not submerged or floating.*
      - Leaves all *long and very narrow*; fruit with 4 valves SP;  sepals separated to the base; stamens 4..... *Caryophyllaceæ*, p. 26.
      - Plant *not having the above characters.*
        - Flowers *surrounded by membranous bracts*..... **AMARANTACEÆ**, p. 143.
        - Flowers *not surrounded by membranous bracts.*
          - Leaves *with rounded divisions.* *Cruciferæ*, p. 10.
          - Leaves *not with rounded divisions*..... *Chenopodiaceæ*, p. 144.
- *0 stamen*; 2 stigmas; 2 united carpels; leaves opposite..... *Euphorbiaceæ*, p. 153.

D.—MONOCOTYLEDONOUS PLANTS.—

Flowers *coloured, not membranous.*

Flowers *regular.*

Flower ***very irregular***; ovary inferior and often resembling externally the pedicel of the flower; anthers 1 or 2; stamens and style united to form a central column ..... **ORCHIDACEÆ**, p. 172.

Stamens 3.

- Plant *not spinous*; anthers extrorse ..... **IRIDACEÆ**, p. 170.
- Plant *spinous* R; anthers introrse..... *Liliaceæ*, p. 164.

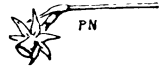


Stamens 4 or many.

- Plant *aquatic*:
  - Flowers *diœcious*; carpels united. ..... **HYDROCHARIDACEÆ**, p. 178.
  - Flowers *monœcious*; carpels free. ..... *Alismaceæ*, p. 163.
- Plant *not aquatic*; flowers perfect; 2-leaved ..... *Liliaceæ*, p. 164.

Stamens 6.

- *Ovary inferior* PN, G. .... **AMARYLLIDACEÆ**, p. 171.





- *Ovary superior.*
  - *3 green sepals*: 3 coloured petals: water plant. ..... **ALISMACEÆ**, p. 163.
  - *Floral envelope entirely coloured.*
    - Leaves *developed at the same time as the flowers.*
    - Leaves *not developed at the same time as the flowers*; flower with a very long tube CO. **LILIACEÆ**, p. 164.



Stamens 9; flowers in an umbel BU ; water plant with pink flowers.. ..... *Alismaceæ*, p. 163.



Stamen 0.

- Plant *aquatic*, with *white or pink* flowers..... *Hydrocharidaceæ*, p. 178.
- Plant *not aquatic*, with *yellowish* flowers, numerous slender twigs resembling leaves. *Liliaceæ*, p. 164.

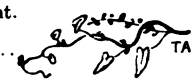
Flowers *membranous* or not brightly coloured. (See next page.)

Continuation of key of Monocotyledonous plants.

Flowers membranous, green or not brightly coloured.

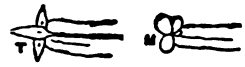
Floral envelope of 6 parts (3 sepals and 3 petals) all alike.

- Plant herbaceous; not spinous.
  - *Shrub*, spinous. — *Liliaceæ*, p. 164.
  - Plant not aquatic and submerged.
    - Plant *aquatic, submerged*; leaves translucent. — *Hydrocharidaceæ*, p. 178.
    - Plant *twining* TA. — **DIOSCOREACEÆ**, p. 169.
  - Plant not twining.
    - Flowers *membranous*. — **JUNCACEÆ**, p. 184.
    - Flowers not membranous.
      - Branches *green, leaf-like*; flowers axillary. — *Liliaceæ*, p. 164.
      - Branches *not green and leaf-like*; flowers in racemes. — *Naiadaceæ*, p. 178.



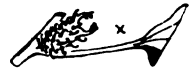
Floral envelope of less than 6 parts.

- Plant *submerged, floating.*
  - Plant *with neither true stems nor leaves* T, M. — **LEMNACEÆ**, p. 182.
  - Plant *having a stem and leaves.*
    - Flowers *collected in balls*. — *Typhaceæ*, p. 183.
    - Flowers *not in balls*. — **NAIADACEÆ**, p. 178.



- Plant *usually not floating*; leaves with long sheathing bases.
  - Flowers in *globose heads.*
    - Head *terminal*; flowering-stem not leafy. — **ERIOCAULACEÆ**, p. 182.
    - Heads *terminal and lateral*; flowering-stem leafy S. — **TYPHACEÆ**, p. 183.
  - Flowers in *cylindrical spikes; staminate flowers above, pistillate below,* or flowers perfect.
    - Inflorescence *not enclosed in bract.*
    - Inflorescence *enclosed in large bract* (Fig. AR, p. XXIX). — **ARACEÆ**, p. 182.
  - Flowers *not having above characters.*
    - Sheath of the leaf *split lengthwise.*
      - Flowers in a single mass with an almost spinous bract C. — *Cyperaceæ*, p. 186.
    - Sheath of the leaf *not split.*
      - Plant not having these characteristics. — **GRAMINEÆ**, p. 198.
      - Flowers *bluish*. — **CYPERACEÆ**, p. 186.
      - Flowers *not bluish*.

E.—PLANTS WITH THEIR FLOWERS IN HEADS.—

Heads of two kinds, some with staminate, others with pistillate flowers; monœcious; involucre spinous X; leaves stalked, X, S.   — **AMBROSIACEÆ**, p. 107.

Corolla papilionaceous; leaves with three leaflets; flower head globular TA, F.....   — *Leguminosæ*, p. 42.

Heads all alike and corolla not papilionaceous.

Anthers *more or less united into a tube through which the style passes.*

- Flowers blue, rarely white; each flower in the head *with 5 petals almost separated down to the base*; anthers spreading out at the apex in a white star; seeds several..... — *Campanulaceæ*, p. 107.
- Each flower of the head *with petals united in a tube*, at least at the base. (See for example Fig. 77, p. 251, and Fig. 129, p. 258.) — **COMPOSITÆ**, p. 88.

Anthers *free* from one another.

Stamens 5.

- Plant *with leathery spinous leaves*; involucre spinous E..... .....  — *Umbelliferæ*, p. 70.
- Plant *with leaves not spinous.*
  - Flowers *blue or white*..... — *Campanulaceæ*, p. 107.
  - Flowers *pink*; stalk without leaves below the flower head AR.....  — **PLUMBAGINACEÆ**, p. 143.

Stamens 4.

- Leaves *all radical*; flowers membranous.
  - Leaves *not transparent*..... .. .. — *Plantaginaceæ*, p. 142.
  - Leaves *transparent*..... .... — *Eriocaulaceæ*, p. 182.
- Leaves *opposite*; ovary united to the calyx... .. .. — **DIPSACEÆ**, p. 87.

Stamens 6, 3 or 2.

- Plant *with a bulb at its base*..... — *Liliaceæ*, p. 164.
- Plant *without a bulb.*
  - Flowers *collected into several balls*. .... — *Typhaceæ*, p. 183.
  - Flowers *not in balls.*
    - *Floral envelope with 6 distinct segments*..... ..... — *Juncaceæ*, p. 184.
    - *Floral envelope with 5 lobes*..... — *Valerianaceæ*, p. 86.
    - *Floral envelope not evident or made up of hairs* . ..... — *Cyperaceæ*, p. 186.

F.—GYMNOSPERMOUS PLANTS.—

Anthers borne on scales in cones; seeds enclosed in dry cones, ori n a fleshy covering; tree or shrub, resinous or not resinous ..... **CONIFERÆ**, p. 222.

G.—CRYPTOGAMIC PLANTS.—

Plants *with true roots* springing from their underground stems.

Leaves or fronds *well developed*; stem *underground*.

Plant *usually aquatic*.

Plant *rooting* I, PI.

- Plant *not rooted*, floating, free ..... **SALVINIACEÆ**, p. 233.
- Stem *not creeping* I ..... **ISOETACEÆ**, p. 233.

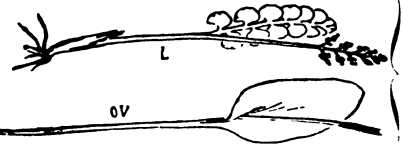


- Stem *creeping* PI; sporangia in globular cases at base of leaves PI ..... **MARSILIACEÆ**, p. 233.



Plant *not aquatic*.

- Frond *often solitary, in two parts*, one green, the other bearing sporangia L, OV ..... **OPHIOGLOSSACEÆ**, p. 230.



Fronds *several or many; not bipartite*.

- Lower part of frond barren, *upper part fertile* ..... **OSMUNDACEÆ**, p. 230.

Fronds *not like above*.

- Fronds *translucent*; sori distinct, marginal ..... **HYMENOPHYLLACEÆ**, p. 229.
- Fronds *not translucent*; sori on under surface ..... **POLYPODIACEÆ**, p. 224.

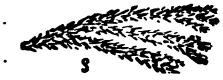
Leaves *very small* in comparison to the stems; stems *aërial and underground*.

- Branches *whorled* AR; leaves in form of small membranous tubular sheaths AV ..... **EQUISETACEÆ**, p. 231.



Branches *repeatedly forked* S; leaves distinct, green; sporangia solitary.

- Sporangia and spores of *one* kind ... **LYCOPODIACEÆ**, p. 232.
- Sporangia and spores of *two* kinds ... **SELAGINELLACEÆ**, p. 232.



Plants *without true roots*, having sometimes absorbent hairs on their lower surface.

- *Bryophytes* (Mosses, Liverworts).
- *Thallophytes* (Algæ, Lichens, Fungi).

SYNOPTICAL ILLUSTRATED TABLES

of the

NATURAL ORDERS & GENERA

or

ILLUSTRATED DICHOTOMOUS KEYS

to the

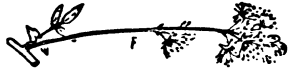
GENERA, SPECIES & VARIETIES

RANUNCULACEÆ. This N.O. includes plants of very varied appearance. Many of them are poisonous because of the presence of alkaloids, as for example *aconitine* and *anemonine* which are used in medicine. Several of the species growing in a wild state are also cultivated in gardens, e.g. Monkshood, Columbine, Globe-flower, Pasque-flower.

Shrub, climbing; leaves *opposite;* sepals 4 C white; corolla absent.  II. **Clematis** L., p. 5. *Clematis.*

Involucre of 3 green bracts below flower AN, PL; sepals large, petal-like.

- Petals *absent*.   IV. **Anemone** L., p. 6. *Anemone.*
- Petals *very small*, tubular. IX. **Eranthis** Salisb., p. 6. *Eranthis.*

Leaves with *stipules united to petiole* T; sepals 4-5, small TM, yellowish; corolla absent; flowers many F; stamens long.    III. **Thalictrum** L., p. 6. *Thalictrum.*

Sepals *golden yellow*, large; petals small, *inconspicuous.* VIII. **Trollius** L., p. 6. *Trollius.*

Carpels on a *long receptacle* SCE.

- Sepals *green*; petals *conspicuous.*
  - Petals *yellow or white*, pocket present at base (*e*, Fig. R).  I. **Ranunculus** L., p. 4. *Ranunculus.*
  - Petals *scarlet*, no pocket at base.  V. **Adonis** L., p. 6. *Adonis.*



not spurred. *herbaceous.* *absent.* *present but free.*

Flowers — Plant — Involucre — Leaves *without stipules*, or rarely stipules

Carpels on a *flattened receptacle* CP.



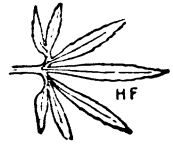
Flowers *regular* N. — Petals *present*.

Petals *absent*; sepals 5, large, yellow (Fig. CP). — VII. **Caltha** L., p. 6. *Caltha.*

Petals *not tubular*.

- Sepals and petals *white*, falling early AS. —  — XV. **Actæa** L., p. 7. *Baneberry.*
- Sepals *green*, persistent; petals *crimson*, large. — XVI. **Pæonia** L., p. 7. *Pæony.*
- Sepals *blue* or veined blue; carpels partly united N; leaves finely divided. —  — XI. **Nigella** L., p. 7. *Nigella.*

Petals *tubular*, small.

- Sepals *greenish*, large, persistent; carpels free; leaves fan-shaped HF. —  — X. **Helleborus** L., p. 7. *Hellebore.*

Flowers *irregular*, helmet-shaped A; sepals blue; two upper petals concealed and resembling inverted horns. —  — XIV. **Aconitum** L., p. 7. *Aconite.*

Flowers *spurred*.

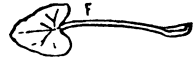
Leaves *all radical* MM; flowers small, greenish; sepals 5, all spurred, falling early. —  — VI. **Myosurus** L., p. 6. *Mouse-tail.*

Leaves *alternate*, flowers large.

- *Spur 1*; flower irregular D; leaf-segments narrow. —  — XIII. **Delphinium** L., p. 7. *Larkspur.*
- *Spurs 5*; flower regular AV; leaf-segments broad. —  — XII. **Aquilegia** L., p. 7. *Columbine.*

I. Ranunculus L. *Ranunculus.*—

Sepals 3; petals 6-9, yellow; leaves cordate F; underground tubers many, cylindrical; plant glabrous; 4-8 in. [Pilewort.]



1. **R. Ficaria** L. ✠
Lesser Celandine. VC.
Damp places: Mar.-May. P.

Flowers yellow; plant never floating. Leaves divided. petals usually 5.

Carpels 3-8, *toothed*, *spinous* AR; flowers yellowish-green; 8-20 in.



2. **R. arvensis** L.
Corn Crowfoot.
Cornfields: May-July. A.

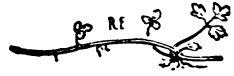
Sepals *spreading* A.



Carpels more than 8, *not toothed.*

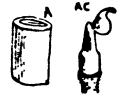
Middle lobe of leaf *not stalked*; stem *not creeping.*

Middle lobe of leaf *stalked* RE; stem usually *creeping*, rooting RE; peduncle furrowed; 8-24 in.



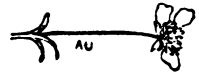
3. **R. repens** L.
Creeping Buttercup. VC.
Fields; waste places: Apr.-Sept. P.

Carpels *glabrous* and receptacle glabrous AC; peduncle smooth A; 1-3 ft.



4. **R. acris** L.
Upright Buttercup. VC.
Fields; waste places: May-Sept. P.

Carpels *downy*; petals sometimes missing; 8-12 in. [Goldilocks.]



5. **R. auricomus** L.
Wood Crowfoot.
Woods; thickets: Apr.-May. P.

Carpels *more than* 100, on a *long* receptacle SC; leaves glabrous; flowers small; stem hollow; 8-24 in.



6. **R. sceleratus** L. ✠
Celery-leaved Crowfoot.
Margins of water: May-Sept. A.

Sepals *reflexed* BU.



Carpels *fewer than* 100, on a *rounded* receptacle.

Carpels bearing *tubercles* PH; stem not bulbous.

Tubercles *rounded*, near margin PH 4-16 in.



7. **R. Philonotis** Ehrh.
Hairy Crowfoot.
Damp fields: May-Sept. P.

Tubercles *sharp or hooked*, over whole surface; 3-12 in.

8. **R. parviflorus** L.
Small-flowered Crowfoot. R.
Fields; banks: May-June. A.

Carpels *smooth* B; stem bulbous at base; 8-24 in.

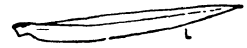


9. **R. bulbosus** L. ✠
Bulbous Buttercup. VC.
Fields; waste places: May-Aug. P.

Sepals 5; *Flowers white*; plant usually floating.

Leaves *entire* F, L.

- Carpels *20-30*; leaves on middle of stem *stalked* F; peduncles furrowed; 4-16 in. 

  10. R. Flammula L. ✠ *Lesser Spearwort.* Wet places: June-Sept. P.
- Carpels *60-80*; leaves on middle of stem *not stalked* L; peduncles not furrowed; 2-5 ft. 

  11. R. Lingua L. ✠ *Great Spearwort.* Pools; ditches: June-Aug. P.

Receptacle *glabrous*. [See Fig. AC, p. 4.]

- Leaves *rounded, cordate, lobed* H; petals equalling sepals H; 

  peduncles ½-1 in.; plant floating or creeping in mud; 4-16 in.
  12. R. hederaceus L.[1] *Ivy-leaved Crowfoot.* Shallow water: May-Aug. P.
- Leaves divided into *long fine segments* FL; petals 2-3 times larger than sepals FL; peduncles 1½-3 in.; plant submerged. [Water Crowfoot.] 

  13. R. fluitans Lam. *Floating Ranunculus.* Rivers: May-Aug. P.

Receptacle *hairy*.

- Leaves cut into fine short segments *spreading like a fan* DI, dark green; plant submerged. [Water Crowfoot.] 

  14. R. divaricatus Schrk. *Divaricate Ranunculus.* Ponds; ditches: June-Aug. P.
- Leaves *not* at the same time spreading like a fan and submerged.
  - Petals *scarcely longer* than sepals T; stipules of upper leaves united throughout ⅓ their length to petioles. [Water Crowfoot.] 

    15. R. tripartitus DC. *Tripartite Ranunculus.* VR. Ponds: Apr.-July. P.
  - Petals *2-3 times longer* than sepals A; stipules of upper leaves united throughout ⅔ their length to petioles. 

    16. R. aquatilis L.[2] *Water Crowfoot.* C. Ponds; rivers: Apr.-Aug. P.

II. Clematis L. *Clematis.*—(Fig. C, p. 2.) Plant woody; petioles twining round support; styles persistent, feathery in fruit; flowers in loose panicles; length variable. [Old Man's Beard.]

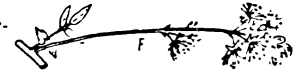
1. C. Vitalba L. ✠ *Traveller's Joy.* Hedges: June-Aug. P.

1. Var. *Lenormandi* F. Schultz: leaves deeply divided, petals twice as long as sepals, carpels acute, Loc.—2. Var. *trichophyllus* Chaix: petals twice as large as sepals, stamens 12-15, C.; var. *confusus* Godr.: receptacle oval, tapering, petals not touching one another, stamens longer than pistil; var. *Baudotii* Godr.: receptacleoval, tapering, stamens shorter than pistil; var. *Drouëtii* F. Schultz: flowers very small, plant slender.

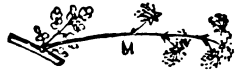
III. **Thalictrum** L. *Thalictrum.* [Meadow Rue.] — (Figs. T, TM, p. 2.)
Leaves *nearly all radical*; flowers in a simple raceme; 2-6 in.

Leaves *not nearly all radical*; inflorescence a panicle.

- Flowers *erect* F; leaves longer than broad F; inflorescence compact; 2-5 ft.



- Flowers *drooping* M; leaves about as broad as long M; inflorescence not compact; ½-4 ft.



IV. **Anemone** L. *Anemone.* —
Styles *feathery* AP; sepals violet-purple, silky outside PL; 4-10 in.



Styles *not feathery.*

Flowers *solitary* AN.

- Sepals *white or pinkish*, glabrous AN; 4-8 in. [Wind-flower.]



- Sepals *bright blue*; 4-8 in.

Flowers *1-2* above each involucre; sepals yellow; stalks of involucral bracts short; 4-8 in.

V. **Adonis** L. *Adonis.*—(Fig. AA, p. 2.) Petals scarlet, dark spot at base; sepals glabrous; carpels beaked, beak straight A; 6-12 in.



VI. **Myosurus** L. *Mousetail.*—(Fig. MM, p. 3.) Carpels numerous in a very long cone MM; leaves narrow, fleshy; flowers solitary, petals small; 1-6 in.

VII. **Caltha** L. *Caltha.*—(Fig. CP, p. 3.) Carpels 5-10; leaves heart-shaped at base, crenate; flowers large; plant glabrous; 8-20 in.

VIII. **Trollius** L. *Trollius.*—Flowers globular, 1-1½ in. across; leaves usually 5-lobed, segments deeply cut; plant glabrous; 8-18 in.

IX. **Eranthis** Salisb. *Eranthis.*—Flower solitary; sepals yellow; radical leaves 3-7 lobed; segments narrow and radiating; 3-6 in.

1. **T. alpinum** L. *Alpine Thalictrum.* Loc. Wet places: July-Aug. P.
2. **T. flavum** L. *Yellow Thalictrum.* Wet places: June-Aug. P.
3. **T. minus** L. *Lesser Thalictrum.* Dry places: June-Aug. P

1. **A. Pulsatilla** L. ✠ *Pasque-flower.* Loc. Open pastures: Apr.-June. P
2. **A. nemorosa** L. *Wood Anemone.* C. Woods: Apr.-May P
*3. **A. apennina** L. *Blue Anemone.* R. Plantations: Apr.-May. P
*4. **A. ranunculoides** L. *Yellow Anemone.* R. Plantations: Apr.-May. P

1. **A. autumnalis** L. *Pheasant's Eye.* R. Corn-fields: June-Sept. A

1. **M. minimus** L. *Mousetail.* Loc. Fields: Apr.-June. A.

1. **C. palustris** L. *Marsh Marigold.* C. Wet places: Apr.-June P

1. **T. europæus** L. *Globe Flower.* Moist mountain pastures. June-Aug. P

*1. **E. hyemalis** Salisb. *Winter Aconite.* R. Thickets: Feb.-Mar. P.

X. Helleborus L. *Hellebore.*—(Fig. *HF*, p. 3.) The Christmas Rose belongs to this genus

Sepals *erect* F; petals tubular, *shorter* than stamens;  bracts entire; 1-2 ft.
[Setterwort.]

Sepals *spreading* V; petals tubular, about *as long as* stamens V; bracts divided; 1-1½ ft. 
[Bear's-foot.]

XI. Nigella L. *Nigella.*—(Fig. N, p. 3.) Carpels more or less united, segments of leaves very narrow; flowers pale blue; 4-12 in.
[Devil-in-the-bush, Love-in-a-mist.]

XII. Aquilegia L. *Columbine.*—(Fig. AV, p. 3.) Carpels usually 5; sepals 5, blue or purple, petals 5, spurred, blue or purple; 1½-3 ft.

XIII. Delphinium L. *Larkspur.*—(Fig. D, p. 3.) Carpels usually 1; calyx spurred, petals joined and prolonged within the spur, sepals and petals blue, rarely rose or white; raceme many-flowered; 8-24 in.

XIV. Aconitum L. *Aconite.*—(Fig. A, p. 3.) Plant glabrous, leaves 3-7 lobed, segments deeply cut, raceme many-flowered; 1½-2½ ft.
[Wolfsbane.]

XV. Actæa L. *Baneberry.*—(Fig. AS, p. 3.) Carpel 1; leaves large, compound, leaflets deeply cut, fruit a berry, nearly black; 1-2 ft.
[Herb Christopher.]

XVI. Pæonia L. *Peony.*—Carpels 2-5, Radical leaves twice trifoliate, margins entire, glabrous below, fruit a follicle, large, downy, 1-2 ft.

BERBERIDACEÆ. The Barberry is disliked by agriculturists as it bears a fungus which produces the *rust* on corn

I. Berberis. L. *Barberry.*—(Fig. B, p. XXI.) Shrub; leaves simple, toothed, clustered, *or* separate and modified into 3-lobed spines; flowers yellow, fruit a berry, red; 3-10 ft.

NYMPHÆACEÆ. Water-lilies are often grown in ornamental waters

Flowers *white*; sepals 4; petals oval, stamens fixed around wall of ovary Fig NA, below)

Flowers *yellow*; sepals 5; petals rounded; stamens fixed on receptacle (Fig NL, below).

I. Nymphæa L. *Nymphæa.*—Fruit more or less globular, marked by scars left by stamens; length variable. 

II. Nuphar Sm. *Nuphar.*—Fruit narrowed above, not marked by scars; length variable. 
[Brandy-bottle.]

1. **H. fœtidus** L. ✠
Fetid Hellebore. Loc.
Open stony places: Mar.-Apr. P.
2. **H. viridis** L.
Green Hellebore. R.
Thickets Mar.-Apr. P

1 **N. arvensis** L. ✠
Nigella.
Gardens June-Aug. A
1. **A. vulgaris** L
Common Columbine.
Thickets. May-June P.
*1 **D. Ajacis** L.
Field Larkspur R.
Corn-fields June-Aug. A
1 **A. Napellus** L ✠
Monkshood. R
Damp places July-Aug P.
1 **A. spicata** L. ✠
Bane-berry R
Woods May-June P
*1. **P. corallina** Retz.
Peony VR
Rocky cliffs May-June. P

1. **B. vulgaris** L
Common Barberry
Hedges, thickets May-June. P.

I. **Nymphæa** L., p. 7.
Nymphæa.
II **Nuphar** Sm., p. 7
Nuphar.
1. **N. alba** L. ✠
White Water-lily
Water. June-Sept. P.

1 **N. luteum** L.
Yellow Water-lily
Water June-Sept. P.

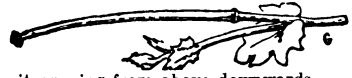
PAPAVERACEÆ. The plants in this N.O. contain a thick liquid, i.e. *latex*. The sap of the Opium Poppy constitutes *opium*.

Fruit *globular or oblong*, opening by pores; stigmas rayed. (Figs. A, R, D, below.)

- Flowers *red or white*; stigmas 4-20; petals crumpled in the bud; sepals usually joined above PA. 
- Flowers *yellow*; stigmas 4-6.

Fruit *linear*, opening by valves; stigmas not rayed.

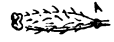
Flowers *yellow*; stigmas 2.

- Leaves *not amplexicaul*; flowers *almost in an umbel* C; fruit opening from below upwards CH.  
- Leaves *half-amplexicaul* G; flowers *solitary*; fruit opening from above downwards. 

Flowers *violet*; stigmas 3-4; fruit opening from above downwards.

I. **Papaver** L. *Poppy.*—(Figs. PA, P, above.)

Ovary and fruit *covered with stiff hairs* H, A.

- Fruit *oval* H; petals purplish-red; 4-8 stigmas; 6-20 in. 
- Fruit *elongated* A; petals pale red; 4-6 stigmas; 6-16 in. 

Ovary and fruit *glabrous*.

Fruit *nearly as wide as long* R; flower usually 2 in. across.

- Petals *scarlet*; 1-2 ft. 
- Petals usually *bluish-white*, spotted at base; 1-3 ft.

Fruit *longer than wide* D; flower usually about 1 in. across; petals pale red; 1-2 ft. 

II. **Meconopsis** Vig. *Meconopsis.*—Fruit oblong, glabrous; leaves glabrous on under surface; flowers large yellow on long peduncles; 1-2 ft.

III. **Chelidonium** L. *Celandine.*—(Figs. C, CH, above.) Leaves glaucous, lobes rounded; 1-2 ft. [Swallow-wort.]

IV. **Glaucium** Hill. *Glaucium.*—(Fig. G, above.) Stems and fruits glabrous; petals golden-yellow; fruit many inches long, often curved; plant very glaucous; 1-2 ft. [Sea Poppy.]

V. **Rœmeria** Med. *Rœmeria.*—Petals violet, falling before noon; 1-1½ ft. [Violet-horned Poppy.]

I. **Papaver** L., p. 8. *Poppy.*

II. **Meconopsis** Vig., p. 8. *Meconopsis.*

III. **Chelidonium** L., p. 8. *Celandine.*

IV. **Glaucium** Hill, p. 8. *Glaucium.*

V. **Rœmeria** Med., p. 8. *Rœmeria.*

1. **P. hybridum** L. *Rough-headed Poppy.* R. Corn-fields: June-Aug. A.
2. **P. Argemone** L. *Long Rough-headed Poppy.* Corn-fields: June-July. A.
3. **P. Rhœas** L. ✠ *Field Poppy.* C. Corn-fields: May-July. A.

*4. **P. somniferum** L. ✠ *Opium Poppy.* R. Fens near the sea: June-Aug. A.

5. **P. dubium** L. *Long-headed Poppy.* Corn-fields: May-July. A.

1. **M. cambrica** Vig. *Welsh Poppy.* Rocky places: June-Aug. P.

*1. **C. majus** L. ✠ *Great Celandine.* Shady waste places: May-Aug. P.

1. **G. flavum.** Cr. *Yellow-horned Poppy.* Sandy shores: June-Sept. B.

*1. **R. hybrida** DC. *Common Rœmeria.* R. Chalky corn-fields: May-June. A

FUMARIACEÆ. As the flowers of the various species resemble one another, it is necessary to choose plants bearing both flowers and fruits.

Fruit *globular* (Figs. O, P, below), indehiscent, 1-seeded; flowers white, pink, purple, often spotted near apex.
Fruit *long* CS, dehiscent, many-seeded; flowers yellow, pink, purple; spur long or curved CO.



I. **Fumaria** L., p. 9. *Fumitory.*
II. **Corydalis** DC., p. 9. *Corydal.*

I. **Fumaria** L. *Fumitory.*—

Fruit with *two little pits* near apex O, FC.

Sepals *narrower* than corolla OF; fruit-stalk straight; fruit wider above O; 6-24 in.



1. **F. officinalis** L. ✠ *Common Fumitory.* Fields; waste places: May-Sept. A.

Sepals *broader* than corolla S; fruit globular FC.

Fruit-stalk *curved*; pits small, deep; plant climbing.



2. **F. capreolata** L. Thickets: June-Sept. A.

Fruit-stalk *straight.*

Pits *faint*; neck of fruit narrow; 6-24 in.

3. **F. muralis** Sond. Hedges, walls: May-Sept. A.

Pits *broad*, *shallow*; neck of fruit broad, plant climbing.

4. **F. Bastardi** Bor. Hedges: Apr.-Sept. A.

Fruit *without pits* near apex P, V.



Fruit *pointed* at apex P; sepals small, 5-10 times shorter than corolla PA; flowers whitish; 4-24 in.



5. **F. parviflora** Lam. R. Corn-fields: June-Sept. A.

Fruit *rounded* at apex V.

Sepals *small*, 10 times shorter than corolla VA; flowers not numerous or dense, purplish or whitish; 4-24 in.



6. **F. Vaillantii** Lois. R. Corn-fields: June-Sept. A.

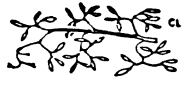


Sepals *large*, broader than corolla D; flowers numerous, dense, pink or purplish; 8-24 in.



7. **F. densiflora** DC. Fields: June-Sept. A.

II. **Corydalis** DC. *Corydal.*—(Figs. CS, CO, above.) Tendrils *present*, terminating leaves CL;



plant climbing; flowers yellowish-white.

1. **C. claviculata** DC. *Climbing Corydal.* Bushy places: June-July. A.

Tendrils *absent*; plant not climbing.

Flowers *yellow*; aerial stems many; no underground tuber; bracts much smaller than pedicels; 4-12 in.

2. **C. lutea** DC. *Yellow Corydal.* Walls: May-Sept. P.

Flowers *purplish*; aerial stems 1-2; underground tuber present; bracts large, often divided; 4-8 in.

*3. **C. solida** Sm. R. Plantations; gardens: Apr.-May. P.

CRUCIFERÆ. **Almost all the Crucifers are very difficult to determine; it is necessary to gather specimens with the fruits well formed, almost if not quite ripe. Several of the plants are cultivated as vegetables, e.g. Cabbage, Radish, Turnip; others for their seeds which yield oil, e.g. Rape, or are used as condiments or in medicine, e.g. Mustard.**

1. **Fruit at least 4 times longer than broad, i.e. *siliquose*, pp. 10-11.**
2. **Fruit short, less than 4 times longer than broad, i.e. *siliculose*, pp. 12-13.**

siliquose SI, OB.

Fruit with seeds in *one row* (Fig. 1).

Flowers *yellow, or white.*

Plant *not having all the above characters.*

Leaves *deeply divided*, at least those at the base.

Seeds *more or less oval* B.

Plant *hairy.*

Fruit *jointed* R, joints *1-seeded*, valves 6-8 nerved R; petals veined or yellow; sepals darker at base; hairs stiff.



I. **Raphanus** L., p. 13. *Radish.*

Beak of fruit *flattened* NI, A; valves of fruit several-nerved; sepals spreading.

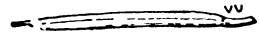


IV. **Sinapis** L., p. 14. *Mustard.*

Seeds *globular* O; stems glaucous.

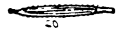
V. **Brassica** L., p. 14. *Brassica.*

Plant *glabrous*; valves of fruit 1-nerved VU.

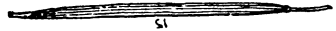


VII. **Barbarea** R. Br., p. 15. *Wintercress.*

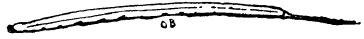
Valves of fruit *3-nerved* SI, SO.



VIII. **Sisymbrium** L., p. 15. *Sisymbrium.*



Valves of fruit *1-nerved* OB.



IX. **Erucastrum**, p. 15. *Erucastrum.*

Leaves *all entire or toothed.*

Stigmas 2, *separate* CH, *curving outwards*, flower more than ½ in. across.



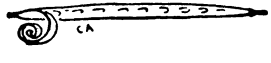
X. **Cheiranthus** L., p. 15. *Wallflower.*

Stigmas 2, *united or only slightly distinct* E, *not curving outwards*; flower less than ½ in. across.



XI. **Erysimum** L., p. 15. *Erysimum.*

Median leaves *compound or deeply divided*; valves of fruit rolling spirally CA.



Underground stem *not fleshy*; bulbils absent.

XII. **Cardamine** L. p. 16. *Bitter-cress.*

Underground stem *fleshy*; bulbils often present in upper leaf axils.

XIII. **Dentaria** L., p. 16. *Dentaria.*

1. Fruit

Flowers *purple, lilac,*

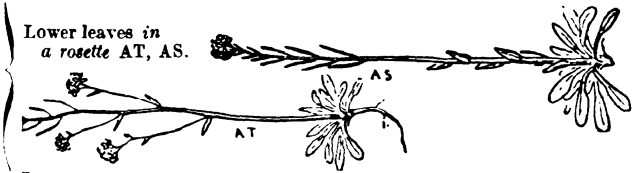
Leaves *not divided.*

Fruit *compressed.*

Lower leaves *not in a rosette.*

XIV. **Matthiola** R. Br., p. 16.
Stock.

Lower leaves *in a rosette* AT, AS.



VI. **Arabis** L., p. 14.
Rock-cress.

Leaves *glaucous*, glabrous. [See V. **Brassica**.]

Fruit *not compressed.*

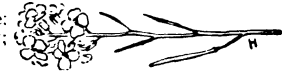
Leaves *not glaucous*

Leaves *cordate*, crenate A, garlic-like odour; stigmas united.



II. **Alliaria** Adans., p. 13.
Alliaria.

Leaves *oval*, toothed, acute: flowers large H, fragrant; stigmas separate.



III. **Hesperis** L., p. 13.
Hesperis.

Leaves *not divided*; fruits compressed, erect T. [See VI. **Arabis**.]



Fruit with seeds in *two rows* (Fig. 2).[1]



Fruit *compressed*, valves distinctly 1-nerved.

XV. **Diplotaxis** DC., p. 16.
Diplotaxis.

Leaves *deeply divided*, at least the lower ones.

Fruit *rounded*, valves nerveless O, S.

XVI. **Nasturtium** R. Br., p. 17.
Water-cress.



1. The valves of the fruit when nearly ripe can be readily detached from the base upwards with a penknife; the rows of seeds can then be seen (Figs. 1 and 2, above). If a valve be examined by transparence, the nerves can be easily seen and counted.

2. Fruit *siliculoe* A, BP, CS.

Flowers *white, rose, or purple.*

Petals *equal.*

Fruits *not 2-jointed.*

Fruit *smooth.*

Valves of fruit *flattened.*

Flowers *purple*, large. — XXV. **Lunaria** L., p. 19. *Lunaria.*

Flowers *white*, small.

Leaves *very narrow* S; plant *aquatic*. — XXIV. **Subularia** L., p. 19. *Awlwort.*

Leaves *not very narrow*; plant *not aquatic.*

Filaments of stamens *neither toothed nor flattened.* — XXIII. **Draba** L., p. 19. *Draba.*

Filaments of stamens *either toothed or flattened.* — XXXII. **Berteroa** DC., p. 20. *Berteroa.*

Valves of fruit *boat-shaped.*

Fruit *distinctly notched* BP.

Fruit *rounded*, winged; seeds not more than 8. — XX. **Thlaspi** L., p. 18. *Penny-cress.*

Fruit *triangular* BP, not winged; seeds many. — XIX. **Capsella** Mœnch, p. 17. *Shepherd's Purse.*

Fruit *entire or only slightly notched.*

Seeds *few.*

Fruit *2-seeded.* — XXI. **Lepidium** L., p. 18. *Cress.*

Fruit *4-seeded.* — XXII. **Hutchinsia** R. Br., p. 18. *Hutchinsia.*

Fruit *many-seeded.* — XXVI. **Cochlearia** L., p. 19. *Cochlearia.*

Fruit *wrinkled* CO; leaves deeply divided SC. — XXIX. **Seneberia** DC., p. 20. *Seneberia.*

Fruits *2-jointed.*

Upper joint *acute* CK, deciduous; lower joint persistent, 2-pointed CM. — XXVII. **Cakile** Mill., p. 20. *Cakile.*

Upper joint *rounded* CR, large, fleshy; lower joint very small CR. — XXVIII. **Crambe** L., p. 20. *Crambe.*

Petals *unequal* I; fruit notched A.

Leaves mostly *radical*; flowers very small; fruit 4-seeded, style shorter than notch. — XVII. **Teesdalia** R. Br., p. 17. *Teesdalia.*

Leaves *cauline*; flowers more than ⅛ in. across; fruit 2-seeded, style longer than notch A. — XVIII. **Iberis** L., p. 17. *Candytuft.*

Flowers *yellow or rarely white.*

- **Fruit *flat*,** long IT, 1-seeded.  — XXX. **Isatis** L., p. 20. *Woad.*
- **Fruit *not flat.***
  - Fruit *few-seeded*, compressed C; flowers *yellow or white.*  — XXXIII. **Alyssum** L., p. 21. *Alyssum.*
  - Fruit *many-seeded.*
    - Fruit *pear-shaped* CS; leaves amplexicaul.  — XXXI. **Camelina** Cr., p. 20. *Camelina.*
    - Fruit *long* R; leaves not amplexicaul. 
      - Leaves *cauline.* [See XVI. **Nasturtium.**]
      - Leaves *radical.* [See XXIII. **Draba.**]

I. Raphanus L.[1] *Radish.*—(Fig. R, p. 10.)

- Fruit separating into 1-seeded segments.
  - Leaf-segments *not touching* each other; petals veined; fruit *shorter* than beak; root slender; 1-2 ft. [Jointed Charlock; White Charlock.] — 1. **R. Raphanistrum** L. *Wild Radish.* C. Corn-fields: June-Aug. A.
  - Leaf-segments *touching or overlapping*; petals yellow; fruit *longer* than beak; root thick; 1-4 ft. — 2. **R. maritimus** Sm. *Sea Radish.* Loc. Sea coast: June-Aug. B.

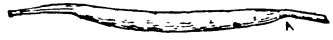
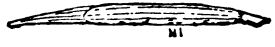
II. Alliaria Adans. *Alliaria.*—(Fig. A, p. 11)

Fruit 7-8 times longer than pedicel; flowers white; 1-3 ft. [Jack-by-the-Hedge; Sauce-alone.] — 1. **A. officinalis** Andrz. ✠ *Garlic Mustard.* C. Hedges; woods: May-June. B.

III. Hesperis L. *Hesperis.*—(Fig. H, p. 11.)

Flowers fragrant in the evening; calyx often purplish; 1½-3 ft. — *1. **H. matronalis** L. *Dame's Violet.* Hedges; woods: May-June. B.

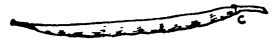
IV. Sinapis L. *Mustard.*—

- **Beak *longer*** than fruit AL;  leaves all deeply divided; 1-3 ft. — 1. **S. alba** L. ✠ *White Mustard.* Corn-fields; waste places: May-July. A.
- **Beak *shorter*** than fruit A, NI; upper leaves entire or toothed.
  - Upper leaves *sessile*; seeds smooth; 1-2½ ft. [Charlock.]  — 2. **S. arvensis** L. ✠ *Wild Mustard.* VC. Corn-fields; waste places: May-Sept. A.
  - Leaves *all stalked*; seeds dull, marked with little points; 1½-4 ft.  — 3. **S. nigra** L. ✠ *Black Mustard.* Banks; hedges: June-Aug. A.

1. ***Raphanus sativus*** L. ✠ [Cultivated Radish] is sometimes found as a garden escape.

V. Brassica L. *Brassica.* [Cabbage.]

- Upper leaves *not divided*; valves of fruit 1-nerved.
  - Upper leaves sessile but *not auricled or amplexicaul*; sepals erect; 1-3 ft. [Sea Cabbage.]
  - Upper leaves sessile, *auricled and amplexicaul*; sepals spreading; 1-3 ft.
- Upper leaves *deeply divided*; valves of fruit 3-nerved C.
  - Stem usually *prostrate*, glabrous; leaves mostly radical, glabrous; 6-24 in.
  - Stem *erect*, hairy below, leafy; leaves hairy; 1-3 ft.



1. **B. oleracea** L.[1] ✠
   Wild Cabbage. Loc.
   Sea cliffs: June-Aug. B.
2. **B. campestris** L.[2] ✠
   Field Brassica.
   Fields; banks: June-Aug. A. or B.
3. **B. monensis** Huds.
   Isle of Man Brassica. R.
   Sea coast: June-Aug. B. or P.
4. **B. Cheiranthus** Vill.
   Wallflower-like Brassica R.
   Stony places: June-Aug. B. or P.

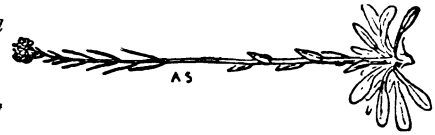
VI. Arabis L. *Rock-cress.*—

Seeds in *two rows* (Fig. 2, p. 11); radical leaves toothed; cauline leaves entire, amplexicaul, glabrous; fruits erect; 1-3 ft. (Fig. T, p. 11). [Tower-Mustard.]

Seeds in *one row* (Fig. 1, p. 10).

- Leaves *entire or toothed.*
  - Flowers *white.*
    - Fruits *erect* AS.
      - Cauline leaves ½ *amplexicaul* AS, hispid; 8-18 in.
      - Cauline leaves sessile but *no amplexicaul*, ciliate; 4-6 in.
    - Fruits *spreading* AT.
      - Cauline leaves *amplexicaul*, soft; 4-9 in.
      - Cauline leaves sessile but *not amplexicaul*, hairy; leaves mostly radical in a rosette AT; 4-12 in.

      [Thale-cress, Wall-cress.]
  - Flowers *yellowish-white*; fruits recurved, twisted; seeds winged; cauline leaves amplexicaul, hairy; 1-2 ft. [Tower-cress.]
- Leaves *deeply cut or lobed.*
  - Fruits *erect*; leaves hispid; stem scarcely branched; flowers white or yellowish-white; 4-8 in.
  - Fruits *spreading*; leaves glabrous or slightly hispid; stem branched from base; flowers white tinged with purple; 3-8 in.





1. **A. glabra** Bernh.
   Glabrous Rock-cress. Loc.
   Dry shady places: May-Aug. B.
2. **A. Turrita** L.
   Tower Rock-cress. R.
   Old walls: May-June. B.
3. **A. hirsuta** R. Br.
   Hairy Rock-cress.
   Banks; rocks: June-Aug. B.
4. **A. ciliata** R. Br.
   Fringed Rock-cress. Loc.
   Rocky places: July-Aug. B.
5. **A. alpina** L.
   Alpine Rock-cress. VR.
   Rocks: July-Aug. P.
6. **A. Thaliana** L.
   Thale Rock-cress.
   Walls; banks: Apr.-Sept. A.
7. **A. stricta** Huds.
   Bristol Rock-cress. R.
   Rocks: Apr.-May. P.
8. **A. petræa** Lam.
   Northern Rock-cress. Loc.
   Rocks: July-Aug. P.

VII. Barbarea R. Br. *Winter-cress.*—(Fig. VU, p. 10.)
Stem more or less furrowed; lower leaves deeply divided, terminal lobe large; petals twice as long as sepals; fruits erect or slightly spreading BA; 1-2½ft.



[Yellow Rocket.]

1. **B. vulgaris** R. Br.[3] ✠
Winter-cress.
Damp places: Apr.-Aug. B. or P.

VIII. Sisymbrium L. *Sisymbrium.*—(Figs. SI, SO, p. 10.)
Fruits *hairy* SO, adpressed OF; upper leaves 3 lobed; 1-3 ft.



1. **S. officinale** Scop. ✠
Hedge Mustard. C.
Waste places: June-July. A.

Fruits *not hairy.*

Lobes of leaves *narrow* S, often more divided than in figure; 

fruit much longer than its stalk, curved towards peduncle; plant whitish-green; 8-30 in.

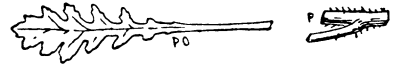
2. **S. Sophia** L. ✠
Flixweed. Loc.
Waste places: June-Aug. A.

Lobes of leaves *broad* SI, few in upper leaves; 

fruit about twice as long as its stalk; plant glabrous, green; 1-2 ft.

3. **S. Irio** L.
London Rocket. R.
Waste places: June-Aug. A.

IX. Erucastrum. *Erucastrum.*—(Fig. OB, p. 10.)
Median leaves not auricled PO, P; bracts present at base of lower flowers; flowers yellowish; 8-20 in.

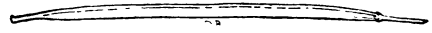


*1. **E. Pollichii** Spenn.
Pollich's Erucastrum. R.
Waste places: June-Aug. A.

X. Cheiranthus L. *Wallflower.*—(Fig. CH, p. 10.)
Stem shrubby; leaves lanceolate, entire, hairy; flowers yellow, fragrant; ½-2 ft.

* 1. **C. Cheiri** L.
Wallflower.
Old walls; rocks: Apr.-May. P.

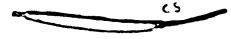
XI. Erysimum L. *Erysimum.*—(Fig. E, p. 10.)



Leaves *entire*, broad, heart-shaped at base; fruit 8-10 times longer than its stalk OR; 8-18 in.

* 1. **E. orientale** R. Br.
Hare's-ear Treacle Mustard. R.
Dry fields: May-Aug. A.

Leaves *toothed*, lanceolate; fruit about twice as long as its stalk CS; 1-2 ft.



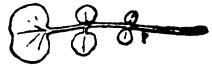
2. **E. Cheiranthoides**
Treacle Mustard.
Damp ground: June-Sept. A.

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1. Cultivated forms include the Cabbage, Cauliflower, Brussels Sprouts, Kale, etc.—2. *B. Napus* L. [Rape Cabbage]: leaves glaucous; var. *oleifera* [Colza, or Cole-seed]: root slender; *B. Rutabaga* L. [Swede Turnip]: leaves glaucous, root swollen; *B. Rapa* L. [Wild Turnip]: leaves hairy; var. *oleifera* [Rape-seed]: root slender; var. *esculenta* [Turnip], root swollen. 3. Var. *arcuata* Rchb.: fruits spreading; var. *stricta* Andrz.: petals 1½ times as long as sepals; var. *intermedia* Bor.: leaves much divided; var. *præcox* R. Br. ✠ [American Cress]: petals 3 times as long as sepals, leaf-segments narrow.

XII. Cardamine L. *Bitter-cress.*—(Fig. CA, p. 10.)

Petals *2-3 times longer* than sepals.

Leaflets of lower leaves *rounded* P; anthers yellow; flowers lilac, rarely white; [Lady's Smock; Cuckoo-flower.]  leaflets of upper leaves narrow; 8-20 in.

1. **C. pratensis** L. *Meadow Bitter-cress.* VC.
Damp meadows: Apr.-May. P.

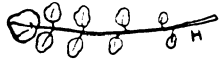
Leaflets of lower leaves *angular* A; anthers violet; flowers white;  leaflets of upper leaves b oad; 8-20 in.

2. **C. amara** L. *Large Bitter-cress.*
Watery places: Apr.-June. P.

Petals *scarcely longer* than sepals.

Leaves with *two acute ciliated lobes at base* I; flowers small, white or petals absent; 4-24 in. 

3. **C. impatiens** L. *Narrow-leaved Bitter-cress.* Loc.
Moist shady places: June-Aug. A. or B.

Leaves with *no ciliated lobes at base* H; flowers white. 

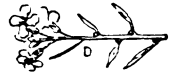
Stamens 4; stem nearly straight; 4-12 in.

4. **C. hirsuta** L. *Hairy Bitter-cress.*
Damp places: Apr.-Aug. A.

Stamens 6; stem wavy; 4-12 in.

5. **C. flexuosa** With.
Shady places: Apr.-Sept. B. or P.

XIII. Dentaria L. *Dentaria.*—

Upper leaves simple, entire, often bearing bulbils in their axils D; petals white or lilac, large; 1-2 ft. 

1. **D. bulbifera** L. *Coralwort.* R.
Woods: Apr.-May. P.

XIV. Matthiola R. Br. *Stock.*—

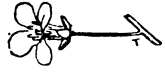
Stem *shrubby*; lower leaves always entire; fruits not bearing glandular hairs; flowers purple; 1-2½ ft. [Gilliflower.]

1. **M. incana** R. Br. *Shrubby Sea Stock.* Loc.
Sea cliffs: May-July. P.

Stem *herbaceous*; lower leaves sinuate; fruits covered with glandular hairs, flowers purple, fragrant at night; 1-2 ft.

2. **M. sinuata** R. Br. *Sea Stock.* Loc.
Sea cliffs: June-Aug. P.

XV. Diplotaxis DC. *Diplotaxis.*—

Pedicel *2-4 times as long* as sepals T;  stem woody at base; leaves light green; flowers large, yellow; 1-2½ ft.

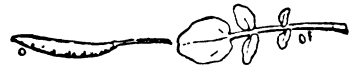
1. **D. tenuifolia** DC. *Narrow-leaved Wall Rocket.*
Walls; banks: June-Sept. P.

Pedicel *twice as long* as sepals M;  stem herbaceous; leaves green; flowers smaller, yellow, becoming reddish; 4-16 in.

2. **D. muralis** DC. *Wall Rocket.* Waste places: June-Sept. A. or B.

XVI. **Nasturtium** R. Br. *Water-cress.*—

Fruit *at least 4 times as long as broad.*

Flowers *white*; leaflets oval or rounded OF; fruit about twice as long as its stalk O; ½-3 ft. 

1. **N. officinale** R. Br. ✠ *Common Water-cress.* VC. Brooks: June-Sept. P.

Flowers *yellow*; leaflets narrow; fruit often curved, longer than its stalk S; 8-20 in. 

2. **N. sylvestre** R. Br. *Creeping Water-cress.* Wet places: June-Sept. P.

Fruit *less than 4 times as long as broad*; flowers yellow.

Fruit about *as long* as its stalk R;  sepals as long as petals; median leaves deeply lobed; 4-20 in.

3. **N. palustre** DC. *Marsh Water-cress.* Wet places: June-Oct. P.

Fruit about *4 times shorter* than its stalk AM; sepals half as long as petals; median leaves entire or deeply toothed A; 1½-3 ft. 

4. **N. amphibium** R. Br. *Great Water-cress.* Watery places: June-July. P.

XVII. **Teesdalia** R. Br. *Teesdalia.*—Radical leaves in a rosette, more or less deeply divided; upper leaves entire; petals white, unequal; 2-6 in.

1. **T. nudicaulis** R. Br. *Common Teesdalia.* Sandy and gravelly places. Apr.-June. A.

XVIII. **Iberis** L. *Candytuft.*—(Figs. I, A, p. 12.) Leaves 2-4 toothed near apex; flowers white or purplish; 4-12 in.

1. **I. amara** L. *Bitter Candytuft.* Loc. Corn-fields: June-Sept. A.

XIX. **Capsella** Mœnch. *Shepherd's Purse.*—(Fig. BP, p. 12.) Radical leaves in a rosette, usually divided; flowers small, white; 4-24 in.

1. **C. Bursa-pastoris** Mœnch *Shepherd's Purse.* VC. Cultivated and waste places: Jan.-Dec. A.

XX. Thlaspi L. *Penny-cress.*—

Radical leaves *in a rosette* MO, entire or slightly toothed;



anthers purplish; style longer than notch AL; flowers white; 4-12 in.



1. **T. alpestre.** L. *Alpine Penny-cress.* Loc. Mountain pastures: May-Aug. B. or P.

Radical leaves *not in a rosette*, often toothed.

- Auricles of leaf *acute* AR; seeds striated, 5-6 in each chamber; flowers white; 8-16 in. [Mithridate Mustard.]



2. **T. arvense** L. *Field Penny-cress.* Cultivated and waste places: May-Aug. A.

- Auricles of leaf *obtuse* PE; seeds smooth, 2-4 in each chamber; flowers white; 4-8 in.



3. **T. perfoliatum** L. *Perfoliate Penny-cress.* Loc. Pastures; stony places: Apr.-May. A.

XXI. Lepidium L. *Cress.*—

Median leaves *amplexicaul*, auricled C.



- Fruit pear-shaped, *not notched* or winged D;



seeds brown; 1-2 ft.

*1. **L. Draba** L. *Hoary Cress.* R. Walls; waste places: May-July. P.

- Fruit oval, *notched*, slightly winged L; seeds black.
  - Stem *branched at top*; anthers yellow; style short L; 6-12 in.



2. **L. campestre** R. Br. *Mithridate Pepperwort.* Fields; waste places: June-Aug. B.

  - Stem *branched at base*; anthers violet; style longer than notch; 6-12 in.

3. **L. Smithii** Hook. *Smith's Cress.* Banks: June-Aug. P.

Leaves *not amplexicaul.*

- Leaves *undivided*, toothed or entire, somewhat thick; fruit rounded I, downy; 1½-4 ft.



4. **L. latifolium** L. *Dittander.* Salt marshes: June-Aug. P.

- Lower leaves much *divided*, upper leaves entire; fruit notched, more or less winged R.
  - Fruit oval R; petals usually absent; *stamens 2*; 4-12 in.



5. **L. ruderale** L. *Narrow-leaved Cress.* R. Waste places: May-Sept. A.

  - Fruit roundish; *stamens 6*; taste pungent; 6-18 in.

*6. **L. sativum** L. ✠ *Garden Cress.* Escape; cultivated: June-July. A.

XXII. Hutchinsia R. Br. *Hutchinsia.* —Leaves not amplexicaul, deeply divided, leaflets parallel; flowers very small, petals about as large as sepals; fruit oval H; plant glabrous, delicate; 1-4 in. [Rock-cress.]



1. **H. petræa** R. Br. *Rock Hutchinsia.* Loc. Walls; rocks: Mar.-May. A.

XXIII. Draba L. *Draba*.—

Flowers *yellow, large*; leaves all radical DA, rigid, ciliate; fruit terminated by long persistent style; 2-6 in.



Flowers *white, small.*

- Petals *entire or slightly notched.*
  - Plant *perennial.*
    - Leaves all radical, or cauline leaves 1-2; fruits *straight*; 1-2 in.
    - Leaves not all radical, cauline leaves several; fruits *twisted*; 4-12 in.
  - Plant *annual*; cauline leaves many, amplexicaul; flowers very small; fruit and its stalk spreading horizontally MU; 4-12 in.



- Petals *deeply 2-lobed*, apparently 8 but really 4; flowers very small; leaves all radical V; 1-6 in.



1. **D. aizoides** L. *Yellow Draba.* Loc. Rocks; walls: Mar.-May. P.
2. **D. rupestris** R. Br. *Rock Draba.* VR. Rocks: June-July. P.
3. **D. incana** L. *Hoary Draba.* Loc. Rocks; dunes: June-July. P.
4. **D. muralis** L. *Wall Draba.* Loc. Rocks; walls: Apr.-May. A.
5. **D. verna** L. *Whitlow-grass.* VC. Walls; banks: Mar.-May. A.

XXIV. Subularia L. *Awlwort.*—(Fig. S, p. 12.) Plant rooted, usually submerged; leaves all radical, long, narrow, nearly cylindrical; 1-3 in.

1. **S. aquatica** L. *Awlwort.* Loc. Margins of ponds and lakes: June-Aug. P.

XXV. Lunaria L. *Lunaria.*—Fruit thin, circular, large, terminated by the persistent style; 2-4 ft.

1. **L. biennis** Mœnch *Honesty.* Gardens; escape: Apr.-May. B.

XXVI. Cochlearia L. *Cochlearia.*—

Upper leaves *amplexicaul.*

- Upper leaves *triangular or oval*, 4-6 toothed; radical leaves cordate; fruit narrowed at both ends; 4-12 in.
- Upper leaves *oblong.*
  - Radical leaves *cordate*, upper ones sinuate; fruit rounded, style short; 4-10 in.
  - Radical leaves *not cordate*, upper ones entire or toothed; fruit oval, style long, about 1 mm.; 10-18 in.

1. **C. alpina** Wats. *Alpine Scurvy-grass.* Loc. Mountains: June-Aug. P.
2. **C. officinalis** L. *Common Scurvy-grass.* Muddy coasts: May-Aug. P.
3. **C. anglica** L. *English Scurvy-grass.* Muddy coasts: May-June. A.

Upper leaves *not amplexicaul.*

- Upper leaves *stalked*, triangular CO; radical leaves cordate; fruit oval (Fig. CA, p. 12); 1-12 in.



- Upper leaves *sessile.*
  - Root *not thick and pungent*; valve of fruit distinctly 1-nerved; radical leaves fleshy, tufted; 2-6 in.
  - Root *thick and pungent*; valve of fruit not nerved; radical leaves large, stalks long; 2-3 ft.

4. **C. danica** L. *Stalked Scurvy-grass.* Sea coasts: Apr.-June. B.
5. **C. grœnlandica** L. *Northern Scurvy-grass.* Loc. Sea coasts: June-Aug. B?

*6. **C. Armoracia** L. ✠ *Horse-radish.* Waste places: May-July. P.

XVII. Cakile Mill. *Cakile.*—(Figs. CK, CM, p. 12.) Seeds 2, one in each joint, the lower seed seldom ripening; leaves fleshy, divided; flowers lilac; branches many, straggling 6-18 in.

1. **C. maritima** Scop. *Sea Rocket.* Sandy coasts: July-Sept. A.

XXVIII. Crambe L. *Crambe.*—(Fig. CR, p. 12.) Seed 1, in upper joint; lower joint abortive and seedless; leaves thick, glaucous, large, wavy; 1-2 ft.

1. **S. maritima** L. *Sea Kale.* R. Rocky and sandy coasts; shingle: June-Aug. P.

XXIX. Senebiera DC. *Senebiera.*—

Plant *glabrous*, prostrate; fruit *not notched*, longer than its stalk CO, deeply wrinkled; 4-8 in.



1. **S. Coronopus** Poir. ✠ *Swine Cress.* Waste places: June-Oct. A.

Plant *more or less hairy*, prostrate; fruit *notched*, shorter than its stalk D slightly wrinkled; 6-16 in.



2. **S. didyma** Pers. *Wart Cress.* Loc. Waste places near sea: June-Sept. A.

XXX. Isatis L. *Woad.*—(Fig. IT, p. 13.) Lower leaves usually hairy; upper leaves glabrous, amplexicaul, auricled; flowers yellow; fruits pendulous; 1-4 ft.

1. **I. tinctoria** L. ✠ *Dyer's Woad.* Banks, cliffs: July-Sept. B.

XXXI. Camelina Cr. *Camelina.*—(Fig. CS, p. 13.) Radical leaves stalked; upper leaves amplexicaul, auricled; flowers pale yellow; fruit finely veined, partition broad; 1-3 ft.

1. **C. sativa** Cr. ✠ *Gold of Pleasure.* R. Fields of flax and corn: June-July. A.

XXXII. Berteroa DC. *Berteroa.*—

Flowers white; leaves entire, hairy; long stamens flattened at base; short stamens 1-toothed; fruit flattened at margin I; plant greyish-green; 8-18 in.



*1. **B. incana** DC. *White Berteroa.* Dry ground: June-Oct. A. or B.

XXXIII. Alyssum L. *Alyssum.*—

Petals *yellow*, becoming white, inconspicuous; sepals persistent; filaments of short stamens with appendages at base ; plant ashy-grey ; 2-6 in.

*1. **A. calycinum** L.
Small Alyssum.
Dry ground: May-June. A.

Petals *white*, spreading, conspicuous; sepals deciduous; filaments without appendages at base; flowers fragrant; 4-12 in.

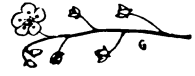
*2. **A. maritimum** Lam.
Sweet Alyssum.
Waste places; gardens: June-Sept. P.

CISTACEÆ. The flowers of the most common species are very similar. The plants often contain a resinous essence which gives them a peculiar smell. The order includes the Gum-Cistuses.

I. **Helianthemum** Mill. *Rock-rose.*—Leaves mostly opposite, with or without stipules; petals spreading; stamens numerous H.



Plant *herbaceous*; stem erect, slender; stipules of upper leaves *very long*; petals yellow, usually spotted brown at base G; style minute; fruits smooth, erect; 4-16 in.



1. **H. guttatum** Mill.
Spotted Rock-rose. Loc.
Heaths: May-Aug. A.

Plant *shrubby*; stems prostrate, spreading.

Stipules *only slightly longer than petiole*; style longer than ovary.

Flowers *white*; sepals hairy over whole surface P: leaves hoary on both surfaces, margins rolled ; 4-16 in.



2. **H. polifolium** Mill.
White Rock-rose. Loc.
Downs near sea: May-July. P.

Flowers *yellow*; sepals hairy only along nerves V; leaves hoary below, green above; 4-16 in.



3. **H. Chamæcistus** Mill.
Common Rock-rose.
Chalky pastures: July-Sept. P.

Stipules *absent*; leaves hoary on both surfaces; flowers small, yellow; 6-8 in.

4. **H. canum** Dun.
Hoary Rock-rose. Loc.
Chalky heaths: May-July. P.

VIOLACEÆ. The species are often very difficult to determine. On contact with alkalies, the blue colouring matter of the petals has the peculiar property of becoming green.

I. Viola L. *Violet.*—

The *4 upper petals erect* T.
[Pansy



Plant with *long, underground stems*; stipule-lobes *narrow* L; flowers yellow; 4-16 in.
[Wild Pansy.]



1. **V. lutea** Huds. R.
Mountain pastures; sand-dunes: June-Aug. P.

Plant with *no long underground stems*; middle lobes of stipules *large and wide*; flowers yellow, white or purple; 4-16 in.
Wild Pansy.

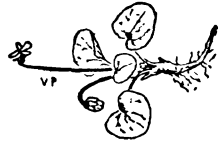
2. **V. tricolor** L.
Heartsease. C.
Hilly pastures; cultivated ground: Apr.-Sept. A.

Only the two upper petals erect H.



Ovary and fruit *smooth*; fruit *triangular.*

Leaves *all at the base* VP; flowers *small*, blue with purple streaks;



stigma flat, oblique; stipules oval, pointed, teeth glandular; plant glabrous; 2-5 in.

3. **V. palustris** L.
Marsh Violet.
Marshes; bogs: May-July. P.

Flowering stem leafy; flowers fairly large, violet, rarely white.

Cilia as long as breadth of stipule S; flowering stems springing from below rosette of leaves, i.e. *axillary*;



fruit often acute SI; 4-9 in.
[Dog Violet.]



4. **V. sylvestris** Lam.[1]
Wood Violet. C.
Shady places: Apr.-June. P.

Cilia shorter than breadth of stipule C; flowering stems *terminal and axillary*;



fruit often blunt CA;



5. **V. canina** L.
Dog Violet.
Shady places; heaths: Apr.-June. P.

Ovary and fruit *hairy*; fruit *globular*.

- Flowers *sweet smelling*; only lower petal notched O;  branches creeping, rooted; 4-8 in. — **6. V. odorata** L. ✠ *Sweet Violet.* Banks: Mar.-Apr. P
- Flowers *odourless*; all 5 petals usually notched H ;  no creeping branches; 4-8 in. — **7. V. hirta** L. *Hairy Violet.* Chalky pastures: Apr.-June. P.

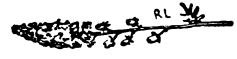
RESEDACEÆ. The members of this N.O. have very similar inflorescences. The roots of several, in particular *R. luteola*, are the source of a yellow dye.

I. **Reseda** L. *Mignonette.*—

Sepals 4, RLL; 

- flowers pale yellow; pedicels short LL; leaves long, entire; 2-3 ft. [Weld: Yellow Weed, Dyer's Rocket.]  — **1. R. luteola** L. ✠ *Dyer's Weed.* Waste places: July-Sept. B.

Sepals 6, LA; sometimes 5. 

- Flowers *yellow*; pedicels fairly long RL; leaves divided L; 1-2 ft. [Wild Mignonette.]   — **2. R. lutea** L. *Cut-leaved Mignonette.* Waste places: June-Aug. B.
- Flowers *white*; pedicels short; leaves divided, segments entire; 1-2 ft. [Wild Mignonette.] — ***3. R. alba** L. *White Mignonette.* R. Waste sandy places; escape; July-Aug. B.

1. Var. *Riviniana* Rchb.: prolongations of sepals angular, persistent, stipules short. var. *Reichenbachiana* Jord.: prolongations of sepals rounded, deciduous.

POLYGALACEÆ. The various species are very similar to one another; to determine them accurately, it is necessary to have plants with well-formed fruits in the lowest part of the inflorescence. The two large sepals are known as the *calyx wings*.

1. Polygala L. *Milkwort.*—

Calyx wings *a* shorter than fruit *c*. (Fig. PA.)

Plant with a *bitter flavour*; leaves alternate; flowers pale, blue, white, or pink; 1-3 in.



1. **P. amara** L. ✠ R.
Rocky places: Apr.-July. P.

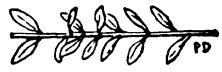
Plant with *no bitter flavour*; leaves alternate; flowers usually blue.

2. **P. oxyptera** Rchb. R.
Sandy and rocky places: June-Aug. P.

Calyx wings *a* longer than fruit *c*. (Figs. D, V, AM.)

Leaves *not opposite*.

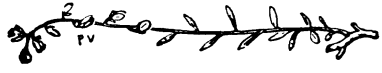
Some of *leaves opposite* PD; flowers pale; 1-10 in.





3. **P. serpyllacea** Weihe.
Heath Milkwort.
Heaths. June-Sept. P.

Lower leaves *smaller* than upper ones PV; calyx wings with secondary veins uniting in two arches at apex; flowers white, lilac, pink or blue; 1-10 in.





4. **P. vulgaris** L.
Common Milkwort. C.
Heaths, pastures; hedges: June-Sept. P.

Lower leaves *larger* than upper ones; veins not uniting in two arches at apex of wing; flowers blue, seldom pink or white; 1-6 in.



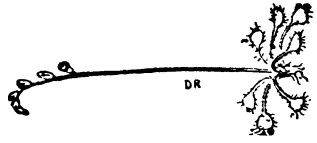
5. **P. calcarea** F. Sch.
Chalk downs: May-July. P.

DROSERACEÆ.

All the species have the upper surfaces of their leaves covered with club-shaped glandular hairs secreting a viscid fluid and sensitive to contact. The leaves attract and retain small insects; the plants are considered by some botanists to be carnivorous.

I. **Drosera** L. *Sundew.*—

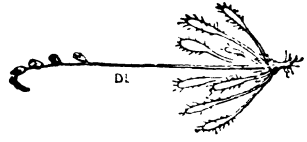
Leaves *prostrate*, lamina as broad as long DR; flowers white; fruit longer than calyx; stigmas rounded; 3-6 in.



1. **D. rotundifolia** L.[1] ✠
Common Sundew.
Bogs: July-Aug. P.

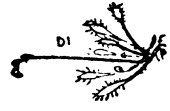
Leaves *erect*; lamina elongated DL, DI.

Flowering stem *much longer* than the leaves, springing from *centre* of rosette DL; stigmas clubbed; flowers whitish or pinkish; 4-8 in.



2. **D. anglica** Huds.
Long-leaved Sundew. R.
Bogs. July-Aug. P.

Flowering stem *not much longer* than leaves, springing from *side* of rosette DI; stigmas flat; flowers white; $1\frac{1}{2}$-4 in.



3. **D. longifolia** L.
Oblong Sundew. R.
Bogs: July-Aug. P

FRANKENIACEÆ.

1. **Frankenia** L. *Frankenia.*—

Stem prostrate, spreading, wiry; leaves in opposite clusters, small, glabrous, margins rolled; flowers few, pink, in terminal or axillary spikes.

1. **F. lævis** L.
Sea Heath. Loc.
Salt marshes: June-Sept. P.

1. *D. obovata* M. and K. is considered a hybrid of *D. rotundifolia* L. and *D. anglica* Huds.—Its characters are intermediate and its seeds aborted, VR.

CARYOPHYLLACEÆ. The species of some genera, e.g. *Sagina*, *Cerastium*, can often be determined only when bearing ripe fruit. Several members of the order are cultivated as ornamental plants, e.g. Carnation, Gypsophylla.

Sepals *united* to form a tube. Sub-Order Silenee.

- Calyx tube *with bracts* closely embracing its base (Figs. on p. 28); *styles* 2. — I. **Dianthus** L., p. 28. *Pink.*
- *No bracts* at base of calyx tube.
  - *Styles 2*; leaves broad, oval; petiole short, broad. — II. **Saponaria** L., p. 28. *Saponaria.*
  - *Styles 3.*
    - Upper leaves *stalked* C;  fruit *fleshy* CC.  — III. **Cucubalus** L., p. 28. *Cucubalus.*
    - Upper leaves *sessile*; fruit *dry*. — IV. **Silene** L., p. 29. *Silene.*
  - *Styles 5 or 0*; petals usually with a small double or notched scale at base; leaves sessile. — V. **Lychnis** L., p. 30. *Lychnis.*
- Leaves with *membranous stipules* SA, SR.
  - *Styles 5* AR;  leaves *clustered* SA;  fruit 5-valved. — VI. **Spergula** L., p. 30. *Spurrey.*
  - *Styles 3* R; fruit 3-valved.
    - Leaves *opposite* SR, cylindrical.  — VII. **Spergularia** Presl., p. 30. *Sand Spurrey.*
    -  Leaves *apparently 4 in a whorl*, flat. — VIII. **Polycarpon** Loefl., p. 30. *Polycarp.*

Sepals *free* or united only at the base. Sub-Order Alsineæ.

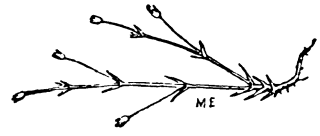
Leaves *without stipules*.

Styles 4 or 5.

Upper leaves slightly *heart-shaped* at base M;  petals cleft to their base; fruit 5-valved, 2-toothed. — IX. **Malachium** Fr., p. 31. *Malachium.*

Fruit *4 or 5 valved* SP;  leaves narrow and united at base. — XII. **Sagina** L., p. 32. *Pearlwort.*

Leaves *not heart-shaped* at base. — Fruit opening by *8 or 10 teeth*; leaves oval or narrow.

- Petals *entire* or slightly notched; plant *glabrous*, glaucous ME.  — XI. **Mœnchia** Ehrh., p. 31. *Mœnchia.*
- Petals *cleft* more or less deeply; plant more or less *hairy* — X. **Cerastium** L., p. 31. *Cerast.*

Styles 2 or 3.

Flowers almost *umbellate* HU; petals irregularly toothed H;  fruit 6-toothed, then 6-valved.  — XIV. **Holosteum** L., p. 33. *Holosteum.*

Petals *cleft* more or less deeply; fruit 6-valved. — XIII. **Stellaria** L., p. 32. *Stitchwort.*

Flowers *not umbellate*. — Petals *entire or only slightly notched.*

- Fruit *3-* or *6-valved*; leaves *not fleshy*. — XV. **Arenaria** L., p. 33. *Sandwort.*
- Fruit *3-valved* PE; leaves thick, *fleshy*.   — XVI. **Honckenya** Ehrh., p. 33. *Honckenya.*

I. **Dianthus** L. *Pink.*

Petals *deeply divided*, segments narrow and many; flowers solitary; bracts 4, ¼ length of calyx tube; calyx smooth; petals pale pink or white, fragrant; 6-12 in. [Common Pink.]

*1. **D. plumarius** L. *Pheasant's-eye Pink.* R.
Old walls: June-July. P.

Petals *entire or toothed.*

- Flowers *clustered*; bracts *longer* than calyx tube P, A.
  - Bracts *oval, obtuse* P; calyx smooth;  petals pink; 4-16 in.
  - Bracts *pointed*; calyx hispid;  petals pink with white spots; 1-1½ ft.
- Flowers *solitary*; bracts *shorter* than calyx tube CŒ, CS, D.
  - Bracts *rounded, apical point short* CS, CŒ.
    - Petals *hispid* on inner surface, irregularly toothed CŒ, rose; fragrant; 4-8 in. 
    - Petals *smooth*, teeth rounded CS, rose; fragrant; 8-20 in. 
  - Bracts *oval, apical point long* D; calyx hairy; petals rose, darker triangular patch at base of limb; 6-12 in. 

2. **D. prolifer** L. *Chidling Pink.* VR.
Dry, hilly pastures: June-Aug. A.

3. **D. Armeria** L. *Deptford Pink.* R.
Dry pastures: July-Aug. A.

4. **D. cæsius** L. *Cheddar Pink.* R.
Chalky pastures: June-July. P.

*5. **D. Caryophyllus** L. *Clove Pink.* R.
Old walls: July-Aug. P.

6. **D. deltoides** L. *Maiden Pink.* R.
Hilly pastures: June-Sept. P.

II. **Saponaria** L. *Saponaria.*—

- Calyx *cylindrical, ribbed*, very long S;  leaves shortly stalked; petals entire, 2 scales at base of limb, pale rose; 1-2 ft.
- Calyx tube with *5-winged angles* SV;  leaves sessile, connate; petals rose; 8-24 in.

*1. **S. officinalis** L. ✠ *Soapwort.*
Waste places: Aug.-Sept. P.

*2. **S. Vaccaria** L. ✠ *Cow Saponaria.* R.
Corn-fields; an escape: July-Sept. A.

III. **Cucubalus** L. *Cucubalus.*—(Figs. C and CC, p. 26.)

Calyx bell shaped; petals entire, 2 scales on limb, white or pale pink; plant glabrous; 12-16 in.

*1. **C. baccifer** L. VR.
Shady waste places: June-Aug. P.

IV. **Silene** L. *Silene.*—

Petals *entire*; calyx smooth; flowers small, apparently whorled, often dioecious, greenish white; 4-18 in.

1. **S. Otites** Sm. *Spanish Silene.* R.
Dry places: June-July. P.

Petals *entire or finely toothed*; calyx very hairy G;



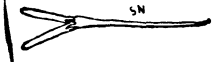
filaments hispid; plant viscid; flowers yellowish white or pink; 8-16 in.

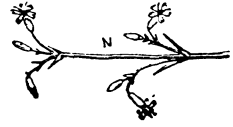
2. **S. anglica** L. *English Catchfly.*
Dry places: June-Sept. A.

Calyx either *contracted* above CO, or *not inflated* N, NF.

Petals *divided in two* more or less deeply SN, CO, NF.

Petals *cleft to base of limb* SN; flowers drooping N; upper part of stem viscid; flowers white or pink; 1-2 ft.





3. **S. nutans** L. *Nottingham Catchfly.* Loc.
Rocky, calcareous places: June-July. P.

Petals *notched* CO.

Flowers erect CO; calyx conical, *contracted* above, *30-nerved*; petals pink; 4-16 in.

Stems short, tufted, moss-like; calyx *tubular, 10-nerved*; flowers small, numerous, purple or white; 2-3 in. [Moss Campion]



4. **S. conica** L. *Striated Silene.* Loc.
Sandy places: June-Aug. A.

5. **S. acaulis** L. *Dwarf Silene.*
Mountains July-Aug P.

Petals *cleft to middle of limb* NF:



calyx 10-nerved, hispid; flowers pinkish-yellow; 4-16 in.

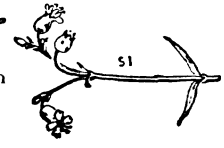
6. **S. noctiflora** L. *Night-flowering Catchfly.* R.
Corn-fields: July-Sept. A.

Calyx very *inflated.* SI.

Petals *deeply 2-cleft* I, MA; flowers white.

Stems *erect*; calyx mouth *narrower* than base SI; petals usually without scales I; 1-3 ft. [White Bottle.]





7. **S. inflata** Sm. *Bladder Campion.*
Roadsides: June-Aug. P.

Stems *prostrate*, spreading; calyx mouth *broader* than base; petals with 2 scales at base of limb MA: 6-12 in.



8. **S. maritima** With. *Sea Campion.*
Shingly beaches; mountains: June-Aug. P.

Petals *notched*, 2 scales at base of limb, rose; calyx about 4 times longer than broad; 6-18 in.

*9. **S. Armeria** L. R.
Shady waste places: July-Sept. A.

V. Lychnis L. *Lychnis.*—

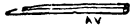
Sepals *longer than petals* GI; petals without scales;  plant covered with long white hairs; leaves linear, pointed; flowers large, solitary, reddish purple; 1-3 ft.

Sepals *shorter than petals*; petals with scales.

- Leaf-blade usually *smooth*.
  - Petals *4-cleft* with 2 scales FC; stem hairy;  flowers rose; peduncles long; 1-2 ft.
  - Petals *not 4-cleft*.
    - Petals *deeply 2-cleft*, scales very small; stem smooth; flowers small, rose, in heads; 3-8 in.
    - Petals almost *entire*, scales long V; upper nodes of stem viscid;  flowers dark rose; peduncles short; 1-2 ft.
- Leaves *hairy*; flowers dicœcious, staminate DI, pistillate LD. 
  - Flowers *white*, opening and scented in evening; petal scales oval, toothed; fruit with *erect teeth*; 1-2 ft.
  - Flowers *rose*: petal scales acute: fruit with *recurved teeth*; 1-2 ft.

1. **L. Githago** Scop. *Corn Cockle.* Corn-fields: July-Aug. A.
2. **L. Flos-cuculi** L. *Ragged Robin.* C. Damp places: May-June. P
3. **L. alpina** L. *Alpine Lychnis.* VR. Mountains: June-July. P.
4. **L. Viscaria** L. *Viscid Lychnis.* R. Dry hilly pastures, and rocks: June-July. P.
5. **L. alba** Mill. *White Campion.* C. Fields; hedges: June-Sept. P.
6. **L. dioica** L. *Red Campion.* C. Shady places: May-Aug. P.

VI. Spergula L. *Spurrey.*—

Leaf revolute, forming a *furrow* on under surface AV. 

- Leaves *scarcely viscid*; seeds with club-shaped papillæ, margin narrowly winged; stamens 10; 4-16 in.
- Leaves *very viscid*; seeds black with minute points, margin narrow; stamens 10; 4-16 ins. [Corn Spurrey.]

1. **S. arvensis** L. *Corn Spurrey.* C. Corn-fields: June-Aug. A.
2. **S. sativa** Bœnn. Corn-fields: June-Aug. A.

VII. Spergularia Presl. *Sandspurrey.*—

Flowers *pink or lilac.*

- *Stamens* less than 10, usually *5*.
  - Fruit about *as long as calyx* RU; seeds papillate, with *thickened margin*; leaves linear, flat, pointed; 2-8 in. 
  - Fruit *slightly longer than calyx*; seeds smooth, with *winged* or thickened *margin*; leaves fleshy; 4-12 in. [Sea Spurrey.]
- *Stamens 10.*
  - Fruit about *as long as calyx*; leaves hairy; seeds *not winged*; 4-12 in. [Sea Spurrey.]
  - Fruit about *twice as long as calyx*; leaves fleshy; seeds with *broad wing*; 4-15 in. [Sea Spurrey.] 

1. **S. rubra** Pers. *Common Sandspurrey.* C. Dry waste places: June-Aug. A.
2. **S. salina** Presl. Sea coasts: June-Sept. A.
3. **S. rupestris** Lebel. Sea coasts: June-Sept. P.
4. **S. media** Presl. Muddy salt marshes: June-Sept. P.

VIII. POLYCARPON Loefl. *Polycarp.*—

Stemsbranched, spreading, prostrate; leaves opposite, lower ones apparently in whorls of 4; flowers very small, numerous; stamens usually 3; 2-8 in. [Four-leaved Allseed.]

1. **P. tetraphyllum** L. *Four-leaved Polycarp.* VR. Sandy places: May-July. A

IX. Malachium Fr. *Malachium.*—

Sepals obtuse, shorter than petals; leaves glabrous; plant delicate, drooping rapidly; flowers white; 1-3 ft. — **1. M. aquaticum** Fr. *Great Chickweed.* Wet places: July-Aug. P.

X. Cerastium L. *Cerast.* [Mouse-ear Chickweed.]—The species of this genus are difficult to determine.

Petals white, *2-3 times longer* than calyx AV; *peduncles much longer* than calyx and bracts; plant a *perennial.*

- Bracts slightly *membranous* at margin.
  - Leaves *lanceolate*, hairy; *flowers several* on a peduncle; capsule oblique; 6-10 in. — **1. C. arvense** L. *Field Cerast.* Dry, hilly places: Apr.-Aug. P.
  - Leaves *ovate*, woolly; *flowers 1-3* on peduncle; styles 5; capsule nearly straight; 3-6 in. — **2. C. alpinum** L. *Alpine Cerast.* Loc. Mountains, moist places: June-Aug. P.
- Bracts *not membranous*; leaves oblong; peduncle *1-3 flowered*; styles 3; stems with hairy line down one side; 3-6 in. — **3. C. Cerastoides** Britton. *Starwort Cerast.* Mountains, moist places: July-Aug. P.
- Peduncles *shorter or no longer* than calyx and bracts; bracts green, herbaceous; sepals membranous at margin; leaves ovate, hispid; petals hairy at base; 4-16 in. — **4. C. viscosum** L. *Broad-leaved Cerast.* Fields; banks: Apr.-Sept. A.

Petals white, *Shorter or little longer* than calyx; plant usually an *annual.*

- Peduncles *much longer* than calyx and bracts.
  - Sepals and bracts *partly membranous.*
    - Sepals and bracts *toothed* near apex S; bracts wholly or half membranous; stamens usually 5; plant with glandular hairs; 4-10 in. — **5. C. semidecandrum** L. *Small Cerast.* Fields, roadsides. Apr.-June. A.
    - Sepals and bracts *entire* at apex; margin of bracts membranous VU, P.
      - Bracts *not hairy* at apex VU; plant with hairs seldom glandular: 4-20 in. — **6. C. vulgatum** L. *Common Cerast.* C. Fields; roadsides: Apr.-Sept. A. or B.
      - Bracts *hairy* at apex P; plant with glandular hairs; 1-10 in. — **7. C. pumilum** Curt. R. Dry chalky situations: Apr.-June. A.
  - Sepals and bracts *entirely herbaceous*; sepals, petals and stamens usually 4; 1-10 in. — **8. C. tetrandrum** Curt. *Sea Cerast.* Walls and dunes near sea: May-July. A.

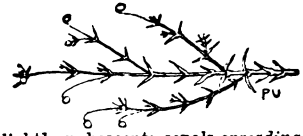
XI. Mœnchia Ehrh. *Mœnchia.*—(Fig. ME, p. 27.) — **1. M. erecta** Sm. *Upright Mœnchia.*

Plant glabrous, glaucous; leaves acute at apex; sepals, petals, stamens 4, seldom 5; petals white, 1-2 times longer than calyx; fruit not longer than calyx; bracts with membranous margins, 2-4 in. [Erect Pearlwort. Waste dry or moist places: Apr.-May. A.

XII. Sagina L. *Pearlwort.*—

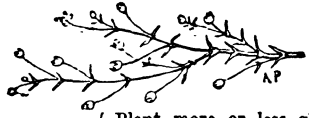
Sepals, petals, styles 4; petals white.

Pedicels *reflexed* after flowering PU; petals ½ length of sepals, sometimes absent; stems prostrate, spreading; plant glabrous; 1-3 in.



1. **S. procumbens** L. *Common Pearlwort.* Waste places: May-Sept. P.

Pedicels *not reflexed* after flowering AP; petals minute or absent; stems more or less erect.



Plant slightly pubescent; sepals *spreading* when fruit is ripe; 1-10 in.

2. **S. apetala** L. *Annual Pearlwort.* Dry places: May-Sept. A.

Sepals *not spreading.*

Plant more or less glandular-pubescent; outer sepals *adpressed* to ripe fruit, apices spreading; 1-6 in.

3. **S. ciliata** Fr. *Ciliated Pearlwort.* Dry places: May-July. A.

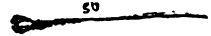
Plant glabrous; leaves fleshy, apices blunt; sepals *sub-erect*; 1-6 in.

4. **S. maritima** Don. *Sea Pearlwort.* Sea coasts: May-Sept. A.

Sepals, petals, styles 5; petals white.

Pedicels *many times longer* than calyx SU.

Stems prostrate, tufted, hairy; leaves awned; peduncle reflexed after flowering; *peduncle and calyx glandular*; petals as long as sepals SU; 1-2 in.



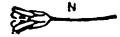
5. **S. subulata** Presl. *Heath Pearlwort.* Dry or moist places: June-Aug. P.

Stems prostrate, central stem erect and barren; leaves shortly pointed, glabrous; *peduncle and calyx glabrous*; petals shorter than sepals; 1-1½ in.

6. **S. Saginoides** Dalla Torre. *Mountain Pearlwort.* Mountains: June-Aug. P.

Pedicels a *few times longer* than calyx N.

Stems procumbent; leaves glabrous, connate; petals *twice as long* as sepals N; 2-6 in. [Knotted Spurrey.]



7. **S. nodosa** Fenzl. *Knotted Pearlwort.* Wet, sandy places: July-Sept. P.

Stems dense, tufted; leaves glabrous; petals *slightly longer* than calyx; 1-1½ in.

8. **S. nivalis** Fr. *Alpine Pearlwort.* VR. High mountains: July-Aug. P.

XIII. Stellaria L. *Stitchwort.*—

Leaves *oval*, lower ones stalked M; stem rounded, flowers white.



Petals *much longer than sepals*; stem entirely hairy; 1-2 ft.

1. **S. nemorum** L. *Wood Stitchwort.* R. Damp shady places: May-July. P.

Petals *not longer than sepals*; stem with two hairy lines; 4-16 in.

2. **S. media** Vill. *Common Chickweed.* C. Damp places: Jan.-Dec. A.

Petal *not cleft to base* H; bracts herbaceous;



sepals without prominent nerves; petals 2-3 times longer than sepals SH; 1-2 ft.



3. **S. Holostea** L. *Greater Stitchwort.* C. Hedges and woods: Apr.-June. P.

Leaves *elongated, sessile*; stem angular; flowers white.

- Petals *cleft to base*; bracts membranous, at least at margins; sepals distinctly 3-nerved GR.



- Petals *twice as long as sepals*;  leaves narrow; bracts glabrous; 1-2 ft.
- Petals *not longer than sepals.*
  - Petals *about the same length* as sepals G;  leaves broader at base; bracts slightly ciliated; 1-2 ft.
  - Petals *shorter* than sepals A;  leaves ovate-lanceolate, apex hard; 4-16 in.

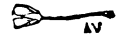
XIV. Holosteum L. *Holosteum.*—(Figs. H, HU, p. 27.)

Lower leaves narrowed at base into stalks; flowers white or pinkish-white; 2-8 in.

XV. Arenaria L. *Sandwort.*—

Petals white, *shorter* than sepals; sepals distinctly 3-nerved; plant an *annual*.

- Leaves *linear* AT; fruit 3-valved;  pedicels 3-5 times longer than calyx; leaves distinctly 3-nerved; sepals narrowly membranous; 4-8 in.
- Leaves *oval* S, TR; fruit 6-valved.
  - Lower leaves *petiolate* TR, distinctly 3-nerved, ciliate;  sepals broadly membranous; 4-12 in.
  - Leaves *sessile* L.
    - Fruits *oval, brittle*; 1-12 in. 
    - Fruits *oblong, flexible*; 2-12 in.

Petals white, *longer* than calyx AV; sepals 1-nerved, green, margin slightly membranous; plant a *perennial*; 4-8 in. 

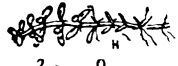
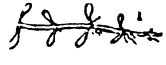
XVI. Honckenya Ehrh. *Honckenya.*—(Figs. HP, PE, p. 27.)

Petals white, entire; fruits large, few; seeds large; leaves fleshy, short, acute, glabrous; stems prostrate: 4-18 in.

ELATINACEÆ. The plants, small and aquatic, vary considerably in appearance and characters even in the same species.

I. Elatine L. *Elatine.*—

Leaves opposite H, T, lower ones stalked; flowers rose.

- Petioles *short* H; flowers stalked; *petals and styles 3*; *stamens 6*; seeds slightly curved; 1-3 in. [Waterwort.] 
- Petioles *longer* I; flowers sessile; *petals and styles 4*; *stamens 8*; seeds very curved; 1-3 in. [Waterwort.] 

4. S. palustris Retz. *Marsh Stitchwort.*
Marshes: May-Aug. P.

5. S. graminea L. *Lesser Stitchwort.* C.
Pastures and hedges: May-Aug. P.

6. S. uliginosa Murr. *Bog Stitchwort.*
Bogs and ditches: May-July. A, B. or P.

1. H. umbellatum L. *Umbellate Holosteum.* VR.
Old walls and roofs: Apr.-May. A.

1. A. tenuifolia L. *Fine-leaved Sandwort.* Loc.
Dry places: June-July. A.

2. A. trinervia L. *Three-nerved Sandwort.*
Moist, shady places: May-June. A.

3. A. serpyllifolia L. *Thyme-leaved Sandwort.*
Dry places: May-Sept. A.

4. A. leptoclados Guss. R.
Dry places: May-Aug. A.

5. A. verna L. *Spring Sandwort.*
Mountains: June-Sept. P.

1. H. peploides Ehrh. *Sea Purslane.*
Sand dunes: May-Sept. P.

1. E. hexandra DC. *Six-stamened Waterpepper.* R.
Margins of water: July-Sept. A.

2. E. Hydropiper L. *Eight-stamened Waterpepper.* VR.
Margins of water: July-Sept. A.

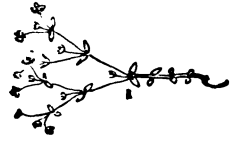
LINACEÆ. The inflorescences of this N.O. are similar to those of the N.O. Caryophyllaceæ. The cultivated Flax is the source of the extile linen fibres.

Parts of flower in *fours*; sepals 2 or 3-cleft. — I. **Radiola** Hill., p. 34. *Allseed.*

Parts of flower in *fives*; sepals entire. — II. **Linum** L., p. 34. *Flax.*

I. **Radiola** Hill. *Allseed.*—

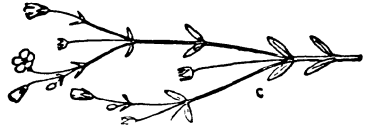
Leaves very small, spreading, opposite, sessile R; plant glabrous; flowers white; 1-2 in. [Flax-seed.]



1. **R. linoides** Roth *Allseed.* Loc. Damp heaths; June-Aug. A·

II. **Linum** L. *Flax.*—

Leaves *opposite* C; flowers *white*, often yellow at base; sepals glandular at margins; 4-12 in. [Purging Flax.]



1. **L. catharticum** L. ✠ *Cathartic Flax.* C. Pastures and meadows: June-Aug. A.

Leaves *alternate*; flowers blue.

Plant *annual*; stem *erect*, branched in upper part; sepals pointed; capsule globular U; flowers deep blue; 1-2 ft. [Linseed.]



*2. **L. usitatissimum** L. ✠ *Common Flax.* Waste places; escape: July-Sept. A.

Plant *perennial.*

Stem *prostrate*, branched at base; sepals *pointed*; flowers pale-blue; 1-2 ft.

3. **L. angustifolium** Huds. *Pale Flax.* Loc. Sandy and chalky Places July-Aug. P.

Stems *usually prostrate*, branched at base; sepals *blunt*; flowers deep-blue; 1-2 ft.

4. **L. perenne** L. *Perennial Flax*, R. Calcareous places: June-July. P.

TILIACEÆ. The species are often cultivated as ornamental trees; their flowers are used in medicine.

I. **Tilia** L. *Lime.*—(Fig. TI, p. XX.)

Young twigs *hairy*; leaves downy beneath especially at branching of veins; fruit woody, downy, *3-5 angled*.

1. **T. platyphyllos** Scop. ✠ *Broad-leaved Lime.* R. Rocky woods: June-July. P.

Young twigs *glabrous*; leaves glabrous; downy in axils of veins.

Fruit woody, downy, *not ribbed*.

*2. **T. europæa** L. *Common Lime.* Parks; plantations: June-July.

Fruit leathery, downy, *faintly ribbed*.

3. **T. ulmifolia** Scop. *Small-leaved Lime.* Old woods: July-Aug. P.

MALVACEÆ. Certain species are used in medicine as emollients; the roots, stems and leaves are all employed.

Bracts of involucre or epicalyx *united*.

- Involucre *3-lobed*; stigma obtuse. — I. **Lavatera** L., p. 35. *Lavatera.*
- Involucre *3-9 lobed* AO; stigma acute. — II. **Althæa** L., p. 35. *Althæa.*



Involucre or epicalyx of 3 bracts, *separate* (Figs. MS, MM, below); stigma obtuse. — III. **Malva** L., p. 35. *Mallow.*

I. Lavatera L. *Lavatera.*—

Stem *woody*, stout; leaves 7-angled, plaited, softly downy; flowers on short pedicels, axillary, clustered, form terminal racemes, purplish-rose, darker veined; 3-8 ft. — 1. **L. arborea** L. *Tree Mallow.* Loc. Maritime rocks: July-Sept. P.

Stem *herbaceous*, hispid; leaves cordate below, 5-lobed above; flowers shortly stalked, axillary, pale-purple; 2-4 ft. — *2. **L. sylvestris** Brot. R. Waste places: June-Aug. P.

II. Althæa L. *Althæa.*—(Fig. AO, above.) The Hollyhock belongs to this genus.

- Plant softly *downy*; flowers *clustered*, axillary, rose; carpels downy; 2-3 ft. — 1. **A. officinalis** L. ✠ *Marsh Mallow.* Marshes near sea: Aug.-Sept. P.
- Plant *hispid*; flowers *solitary*, axillary, pale rose or white; carpels glabrous; 6-18 in. — 2. **A. hirsuta** L. *Hispid Althæa.* Loc. Waste places: June-Aug. A.

III. Malva L. *Mallow.*—

Flowers *clustered*, axillary.

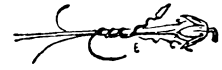
- Stem *prostrate*; bracts *linear* MR; fruit hairy.
  - Petals *longer* than calyx MR; carpels *rounded*; flowers lilac or pale rose; 6-18 in. — 1. **M. rotundifolia** L. ✠ *Dwarf Mallow.* C. Waste places: June-Sept. P.
  - Petals *scarcely longer* than calyx; carpels with *angular edges*; 6-18 in. — *2. **M. pusilla** With. Waste places: June-Sept. P.
- Stem *erect*; bracts *oval* MS; fruit glabrous; carpels with angular edges; flowers pale purple; 2-3 ft. — 3. **M. sylvestris** L. ✠ *Common Mallow.* C. Waste places: June-Sept. P.





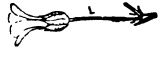
Flowers *solitary*, axillary, rose or white; bracts *linear* MM; fruit hairy;  **leaves with a *musk-like smell*; 1-2 ft.** — 4. **M. moschata** L. *Musk Mallow.* Shady places: July-Aug. P.

GERANIACEÆ. The species contain diverse fragrant essences, particularly in their glandular hairs.

- Stamens 10, *all with anthers* GE; [Examine flowers in bud.] —  — ripened carpels remain attached above; awn elastic rolling once on itself G. —  — I. **Geranium** L., p. 36. *Geranium.*
- Stamens 10, *5 with anthers*, 5 without ER; —  — ripened carpels become entirely detached; awn rolls on itself resembling a corkscrew E, strongly hygroscopic. —  — II. **Erodium** L'Hérit., p. 38. *Erodium.*

I. Geranium L. *Geranium.* [Crane's-bill.]—

Flowers *not more than 1 cm.* in diameter.

- Petals *entire* R,L,GR.
  - Leaves palmately *lobed*; segments rounded.
    - Sepals *hairy, not wrinkled* RO; —  — plant *hairy* R; carpels not wrinkled; flowers pink; 8-20 in. —  — 1. **G. rotundifolium** L. *Round-leaved Geranium.* Roadsides: May-Aug. A.
    - Sepals *glabrous, wrinkled* LV; —  — plant *glabrous* L; carpels wrinkled; flowers rose; 8-16 in. —  — 2. **G. lucidum** L. *Shining Geranium.* Walls; hedges: May-Aug. A.
  - Leaves *deeply divided* RT; —   — sepals acute GR; plant hispid, strong smell; flowers rose, veined white; 8-24 in. — 3. **G. Robertanium** L. ✠ *Herb Robert.* C. Hedges; rocky and waste places: May-Sept. A.
- Petals more
  - Petals about as *long* as sepals.
    - Sepals *not membranous* at margin D; pedicels shorter than neighbouring leaves; —  — leaves deeply divided; segments 5, 7 or 9, deeply lobed; flowers deep pink; 8-20 in. — 4. **G. dissectum** L. *Cut-leaved Geranium.* C. Dry ground: June-Aug. A. or B.
    - Sepals *membranous* at margin C; pedicels longer than neighbouring leaves; —  — leaves *more deeply divided* than above; flowers rose; 1-2 ft. — 5. **G. columbinum** L. *Long-stalked Geranium.* Gravelly and chalky places: June-Aug. A.

Flowers *more than 1 cm.* in diameter.

- Calyx and pedicels with *glandular hairs*, i.e. hairs with small round mass at apex.
  - Petals *not reflexed*, purple; carpels smooth.
    - Petals almost or quite *entire*; seeds pitted.
      - Petals hairy at base *along margins* PR; filaments flattened and triangular at base; 1-2½ ft. — 10. **G. pratense** L. *Meadow Geranium.* Damp, shady places: June-July. P.
      - Petals hairy at base *along margins* and *on upper surface* SI; filaments narrow at base; 1-2½ ft — 11. **G. sylvaticum** L. *Wood Geranium.* Woods and thickets: June-Aug. P
    - Petals *deeply notched* PY; outline of leaf as a whole rounded; seeds *smooth*; 1-2 ft. — 9. **G. pyrenaicum** Burm. *Mountain Geranium.* Loc. Shady roadsides and waste places: June-Aug. P.
  - Petals *almost reflexed* PH, dark purple; carpels wrinkled near apex GP; 8-24 in. — *8. **G. phæum** L. *Dusky Geranium.* R. Hilly woods and near streams: June-Aug. P.
- Calyx and pedicels with *simple hairs.*
  - Leaves with *narrow segments*; carpels with several long hairs at apex; flowers crimson, solitary S; 1-2 ft. — 12. **G. sanguineum** L. *Blood-red Geranium.* Loc. Dry woods and pastures. July-Aug. P.
  - Leaf-*segments as broad as long*; petals notched NO; fruit-stalks erect; carpels with a transverse wrinkle at apex; flowers pale purple; 1-2 ft. — *13. **G. nodosum** L. VR. Shady places: July-Aug. P.
- Petals *longer* than sepals.
  - Carpels *wrinkled* slant-wise MO, glabrous; bruised plant has smell like Indian ink; flowers rose or purple M; 6-12 in. — 6. **G. molle** L. *Dove's-foot Geranium* C. Waste and cultivated ground: Apr.-Sept. A.
  - Carpels *not wrinkled*, more or less hairy PU; flowers pink, very small P; 6-18 in. — 7. **G. pusillum** L. *Small-flowered Geranium.* Waste and cultivated ground June-Sept. A.
- Calyx and pedicels with *glandular hairs*, i.e. hairs with small round mass at apex.
  - Petals *not reflexed*, purple; carpels smooth.
    - Petals almost or quite *entire*; seeds pitted.
      - Petals hairy at base *along margins* PR; filaments flattened and triangular at base; 1-2½ ft. — 10. **G. pratense** L. *Meadow Geranium.* Damp, shady places: June-July. P.
      - Petals hairy at base *along margins* and *on upper surface* SI; filaments narrow at base; 1-2½ ft — 11. **G. sylvaticum** L. *Wood Geranium.* Woods and thickets: June-Aug. P
    - Petals *deeply notched* PY; outline of leaf as a whole rounded; seeds *smooth*; 1-2 ft. — 9. **G. pyrenaicum** Burm. *Mountain Geranium.* Loc. Shady roadsides and waste places: June-Aug. P.
  - Petals *almost reflexed* PH, dark purple; carpels wrinkled near apex GP; 8-24 in. — *8. **G. phæum** L. *Dusky Geranium.* R. Hilly woods and near streams: June-Aug. P.
- Calyx and pedicels with *simple hairs.*
  - Leaves with *narrow segments*; carpels with several long hairs at apex; flowers crimson, solitary S; 1-2 ft. — 12. **G. sanguineum** L. *Blood-red Geranium.* Loc. Dry woods and pastures. July-Aug. P.
  - Leaf-*segments as broad as long*; petals notched NO; fruit-stalks erect; carpels with a transverse wrinkle at apex; flowers pale purple; 1-2 ft. — *13. **G. nodosum** L. VR. Shady places: July-Aug. P.
- Petals *longer* than sepals.
  - Carpels *wrinkled* slant-wise MO, glabrous; bruised plant has smell like Indian ink; flowers rose or purple M; 6-12 in. — 6. **G. molle** L. *Dove's-foot Geranium* C. Waste and cultivated ground: Apr.-Sept. A.
  - Carpels *not wrinkled*, more or less hairy PU; flowers pink, very small P; 6-18 in. — 7. **G. pusillum** L. *Small-flowered Geranium.* Waste and cultivated ground June-Sept. A.

II. Erodium L'Hérit. *Erodium.* [Stork's-bill.] —

Leaves *compound.*

- Leaflets *deeply divided*, lobes toothed EC; petals *unequal*, rose or white; fruit with geddish hairs; 4-16 in. [Hemlock Stork's-bill.]  — **1. E. cicutarium** L'Hérit. *Common Erodium.* Waste places; dry pastures May-Aug. A. or B.
- Leaflets *ovate*, toothed; petals *almost equal*, pink; fruit with white hairs; strong musk-like smell; 4-24 in. — **2. E. moschatum** L'Hérit. ✠ *Musk Erodium.* R. Waste places near sea: June-Aug. A.

Leaves *lobed or toothed*, small; peduncles few-flowered; flowers small; petals pink, often absent; plant softly hairy, often viscid; 4-18 in. — **3. E. maritimum** L'Hérit. *Sea Erodium.* R. Dry places near sea: May-Aug.

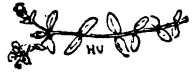
HYPERICACEÆ. The plants have glands of two kinds, pellucid and black, easily seen in the leaves. The flowers of several of the species, infused in oil, are used for wounds. Tutsan and the Rose of Sharon are the chief species cultivated as ornamental plants.

I. Hypericum L. *Hypericum.*—

Plant a *shrub*; flowers yellow; stamens in *5 bundles* A; fruit slightly *succulent.*

- Stem *erect*; petals about same length as sepals A; *styles 3 recurved*; ripe fruit black; 1-3 ft. [Tutsan.]  — **1. H. Androsæmum** L. ✠ *H. Tutsan.* Loc. Thickets: June-Aug. P. ☿
- Main stem *creeping*; branches erect; flowers solitary, very large (3-4 in.); *styles 5*, straight; 6-18 in. [Rose of Sharon.] — ***2. H. calycinum** L. *Large-flowered Hypericum.* R. Thickets: June-Sept. P.

Flowers with small *coloured scales g*, at base of corolla EP;  leaves as wide as long, sessile, *woolly*; 4-12 in. — **3. H. elodes** L. *Marsh Hypericum.* Spongy bogs: July-Aug. P.

Stem *prostrate, very slender* HU; flowers small, less than 1 cm. in diameter;  midrib alone prominent; sepals with a few black glands; 4-8 in. [Creeping St. John's Wort. — **4. H. humifusum** L. *Trailing Hypericum.* Stony, wet and dry places: July-Aug. P.

Plant *herbaceous*; flowers yellow; stamens in *3 bundles* H, EP; fruit *dry*.

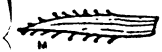
Corolla *without scales* H; leaves *not woolly*.



Stem *erect*.

Sepals *bordered with glands* M, P; stem rounded.

Sepals *acute* with stalked glands M.



Stem *glabrous* LI, MO; leaves *sessile*, amplexicaul.

Leaves *linear* LI, margins inrolled; pedicels longer than calyx; 8-16 in.



5. **H. linarifolium** Vahl
Flax-leaved Hypericum. R.
Dry rocky places: July-Aug. P.

Leaves *oval* MO, margins not inrolled; pedicels shorter than calyx; 1-2 ft.



6. **H. montanum** L.
Mountain Hypericum. R.
Woods: June-Aug. P.

Stem *hairy* HI;



leaves shortly *stalked* HI; nerves not prominent; 1-2 ft.
[Hairy St. John's Wort.]

7. **H. hirsutum** L.
Hairy Hypericum. C.
Woods and thickets: July-Aug. P.

Sepals *obtute* with glandular teeth P;



leaves amplexicaul, nerves prominent, black glands absent; flowers often veined red; 1-2 ft. [Slender St. John's Wort.]

8. **H. pulchrum** L.
Slender Hypericum. C.
Dry heaths, banks, woods: June-Aug. P.

Sepals *not bordered with glands*; stem more or less angular.

Stem *2-edged* PE; [PE, stem cut transversely.]



stamens shorter than petals; 1-2½ ft.

9. **H. perforatum** L. ✠
St. John's Wort. VC.
Woods and roadsides: July-Sept. P.

Stem *4-angled* Q, or *4-winged* T. [Q. T. stems cut transversely.]



Petals with *black glands on their surface* HQ; angles of stem not winged Q; stamens about as long as petals; 1-2½ ft.
[Square-stalked St. John's Wort.]



10. **H. quadrangulum** L.
Square-stalked Hypericum.
Damp shady places: July-Aug. P.

Petals with *black glands only at margin* TE; angles of stem winged T; stamens about half as long as petals; 1-3 ft.



11. **H. tetrapterum** Fr.
Damp shady places: July-Aug. P.

ACERACEÆ. Several species are cultivated as ornamental trees. The plants contain much sugar.

I. **Acer** L. *Maple.*—

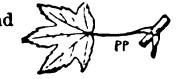
Leaf-lobes *entire* or sinuate AC;  lower surface of leaf pale green; flowers greenish, erect; wings of fruit diverging horizontally.

1. **A. campestre** L.
Common Maple.
Hedges; woods: May-July. P.

Leaf-lobes *toothed* AP, PP.

Margin *deeply indented*, teeth acute AP;  both surfaces of leaf green; flowers yellowish, erect.

2. **A. platanoides** L.
Norway Maple.
Cultivated: Apr.-July. P.

Teeth *short* and not so acute PP;  lower surface of leaf whitish; flowers greenish, pendulous; wings of fruit erect or slightly diverging.

*3. **A. Pseudo-Platanus** L.[1]
Sycamore.
Cultivated: May-July. P.

AMPELIDACEÆ. The order includes several climbing species often cultivated, e.g. Virginian Creeper.

I. **Vitis** L. *Vine.*—(Fig. V, p. XXII.) Shrub climbing by branch tendrils; petals greenish, united above; stamens 5.

*1. **V. vinifera** L. ✠
Grape Vine.
Cultivated: June. P.

HIPPOCASTANEÆ.

I. **Æsculus** L. *Horse Chestnut.*—Tree; leaves compound, palmate; buds viscous; flowers rose or pinkish-white; stamens usually 7 (Fig. H, p. XXII.)

1. **Æ. Hippocastanum** L. ✠
Horse Chestnut.
Cultivated: June. P.

BALSAMINACEÆ. The well-known garden Balsam is *I. Balsamina*; Touch-me-not is sometimes cultivated.

I. **Impatiens** L. *Balsam.*—(Fig. I, p. XXIV.)

Leaves soft, oval, petiolate; flowers large, *yellow spotted with orange*; spur *loosely reflexed*, not notched; 1-3 ft. [Touch-me-not.]

1. **I. Noli-tangere** L. ✠
Yellow Balsam. R.
Damp, hilly woods: July-Sept. A

Leaves more acute; flowers deep *orange, spotted with red*; spur *closely reflexed*, notched; 1-3 ft.

*2. **I. biflora** Walt.
Orange Balsam. Loc.
Banks of streams: July-Oct. A.

Leaves acute apex and base; flowers small, *pale yellow*; spur *short, straight*; 1-2 ft.

*3. **I. parviflora** DC.
Small Yellow Balsam. Loc.
Waste shady places: July-Sept. A.

OXALIDACEÆ. The leaves of the plants contain oxalic acid, hence the name of the natural order.

I. **Oxalis** L. *Oxalis.*—

Leaves all springing from base O; flowers *solitary* O, *white* or pale pink; 2-5 in.



1. **O. Acetosella** L. ✠
Wood-sorrel. C.
Woods: May-Aug. P.

Leaves *cauline*; flowers *not solitary, yellow.*

Stem *erect*, glabrous; stipules absent; peduncle *2-8 flowered* S; 4-16 in.



*2. **O. stricta** L.
Erect Oxalis. Loc.
Waste places: June-Sept. P.

Stems *prostrate*, hairy; stipules present; peduncle *2-flowered*; petals notched; 4-16 in.

*3. **O. corniculata** L.
Procumbent Oxalis. Loc.
Waste places: June-Sept. P.

CELASTRACEÆ. Several exotic species are occasionally planted in shrubberies.

I. **Euonymus** L. *Spindle-tree.*—Tall shrub; leaves simple, toothed (Fig. EV, p. XXII), opposite; flowers greenish or purplish white, small; fruit red, dehiscent, 4-seeded; seed surrounded by orange-coloured aril.

1. **E. europæus** L.
Common Spindle-tree.
Hedges; thickets: May-June. P.

AQUIFOLIACEÆ. The Holly is sometimes cultivated to form hedges, or as an ornamental shrub.

I. **Ilex** L. *Holly.*—
Tall shrub; leaves simple, leathery, margins spinous (Fig. I, p. XXV); evergreen; berries red, seldom yellow flowers yellowish-white, clustered, axillary.

1. **I. Aquifolium** L.
Common Holly. C.
Hedges; woods: May-Aug. P.

RHAMNACEÆ. The bark and fruits are used in medicine.

I. **Rhamnus** L. *Buckthorn.*—

Flowers *perfect* F; calyx 5-cleft; stamens 5;



styles united F; branches not thorny; flowers greenish-white; fruit dark purple. [Black Alder.]

1. **R. Frangula** L. ✠
Alder Buckthorn.
Damp bushy places: May-Sept. P.

Flowers *diœcious*; staminate R, pistillate RC; calyx 4-cleft; stamens 4;



styles free at apex C; branches thorny or otherwise; flowers yellowish-green; fruit black.

2. **R. catharticus** L. ✠
Common Buckthorn.
Hedges and bushy places: May-Sept. P.

1. The cultivated Ash-leaved Maple (*Negundo fraxinifolium* Nutt.) is distinguished by its deeply divided leaves and its monœcious flowers.

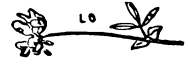
LEGUMINOSÆ. The British members of this Order belong to the sub-order *Papilionaceæ*. Some species are cultivated for their fruits or seeds, e.g. Beans, Peas, Lentils; others as forage, e.g. Clover, Lucerne, Sainfoin; others as ornamental plants, e.g. Robinia (commonly called Acacia), Laburnum, Spanish Broom, Bladder Senna.—The fruit, more or less ripe, is often useful as an aid in determining a species.

Leaves *terminated by a leaflet.* — Tribe I. **Loteæ**, p. 42.
Leaves *terminated by a tendril or a short point.* — Tribe II. **Vicieæ**, p. 44.

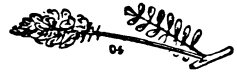
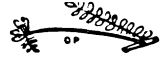
Tribe I. LOTEÆ.—

Leaves *digitate*, stipulate; stem stout, leafy, herbaceous; flowers in raceme. — I. **Lupinus** L., p. 44. *Lupinus.*

Leaves usually *trifoliate*, sometimes simple.

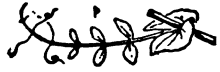
- Stipules *absent* or very small (1-2 mm.); *shrub*, but sometimes very small and almost herbaceous.
  - Calyx *deeply bifid* U;  leaves spinous U; corolla scarcely longer than calyx. — II. **Ulex** L., p. 44. *Furze.*
  - Calyx *not divided below middle*, S, G.
    - Calyx *membranous*, teeth *short* S.  — III. **Cytisus** L., p. 44. *Broom.*
    - Calyx *not membranous*, teeth *deep* G.  — IV. **Genista** L., p. 45. *Genista.*
- Leaves *with stipules* longer than 2 mm.; plant usually *herbaceous.*
  - Stipules *very like leaflets* LO; flowers usually in a head LO.  — V. **Lotus** L., p. 45. *Bird's-foot Trefoil.*
  - Stipules small *different from leaflets.*
    - Flowers often *solitary, axillary on leafy branches* O;  keel beaked, recurved over stamens and pistil. — VII. **Ononis** L., p. 48. *Ononis.*
    - Flowers on *peduncles*
      - Corolla *persistent*, becoming membranous.
        - Flowers in heads; fruit *not longer* than calyx, 1-4 seeded. — VI. **Trifolium** L., p. 46. *Clover.*
        - Flowers in racemes; fruit *much longer* than calyx; several seeds. — VIII. **Trigonella** L., p. 48. *Trigonel.*

Leaves with *more than three* leaflets OS, OP.

- Flowers in a *close raceme*, resembling a head; calyx *inflated* A;  terminal leaflet large AV  — XI. **Anthyllis** L., p. 49. *Anthyllis.*
- Flowers in a more or less *elongated raceme.*
  - Fruit *long*, 2-chambered G, partition imperfect; stipules free or united to petiole.
    - Keel *obtuse*; partition in fruit projecting from angle next to keel.  — XII. **Astragalus** L., p. 49. *Astragal.*
    - Keel *pointed*; partition in fruit formed from angle bearing seeds, i.e. away from keel. — XIII. **Oxytropis** DC., p. 49. *Oxytrope.*
  - Fruit *short*, 1-seeded SA;  stipules united to each other; flowers almost in a spike OS.  — XIV. **Onobrychis** Hill, p. 50. *Sainfoin.*
- Flowers *umbellate*; fruit divides transversely into 1-seeded joints.
  - Flowers *small* (shorter than ¼ in.), few in umbel OP; fruit jointed, resembling a string of beads.  — XV. **Ornithopus** L., p. 50. *Bird's Foot.*
  - Flowers *longer* than ¼ in.
    - Calyx teeth *unequal* CV,  two upper teeth almost united; fruit not notched VA.  — XVI. **Coronilla** L., p. 50. *Coronilla.*
    - Calyx teeth almost equal H;  fruit successively notched HC.  — XVII. **Hippocrepis** L., p. 50. *Hippocrepis.*

- *distinct from leafy branches* M. — Corolla *deciduous.*
  - Raceme *short*; fruit curved or twisted spirally. — IX. **Medicago** L., p. 48. *Medick.*
  - Raceme *long* M; fruit straight AR.  — X. **Melilotus** Hill, p. 49. *Melilot.*

Tribe II. VICIEÆ.—

Stipules *larger than leaflets* P;  style flattened, grooved. — XVIII. **Pisum** L., p. 50. *Pisum.*

Stipules *not larger* than *leaflets.*

Leaflets usually 0-4, main veins *nearly parallel* L; style flattened.  — XIX. **Lathyrus** L., p. 50. *Lathyrus.*

Leaflets usually *many* V, main veins *divergent*.  — XX. **Vicia** L., p. 52. *Vetch.*

I. Lupinus L. *Lupinus.*—

Plant hairy; calyx deeply bi-fid, 5-toothed; flowers numerous, blue or purple; 1-2 ft. — 1. **L. nootkatensis** Donn *Lupine.* Loc. River shingle: July-Aug. P.

II. Ulex L. *Furze; Gorse; Whin.*—

Calyx *very hairy* UE; bracts below calyx *broader* than pedicel UE; flowers bright yellow; 2-6 ft.  — 1. **U. europæus** L. ✠ *Furze.* C. Heaths: Feb.-July. P.

Calyx *slightly hairy* or downy N; bracts below **calyx *narrower* than** pedicel N.

Spines *strong*; wings slightly curved, *longer than keel* N fruit persistent till spring; 1-5 ft.  — 2. **U. Gallii** Planch. *Western Furze.* Heaths: July-Nov. P.

Spines *slender*; wings *shorter than keel*; fruit persistent for a year; 1-3 ft. — 3. **U. minor** Roth *Small Furze.* Heaths: July-Nov. P.

III. Cytisus L. *Broom.*—(Fig. S., p. 42.)

Stem erect, branched, green; leaves small, simple or trifoliate, hairy on both surfaces; style rolled on itself in older flowers; petals golden yellow; 2-6 ft. — 1. **C. scoparius** Link ✠ *Common Broom.* C. Heaths: May-June. P.

IV. Genista L. *Genista.*—

Branches *not thorny*; leaves narrow.

- Stem *prostrate*; leaves hairy on under surface; corolla yellow, *hairy* GP; fruit hairy; 8-12 in. [Hairy Green Weed.]  **1. G. pilosa** L. *Hairy Genista.* R. Heaths: May-Sept. P.
- Stem *erect*; leaves glabrous; corolla yellow, *glabrous* GT; fruits glabrous: 1-2 ft. [Dyer's Green Weed.]  **2. G. tinctoria** L. ✠ *Dyer's Genista.* Thickets: July-Sept. P

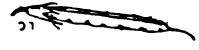
Branches *terminating as thorns*; stem *erect*; plant entirely *glabrous* GA; leaves  almost oval; flowers yellow; 1-2 ft. [Petty Whin.] **3. G. anglica** L. *Needle Genista.* Heaths: May-July. P.

V. Lotus L. *Bird's-foot Trefoil.*—(Fig. LO, p. 42.)

Plant a *perennial*; flowers yellow, usually *5 or more* in a head.

- Stem *erect*; calyx teeth *spreading* in bud, two upper *diverging*; claw of standard *linear*; 6-24 in. **1. L. uliginosus** Schk. *Marsh Bird's-foot Trefoil.* Moist, bushy places: July-Sept. P.
- Stem *decumbent*, or erect; calyx teeth *erect* in bud, two upper *converging*; claw of standard nearly *oval*.
  - Leaflets *obovate*; flowers *5-10* in a head; 4-18 in. **2. L. corniculatus** L. *Bird's-foot Trefoil.* C. Pastures: July-Sept. P.
  - Leaflets *narrow*; flowers *fewer* and *smaller* than above; stems *slender*; 12-24 ft. **3. L. tenuis** W. and K. *Narrow-leaved Bird's-foot Trefoil.* Poor pastures: July-Sept. P.

Plant an *annual*; *procumbent*; flowers yellow, *fewer than 5* in a head.

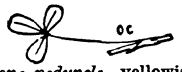
- Peduncles *shorter than leaves*, 1-2 flowered; fruit *several times longer than calyx* LC; stems slender; 2-8 in.  **4. L. angustissimus** L. *Slender Bird's-foot Trefoil.* Pasturesnearsea: June-Aug. A.
- Peduncles *longer than leaves*, 3-4 flowered; fruit *twice as long as calyx*; stems more hairy than above; 2-12 in. **5. L. hispidus** Desf. *Hispid Bird's-foot Trefoil.* Pasturesnearsea: June-Aug. A.

VI. Trifolium L. *Clover; Trefoil.* The species are often difficult to determine. It is necessary that the plant chosen should have almost ripe fruits, surrounded by the persistent corollas.

Flowers *yellow, yellowish* or *cream.*

Leaflets *hairy.*

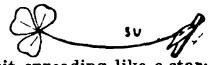
Leaflets *narrowly* obovate OC; lowest tooth of calyx twice as long as the others; flowers in heads, yellowish or cream; 1-1½ ft.



Leaflets *broadly obovate* SU.

Flowers *2 or 3 on one peduncle*, yellowish, standard often pink; fruits bury themselves in ground; 4-18 in.

Flowers in *globular heads*, cream; calyx teeth in fruit spreading like a star; 4-12 in.



Leaflets *glabrous.*

Standard *smooth*; style much shorter than fruit TF; flowers pale yellow, 2-6 in a head; 2-12 in.



Standard *striated* with longitudinal furrows.

Leaflets almost always *attached at one point* AG; stipules *narrow at apex* AG; flowers numerous (about 50) in globular heads TA, bright yellow; style *as long as fruit*; 8-16 in.





Terminal leaflet *almost stalked*, stipules *oval, pointed* P; peduncle 2-3 times as long as head PR; style about *6 times shorter than fruit.*



Flowers 30-50 *in a head*, yellow; 4-18 in.

Flowers *12-20 in a head*, pale yellow; plant *more slender and procumbent* than above; 4-18 in.

Calyx-tube *closed* round fruit *by thickened 2-lipped rim*; sepals acute, spreading; stipules narrow, acute; flowers white or pinkish; 4-16 in.



and leaves *glabrous.*

Heads of flowers on *peduncles* R.

Flowers on *pedicels* TE, later reflexed.



Flowers *white*; stems *creeping, rooting* R; stipules *small* R; 4-18 in.



Flowers *pink*; stems *erect*, or *never rooting*; stipules *large* E; 8-24 in.



Flowers *sessile, rose.*

Calyx-teeth short, *finely pointed*; 2-6 in.

Calyx *inflated* after flowering; lateral margins of standard turned outwards; 4-9 in.

1. **T. ochroleucon** Huds. *Sulphur Trefoil.* Loc. Dry pastures: June-Aug. P.
2. **T. subterraneum** L. *Subterranean Trefoil.* Dry pastures: May-June. A.
*3. **T. stellatum** L. *Starry Trefoil.* Loc. Shingle beach: June-Aug. A.
4. **T. filiforme** L. *Slender Trefoil.* R. Dry pastures: June-July. A.
*5. **T. agrarium** L. *Large Hop Trefoil.* Cultivated ground: June-Sept. A. or B.
6. **T. procumbens** L. *Hop Trefoil.* C. Pastures, meadows: June-Sept. A.
7. **T. dubium** Sibth. *Lesser Yellow Trefoil.* C. Pastures and meadows: June-Aug. A.
8. **T. maritimum** Huds. *Sea Trefoil.* Loc. Salt marshes; rich meadows near sea: June-July. A.
9. **T. repens** L. ✠ *Dutch or White Clover.* C. Pastures; meadows: May-Sept. P.
*10. **T. hybridum** L. *Alsike-Clover.* Roadsides; escape: June-Sept. P.
11. **T. strictum** L. *Upright Trefoil.* VR. Near coast: June-July. A.
*12. **T. resupinatum** L. *Reversed Trefoil.* R. Pastures near sea: July-Aug. A.

Flowers *white, pink* or *purple.*

Calyx-tube *not closed* by a thickened rim.

Stem and leaves more or less *hairy.*

Stem

Heads of flowers *sessile.*

- Stems *spreading*; heads of flowers *axillary* and *terminal*, rose; 2-15 in.
- Stems *tufted*, buried in sand; heads of flowers *axillary*, *crowded* at base of branches, *white*; 1-3 in.

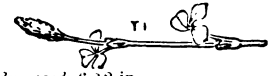
Head *swollen and very compact* F; flowers almost united; calyx much *inflated*; petioles long; petals rose; 4-16 in.



Head not *swollen* or *very compact.*

Head of flowers *elongated* TI; *4-6 cm.*

- Flowers *red*; hairs on stem *spreading*; 6-18 in.
- Flowers *pinkish-white*; hairs on stem *adpressed*; 6-12 in.



Head not more than 3 *cm. long.*

Flowers *purplish.*

- Stipules *shortly pointed* TP; calyx hairy PR; 4-16 in.
- Stipules with *long pointed apices* TM; calyx-teeth hairy ME. 4-18 in.



Flowers *white* or *pinkish.*

Head *cylindrical*, *softly hairy* A, pedunculate; leaflets narrow; calyx-teeth long; 4-12 in.



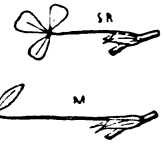
Heads more or less *oval*, *not softly hairy.*

Leaflets with *lateral veins prominent and thickened* SC; at margin SC; 4-10 in.



Leaflets with *lateral veins not prominent* SR, M.

- Leaflets *obovate* SR; stem procumbent; 8-16 in.
- Leaflets *longer and narrower* M; stem erect; 2-6 in.



13. **T. glomeratum** L. *Clustered Trefoil.* R.
Dry places: May-June. A.

14. **T. suffocatum** L. *Suffocated Trefoil.* R.
Sandy coasts: May-June. A.

15. **T. fragiferum** L. *Strawberry Clover.*
Dry meadows and pastures: July-Sept. P.

*16. **T. incarnatum** L. *Crimson Clover.*
Cultivated fields: June-July. A.

17. **T. Molinerii** Balb. Loc.
Pastures: May-June. A.

18. **T. pratense** L. ✠ *Purple Clover.* VC.
Pastures; meadows: May-Sept. P.

19. **T. medium** L. *Zigzag or Meadow Trefoil.*
Dry open woods and hedges: June-Sept. P.

20. **T. arvense** L. *Hare's-foot Trefoil.* C.
Dry pastures and corn-fields. July-Sept. A.

21. **T. scabrum** L. *Rough Trefoil.*
Dry pastures near sea: May-July. A.

22. **T. striatum** L. *Knotted Trefoil.*
Dry pastures: June-July. A.

23. **T. Bocconei** *Savi Boccone's Trefoil.* VR.
Coast: June-July. A.

VII. Ononis L. *Ononis.*—(Fig. O, p. 42.)



Stem *spinous*, erect; fruit as long as or longer than calyx S; leaves hairy, viscid; flowers rose; 6-18 in.

1. **O. spinosa** L. ✠
Spiny Rest-harrow.
Barren pastures: June-Sept. P.

Stem *not spinous*; flowers rose.



Fruit *shorter* than calyx R; stems spreading; leaves hairy, viscid; 1-2 ft.

2. **O. repens** L.
Rest-harrow.
Barren pastures: June-Sept. P.

Fruit *reflexed*; stems ascending or decumbent; plant slightly hairy, viscid; 1-6 in.

3. **O. reclinata** L.
Small Rest-harrow. VR.
Dry ground near sea: May-June. A.

VIII. Trigonella L. *Trigonel.*—

Stems prostrate, matted, glabrous; flowers white or pink, small, 1-3 on peduncle; fruit slightly curved; 2-8 in.

1. **T. ornithopodiodes** DC.
Bird's-foot Trigonel. Loc.
Sandy pastures near sea: June-July. A.

IX. Medicago L. *Medick.*—





Fruits *without prickles* S, F, L.

Flowers *purple* or *bluish*; pedicel *shorter* than bract SA; fruit spiral, coils 1-3 S; 1-2½ ft.

*1. **M. sativa** L. ✠
Lucerne.
Cultivated; escape: June-Aug. P.

Flowers *yellow.*

Pedicel *longer* than bract.



Stem prostrate; fruit *sickle-shaped* F; 1½-2½ ft.

2. **M. falcata** L.
Sickle Medick. R.
Stony places; June-July. P.

Stem erect; fruit forming a *complete ring*: 6-24 in.

3. **M. sylvestris** Fr.
Stony places: June-July. P.

Flowers *sessile*; stems spreading; fruit *curved, rounded* I, black when ripe; 6-24 in. [Nonsuch.]



4. **M. lupulina** L.[1] ✠
Black Medick. C.
Pastures; cultivated: May-Aug. A. or B.



Plant *hairy*; stipules *entire*: fruit closely spiral, coils 2-4 MI, prickles *hooked*; 4-12 in.

5. **M. minima** Lam.
Bur Medick. R.
Open, waste places: May-July. A.

Fruit *covered with prickles* MI, MA, A; flowers *yellow.*

Plant usually *glabrous*; stipules *toothed.*



Prickles *curved* MA; fruit closely spiral, coils 3-4-furrowed on edge; leaflets with a *dark spot* in centre; 12-20 in.

6. **M. maculata** Willd.
Spotted Medick.
Pastures; waste places: May-Aug. A.



Prickles *hooked*; fruit loosely spiral, coils 2-3, not furrowed; leaflets *without dark spot*; 8-20 in.

7. **M. denticulata** Willd.[2]
Toothed Medick. R.
Sandy ground: May-Aug. A.

X. **Melilotus** Hill. *Melilot.*—

Flowers *white*; standard longer than wings and keel AL; fruit glabrous; 2-6 ft.



*1. **M. alba** Desr. *White Melilot.*
Waste places: June-Aug. B

Flowers *yellow*.
- Fruit *hairy*, upper edge *acute* OF; standard as long as wings and keel; stem usually erect; 2-6 ft. — 2. **M. officinalis** Lam. ✠ *Common Melilot.* Shady places: June-Aug. B.
- Fruit *glabrous*, upper edge *obtuse*.
  - Standard and wings *longer* than keel; fruit *oval*, wrinkled transversely; 1-3 ft. — *3. **M. arvensis** Wallr. ✠ *Field Melilot.* Cultivated and waste places. June-Aug. B.
  - Keel and wings equal, *shorter* than standard; fruit *globular*; flowers very small; 4-12 in. — *4. **M. indica** All. *Small Melilot.* R. Waste places: June-Aug. A.

XI. **Anthyllis** L. *Anthyllis.*—(Figs. A, AV, p. 43.)

Upper leaves narrower than lower ones, flowers yellow, seldom reddish; fruit 1-seeded; 8-16 in. [Lady's Fingers.]

1. **A. Vulneraria** L. ✠ *Kidney Vetch.* Dry, hilly pastures. June-Aug. P.

XII. **Astragalus** L. *Astragal.*—(Fig. G, p. 43.)

Stem *long*, *glabrous*, *zigzag*; leaflets *large*; leaves *longer* than peduncle; stipules free GL; raceme fairly close AG; flowers greenish-yellow, 2-3 ft. [Wild Liquorice.]





1. **A. glycyphyllos** L. *Milk Vetch.* Shady calcareous ground June-Sept. P

Stem *short*, *hairy*; leaflets *small*.
- Leaves *shorter* than peduncle; flowers *purple*; fruit *erect*; 2-9 in. — 2. **A. danicus** Retz. *Purple Astragal.* Loc. Dry hilly pastures June-Aug P
- Leaves *as long as* peduncle; flowers *white tipped with purple*; fruit *pendulous*; 2-5 in. — 3. **A. alpinus** L. *Alpine Astragal.* VR. Mountains: June-July. P.

XIII. **Oxytropis** DC. *Oxytrope.*—

Leaves all *radical*; leaflets 9-15.
- Leaves slightly shorter than peduncles, *hairy*; flowers *yellow* ed with purple; 4-9 in. — 1. **O. campestris** DC. *Yellow Oxytrope.* VR. Mountains: July-Aug. P.
- Leaves shorter than peduncles, *silky*; flowers *purple*; 4-9 in. — 2. **O. uralensis** DC. *Purple Oxytrope.* Loc. Dry, hilly pastures: June-July. P.

1. Var. *Willdenowii* Koch: fruit covered with glandular hairs.—2. Var. *apiculata* Willd.: prickles straight.

XIV. Onobrychis Hill. *Sainfoin.*—(Figs. SA, OS, p. 43.)
Leaflets numerous ; petals striated, pink, seldom white; 8-24 in. [Cock's-head.]

1. **O. sativa** Lam. ✠
Common Sainfoin.
Calcareous, hilly places: June-July. P.

XV. Ornithopus L. *Bird's Foot.*—(Fig. OP, p. 43.)

Leaflets numerous; stipules very small, membranous.

Plant *hairy*; peduncle with *pinnate leafy bract* below head of flowers: petals pinkish, veined crimson; beak of fruit curved; 2-12 in.

1. **O. perpusillus** L.
Common Bird's Foot.
Dry places: May-Aug. A.

Plant *glabrous*; peduncle *without pinnate bract*: flowers minute, yellow, standard veined crimson; beak of fruit hooked; 2-6 in.

2. **O. ebracteatus** Brot.
Sand Bird's Foot.
Sandy places: May-Aug. A.

XVI. Coronilla L. *Coronilla.*—(Figs. CV, VA, p. 43.)

Petals *rose, tinged with white*; each flower on pedicel almost *twice as long* as calyx V; stipules *free*; leaves not glaucous; 16-28 in.



*1. **C. varia** L. VR.
Shady waste places: July-Aug. P.

XVII. Hippocrepis L. *Hippocrepis.*—(Figs. H, HC, p. 43.)
Flowers yellow, 2-8 on peduncle, slightly pendulous; fruit jointed, rugose 8-16 in. [Horse-shoe Vetch.

1. **H. comosa** L.
Common Hippocrepis.
Calcareous pastures and banks: May-Aug. P.

XVIII. Pisum L. *Pisum.*—(Fig. P, p. 44.)
Stem glabrous; leaflets 4-6; flowers white; seeds rounded; 2-5 ft.

1. **P. sativum** L. ✠
Garden Pea,
Cultivated: June-Sept. A.

XIX. Lathyrus L. *Lathyrus.* [Pea.]—

Tendrils *absent* OT.



Aerial stem *winged* T;



underground stem with *tubercles* TU; leaflets 2-4 pairs; flowers reddish or bluish purple; 6-15 in.



1. **L. macrorrhizus** Wimm.
Tuberous Pea.
Hedges; bushy places: May-Aug. P.

Aerial stem *not winged* ON;



tubercles absent; leaflets 3-6 pairs; flowers variegated red, blue, purple; 1-2 ft.

2. **L. niger** Wimm.
Black Pea. R.
Rocky glens: July-Aug. P.

Leaves *with tendrils* [except *L. Nissolia*.]

Leaflets *well-developed.*

Peduncle *more than 2-flowered.*

Leaflets absent A, NI.

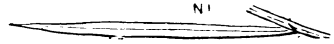
Stipules *leaf-like, very large* A;



flowers yellow; fruit about 1 in. long; 1-3 ft.

3. L. Aphaca L.
Yellow Vetchling. R.
Cultivated and waste places: June-July. A.

Petiole *leaf-like, flattened* NI, green, resembling a blade of grass; *stipules minute* NI; flowers rose; fruit nearly 2 in. long; 1-2 ft.



4. L. Nissolia L.
Grass Vetchling. R.
Fields near borders: May-June. A.

Leaflets *1 pair* L, LT, LS.

Flowers *yellow*; base of stipules *2-pointed* L;



stem almost winged; fruit compressed; 1-3 ft. [Yellow Meadow Vetchling.]

5. L. pratensis L.
Meadow Pea. VC.
Moist meadows and hedges: June-Sept. P.

Flowers *red to purple*; stipules *1-pointed* at base LT, LS.

Stem *not winged* LT; underground stem with tubers; secondary veins of leaflets divergent LT; flowers fragrant; 1½-3½ ft. [Earth-nut.]

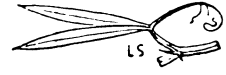


***6. L. tuberosus** L. ✠
Earth-nut Pea. R.
Corn-fields: June-Aug. P

Stem *winged* SI:



tubercles absent; veins parallel; hilum ½ encircling seed; leaflets parallel; 3-6 ft.



7. L. sylvestris L.
Everlasting Pea.
Woods, thickets June-Aug. P.

As above but flowers larger, more showy; hilum shorter, ⅓ encircling seed; 3-6 ft. [Everlasting Pea.]

***8. L. latifolius** L. R.
Waste places; garden escape: June-Aug. P.

Leaflets *2-4 pairs* PA.

Peduncle *as long as or longer* than neighbouring leaf; flowers bluish-purple; 2-3 ft.



9. L. palustris L.
Marsh Pea. R.
Moist meadows; marshes: June-Aug. P.

Peduncle *shorter* than leaf; standard purple, veined pale-blue; wings pale-blue; 4-16 in.

10. L. maritimus Big.
Sea Pea. R.
Sea shingle: July-Aug. P.

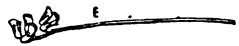
Peduncle *1 or 2-flowered*; stem *winged*; leaflets *one pair* H fruit hairy; flowers bluish-red; 1½-3 ft.



***11. L. hirsutus** L.
Rough Pea. R.
Corn-fields: June-July. B.

XX. Vicia L. *Vetch.*—

Flowers *shorter than 6 mm.*; fruits than 11 mm.

- Fruit *hairy* H;  peduncle 1-8 flowered E, as long as neighbouring leaf; petals bluish-white; 1-2½ ft. [Tare.] 
- Fruit *glabrous* ET, G.
  - Peduncle *1-2 flowered*, as long as leaf TE;  fruit 2-5 seeded ET; petals pale-blue; 1-2 ft. 
  - Peduncle *2-5 flowered*, longer than leaf GR;  fruit 5-8 seeded G; petals pale-blue; 1-2 ft. 

Flowers *solitary or in pairs.*

- Flowers *yellow*, solitary; peduncle short; fruit hairy L.
  - Leaflets *narrow*, *ovate*; standard *glabrous*; 6-18 in. 
  - Leaflets *broad*, *ovate*; calyx-teeth ciliate, hairy; standard *hairy*; 6-24.
- Fruit *hairy*, *rough*; leaflets *2-4*, long; peduncle short, 1-2 flowered; 1-2 ft.
- Flowers *reddish- or bluish-purple.*
  - Fruit *glabrous*; leaflets *4 or more.*
    - Stipule *with black spot* SA; leaflets 10-14 V.
      - Leaflets *narrow*, *ovate* V; flowers usually in pairs; fruit 2-3 in., erect; 6-18 in. 
      -  Leaflets *linear*; flowers often solitary; fruit 1-2 in., spreading, black, not splitting calyx; 6-12 in.
    - Stipule *without black spot* LA;  leaflets 4-8 VL; flowers solitary; 3-8 in. 

fruits than 2 cm.

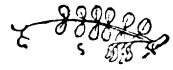
1. **V. hirsuta** Gray. *Hairy Vetch.* Hedges; corn-fields; waste places: June-Aug. A.
2. **V. tetrasperma** Mœnch *Smooth Vetch.* Fields; hedges: June-Aug. A.
3. **V. gracilis** Lois. *Slender Vetch.* R. Fields, hedges. June-Aug. A.
4. **V. lutea** L. *Yellow Vetch.* Dry places near sea: June-Aug. A.

*5. **V. hybrida** L. *Hairy Yellow Vetch.* R. Waste places; cultivated ground: June-Aug. A.

6. **V. bithynica** L. *Bithynian Vetch.* R. Bushy stony places: July-Aug. P.
7. **V. sativa** L. ✠ *Common Vetch.* Waste places: May-July. A.
8. **V. angustifolia** L.[1] *Narrow-leaved Vetch.* Dry places: Apr.-July. A.
9. **V. lathyroides** L. *Spring Vetch.* Dry pastures; open woods: Apr.-June. A.

Flowers *longer than 1 cm.*, Flowers in *racemes*. Peduncles *long*, more than 6-flowered.

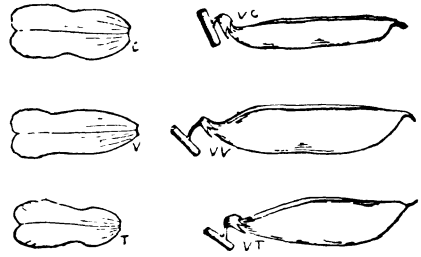
Peduncle ***short*** S, 2-6 flowered; leaflets many S; flowers erect, reddish-purple; fruit glabrous; 1-3 ft.



10. **V. sepium** L.
Bush Vetch. C.
Hedges: May-Aug. P.

Flowers *blue or purple.*

Standard narrowed towards middle C, above middle VI, below middle T; fruit variable in form VC, VV, VT; 2-5 ft.



11. **V. Cracca** L.[1]
Tufted Vetch. C.
Hedges. June-Aug. P.

Flowers *white* veined blue, pink or purple.

Stem *climbing*; tendrils much branched; stipules deeply divided; 2-6 ft

12. **V. sylvatica** L.
Wood Vetch. Loc.
Hilly bushy places. June-Aug. P.

Stem *erect*; leaves ending in point, tendrils absent; stipules broad, toothed; 1-2 ft. [Bitter Vetch]

13. **V. Orobus** DC.
Upright Vetch. R.
Rocky places: May-June. P.

1. Var. ***segetalis*** Koch: upper leaves with more rounded leaflets, ripe fruit splitting calyx.—2. Var. ***villosa*** Roth: standard narrowed above middle (Fig. VI); var. ***tenuifolia*** Roth: standard narrowed below middle (Fig. T).

ROSACEÆ. This order includes most of our fruit trees. Many species are ornamental, others are used in medicine.

Plant a *shrub* or *tree*.

- Carpel *1*, *free*, in centre of flower P;  leaves entire, rolled lengthways when young; inner part of fruit woody enclosing a seed. — I. **Prunus** L., p. 56. *Prunus*.
- Carpels *several*, *free* RU, RO; leaves compound.
  - Carpels fixed on a *convex receptacle* RU; fruits as many as carpels, fleshy.  — X. **Rubus** L., p. 59. *Rubus*.
  - Carpels fixed on a *concave receptacle* RO; fruits as many as carpels, dry within the fleshy calyx-tube.  — IX. **Rosa** L., p. 58. *Rose*.
- Carpels *not free*; ovary united to calyx.
  - Flowers *solitary*, *large* (diameter more than 1 in.).   sepals *acute* M; leaves almost or quite entire MG. — XV. **Mespilus** L., p. 60. *Medlar*.
  - Flowers *not solitary* (diameter less than 1 in.).
    - *Shrub*.
      - Leaves *lobed* CR; flowers many, in corymbs; style 1, rarely 2.  — XIV. **Cratægus** L., p. 60. *Hawthorn*.
      - Leaves *entire* CO; flowers few in drooping racemes; styles 2-5.  — XVII. **Cotoneaster** Med., p. 60. *Cotoneaster*.
    - *Tree*; leaves simple and toothed, lobed, or compound: flowers many in corymbs, simple P, or branched SA; styles 3 or 5.   — XVI. **Pyrus** L., p. 60. *Pyrus*.

Plant usually *herbaceous* without prickles.

Calyx and *corolla present.*

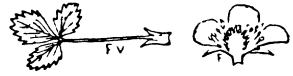
Calyx double, i.e. *epicalyx present* P.



Receptacle *not swollen and fleshy* G, PR, hairy.

- Styles *very long* G, apical;  receptacle elongated G. — IV. **Geum** L., p. 56. *Avens.*
- Styles *very short* PR, lateral;  receptacle short PR. — VI. **Potentilla** L., p. 57. *Potentil.*

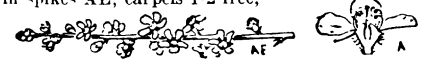
Receptacle *swollen and fleshy* F, C, glabrous.

- *Leaflets 3* FV; petals rounded at apex F; flowers creamy-white.  — VII. **Fragaria** L., p. 58. *Strawberry.*
- *Leaflets 5-7* CP; petals acute at apex C; flowers dark purple.  — V. **Comarum** L., p. 57. *Comarum.*

Epicalyx absent.

Flowers *solitary*, white; carpels numerous, separate. — III. **Dryas** L., p. 56. *Dryas.*

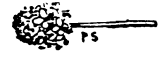
Flowers *not solitary.*

- Flowers *white or pink*, in branched raceme; carpels 3-12, separate. — II. **Spiræa** L., p. 56. *Spiræa.*
- Flowers *yellow*, in spikes AE; carpels 1-2 free, surrounded by calyx A  — VIII. **Agrimonia** L., p. 58. *Agrimony.*

Corolla absent.

Leaves *lobed* more or less deeply, toothed AA, AV; style 1.  — XI. **Alchemilla** L., p. 59 *Alchemil.*

Leaves *compound*; flowers in short dense spikes PS.

- Stamens *4* S, erect; flowers hermaphrodite; calyx dark purple.  — XII. **Sanguisorba** L., p. 59. *Sanguisorb.*
- Stamens *20-30* becoming pendulous PS; flowers usually monœcious; calyx light green, seldom tinged with purple.  — XIII. **Poterium** L., p. 59. *Poterium.*

I. Prunus L.[1] *Prunus.*—(Fig. P, p. 54.)



Fruit *glaucous.*
- Branches *thorny* SP.
  - Branches very thorny SP, black; flowers appear before leaves; fruit *blue-black*; 3-8 ft. [Blackthorn; Whitethorn.]
  - Branches less thorny, brown; flowers and leaves appear together; fruit usually *pale yellow*; 6-15 ft.
- Branches *not thorny*, brown; flowers and leaves appear together; fruit yellow or purple; 6-20 ft.

Fruit *not glaucous.*
- Flowers in *long racemes* PA; leaves toothed; fruit black, bitter; 10-25 ft.



- Flowers in *almost sessile umbels*; 2 glands usually present at base of leaf-blade *g*, A.
  - Leaves *hairy* beneath; petiole long; fruit crimson or black, sweet; 15-30 ft.
  - Leaves *glabrous*; petiole short; fruit red, acid; 10-20 ft.

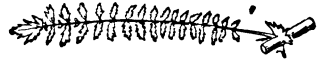


II. Spiræa L. *Spiræa.*—
Shrubby; leaves *simple*, toothed; flowers pink; carpels usually 5; 2-5 ft.

Plant *herbaceous*; leaves *compound*; flowers creamy-white.
- Leaflets 11-15, *very unequal* UL; carpels 5-8, twisted S; *no tubers*; flowers sweet-scented; 2-3 ft. [Queen of the Meadows.]
- Leaflets 31-41, *almost equal* F; carpels 5-12, straight SF; roots *with tubers*; 1-2 ft.









III. Dryas L. *Dryas.*—
Stems much branched, prostrate; flowers large; calyx 8-10 lobed; petals 8-10; awn of fruit feathery and more than 1 in. in length; 1-4 in. [Mountain Avens.]

IV. Geum L.[2] *Avens.*—(Fig. G, p. 55.)

Flowers yellow, small, erect; calyx green, *reflexed* after flowering U; style in fruit hooked, upper ¼ silky; 1-3 ft. [Herb Bennet.]



Flowers dull purple, large, drooping; calyx *erect* after flowering R; style in fruit hooked, upper ½ hairy; 1-2 ft.



1. **P. spinosa** L. ✠
Sloe. VC.
Hedges; open woods; Mar.-Apr. P.
2. **P. institia** L. ✠
Bullace.
Hedges: Apr.-May. P.
*3. **P. domestica** L.[2] ✠
Wild Plum. R.
Hedges: Apr.-May. P.
4. **P. Padus** L. ✠
Bird Cherry.
Open woods and cultivated: May-June. P.
5. **P. avium** L. ✠
Gean.
Woods: May-June. P.
6. **P. Cerasus** L. ✠
Cherry.
Woods; hedges: May-June. P.

*1. **S. salicifolia** L.
Willow-leaved Spiræa.
Hedges; escape: June-July. P.
2. **S. Ulmaria** L. ✠
Meadow-sweet. C.
Damp meadows and by water: June-Sept. P.
3. **S. Filipendula** L. ✠
Dropwort.
Meadows and open woods: June-Aug. P.

1. **D. octopetala** L.
White Dryas. Loc.
Mountains: June-July. P.

1. **G. urbanum** L. ✠
Wood Avens. VC.
Hedges; woods: June-Aug. P.
2. **G. rivale** L.
Water Avens.
Damp woods; shady ditches: June-July. P.

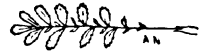
V. Comarum L. *Comarum.*—(Figs C. CP, p. 55.)
Stem decumbent, rooting; receptacle spongy; 8-20 in.

VI. Potentilla L. *Potentil.*—(Figs. P, PR, p. 55.)

Leaves *pinnate.*

Plant *shrubby*; leaflets 5, narrow, entire, hairy; flowers solitary, large, *yellow*; 2-4 ft.

Plant *herbaceous.*
- Stem *erect*, woody at base; leaflets 5-7, hairy; flowers *white*; 8-20 in.
- Stems *prostrate*, with creeping runners rooting at nodes; leaflets 12-20, silky beneath; flowers *yellow*; 3-12 in.



Leaves *ternate.*

Flowers *white*; stem procumbent, leaflets *toothed almost all round* PF; carpels many, smooth; 2-6 in. [Barren Strawberry.]



Flowers *yellow.*
- Stem *woody at base*; leaflets *toothed at apex*; carpels 5-7; 2-6 in.
- Stem erect, *herbaceous*; leaflets *coarsely toothed*; carpels wrinkled; 6-12 in.

Leaves *digitate*; flowers *yellow.*

Leaves *green above, white and downy beneath* PA; leaflets recurved at margin; 4-18 in.



Leaves *green on both surfaces.*

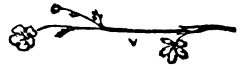
Stems slender, prostrate, *rooting* RE; leaflets toothed all round; flowers solitary; 6-18 in.



Stems erect or prostrate, *not rooting.*
- Stipules of upper leaves *resembling leaflets* T; petals 4, rarely 5; 6-10 in,



- Stipules all *small, narrow* V; petals 5; 2-8 in.



1. **C. palustre** L. ✠
Marsh Cinque-foil.
Marshes; bogs: June-July. P.

1. **P. fruticosa** L.
Shrubby Potentil. R.
Shady, *stony* places: June-July. P.

2. **P. rupestris** L.
Rock Potentil. VR.
Calcareous rocks: May-June. P.

3. **P. Anserina** L. ✠
Silver Weed. VC.
Roadsides: June-Aug. P.

4. **P. Fragariastrum** Ehrh.
Strawberry-leaved Potentil. C.
Woods and banks: Mar.-May. P.

5. **P. Sibbaldi** Hall
Sibbaldia. Loc.
Mountains: July-Aug. P.

*6. **P. norvegica** L.
Norwegian Potentil. Loc.
Waste damp places: July-Aug. A.

7. **P. argentea** L.
Hoary Potentil.
Dry gravelly places: June-Aug. P.

8. **P. reptans** L. ✠
Cinque-foil. C.
Pastures, hedges: June-Sept. P.

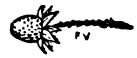
9. **P. Tormentilla** Sibth.[1]
Tormentil. VC.
Heaths; moors; dry pastures: June-Sept. P.

10. **P. verna** L.
Spring Potentil. Loc.
Hilly pastures: Apr.-May. P.

1. Belonging to this genus are the following cultivated plants:—*P. Armeniaca* L. ✠ [Apricot], *P. Lauro-cerasus* L. [Laurel], *P. lusitanicus* L. [Portugal Laurel], and *P. Mahaleb* L. ✠ [Damson]. Closely allied is the genus *Amygdalus* including *A. communis* L. ✠ [Almond], and *A. Persica* L. ✠ [Peach].—2. *P. domestica* L. is alien but now established.—3. A hybrid of the two species [*G. intermedium* Ehrh.] is sometimes found. Its flowers are erect or drooping, larger than in *G. urbanum*, more yellowish than in *G. rivale*.—4. A hybrid between *P. reptans* and *P. Tormentilla* is known as *P. procumbens* Sibth.: stem procumbent, rooting; stipules entire or deeply 3-lobed; petals 4-5.

VII. Fragaria L. *Strawberry.* — (Figs. F, FV, p. 55.)

Calyx *spreading* or *reflexed* FV, E.

- *Hairs adpressed* on peduncle and pedicels FV; receptacle with carpels to its base; 4-12 in.  **1. F. vesca** L. ✠ *Strawberry.* VC. Woods and hedges: May-June. P.
- *Hairs spreading* on peduncle and pedicels E; receptacle without carpels at its base; 4-16 in.  ***2. F. elatior** Ehrh. *Hautbois Strawberry.* R. Woods: May-July. P.

VIII. Agrimonia L. *Agrimony.*—(Figs. AE, A, p. 55.)

Leaves greyish-green beneath; leaflets 5-9; calyx persistent, bearing hooked spines when fruit is ripe; 1-2 ft. **1. A. Eupatoria** L.[1] ✠ *Agrimony.* Roadsides; hedges: June-July. P.

IX. Rosa L. *Rose.*—(Fig. RO, p. 54.) This genus includes many types very difficult to determine, even for those who have made of it a special study. Only the chief species are here given—the varieties in the foot-note are often classified as species.

Prickles *straight* T, P. 

- Leaflets *simply toothed* RP, glabrous;  prickles stout T; flowers white, seldom pink; 6-24 in. **1. R. spinosissima** L. *Burnet or Scotch Rose.* Sand dunes; sandy or chalky hillsides near sea: May-July. P.
- Leaflets *twice toothed* RT, hairs glandular;  prickles slender P; flowers rose: 3-8 ft. **2. R. tomentosa** Sm. *Downy-leaved Rose.* Hedges and thickets: June-July. P.

Prickles *curved* C. 

- Sepals almost entire RA; leaves glabrous; styles united; flowers white; 3-6 ft.  **3. R. arvensis** Huds.[2] *Trailing Rose.* C. Hedges; woods: June-Aug. P.
- Sepals *deeply divided* RC.
  - Leaflets simply toothed CA; *no glandular hairs*; flowers fragrant, white or pink; 3-9 ft.  **4. R. canina** L.[3] ✠ *Dog Rose.* C. Hedges; woods: June-July. P.
  -  Leaflets twice toothed RU; under surface *with glandular hairs, rust-coloured, apple-like scent*; flowers small, rose; 3-6 ft. [Eglantine.]  **5. R. rubiginosa** L.[4] *Sweet Briar.* Hedges; thickets: June-July. P.

X. Rubus L. *Rubus.*—(Fig. RU, p. 54.) The remarks with regard to the genus *Rosa* are equally applicable here.

Leaves *compound* I, RF.

- Leaves *white beneath*; plant a *shrub*.
  - Lateral leaflets *sessile* I; flowers white; ripe fruits red; 3-6 ft.
  - Lateral leaflets *shortly stalked* RF; flowers white or pink; ripe fruits black, not glaucous; 3-6 ft. [Blackberry.]
- Leaves *green beneath*; flowers white.
  - Sepals erect, *adpressed on fruits* RC; plant *shrubby*; leaves glabrous; fruit glaucous, bluish-black; 2-6 ft.
  - Sepals *reflexed below fruits* S; plant *herbaceous*; leaves with glandular hairs; fruit red, carpels few; 6-24 in.

Plant *herbaceous*; leaves *simple*, toothed or lobed; flowers large, solitary, white; fruit red, afterwards yellow; 6-12 in. [Knotberry.]

XI. Alchemilla L. *Alchemil.*—

Plant an *annual*; leaves *deeply tri-fid*, petiole shorter than lamina AA; flowers yellowish-green in sessile, axillary heads; 2-4 in.

Plant a *perennial*; petiole long AV; flowers yellowish green.

- Leaves *rounded, plaited, lobes broad, green*, toothed AV; flowers in loose panicles; 4-16 in.
- Leaves *digitate, white and silvery* beneath, toothed; flowers in interrupted spikes: 3-9 in.

XII. Sanguisorba L. *Sanguisorb.*—(Fig. S, p. 55.)

Leaves glabrous; leaflets 5-15, toothed; stem angular; 1-3 ft.

XIII. Poterium L. *Poterium.*—(Fig. PS, p. 55.)

Leaflets 11-15, glabrous; calyx wings in fruit 4, *smooth*; 6-18 in. [*Lesser Burnet.*]

Plant larger; calyx wings *deeply pitted*, more pronounced; 6-18 in.

1. **R. idæus** L. ✠
   Raspberry.
   Damp woods: June-Aug. P.
2. **R. fruticosus** L. ✠
   Bramble VC.
   Hedges; woods: July-Sept. P.
3. **R. cæsius** L.[5]
   Dewberry.
   Open, stony places: July-Sept. P.
4. **R. saxatilis** L.
   Stone Bramble.
   Stony places, July-Sept. P.
5. **R. Chamæmorus** L.
   Cloudberry.
   Turf-bogs: July-Aug. P.

1. **A. arvensis** Scop.
   Parsley Piert. C.
   Dry fields; roadsides: May-Aug. A.
2. **A. vulgaris** L.
   Common Lady's Mantle.
   Moist shady places. June-Sept. P.
3. **A. alpina** L.
   Alpine Lady's Mantle.
   Mountains: June-Aug. P.

1. **S. officinalis** L. ✠
   Great Burnet.
   Moist meadows: June-Aug. P.

1. **P. Sanguisorba** L. ✠
   Salad Burnet.
   Dry pastures: June-Aug. P.
   *2. **P. polygamum** W. and K.
   Fodder Burnet.
   Dry waste places: June-Aug. P.

1. Var. **odorata** Mill.: 2-3 ft; calyx-tube more or less furrowed; leaves with glandular hairs and resinous odour, R.—2. Var. *stylosa* Desv. has characteristics intermediate between those of *R. arvensis* and *R. canina*, R.—3. Var. *dumetorum* Thuill.: leaves soft, grey-green, C.—4. Var. *micranthe* Sm.: leaves faintly aromatic, styles almost glabrous.—5. Var. *dumetorum* W. and N.: terminal leaflet heart-shaped at base; fruit black, shiny.

XIV. Cratægus L. *Hawthorn.*—(Fig. CR, p. 54.)



Plant glabrous, thorny; leaf-base narrow; flowers white, sometimes pink; style 1. CO, sometimes 2-3; haws red, globular or ovoid; 6-50 ft. [May; Whitethorn.]

1. **C. Oxyacantha** L.[1] *Hawthorn.* VC.
Hedges; thickets: May-June. P.

XV. Mespilus L. *Medlar.*—(Figs. M, MG, p. 54.)
Flowers solitary, white; fruit hairy; branches thorny when wild; 6-10 ft.

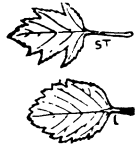
1. **M. germanica** L. *Common Medlar.* R.
Hedges; thickets: May-June. P.

XVI. Pyrus L. *Pyrus.*—

Flowers in a *simple raceme* P; styles 5; leaves simple, toothed M, P.

- Styles *united at base*; flowers almost in an umbel M;  fruit depressed above and below; 6-30 ft.
  - 1. **P. Malus** L. ✠ *Crab-apple.* Hedges; woods: Apr.-May. P.
- Styles *quite free*; flowers in a short raceme P;  fruit depressed above only; 10-50 ft.
  - 2. **P. communis** L.[2] ✠ *Pear.* R. Hedges; woods; often an escape: Apr.-May. P.

Flowers in a *branched raceme* (Fig. SA, p. 54); styles usually 3, seldom 5.

- Leaves *pinnate* AU. 
  - Fruit pear-shaped D;  buds *glabrous, gummy.*
    - 3. **P. domestica** Ehrh. ✠ *Service Tree.* Cultivated: May-June. P.
  - Fruit globular A;  buds *very hairy, whitish*; 6-30 ft. [Mountain Ash.]
    - 4. **P. aucuparia** Gærtn ✠ *Rowan-tree.* Woods: May-June. P.
- Leaves *lobed* ST, *or deeply toothed* L. 
  - Styles *glabrous*; leaves, except when young, not downy beneath; fruit oval, brown; 6-50 ft.
    - 5. **P. torminalis** Ehrh. ✠ *Wild Service Tree.* Loc. Woods: May-June. P.
  - Styles *very hairy at base*; leaves white and downy beneath; fruit globular, red; 6-40 ft.
    - 6. **P. Aria** Ehrh. *Beam Tree.* Woods, calcareous soil: May-June. P.

XVII. Cotoneaster Med. *Cotoneaster.*—(Fig. CO, p. 54.)

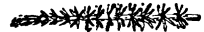
Branches not thorny; calyx persistent; flowers small, pink, solitary or 2-5; fruit globular, red; 6-24 in.

1. **C. vulgaris** Lindl. *Cotoneaster.* VR.
Limestone cliffs: May-June. P.

HALORAGACEÆ. The species are all aquatic; their stems and leaves vary considerably according to whether they are submerged or aerial.

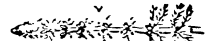
Leaves *finely pinnate* S, V, AL, below; calyx, petals and styles 4, stamens 4 or 8. — I. **Myriophyllum** L., p. 61. *Water Milfoil.*

Leaves *entire* HI; calyx indistinct; petals absent; stamen and style 1. — II. **Hippuris** L., p. 61. *Mare's-tail.*



I. Myriophyllum L. *Water Milfoil.*—

Flowers in *close axillary whorls* V; bracts pinnate, longer than flowers; plant submerged. — 1. **M. verticillatum** L. *Whorled Water Milfoil.* Ditches; ponds: June-Aug. P

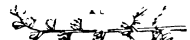


Flower-clusters *distant* S, AL, appearing above water; bracts entire, not longer than flowers.

- Flower-clusters in *whorls* S; bracts entire. — 2. **M. spicatum** L. *Spiked Water Milfoil.* Ditches; ponds: July-Aug P.



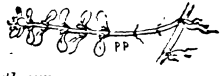
- Flower-clusters *alternate* AL; lower bracts lobed. — 3. **M. alterniflium** DC. Ditches, ponds: June-Aug. P.



II. Hippuris L. *Mare's-tail.*—
Stem erect, unbranched, upper part aerial; flowers very small, solitary, axillary, green; anther reddish-brown. — 1. **H. vulgaris** L. *Mare's-tail.* Shallow water, ditches and marshes: June-July. P

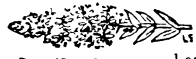
LYTHRACEÆ. This natural order is remarkable for the different forms of flowers in the same species. Sometimes the pistil, sometimes the stamens are relatively more developed.

Leaves *oval or narrow* LH, LS; calyx tubular, furrowed; style long; fruit longer than broad. — I. **Lythrum** L., p. 61 *Lythrum.*

Leaves *rounded or broader at apex* PP; 

calyx campanulate; style short, fruit globular. — II. **Peplis** L., p. 61 *Peplis.*

I. Lythrum L. *Lythrum.*—

Flowers *3-10 in clusters* arranged in whorled spikes LS, trimorphic; 

leaves heart-shaped at base; flowers rose or purple; 2-4 ft. — 1. **L. Salicaria** L. ✠ *Purple Loosestrife.* River-banks: July-Sept. P.

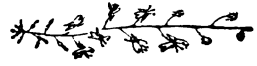
Flowers *solitary*, axillary LH; 

leaves linear; flowers pink; 4-12 in. — 2. **L. hyssopifolium** L. ✠ *Hyssop Loosestrife.* Stagnant ponds: June-Sept. A.

II. Peplis L. *Peplis.*—(Fig. PP, above.) Stem prostrate, creeping, rooting; sometimes floating; flowers solitary, axillary, pale rose; petals often absent; 3-8 in. — 1. **P. Portula** L. *Water Purslane.* Margin of ponds: July-Aug. A.

1. Var. *monogyna* Jacq.: young stems and calyx hairy; leaves more deeply cut; *style one.*—2. *P. Cydonia* L. ✠ [Quince]. flowers solitary; petals large, rounded; fruit yellow; cultivated.

ONAGRACEÆ. Several species belonging to this N.O. are cultivated as ornamental plants.

Stamens 2; petals 2, cleft; flowers white or pinkish in raceme C; leaves opposite, petiolate.  — I. **Circæa** L., p. 62. *Circæa.*

Stamens 4; petals absent I;  flowers greenish; leaves glabrous, opposite I. — III. **Ludvigia** L., p. 62. *Ludvigia.*

Stamens 8; petals 4.
- Flowers *yellow*; seeds without pappus of hairs B.  — II. **Œnothera** L., p. 62. *Œnothera.*
- Flowers *rose or purple*; seeds with pappus of hairs E.  — IV. **Epilobium** L., p. 62. *Willow Herb.*

I. **Circæa** L. *Circæa.*—

Flowers *without bract* at base of pedicel (Fig. C, above); leaves *slightly toothed* CL, downy; 16-24 in. [Enchanter's Nightshade.] 

1. **C. lutetiana** L. *Common Circæa*, C. Moist woods: June-Aug. P.

Flowers with *very small bract* at base of pedicel (*b*, Fig. IN);  leaves *coarsely toothed* INT, often glossy; 4-16 in. 

2. **C. alpina** L. *Alpine Circæa*, Shady places: June-Aug. P.

II. **Œnothera** L. *Œnothera.*—(Fig. B, above.)

Sepals 4, upper part free and reflexed; leaves opposite; entire or slightly toothed; fruit 4-valved.
- Leaves *ovate-lanceolate*; capsule *oblong*, tapering towards apex; flowers yellow; 2-4 ft.
- Leaves *narrower*; capsule *longer, more cylindrical*; flowers deep yellow changing to dull orange red; 2-3 ft.

*1. **Œ. biennis** L. *Evening Primrose.* Loc. Waste sandy places: July-Sept. B.

*2. **Œ. odorata** Jacq. Loc. Sandy places: July-Sept. B.

III. **Ludvigia** L. *Ludvigia.*—(Fig. I, above.)
Calyx persistent; stamens opposite sepals; plant aquatic; stem creeping and rooting in mud; 6-10 in.

1. **L. palustris** Ell. *Marsh Ludvigia.* VR. Marshes; pools: June-July. P.

IV. **Epilobium** L. *Willow-herb.*—

Corolla *large*, at least 2 cm. in diameter; stigma 4-lobed.
- Style and stamens *curved downwards* ES; plant glabrous;  leaves not amplexicaul; flowers slightly irregular, rose or purple; 3-6 ft.
- Style and stamens *erect* H; platn hairy;  leaves amplexicaul; flowers regular, rose; 3-5 ft.

1. **E. angustifolium** L. *Rose-bay Willow-herb.* Moist banks and open woods: July-Aug. P.

2. **E. hirsutum** L. *Great Willow-herb.* Sides of ditches and streams. July-Aug. P.

Corolla *small*, less than 1 cm. in diameter.

- **Stem *2-4 angled* R, T; stigma entire, club-shaped.**
  - Leaves *sessile* T;  flowers rose; 1-2½ ft. — **3. E. tetragonum** L. *Square-stalked Willow-herb.* C. Wet ditches; damp places: July-Aug. P.
  - Leaves *petiolate* R;  flowers pale rose, often with darker veins; 1-2 ft. — **4. E. roseum** Schreb. *Pale Willow-herb.* Ditches; damp places: July-Aug. P.
- **Stem *rounded* or without distinct angles.**
  - Stigma entire, *club-shaped* P. 
    - Leaves *sessile*, narrow, entire or slightly toothed; flowers rose-lilac ;6-18 in. — **5. E. palustre** L. *Marsh Willow-herb.* Marshes: July-Aug. P.
    - Leaves with short *stalks.*
      - Leaves *toothed*, glabrous and *glossy*; flowers rose-purple; 4-12 in. — **6. E. alsinefolium** Vill. *Mountain Willow-herb.* Sides of mountain streams: July-Aug. P.
      - Leaves usually *entire, tinged with red*; flowers pale rose : 2-4 in. — **7. E. alpinum** Huds. *Alpine Willow-herb.* Sides of mountain streams: July-Aug. P.
  - Stigma *4-lobed* PV in opened flower. 
    - Leaves *hoary*, finely toothed, alternate EP; stem hoary; flowers rose or purple; 1-2 ft.  — **8. E. parviflorum** Schreb. *Hoary Willow-herb.* Wet places: July-Aug. P.
    - Leaves *glabrous or slightly hoary*, coarsely toothed M; stem glabrous or with few woolly hairs.
      - Leaves *opposite* M; flowers pale-purple; 6-24 in.  — **9. E. montanum** L. *Broad-leaved Willow-herb.* VC. Damp shady places: June-July. P.
      - Leaves *alternate*; flowers pale rose; 9-24 in. — **10. E. lanceolatum** S. and M. *Spear-leaved Willow-herb.* R. Dry places: July-Aug. P.

CUCURBITACEÆ. Several species are cultivated, e.g. Cucumber ,Melon, Pumpkin, Vegetable Marrow.

I. **Bryonia** L. *Bryony.*—(Fig. BR, p. XXIV.)
Plant climbing by tendrils; leaves palmately lobed; flowers greenish-white, diœcious, berries red.
[White Bryony; Red Bryony.]

1. **B. dioica** Jacq.
Common Bryony.
Hedges; thickets: May-Sept. P.

TAMARICACEÆ. Only one species, and that naturalised, is admitted in the British flora.

I. **Tamarix** L. *Tamarisc.*—

Leaves minute, acute, adpressed; flowers pinkish-white, small; sepals and petals 4-5, stamens as many or twice as many; ovary 1-celled, styles 3, rarely 2 or 4; fruit 3-valved; 3-6 ft.

1. **T. gallica** L.
Common Tamarisc. Loc.
Sandy places: July-Sept. P.

PORTULACEÆ.



Flowers *yellow*; *stamens 6-15*; leaves opposite or alternate, form a rosette round flowers O; fruit opens transversely.

I. **Portulaca** L., p. 64.
Portulaca.



Flowers *white*; fruit 3-valved.
- *Stamens 3*; leaves opposite F; corolla cleft on one side.
- *Stamens 5*; 2 upper stem leaves connate below flowers; petals 5, distinct.

II. **Montia** L., p. 64.
Montia.

III. **Claytonia** L., p. 64.
Claytonia.

I. **Portulaca** L. *Portulaca.*—

Stem decumbent, often reddish; leaves fleshy, glabrous, short hairs in axil; 4-12 in.

*1. **P. oleracea** L. ✠
Purslane. R.
Escape; cultivated ground: June-Aug. A.

II. **Montia** L. *Montia.*—

Stems tufted, *rigid*; leaves entire, glabrous, slightly connate; seeds dull black.
[Water Chickweed.]

1. **M. fontana** L. ✠
Blinks.
Wet sandy places: Apr.-Aug A.

Stems sub-erect, *flaccid*; leaves free at base; seeds shining, brown.

2. **M. lamprosperma** Cham.
Wet places: May-Aug. A.

III. **Claytonia** L.[1] *Claytonia.*—

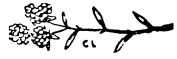
Radical leaves *oval, pointed at apex*; flowers often solitary; petals bi-fid, sometimes pink.

*1. **C. sibirica** L. Loc.
Stream-sides; waste places: May-Aug. A.

Radical leaves *broadly ovate, not strongly pointed at apex*: flowers few in short raceme; petals notched.

*2. **C. perfoliata** Donn.
Roadsides; waste places: Apr.-June. A.

PARONYCHIACEÆ [ILLECEBRACEÆ]. The members of this N.O. usually have spreading or decumbent stems, and small flowers, the petals of which are either aborted or reduced to small filaments.

Leaves *all alternate* CL; stipules small, silvery;  flowers white; fruit a nut. — I. **Corrigola** L., p. 65. *Strapwort.*

Leaves *opposite.*

- Leaves *without stipules*, connate A, SP;   flowers green; sepals 2, joined; styles 2. — II. **Scleranthus** L., p. 65. *Knawel.*
- Leaves *with membranous stipules* HH.
  - Sepals *milky-white*, thick, acute; flowers 3-6 in a cluster I.  — III. **Illecebrum** L., p. 65. *Illecebrum.*
  - Sepals *green* without, yellowish within; flowers many in a cluster HH.  — IV. **Herniaria** L., p. 65. *Rupture-wort.*

I. **Corrigola** L. *Strapwort.*—(Fig. CL, above.)

Stems many, prostrate; leaves narrow; flowers crowded in terminal cymes; 4-12 in.

1. **C. littoralis** L. *Strapwort.* Sandy shores: July-Aug. A.

II. **Scleranthus** L. *Knawel.*—

Sepals *obtuse* with *broad white margin*, converging after flowering; flowers terminal (Fig. SP, above); 2-6 in.

1. **S. perennis** L. *Perennial Knawel.* VR. Sandy fields: June-Sept. P.

Sepals *acute, hardly margined white* (about ½ mm.); a few flowers sometimes axillary (Fig. A, above); 2-6 in.

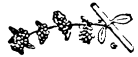
2. **S. annuus** L. *Annual Knawel.* C. Fields; waste places: June-Sept. A or B.

III. **Illecebrum** L. *Illecebrum.*—(Fig. I, above.)

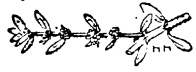
Stems prostrate, slender; leaves numerous, oval; flowers shining, sessile, in numerous clusters; 2-10 in.

1. **I. verticillatum** L. ✠ VR. Sandy marshes. July-Aug. A. or B.

IV. **Herniaria** L. *Rupture-wort.*—

Plant *glabrous*, green G;  leaves glabrous; 2-8 in.

1. **H. glabra** L. *Smooth Rupture-wort.* R. Dry fields: July-Aug. A., B. or P.

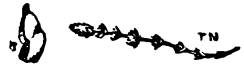
Plant *hairy*, greyish HH;  leaves ciliate; 2-8 in.

*2. **H. hirsuta** L. *Hairy Rupture-wort.* VR. Dry fields July-Aug. A. B. or P.

1. The two species of Claytonia are natives of NW. America, weeds now naturalised in England.

CRASSULACEÆ.

The members of this N.O. are *succulent plants*, their thick leaves storing enough water to enable them to withstand a drought on rocky and dry soil.

Stamens 3-4; plant very small; flowers white, sessile TM; carpels contracted transversely T.  — III. **Tillæa** L., p. 67. *Tillæa.*

Stamens *twice as many as petals*, half of them sometimes without anthers. — Petals *free*, spreading.

- *Petals 6-20* ST; scale at base of carpel *toothed*; flowers rose, striated. — II. **Sempervivum** L., p. 67, *Houseleek.*
- *Petals 5*, rarely 4, 6 or 8; scale at base of carpel *entire or cleft*; flowers rose, white or yellow. — I. **Sedum** L., p. 66. *Stonecrop.*



Petals 5 united; corolla tubular; scale at base of carpel entire; flowers yellowish-green. — IV. **Cotyledon** L., p. 67. *Cotyledon.*

I. Sedum L. *Stonecrop.*—

Leaves *flat, broad* TE.

- Leaves coarsely toothed TE; flowers *5-partite, perfect*, rose or purple; roots swollen; 1-2 ft. [Live-long.] 
- Leaves slightly toothed; flowers *4-partite, diœcious*, yellow tinged purple; 6-18 in. [Midsummer-men.]

Thick and narrow AC, SB. — Flowers *yellow.*

Flowering stems *1-3 in.*; leaves *blunt.*

- Sepals *prolonged* at base A;  leaves short, nearly globular AC; 3-10 in. [Wall-pepper; Ginger.] 
- Sepals *not prolonged* at base BO;  leaves several times longer than thick; 3-6 in.

Flowering stems *6 in.* or more; leaves *acute.*

Inflorescence *flattened* R.

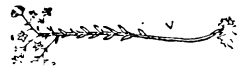
- Leaves elongated, *flattened*, prolonged at base; 6-10 in.
- Leaves *cylindrical*, prolonged at base, crowded E. R; 6-12 in. [A garden form has reflexed cauline leaves.]  

Inflorescence *rounded* at top; leaves elongated, *flattened*, prolonged at base; 6-10 in.

1. **S. Telephinum** L. ✠ *Orpine.* Hedges; thickets: July-Aug. P.
2. **S. roseum** Scop. *Rose-root.* Damp rocks; mountains: May-Aug. P.
3. **S. acre** L. *Biting Stonecrop.* C. Walls; dry places: June-July. P.
- *4. **S. sexangulare** L. *Tasteless Stonecrop.* VR. Old walls: July-Aug. P.
5. **S. rupestre** L. *Rock Stonecrop.* R. Rocks: June-July. P.
- *6. **S. reflexum** L. ✠ *Reflex-leaved Stonecrop.* R. Rocks, walls; an escape: June-July. P.
7. **S. Forsterianum** Sm. *Small Welsh Stonecrop.* Loc. Damp rocks: June-July. P.

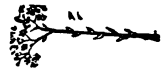
Leaves — Flowers *white* or *reddish*.

Stem *not branched* at base V, viscid and *hairy* at apex; leaves alternate V, flat above; 3-6 in.



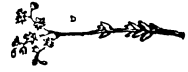
Leafy *branches* at *base* of stem. — Plant *glabrous*.

Leaves *elongated*, flattened above, scattered on flowering stem AL; 3-5 in.



Leaves *globular* or ovoid, prolonged at base; 3-5 in.

Plant with *glandular hairs* near apex, glaucous green; leaves short, thick, more or less crowded on flowering stem D; 2-3 in.



8. **S. villosum** L. *Hairy Stonecrop.*
Peat bogs, mountains: June-July. A or B.

9. **S. album** L. ✠ *White Stonecrop.*
Walls; rocks: June-July. P.

10. **S. anglicum** Huds. *English Stonecrop.*
Rocks near sea: June-Aug. P.

11. **S. dasyphyllum** L. *Thick-leaved Stonecrop.* R.
Old walls: June-July. P.

II. **Sempervivum** L. *Houseleek.*—(Fig. ST, p. 66.)
Stem hairy, viscid; barren branches bear rosette of leaves at apex; leaves fleshy, ciliate, green, tipped purple; 1-2 ft.

*1. **S. tectorum** L. ✠ *Houseleek.*
Roofs; old walls: July-Aug. P.

III. **Tillæa** L. *Tillæa.*—(Figs. TM, T, p. 66.)
Stems reddish, decumbent, tufted: leaves small, connate; flowers very small: 1-2 in.

1. **T. muscosa** L. *Mossy Tillæa.* R.
Barren sandy heaths. June-July. R.

IV. **Cotyledon** L. *Cotyledon.*—
Leaves chiefly radical, fleshy, peltate, crenate; flowering stem erect; flowers pendulous in long raceme; 4-12 in.

1. **C. Umbilicus** L. *Navelwort.*
Rocks; walls. June-Aug. P.

RIBESIACEÆ. The various species are often cultivated for their edible fruits.

I. **Ribes** L. *Ribes.*—
Branches *thorny*; leaves hairy, 3-lobed, sharply pointed; peduncle 1-3 flowered; calyx *hairy* U; petals green; fruit smooth, yellow; 2-4 ft.



1. **R. Uva-crispa** L.[1] ✠ *Gooseberry.*
Hedges: Apr.-May. P.

Branches *not thorny*; leaves 3-5 lobed; peduncles many flowered.

Racemes *pendulous*; flowers *perfect*.

Calyx *glabrous* R; flowers greenish-yellow; fruit red; 3-5 ft.



2. **R. rubrum** L. ✠ *Red Currant.*
Rocky woods: Apr.-May. P.

Calyx *hairy*: flowers greenish, tinged red within; fruit black; leaves with glandular dots, strongly scented; 3-5 ft.

3. **R. nigrum** L. ✠ *Black Currant.*
Shady damp thickets and woods: Apr.-May. P.

Racemes *erect*; flowers *diœcious*, greenish-yellow; calyx *glabrous*; fruit red, tasteless; 4-5 ft.

4. **R. alpinum** L. *Mountain Currant.* R.
Woods: Apr.-May. P.

1. Var. *Grossularia* L. ✠, is often cultivated. Its leaves are almost glabrous, shining beneath; its fruit is hispid.

SAXIFRAGACEÆ. Ornamental plants belonging to this N.O. include the Hydrangea, Syringa or Mock Orange, and Deutzia.

Corolla absent; sepals 4, stamens 8, stigmas 2 CH.



II. **Chrysosplenium.** L., p. 69. *Chrysosplene.*

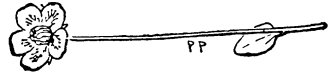
Corolla present, GR, PP; sepals and petals 5.

Stamens 10, stigmas 2 GR.



I. **Saxifraga** L., p. 68. *Saxifrage.*

Stamens 5 with anthers, 5 modified as scales bearing glandular filaments PP; stigmas 4.



III. **Parnassia** L., p. 69. *Parnassia.*

I. Saxifraga L. *Saxifrage.*—(Fig. GR, above.)

Radical leaves *not in close rosette* TR, G; flowers *white*.

Flowering stem *leafy* TR, G.

Plant an *annual*; root-stock without small bulbs TR; lower leaves *3-lobed*; flowers solitary; 2-4 in.

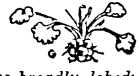


1. **S. tridactylites** L. *Rue-leaved Saxifrage.* Walls; dry fields: Apr.-July. A.

Plant a *perennial*.

Plant *forming bulbils*.

Root-stock with many small bulbs G; lower leaves *crenate*; peduncle several flowered; 6-12 in.



2. **S. granulata** L. *Meadow Saxifrage.* Meadows; banks: May-June. P.

Small bulbs in upper leaf axils; leaves more *broadly lobed*; peduncle 1-3 flowered; 2-4 in.

3. **S. cernua** L. *Drooping Saxifrage.* VR. Mountains: July-Aug. P.

Plant glabrous *seldom forming bulbils*; stem decumbent, rooting; leaves *3-5 lobed*; peduncle 1-3 flowered; 1-4 in.

4. **S. rivularis** L. *Brook Saxifrage.* R. Damp places, mountains: July-Aug. P.

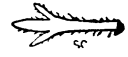
Flowering stem *leafless*; radical leaves toothed; flowers small in dense terminal cyme; 3-6 in.

5. **S. nivalis** L. *Alpine Saxifrage.* Mountain rocks: July-Aug. P.

Flowers *white*.

Flowering stem *leafy*.

Leaves usually *3-lobed*, ciliate SC; tufts dense; barren shoots very short; sepals obtuse; 4-8 in.



6. **S. cæspitosa** L. *Tufted Saxifrage.* VR. Highest mountains: May-June. P.

Leaves more acute, less frequently lobed, tufts loose; barren shoots 2-3 in; sepals acute; 4-12 in. ½

7. **S. hypnoides** L. *Mossy Saxifrage.* Hilly districts: May-July. P.

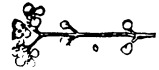
Radical leaves *in close rosette.*

- Flowering stem *leafless*; leaves coarsely toothed; petals with 2 orange spots above base; 2-8 in. — 8. **S. stellaris** L. *Star Saxifrage.* Damp rocks; hills and mountains: July-Aug. P.
- Flowers *pink*; flowering stem *not leafy.*
  - Leaves very coarsely toothed, *narrow at base*; petiole broad, flat, ciliate; 6-12 in. [St. Patrick's Cabbage; None-so-pretty.] — 9. **S. umbrosa** L. *London Pride.* Mountains: June-July. P.
  - Leaves toothed, *heart-shaped at base*; petiole longer, less flattened, hairy; 6-12 in. — 10. **S. Geum** L. *Kidney Saxifrage.* Mountains: June-July. P.
- Flowers *yellow*; flowering stem *leafy.*
  - Peduncle *several flowered*; calyx slightly adherent to ovary, spreading; 4-6 in. — 11. **S. aizoides** L. *Yellow Saxifrage.* Wet rocks, mountains: June-Sept. P.
  - Flowers usually *solitary*; calyx free, reflexed; petals dotted with red; 4-8 in. — 12. **S. Hirculus** L. *Marsh Saxifrage.* VR. Wet moors: July-Aug. P.

Stem creeping; branches decumbent; leaves *all opposite* forming 4 rows, small, crowded, ciliate; flowers many, solitary, axillary, large, *purple*; 4-8 in. — 13. **S. oppositifolia** L. *Purple Saxifrage.* Damp places, high mountains: Apr.-June. P

II. **Chrysosplenium** L. *Chrysosplene.*—(Fig. CH. p. 68.)

Flowers small, *yellow in compact clusters* surrounded by leaves usually greenish yellow.

- Leaves *opposite*, lower ones with short petioles O;  stem erect, 4-angled; 4-6 in. — 1. **C. oppositifolium** L. *Golden Saxifrage.* C. Damp shady places. Apr.-July. P.
- Leaves *alternate*, lower ones with long petioles A;  stem decumbent, 3-angled; 4-6 in. [Golden Saxifrage.] — 2. **C. alternifolium** L. ✠ *Alternate-leaved Chrysosplene.* Loc. Damp shady places: Apr.-July. P.

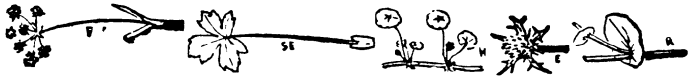
III. **Parnassia** L. *Parnassia.*—(Fig. PP, p. 68.)

Radical leaves entire, in a rosette; cauline leaf usually one, oval, amplexicaul; flowers solitary, white, ½-1 in across; scales white, glands yellow; 4-8 in. — 1. **P. palustris** L. *Grass of Parnassus.* Marshes; bogs: July-Sept. P.

UMBELLIFERÆ.

The members of this N.O. are usually difficult to determine. It is therefore necessary to choose plants with well-formed or ripe fruits. Many of the species contain useful essences, e.g. Aniseed, Angelica, Fennel, Coriander; others contain poisonous organic alkalies, e.g. Hemlock, Water Hemlock.

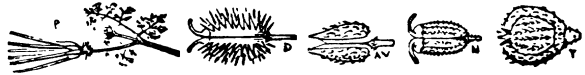
Leaves *simple or spinous*.
[Examples: F, SE, H, E, R]



GROUP 1, p. 71.

Leaves *compound*.

Fruit *hispid or covered with bristles*.
[Examples: P, D, AV, M, T.]



GROUP 2, p. 71.

Fruit *smooth* and not hairy.

Flowers *yellow, yellowish* or greenish-yellow.

GROUP 3, p. 72.

Flowers *white, pink* or green.

Involucre and *involucel* present, or one of them.

Involucre and involucel absent.[1]

GROUP 4, p. 72.

Lower leaves completely divided *once*.
[Examples: L, F, V.]



GROUP 5, p. 73.

Lower leaves completely divided *two or more times*.
[Examples: PE, PA.]



Fruit *winged* A.
[A shows the winged fruit cut transversely.]



GROUP 6, p. 73.

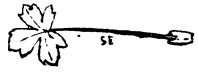
Fruit *not winged*.

GROUP 7. p. 74.

GROUP 1.—

Leaves *spinous*; flowers in dense umbel E; plant glabrous.  I. **Eryngium** L., p. 75. *Eryngo.*

Leaves *not spinous.*

- Leaves palmately *lobed* SE; umbel irregular S.
  - Bracts *small*.   II. **Sanicula** L., p. 75. *Sanicle.*
  - Bracts *large* and leaflike. III. **Astrantia** L., p. 75. *Astrantia.*
- Leaves *entire* or nearly so.
  - Leaves peltate, *crenate* H; flowers *white*; plant aquatic.  V. **Hydrocotyle** L., p. 76. *Pennywort.*
  - Leaves *entire*; flowers *yellow*; fruit furrowed; plant not usually aquatic. IV. **Bupleurum** L., p. 76. *Buplever.*

GROUP 2.—



Fruit *hairy.*

- Fruit with a *long beak* P; umbel of 2-3 rays. VI. **Scandix** L., p. 76. *Scandix.*
- Fruit *without long beak.*
  - Fruit *flattened* T, H.
    - Fruit with erect stiff hairs and a *thick yellowish border* T; umbels with 8-10 rays.  VII. **Tordylium** L., p. 76. *Hartwort.*
    - Fruit with a *thin* border H; umbels with 15-20 rays. [See XXVI. **Heracleum**.] 
  - Fruit *oval, not margined* M; bracts 0-2, or many.  VIII. **Seseli** L., p. 76. *Seseli.*

Fruit covered with *bristles.*

- Fruit *not ribbed*[1] *pointed beak* AV;  beak smooth. IX. **Anthriscus** Bernh., p. 76. *Anthriscus.*
- Fruit *without a pointed beak.*
  - Bracts *deeply divided* DC;  bristles stiff, straight D.  X. **Daucus** L., p. 76. *Carrot.*
  - Bracts *entire.*
    - Bristles *arranged regularly* C.  XI. **Caucalis** L., p. 77. *Caucalis.*
    - Bristles arranged *irregularly*, slightly hooked TA.  XII. **Torilis** Adans., p. 77. *Torilis.*

1. Young umbels should be examined as the bracts forming the involucre or involucel sometimes fall early.

GROUP 3.—

Leaves *hairy*; fruit *flattened*.

- Leaves several times *trifoliate*; segments entire. [See XXXVIII. **Peucedanum.**
- Leaves *pinnate* PA; leaflets sharply toothed or lobed.  XIII. **Pastinaca.** L., p. 77. *Parsnip.*

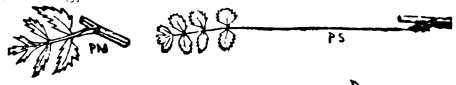
Leaves *glabrous* or nearly so; fruit *not flattened*.

- Leaflets with thread-like segments F;  bracts absent. XIV. **Fœniculum** Hill, p. 77. *Fennel.*
- Leaflets *flat, more or less broad*; involucre 1-3 bracts.
  - Calyx-teeth 5, *acute* PP. [See XXXVII. **Œnanthe.**] 
  - Calyx-teeth *indistinct*.
    - Leaves *rough at edge*; flowers yellowish; ribs slightly *acute* SI.  XV. **Silaus** Bernh., p. 77. *Silaus.*
    - Leaf *smooth at edge*; flowers greenish-yellow; fruit wide PE.
      - Ribs *fine* PE.  XVI. **Petroselinum** Hill, p. 77. *Petroselinum.*
      - Ribs *acute*. XVII. **Smyrnium** L. p. 77. *Smyrnium.*

GROUP 4.—

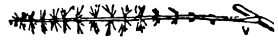
Flowers *greenish-white*; petals *entire* AG; plant very aromatic.  XVIII. **Apium** L., p. 78. *Apium.*

Flowers *white* or *pinkish*.

- Leaf segments *narrow*.
  - Fruit *oblong* or longer than broad. [See XLII. **Carum.**]
  - Fruit *ovoid* or broader than long; flowers *dicœcious*. XX. **Apinella** Neck, p. 78. *Apinella.*
- Leaflets *broad*.
  - Lower leaves *pinnate* PM, PS.  XXI. **Pimpinella** L., p. 78. *Pimpinel.*
  - Lower leaves *bi-ternate* Æ or tri-ternate.  XXII. **Ægopodium** L., p. 78. *Goutweed.*

GROUP 5.—

Leaves trifoliate; leaflets *6-10 times longer than broad* FR; margin cartilaginous;  pistil or stamens often aborted. — XXV. **Falcaria** Host., p. 79. *Falcaria.*

Leaf segments *narrow, thread-like* V,  apparently whorled. [See **Carum verticillatum**, p. 81.]

Leaf divisions *1-4 times longer than broad.*

- Bracts divided into 3-5 narrow segments. [See **XIX. Ammi.**]
- Petals all *equal.*
  - Petals on circumference of umbel *larger* than the rest; leaves hispid; fruit flattened at margin H.  — XXVI. **Heracleum** L., p. 79. *Heracleum.*
  - Plant *aquatic.*
    - Plant *not aquatic*; petals usually cleft or notched; calyx indistinct. — XXVII. **Sison** L., p. 79. *Sison.*
    - Petals *notched* SA; calyx-teeth 5;  lower leaves longer than 6 in. — XXVIII. **Sium** L., p. 79. *Sium.*
    - Petals *entire* HN; calyx indistinct;  lower leaves shorter than 4 in. [See XVIII. **Apium.**]

GROUP 6.—

Stem ***hollow***, almost smooth, aromatic; base of leaf broadly sheathed AS; fruit 4-winged A.

- *Calyx indistinct*; ribs fine.   — XXXI. **Angelica** L., p. 79. *Angelica.*
- *Calyx-teeth 5*, minute; ribs thick. — XXXII. **Archangelica** Hoffm., p. 79. *Archangelica.*

Stem ***solid***, furrowed, distinctly angular; *leaflets* deeply cut SC; fruit 4-winged (S, section of fruit).   — XXXIII. **Selinum** L., p. 80. *Selinum.*

GROUP 7. —

Sepals *indistinct.*

Flowers *white or pink.*

Bracts lobed; segments 3-5, narrow.

Bracts of involucre *entire or absent.*

Underground part *not a tuber.*

Involucel of *2-3 bracts longer than umbellule* CY, reflexed towards circumference of umbel. [All rays but one are cut in Fig. CY.]

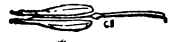


Involucel of *bracts shorter than umbellule.*

Plant *submerged.* [See XVIII. **Apium.**]

Plant *not submerged.*

Chervil odour; *umbels sessile*; fruit long CE. [See **Chærophyllum sativum**, p. 78.]



Umbels *not sessile.*

Leaf segments many more or less *fine* ME.

Petals *acute*; leaf-segments short ME.



Petals *notched*, apex inflexed; leaf segments longer. [See XLII. **Carum**].

Leaf-segments *not fine.*

Fruit ½-1 *in. long*; involucre absent.

Fruit *not more than ¼ in. long.*

Fruit *almost as broad as long* CM; ribs prominent. [All rays but one are cut in Fig. CM.]



Fruit *much longer than broad* AS, almost smooth.



Underground part *a tuber.*

Involucre of *5-8 bracts*; leaf-segments very narrow B.



Involucre of *0-3 bracts*; leaf-segments narrow CD.



Flowers *greenish-white*; bracts of involucre reflexed; leaves thick, fleshy, segments narrow CRI.



XIX. **Ammi** L., p. 78. *Ammi.*

XLI. **Æthusa** L., p. 81. *Fool's Parsley.*

XXX. **Meum** Hill, p. 79. *Spignel.*

XXIV. **Myrrhis** Scop. p. 78. *Cicely.*

XL. **Conium** L., p. 81. *Hemlock.*

XXIII. **Chærophyllum** L., p. 78. *Chervil.*

XLII. **Carum** L., p. 81. *Carum.*

XLIII. **Conopodium** Koch, p. 81. *Conopodium.*

XXIX. **Crithmum** L., p. 79. *Samphire.*

Sepals *free at apex.*

- Fruit more or less *globular.*
  - Fruit *not bladder-like.*
    - Sepals large, membranous; *involucre absent* or bracts 1-2; *involucel of many bracts.* — XXXIV. **Cicuta** L., p. 80. *Cowbane.*
    - Calyx teeth large; *involucre absent; involucel of few, narrow bracts.* — XXXV. **Coriandrum** L., p. 80. *Coriander.*
  - Fruit *bladder-like*; seed free, 1 in each chamber; involucre and involucel present. — XXXVI. Physospe mum Cuss., p. 80. *Physospermum.*
- Fruit *longer than broad, not flattened*; sepals *increasing in size after flowering*; involucre absent or falling early. — XXXVII. **Œnanthe** L., p. 80. *Œnanth.*
- Fruit *more or less flattened*; calyx-teeth small; involucel of many bracts.
  - *Margin* of fruit thin, *flattened*; ribs 3, prominent. — XXXVIII. **Peucedanum** L., p. 81. *Peucedan.*
  - *Ribs* 5, prominent, acute, *almost winged.* — XXXIX. **Ligusticum** L., p. 81. *Lovage.*

I. **Eryngium** L. *Eryngo.*—(Fig. E, p. 71.)

Cauline leaves *amplexicaul.*

- Flowers *blue*; leaves of involucre broad and lobed; radical leaves petiolate, rounded, broadly 3-lobed; plant glaucous, sometimes bluish at apex; 1-2 ft. [Sea Holly.] — 1. **E. maritimum** L. *Sea Eryngo.* Sandy coasts: July-Aug. P.
- Flowers *bluish-white*; leaves of involucre narrow, pinnately toothed; radical leaves petiolate, pinnately lobed; plant pale green; 1-2 ft. — 2. **E. campestre** L. ✠ *Field Eryngo.* VR. Waste places: July-Aug. P.

II. **Sanicula** L. *Sanicle.*—(Figs. S, SE, p. 71.)

Leaves all radical, 3-5 lobed, glabrous or ciliate; flowers pinkish-white; fruit covered with hooked prickles; 1-2 ft. — 1. **S. europæa** L. ✠ *Wood Sanicle.* Woods: June-July. P

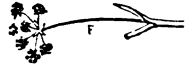
III. **Astrantia** L. *Astrantia.*—

Leaves 5-7 lobed, acutely pointed; petals pinkish white not longer than calyx-teeth; bracts entire, yellowish-white tinged with pink; flowers often unisexual; 1-3 ft. — *1. **A. major** L. *Larger Astrantia.* VR. Woods an escape: June-Aug. P.

IV. Bupleurum L. *Buplever.*—

Leaves *oval, perfoliate* R;  bracts of involucel unequal, yellow within; 8-20 in. [Throw-wax.]

Leaves *narrow, grass-like, not perfoliate* F, T.:

- Involucel *shorter* than flowers;  umbel 4-10 rayed F; upper leaves recurved; 16-40 in.
- Involucel *longer* than flowers T.:
  - Umbels *terminal and axillary*; flowers in partial umbel 3-5, sessile; fruit granulate; 4-4 in. 
  - Umbels *terminal*; flowers shortly petiolate; 1-10 in.

1. **B. rotundifolium** L. ✠ *Hare's-ear.* Loc.
Corn-fields, calcareous soil: June-July. A.

2. **B. falcatum** L. ✠ *Falcate Buplever.* VR.
Shady roadside: Aug.-Sept. P.

3. **B. tenuissimum** L. *Slender Buplever.*
Pastures chiefly near sea: July-Sept. A.

4. **B. aristatum** Bartl. *Narrow Buplever.* VR.
Dry places near sea: June-July. A.

V. Hydrocotyle L. *Pennywort.*—(Fig. H. p. 71.)

Stem prostrate, creeping, rooting, slender; umbels small, flowers 3-6; fruit spotted purple. [White-rot.]

1. **H. vulgaris** L. ✠ *Marsh Pennywort.*
Bogs; marshes: May-Aug. P.

VI. Scandix L. *Scandix.*—(Fig. P, p. 71.)

Leaves much divided; segments linear; flowers white; petals unequal; fruit 1-2 in. long; 4-16 in. [Venus's Comb.]

1. **S. Pecten-veneris** L. *Shepherd's Needle.*
Corn-fields: June-Sept. P.

VII. Tordylium L. *Hartwort.*—(Fig. T, p. 71.)

Stem hispid; hairs reflexed; leaflets deeply toothed; flowers white, reddish outside; 1-3 ft.

*1. **T. maximum** L. *Great Hartwort.* VR.
Cultivated and waste ground: June-July. A.

VIII. Seseli L. *Seseli.*—(Fig. M, p. 71.)

Leaves bi-pinnate; leaflets toothed SL; leaf-base broad SL; flowers white, crowded; 1-3 ft. 

1. **S. Libanotis** Koch *Mountain Seseli.*
Chalk hills: July-Aug. B. or P.

IX. Anthriscus Bernh. *Anthriscus.*—(Fig. AV, p. 71.)

Leaves soft, hairy, bi- or tri-pinnate; rays of umbel very short; flowers white; 8-24 in.

1. **A. vulgaris** Pers. *Beaked Parsley.*
Waste places: May-June. A.

X. Daucus L. *Carrot.*—(Figs. DC, D, p. 71.)

Leaves bi- or tri-pinnate; leaflets deeply lobed; flowers white.

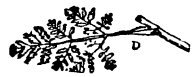
- Stem with a *zig-zag outline*, covered with long white reflexed hairs; fruiting umbel only slightly contracted; leaves slightly fleshy, hairy, shining above; 8-12 in.
- Stem with a *straight outline*, hairy; fruiting umbel very contracted, bringing all fruits close to the centre; leaves soft, hairy or glabrous; 16-32 in.

1. **D. gummifer** Lam. *Sea Carrot.* R.
Sea coast: June-Aug. B.

2. **D. Carota** L. ✠ *Common Carrot.*
Pastures especially near sea: June-Aug. B

XI. Caucalis L. *Caucalis.*—(Fig. C, p. 71.)

Involucre *absent*; involucel of 3-5 bracts; umbel with 2-3 rays; leaves bi- or tri-pinnate D; flowers white or pinkish; 4-20 in.



1. **C. daucoides** L.
Small Caucalis. R.
Corn-fields: June-July. A.

Involucre *present*, bracts 2-4; umbel with 2-5 rays; leaves pinnate L; flowers rose, seldom white; 8-24 in.



*2. **D. latifolia** L. ✠
Broad Caucalis. R.
Corn-fields: June-July. A.

XII. Torilis Adans. *Torilis.*—

Leaves *pinnate* or *bipinnate.*

Umbel almost *sessile* TN of 2-3 rays, or quite sessile, opposite leaves; bracts of involucel longer than pedicels; involucre absent; flowers white; 4-20 in.



1. **T. nodosa** Gærtn.
Knotted Hedge Parsley.
Dry places: May-July. A.

Umbels on *long stalks*; flowers white or pinkish.

Outer flowers *almost regular*; all the bristles of fruit bent TA; styles glabrous; involucre of *5 bracts*; 2-3 ft.



2. **T. Anthriscus** Gmel.
Hedge Parsley C.
Roadsides: July-Sept. B.

Outer flowers *very irregular*; bristles at apex of fruit hooked; styles hairy at base; involucre of 0-4 bracts; 8-20 in.



3. **T. infesta** Hoffm.
Spreading Hedge Parsley.
Fields. June-Sept. B.

XIII. Pastinaca L. *Parsnip.*—(Fig. PA, p. 72.)

Umbel of 8-12 rays; involucres absent; stem angular, furrowed; tap-root large; plant aromatic; 2-4 ft.

1. **P. sativa** L. ✠
Common Parsnip.
Roadsides: July-Aug. B.

XIV. Fœniculum Hill. *Fennel.*—(Fig. F, p. 72.)

Leaves dark green, petiole very broad; umbels large, 15-20 or more rays; flowers yellow; plant aromatic; 2½-5 ft.

1. **F. vulgare** Mill. ✠
Common Fennel.
Dry banks and rocks near sea: July-Aug. B. or P.

XV. Silaus Bernh. *Silaus.*—(Fig. SI, p. 72.)

Plant glabrous; leaves pinnate, 1-4 times divided; involucel of several bracts reddish at apex; petals hairy along middle line below; 1-3 ft.

1. **S. flavescens** Bernh.
Pepper Saxifrage.
Damp pastures: July-Sept. P.

XVI. Petroselinum Hill. *Petroselinum.*—(Fig. PE, p. 72.)

Plant glabrous; leaves bipinnate, shining, aromatic; umbels of 15-20 or more rays; involucel of many threadlike bracts; 1-2 ft.

*1. **P. sativum** Hoffm. ✠
Parsley R.
Rocks; old walls near sea: June-Aug. B.

XVII. Smyrnium L. *Alexanders.*—

Stem stout, furrowed; leaves trifoliate, bi- or tri-ternate, coarsely toothed; petiole sheathing; umbels of 8-12 rays flat; fruit black, aromatic; 3-4 ft.

1. **S. Olusatrum** L.
Alexanders.
Waste places: May-June. B.

XVIII. Apium L. *Apium.*—

Involucre *absent.*

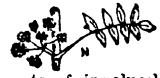
Involucels absent; stem erect, angular, furrowed: leaves pinnate or trifoliate, shining; leaflets broad; flowers greenish-white; petals with involute apex (Fig. AG, p. 72); 1-3 ft.

Involucel of 2-4 small bracts; flowers white; petals with acute apex (Fig. HN, p. 73).

Stem creeping, often submerged; lower leaves cut into *fine segments* H; upper leaves with 5 leaflets; umbel 2-3 rayed HI; 4-36 in.



Stem prostrate; rooting; leaves *pinnate*; leaflets toothed, acute *N*; umbel 4-8 rayed, peduncle short N; 1-4 ft.



XIX. Ammi L. *Ammi.*—

Leaves slightly glaucous with stiff teeth; lower ones sometimes only slightly pinnate; bracts of involucel narrow, long; flowers white; 1-2½ ft.

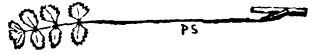
XX. Apinella Neck. *Apinella.*—

Root-stock woody covered with old leaf-bases; leaflets very narrow, often thread-like, glaucous; umbels small, 4-6 rayed, many; 3-8 in.

XXI. Pimpinella L.[1] *Pimpinel.*—

Leaflets and teeth *acute* PM; 

stem *angular*, coarsely striate; ½-4 ft.



Leaflets more *rounded*, more finely toothed PS; stem *rounded*, finely striate; ½-2 ft.

XXII. Ægopodium L. *Goutweed.*—(Fig. Æ, p. 72.)

Stem erect, glabrous, furrowed; leaflets toothed, acute; umbel with unformed fruits at centre; root-stock creeping; 2-3 ft. [Bishop-weed; Herb Gerard.]

XXIII. Chærophyllum L. *Chervil.*—

Umbels on *long peduncles*; flowers white.

Leaflets *acute*, deeply toothed; fruit with a ring of hairs at base AS; 2-4 ft.



Leaflets *obtuse*, almost crenate CH; 

fruit without ring of hairs at base; stem rough, spotted; 1-4 ft.

Umbels *sessile*, opposite leaves (Fig. CE, p. 74); flowers white; stem striate; 1-1½ ft.

XXIV. Myrrhis Scop. *Cicely.*—

Stem stout, hollow; leaflets deeply toothed; bracts of involucel thin, whitish, finely pointed; flowers white; plant very aromatic; 2-3 ft.

1. **A. graveolens** L. ✠ *Celery.*
Wet places, chiefly near sea: June-Aug. B.
2. **A. inundatum** Reich. *Lesser Apium.*
Marshes; shallow ponds: June-July. P.
3. **A. nodiflorum** Reich. *Procumbent Apium.*
Wet ditches and meadows: July-Aug. P.
*1. **A. majus** L.
River banks: July-Sept. A.
1. **A. glauca** O. Kuntze. *Honewort.* R.
Dry, calcareous hills: May-June. P.
1. **P. magna** L.[2] *Greater Pimpinel.*
Shady damp places: July-Sept. P.
2. **P. Saxifraga** L. *Burnet Saxifrage.* C.
Roadsides; hilly places: July-Sept P.
1. **Æ. Podagraria** L. ✠ *Goutweed.*
Damp shady places: June-Aug. P.
1. **C. sylvestre** L. ✠ *Wild Chervil.* C.
Hedges: Apr.-June. P.
2. **C. temulum** L. ✠ *Rough Chervil.*
Hedges: June-July. B.
*3. **C. sativum** Gærtn. ✠ *Garden Chervil.*
Waste places; escape: May-July. A.
1. **M. odorata** Scop. *Sweet Cicely.*
Hilly pastures: May-June. P.

XXV. Falcaria Host. *Falcaria.*—(Fig. FR, p. 73.)

Lower leaves simple or trifoliate; margin of leaf toothed, cartilaginous; flowers white; 16-24 in.

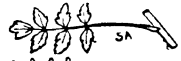
*1. **F. Rivini** Host. R.
Corn-fields: July-Aug. P.

XXVI. Heracleum L. *Heracleum.*—(Fig. H, p. 73.)

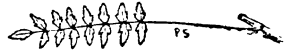
Plant rough; leaves large; leaflets deeply cut; umbel about 20-rayed; petals white, cleft; 3-5 ft. [Hog-weed.]

1. **H. Spondylium** L. ✠
Cow Parsnip. C.
Damp waste places: June-Aug B

XXVII. Sison L. *Sison.*—

Lower leaves with *5-9 leaflets* SA;  terminal leaflet slightly 3-lobed; petals cleft, white; 2-3 ft. [Bastard Stone Parsley.]

1. **S. Amomum** L. ✠
Hedge Sison.
Damp shady places: July-Aug. B.

Lower leaves with *many leaflets* PS;  terminal leaflet oval, acute; petals notched or entire, white 16-24 in. [Corn Parsley.]

2. **S. segetum** L.
Damp fields. July-Sept. A. or B.

XXVIII. Sium L. *Sium.*—

Leaflets *finely toothed* L;  bracts of involucre usually entire; styles slender; flowers white; 2½-4 ft.

1. **S. latifolium** L. ✠
Water Parsnip.
Marshes; edges of streams: July-Aug. P.

Leaflets *coarsely toothed* A;  bracts of involucre usually cut: style enlarged at base; flowers white; 1-3 ft. [Water Parsnip.]

2. **S. angustifolium** L. ✠
Lesser Sium.
Ditches; ponds: July-Aug. P.

XXIX. Crithmum L. *Samphire.*—(Fig. CRI, p. 74.)

Leaves fleshy, glaucous-green; leaflets spreading; involucre and involucels of many bracts; edges of fruit sharp; plant almost woody at base; 4-12 in.

1. **C. maritimum** L.
Samphire.
Rocky sea cliffs: May-Aug P.

XXX. Meum Hill. *Spignel.*—(Fig. ME, p. 74.)

Umbel of 10-20 rays, rough on inner side; involucre 0-3 bracts; involucel 3-8 bracts, edges of fruit sharp; plant glabrous, aromatic; flowers white; 4-16 in. [Baldmoney.]

1. **M. Athamanticum** Jacq.
Spignel Meu.
Dry mountain pastures June-July. P.

XXXI. Angelica L. *Angelica.*—(Figs. AS, A, p. 73.)

Umbel of 20-30 rays, smaller at centre; stem smooth; involucre of 2-3 bracts; involucel of several bracts, reflexed; flowers white; 2-5 ft.

1. **A. sylvestris** L. ✠
Wild Angelica. C.
Damp shady places: July-Aug P.

XXXII. Archangelica Hoffm. *Archangelica.*—

Leaves very large, terminal leaflet trifid; flowers, petioles and stems bright green; 3-5 ft.

*1. **A. officinalis** Hoffm.
Garden Angelica.
Wet places: July-Aug P

1. *Pimpinella Anisum* L. ✠ (Aniseed), with hairy fruits and basal leaves reduced to a terminal leaflet, is cultivated for its aromatic fruits —2. Var. ***dissecta*** Retz. has finely cut leaves.

XXXIII. Selinum L. *Selinum.*—(Figs. S, SC, p. 73.)
Umbel of 15-20 rays, smooth on inner side; stem winged and membranous at edges; flowers white; 1-3 ft.

XXXIV. Cicuta L. *Cowbane.*—
Stem furrowed, hollow; leaves bi- or tri-pinnate or trifoliate; segments narrow and toothed CV; umbel of 10-15 rays; flowers white; plant very poisonous; 2½-4 ft. [Water Hemlock.]



XXXV. Coriandrum L. *Coriander.*—
Leaves bipinnate; leaflets more or less deeply cut, upper ones fleshy; umbels 5-8 rayed; flowers white; odour disagreeable; 1-2 ft.

XXXVI. Physospermum Cuss. *Physospermum.*—
Radical leaves two or three times trifoliate; cauline leaves few; umbels of 10-12 rays; flowers white; 1-3 ft. [Bladder Seed.]

XXXVII. Œnanthe L. *Œnanth.* [Water Dropwort.]—

Umbellule with central *sessile fertile* flowers, and outer *barren pedicelate* flowers.

Roots *tuberous* PIM.

Tubers elongated, *close to stem*; umbel of 15-20 rays; flowers white; juice yellow on exposure; plant poisonous; 2-5 ft.

Tubers *below middle of root* PIM; umbel of 6-12 rays; fruiting pedicel becoming thick around base of fruit; flowers yellowish-white; 1-3 ft.



Roots sometimes *fleshy*, not distinctly tuberous; flowers white.

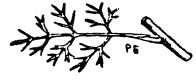
Stem *solid*; lower leaves bipinnate LA with petioles slightly winged; umbel of 6-12 rays; 1½-3 ft.



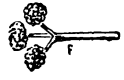
Stem *hollow.*

Umbel of *5-10 rays* PC; median leaves bipinnate PE; 2-3 ft.



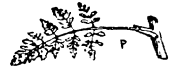


Umbel usually *2-3 rayed* F; median leaves pinnate; 2-3 ft.



Umbellule with all flowers *fertile and pedicellate*; flowers white; *no tubers.*

Stem *erect*; leaves bi- or tri-pinnate P; segments of submerged leaves fine, diverging; 1-4 ft. [Horsebane.]



Stem *floating*; leaves bipinnate; segments of submerged leaves parallel; 1-4 ft.

1. **S. carvifolium** L. VR.
Damp woods. July-Sept. P.

1. **C. virosa** L. ✠
Cowbane. R.
Wet places; edges of pools. July-Aug. P.

*1. **C. sativum** L.
Coriander. R.
Waste places: June-July A.

1. **P. commutatum** Spr.
Cornish Physospermum. Loc.
Woods. July-Aug. P.

1. **Œ. crocata** L. ✠
Hemlock Œnanth.
Wet ditches; sides of streams. July-Aug. P.

2. **Œ. pimpinelloides** L. R.
Moist or dry meadows and pastures: June-Aug. B. or P.

3. **Œ. Lachenalii** Gmel.
Parsley Œnanth.
Fresh and salt marshes: June-Aug. P.

4. **Œ. peucedanifolia** Poll.
Marshes and wet places: June-July. P.

5. **Œ. fistulosa** L. ✠
Water Dropwort.
Wet ditches; marshes: July-Sept. P.

6. **Œ. Phellandrium** Lam. ✠
Fine-leaved Œnanth.
Wet ditches; marshes: July-Sept. B. or P.

7. **Œ. fluviatilis** Colem.
Streams. July-Sept. B. or P.

XXXVIII. Peucedanum L. *Peucedan.*—

Flowers *yellowish*; leaves 3-5 times trifoliate; segments linear, entire ; umbels of 20-30 rays; 2-3 ft. [Sulphur-weed.]

Flowers *White.*

- Leaves bi- or *tri-pinnate* PA; segments oval, acute, toothed; umbels of 20-30 rays; juice white; 3-5 feet. [Hog's Fennel.]



- Leaves *large, trifoliate*; leaflets deeply 3 lobed, 2 in. across, coarsely toothed; involucre absent, umbel of 30-50 rays; 2-3 ft.

1. **P. officinale** L. *Hog's Fennel.* R.
Salt marshes: July-Sept. P.

2. **P. palustre** Mœnch *Milk Parsley.* R.
Marshes: July-Aug. P.

3. **P. Ostruthium** Koch *Masterwort.* R.
Moist meadows June-July P.

XXXIX. Ligusticum L. *Lovage.*—

Stem erect, glabrous, hollow; leaves twice trifoliate; leaflets toothed; umbel of 12-20 rays; flowers pinkish-white; 1-2 ft.

1. **L. scoticum** L. *Scotch Lovage.* Loc.
Rocky coasts: July-Aug. P.

XL. Conium L. *Hemlock.*—(Fig. CM, p. 74.)

Involucre of reflexed bracts; those of involucel unilateral; leaves soft, shining; stem glabrous, hollow, lower part usually spotted with purple; flowers white; odour disagreeable; plant poisonous; 3-6 ft.

1. **C. maculatum** L. ✠ *Hemlock.*
Hedges and waste places: June-July. B.

XLI. Æthusa L. *Fool's Parsley.*—(Fig. CY, p. 74.)

Involucre absent; bracts of involucel reflexed towards exterior, longer than umbellule; umbels 8-12 rayed; flowers white; leaves bright green, segments narrowly lobed; plant glabrous, poisonous, odour nauseous, 6-24 in.

1. **Æ. Cynapium** L. ✠ *Fool's Parsley.* C.
Gardens fields July-Aug A.

XLII. Carum L. *Carum.*—

Underground part a *tuber*: lower leaves bi- or tri-pinnate, segments linear (Fig. B, p. 74); bracts fine, acute; umbels with many rays; flowers white; 4-28 in. [Great Earth-nut, Pig-nut.]

1. **C. Bulbocastanum** Koch. *Tuberous Carum.* Loc.
Fields, June-July. P.

No tuber; umbel of 8-10 rays; flowers white.

- Involucre *0-2 bracts*: leaves bi- or tri-pinnate, outline oval, segments narrow; fruits aromatic; 1-2 ft.

2. **C. Carvi** L. ✠ *Caraway.*
Meadows, pastures, June-July. B.

- Involucre of *many bracts*; leaves bipinnate, outline long and narrow, segments apparently whorled (Fig. V, p. 73); 12-28 in.

3. **C. verticillatum** L. *Whorled Carum.* Loc.
Moist shady places: July-Aug. P.

XLIII. Conopodium Koch. *Conopodium.*—(Fig. CD, p. 74.)

Annual stems erect, slender, glabrous; umbel of 8-10 rays; flowers white; 4-16 in. [Earth-nut.

1. **C. denudatum** Koch *Pig-nut.*
Fields; woods: May-June. P

ARALIACEÆ. Several varieties of Ivy are cultivated: their leaves vary somewhat in shape and size; one has yellow berries.

1. Hedera L. *Ivy.*—(Fig. H, p. XXII.)

Shrub; leaves alternate, thick, shining, evergreen; flowers greenish-yellow, umbellate; berry black, 2-5 seeded; climbs by adventitious roots on back of stem. — 1. **H. Helix** L. ✠ *Common Ivy.* Walls; trees: Oct.-Nov. P.

CORNACEÆ. The species are usually shrubs or small trees; many are cultivated in shrubberies. The outer part of the fruit is fleshy and surrounds a "stone" enclosing the seeds; the fruit is a berry-like drupe.

Cornus L. *Cornus.*—

Plant a *shrub.*

- Flowers *white*, appearing *after* the leaves, without involucre S;  fruits black when ripe. — 1. **C. sanguinea** L. ✠ *Dogwood.* Hedges; thickets. May-June P.
- Flowers *yellow*, appearing *before* the leaves, with involucre M;  fruits red when ripe. — *2. **C. mas** L. ✠ Shrubberies. Mar.-Apr. P.

Plant *herbaceous*; umbel few flowered; involucre of 4 white bracts; petals minute, dark purple; fruits red. — 3. **C. suecica** L. *Dwarf Cornel.* Moist mountain moors July-Aug. P.

LORANTHACEÆ. The Mistletoe is parasitic on the branches of old trees, e.g. Apple, Pear, Poplar.

1. Viscum L. *Mistletoe.* — (Fig. VI, p. XXVIII.)
Shrubby; branches tufted, yellowish-green; flowers yellowish, dioecious; fruit succulent, white. — 1. **V. album** L. ✠ *Mistletoe.* Old trees: Mar.-Apr. P.

CAPRIFOLIACEÆ. Several shrubs belonging to this natural order are cultivated for ornamental purposes, e.g. Snowberry, Laurustinus.

Leaves almost or quite *entire*; style 1; stigma 1 or slightly divided in three.

- *Shrub erect, or climbing*; stamens *5*. — I. **Lonicera** L., p. 83. *Honeysuckle.*
- *Trailing* plant; stamens *4*. — II. **Linnæa** L., p. 83. *Linnæa.*

Leaves finely *toothed, lobed or compound*; stigmas usually 3.

- Leaves *ternate* A; *styles as many as stigmas*; inflorescence almost a globular head of four lateral 5-partite and one  terminal 4-partite flowers, yellowish-green. — III. **Adoxa** L., p. 83. *Moschatel.*
- Stigmas *sessile*; flowers usually white.
  - Leaves *pinnate*; fruit 3-5 seeded. — IV. **Sambucus** L., p. 83. *Elder.*
  - Leaves *simple or lobed*, toothed; fruits 1 seeded. — V. **Viburnum** L., p. 83. *Viburnum.*

I. Lonicera L. *Honeysuckle.*—

Flowers *in axillary pairs* X, very downy;  corolla yellowish-pink, tube short with protuberance; leaves petiolate; shrub erect; 3-5 ft.
1. **L. Xylosteum** L. *Fly Honeysuckle.* Thickets: May-June. P.

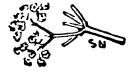
Flowers *in terminal heads* C, P; corolla-tube long.
- Upper leaves *connate* C;  flowers sessile, pink or yellowish-white, fragrant; shrub climbing.
  2. **L. Caprifolium** L. ✠ *Perfoliate Honeysuckle.* Thickets: May-June. P.
- Upper leaves *separate* P;  flowers with pedicels, yellowish-white, fragrant; shrub climbing. [Woodbine.]
  3. **L. Periclymenum** L. *Common Honeysuckle.* C. Hedges, woods: June-Sept. P.

II. Linnæa L. *Linnæa.*—
Evergreen; leaves small, opposite, toothed near apex; peduncles erect, 2-flowered; flowers fragrant, pale-pink or white, drooping; 3-8 in.
1. **L. borealis** L. *Linnæa.* Loc. Fir-woods: July-Aug. P.

III. Adoxa L. *Moschatel.*—(Fig. A, p. 82)
Radical leaves with long petioles; filaments of stamens divided in two almost to their base; plant with musk-like odour; 4-6 in.
1. **A. Moschatellina** L. *Tuberous Moschatel.* Moist shady places. Apr.-May. P.

IV. Sambucus L. *Elder.*—

Plant *herbaceous*; stipules large, green E;  leaflets 5-11; flowers white or reddish, odour of bitter almonds; fruits black; 3-5 ft. [Danewort.]
1. **S. Ebulus** L. ✠ *Dwarf Elder.* Loc. Waste places: July-Aug. P.

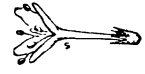
Tree or shrub; stipules absent or small N. 
- Inflorescence *corymbose or cymose* with 5 main branches SN;  lateral flowers sessile; fruits black.
  2. **S. nigra** L. ✠ *Common Elder.* Hedges; woods: June-July. P.
- Inflorescence an elongated *compound raceme* R;  flowers all stalked; fruit red.
  3. **S. racemosa** L. *Red-berried Elder.* Shrubberies: Apr.-May. P.

V. Viburnum L.[1] *Viburnum.*—

Tree or shrub.
- Leaves *regularly toothed* L, mealy beneath:  flowers all similar; fruit black when ripe.
  1. **V. Lantana** L. *Wayfaring Tree.* Hedges and thickets: May-June. P.
- Leaves *lobed*, toothed O, glabrous;  outer flowers of inflorescence larger than rest, and producing no fruits; ripe fruits red.
  2. **V. Opulus** L.[2] *Guelder-Rose.* Hedges: thickets: June-July. P.

1. The garden *Laurustinus* belongs to this genus.—2. A variety cultivated in gardens has all its flowers large, without either stamens or pistil; the inflorescence is globular; it is known as Snowball.

RUBIACEÆ. The British members of this N.O. have their leaves apparently in whorls, but as branches are produced in the axils of only two of these leaves it is considered that these two leaves, which are opposite, are the only true ones. The others are really stipules resembling the true leaves.—Several well-known exotic plants belong to this order, e.g. Coffee, Quinquina.

Calyx *with 6 sepa's* S flowers with involucre of bracts  corolla-tube narrow S.  — II. **Sherardia** L., p. 85. *Sherardia.*

Sepals *not or only slightly distinct* GS.

- Corolla *funnel-shaped* AC;  fruit dry. — III. **Asperula** L., p. 85. *Asperule.*
- Corolla *rotate* GS. 
  - Leaves *evergreen*, bordered with stiff reflexed teeth RP; corolla usually 5-lobed; fruit *fleshy*, black.  — IV. **Rubia** L., p. 85 *Madder.*
  - Leaves *not evergreen*, with or without teeth; fruit *dry*. — I. **Galium** L., p. 84. *Galium.*

I. Galium L. *Galium.*

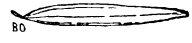
Flowers *yellow.*

- Leaves in *fours*, oval, ciliate GC;  flowers sometimes imperfect, staminate or pistillate; 1-2 ft.
- Leaves *6 or 8* in a whorl, narrow, linear V;  flowers all perfect; 8-24 in.

Leaves *obtuse* P.  4-5 in a whorl, rarely 6; anthers dark pink, 1-5 ft. [Marsh Bedstraw.]

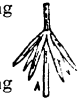
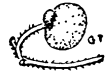
white, sometimes reddish. *acute apex.*

Stem with *no prickles* on its angles; sometimes smooth.

- Leaves on middle of stem *4-6 mm. long*,  [GS, natural size.] leaves usually 4-6 in a whorl; fruit granulated; 4-10 in. [Heath Bedstraw.]
- Leaves on middle of stem *10-30 mm. long.*
  - Leaves *4 in a whorl*, with 3 prominent nerves BO; fruit with hooked hairs; 8-16 in. 
  - Leaves *6-8 in a whorl*, with only 1 prominent nerve.
    - Petals *acute* GM; fruit smooth; 1½-5 ft. [Hedge Bedstraw.] 
    - Petals *obtuse* GS; fruit granulated; 4-12 in. 

1. **G. Cruciata** Scop. *Crosswort.* Shady places Apr.-June. P.
2. **G. verum** L. ✠ *Ladies' Bedstraw.* C. Pastures; hedges: June-Sept. P.
3. **G. palustre** L.[1] *Marsh Galium.* C. Marshes: June-Aug. P
4. **G. saxatile** L. *Heath Galium* C. Heaths: June-Aug. P.
5. **G. boreale** L. *Northern Galium.* Moist rocky mountain pastures: July-Aug. P
6. **G. Mollugo** L.[2] *Hedge Galium.* Hedges; thickets: July-Sept. P.
7. **G. sylvestre** Poll. *Mountain Galium.* Hills and pastures: June-Aug. P.

Flowers usually — Leaves with — Stem *with prickles* on its angles.

- Fruit *1-2 mm. broad.*
  - Leaves becoming *reflexed* A;  corolla slightly reddish outside; prickles on leaves pointing towards apex; 4-16 in. — **8. G. anglicum** Huds. *Wall Galium.* R. Walls; stony places: June-July. A.
  - Leaves remaining *erect* U;  corolla white; prickles on leaves pointing towards apex and base; 1-2½ ft. — **9. G. uliginosum** L. *Bog Galium.* Bogs: July-Aug. P.
- Fruit *3-6 mm broad.*
  - Fruit covered with *hooked hairs* or bristles GA, seldom smooth;  peduncles longer than leaves; 1-5 ft. [Goose-grass.] — **10. G. Aparine** L.[3] ✠ *Cleavers.* VC. Hedges, thickets: June-Aug. A.
  - Fruit *granulated*, often with 1 carpel aborted GT;  peduncles shorter than leaves; 4-16 in. — **11. G. tricorne** With. *Corn Galium.* Corn-fields: July-Aug. A.•

II. Sherardia L. *Sherardia.*—(Fig. SA, S, p. 84.)

Calyx with ciliated sepals, persistent, crowning the fruit; corolla lilac, seldom white, flowers small in terminal head; 4-16 in. — **1. S. arvensis** L. *Field Madder.* Corn-fields: May-Aug. A

III. Asperula L. *Asperule.*—

Plant *annual*; flowers *blue*, in a head surrounded by involucre of bracts AA;  bracts long, ciliate; leaves *6-10 in a whorl*; 8-12 in. — *** 1. A. arvensis** L. Fields: May-July. A.

Plant *perennial.*

- Flowers *white*; leaves *6-9 in a whorl* AO; fruit covered with hooked hairs; plant fragrant when dry; 8-16 in.  — **2. A. odorata** L. ✠ *Woodruff.* Woods: May-June P.
- Flowers *pink*; leaves *4 in a whorl*; corolla rough outside AC;  fruit rugose C; 6-10 in.  — **3. A. cynanchica** L. ✠ *Squinancy Wort.* Dry chalky pastures: June-Aug. P.

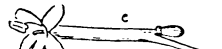
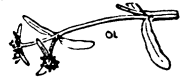
IV. Rubia L. *Madder.*—(Fig. RP, p. 84.)

Leaves *persistent*, nerves only slightly prominent beneath, 4-6 in a whorl; flowers small, greenish-yellow; anthers rounded; 1-4 ft. — **1. R. peregrina** L.[4] *Wild Madder.* Rocky and stony places June-Aug. P.

1. Var. *elongatum* Presl., a robust plant with spreading branches and large flowers.—2. Var. *erectum* Huds., leaves not transparent, flowers a beautiful white.—3. Var. *Vaillantii* DC., stem not swollen at nodes, fruit hairy, var. *spurium* L. stem not swollen at nodes, fruit small and smooth.—4. *Rubia tinctorium* L. ✠ [Dyers' Madder] is sometimes cultivated; its leaves have nerves forming a prominent network beneath.

VALERIANACEÆ. Several members of this natura order are cultivated as food, e.g. Lamb's Lettuce, and others as ornamental plants, e.g. Valerian, Centranth.

Flowers usually in *corymbs*.

- Leaves, at least the upper ones, *deeply divided*; fruit crowned with a pappus OF. 
- Leaves *entire or toothed*
  - Corolla-tube *spurred* C;  stamen 1; fruit with pappus.
  - Corolla-tube *not spurred* OA;  stamens 3; pappus absent; leaves elongated OL. 

I. Valeriana L. *Valerian.*—

- Leaves *all pinnate.*
  - Median leaves with *15-21 leaflets* O;  flowers perfect, white or pink; 2-4 ft. [All-heal.]
  - Median leaves with fewer and broader leaflets; flowers perfect, white or pink; 2-4 ft.
- Radical leaves *simple*
  - Median leaves with 7-11 *leaflets* D;  flowers dicœcious, white or pink; 8-16 in.
  - Leaves simple except upper ones which have *1-2 pairs of leaflets* and a large terminal one; flowers white or pink; 2-4 ft.

II. Centranthus Neck. *Centranth.*—(Fig. C, above.)
Leaves ovate, lower ones petiolate; spur twice as long as ovary; flowers red, seldom white; 1-2 ft.

III. Valerianella Hill. *Corn Salad.*—

Flowers lilac or blue.

- Calyx with *sepals surmounting the fruit*, teeth very unequal VE;  fruit with lines of hairs; 4-8 in.
- Sepals *not distinct.*
  - Fruit *pear-shaped* VA, VM.
    - Fruit *furrowed* once VA, *3-chambered*, [Cut the fruit transversely.]  with 3 fine ribs on opposite side; 8-20 in.
    - Fruit *dimpled* once VM, only *1 chamber* well-formed,  1 fine rib on opposite side; 8-20 in.
  - Fruit *as long as broad* VO,  compressed; 8-20 in. [Lamb's Lettuce]
  - Fruit *long and narrow* VC,  furrowed on one side; 4-16 in. [Corn Salad; Lamb's Lettuce.]

I. **Valeriana** L., p. 86. *Valerian.*
II. **Centranthus** Neck. p. 86. *Centranth.*
III. **Valerianella** Hill., p. 86. *Corn Salad.*

1. **V. officinalis** L. ✠ *Common Valerian.* C. Marshes; damp woods. June-Aug. P.
2. **V. sambucifolia** Mik. Marshes; damp woods: June-Aug. P.
3. **V. dioica** L. ✠ *Marsh Valerian.* Marshes; damp woods May-June. P.

*4. **V. pyrenaica** L. *Pyrenean Valerian.* Woods, escape: June-July. P.

*1. **C. ruber** DC. *Red Valerian.* Chalk pits; old walls June-Sept. P.

1. **V. eriocarpa** Desv. *Hairy-fruited Corn Salad.* R. Cultivated ground: June-July. A.
2. **V. Auricula** DC. *Sharp-fruited Corn Salad.* Fields: June-Aug. A.
3. **V. Morisonii** DC. *Narrow-fruited Corn Salad.* Corn-fields: June-Aug. A.
4. **V. olitoria** Poll. ✠ *Corn Salad.* Corn-fields; banks: Apr. June A.
5. **V. carinata** Lois. ✠ *Keeled Corn Salad.* R. Fields; banks: Apr.-June A.

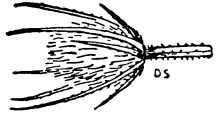
DIPSACEÆ. Several plants of this N.O. are cultivated, either in gardens or ornamental purposes, e.g. Scabious, or in fields for use in industries, e.g. Fullers' Teasel.

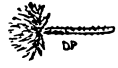
Stem *prickly*, at least in the upper part; bracts on the receptacle and between the flowers, scaly and spinous. I. **Dipsacus** L., p. 87. *Teasel.*

Stem *not prickly.*

- Calyx surmounted by *6-8 bristles* K; no scales between flowers;  leaves usually with broad lobes KN.  — III. **Knautia** Coult., p. 87. *Knautia.*
- Calyx surmounted by *4-5 bristles* (Fig. S, below); scales present between flowers. — II. **Scabiosa** L., p. 87. *Scabious.*

I. Dipsacus L. *Teasel.*—

Involucre of *prickly bracts* DS;  leaves entire or crenate, often connate; flowers lilac or white: 3-6 ft. — 1. **D. sylvestris** L.[1] *Wild Teasel.* Waste places: Aug.-Sept. B.

Involucre of *hairy bracts* DP;  leaves usually 3-lobed, middle segment large; flowers yellowish-white; 2½-4 ft. [Shepherd's Rod.] — 2. **D. pilosus** L. *Small Teasel.* Wet shady places: Aug.-Sept. B

II. Scabiosa L. *Scabious.*—

Leaves all *entire* SS;  corolla 4-lobed; calyx green, 4-toothed; bristles blackish, twice as long as calyx-cup; flowers blue, seldom white, in 3 capitula; 1-3 ft. — 1. **S. Succisa** L. ✠ *Devil's-bit.* VC. Pastures: July-Oct. P.

Median leaves *deeply lobed* CO; corolla 5-lobed; calyx membranous; bristles blackish, much longer than calyx-cup S; flowers lilac or purplish, outer ones larger; 1-2 ft.   — 2. **S. columbaria** L. *Small Scabious.* Chalky pastures; waste places. July-Aug. P.

III. Knautia Coult. *Knautia.*—(Figs. KN, K, above.)

Outer florets of capitulum with much larger corolla than the rest; flowers purple or lilac-purple; fruit hairy; stem hollow; 1-3½ ft. — 1. **K. arvensis** Coult. ✠ *Field Scabious.* C. Fields; waste places: June-Aug. P.

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1. *Dipsacus fullonum* Mill. ✠ [Fullers' Teasel], bracts of involucre a little shorter than capitulum, scales between flowers hooked at apex; cultivated.

COMPOSITÆ. To determine the greater number of the species belonging to this N.O., it is necessary to gather specimens having ripe or well-formed fruits.—Several edible species are cultivated, e.g. Artichoke, Jerusalem Artichoke, Salsify, Lettuce, Chicory, etc.; others are cultivated as ornamental or medicinal plants.

Leaves *prickly*. **GROUP 1**, p. 89.

Florets *tubular*, at least those of disc. (Examples: CS, CY, CR, AV.)

Leaves *opposite*, at least inferior ones. **GROUP 2**, p. 89.

Florets of capitulum of *2 different* colours; disc-florets yellow; ray-florets white, violet or purple (sometimes absent, e.g. Matricaria). **GROUP 3**, p. 90.



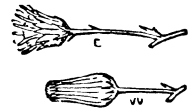


Leaves *not prickly*.

Leaves *alternate* or all at base.

Florets all the *same colour*.

Involucre of *1 or 2 rows* of bracts, nearly equal in principal row. (Examples: E, VC.) **GROUP 4**, p. 90.



Fruit *without pappus* (Example: TH.) **GROUP 5**, p. 91.



Involucre of *several rows* of bracts, unequal. (Examples. CO, HE.)





Fruit surmounted by *pappus*, sometimes very short, at least those at centre

Scales present between florets. (Example: CO.) **GROUP 6**, p. 91.



Scales absent between florets (Example: I.) **GROUP 7**, p. 91.



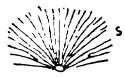
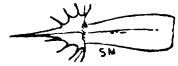
No tubular florets; all florets *ligulate*. (Examples: VI and following figure.) **GROUP 8**, p. 92. (**Cichoriaceæ** or **Ligulifloræ**.)
[Do not confuse the unopened ligulate florets at the centre of the capitulum with tubular florets.]



GROUP 1.—

Florets all tubular.

Florets *not united in a globular head*.

- Florets united in a *globular head* E;  fruits hairy, almost without pappus. — I. **Echinops** L., p. 94. *Echinops.*
- Involucre with *outer bracts resembling the leaves* C; florets yellow or yellowish-white; inner bracts radiating.  — II. **Carlina** L., p. 94. *Carline.*
- Involucre with *outer bracts very different from the leaves*: florets rose, purple or yellowish-white.
  - Pappus of *feathery hairs* CE.  — III. **Cirsium** Hill, p. 94. *Plume Thistle.*
  - Pappus of hairs *simple or toothed* S. 
    - Bracts of involucre terminating in *broad, spinous blade* SM.  — IV. **Silybum** Gærtn, p. 95. *Silybum.*
    - Bracts of involucre *not broadened into a spinous blade.*
      - Branch *strongly winged* below capitulum O: *scales absent* between flowers.  — V. **Onopordon** L., p. 95. *Onopord.*
      - Branch *scarcely winged* below capitulum; *scales present* between flowers. — VI. **Carduus** L., p. 95. *Thistle.*

GROUP 2.—

Leaves *lobed or toothed*; bracts of involucre very unequal.

- Florets pale *reddish-purple*; capitula numerous in corymbs EU;  involucre of bracts shorter than flowers. — XIX. **Eupatorium** L., p. 98. *Eupatory.*
- Flowers *yellow*; involucre of bracts as long as or longer than flowers.
  - Capitulum *narrow.*
    - Capitulum *1-2 cm. in diameter*; bracts in 2 rows, outer long and spreading B;  stem 4-28 in. — XI. **Bidens** L., p. 96. *Bidens.*
    - Capitulum *about* ½ *cm. in diameter*; bracts in 1 row; stem 6-28 in. — XII. **Galinsoga** R. and P., p. 96. *Galinsoga.*
  - Capitulum *broad, 8-20 cm. in diameter*; bracts in several rows; stem 3-7 ft. — XIII. **Helianthus** L., p. 96. *Helianthus.*

GROUP 3.—

Receptacle of capitulum *not convex*; leaves entire or toothed.

- Ray-florets *spreading* A, blue, purple, rarely white.  — XIV. **Aster** L., p. 96. *Aster.*
- Ray-florets *erect*, pinkish-purple or whitish. — XXXII. **Erigeron** L., p. 102. *Erigeron.*

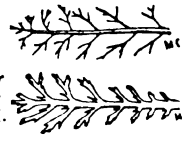
Receptacle of involucre *convex* M or *conical* AC.



Bracts of involucre in *2 rows*; leaves all or nearly all radical B;  ray-florets white or pinkish. — XV. **Bellis** L., p. 97. *Daisy.*

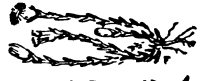


Bracts of involucre in *several rows*; leaves alternate.

- Leaves *entire*, *toothed* VU *or broadly lobed* PA;  Fruit ribbed; *pappus absent*. — XVI. **Chrysanthemum** L., p. 97. *Chrysanthemum.*
- Leaves with *narrow lobes or leaflets* MC, M. 
  - *No scales* between flowers I;  (plant glabrous). — XVII. **Matricaria** L., p. 97. *Matricary.*
  - *Scales present* between flowers CO;  (plant more or less hairy, *or* ribs of fruit rough). — XVIII. **Anthemis** L., p. 97. *Chamomile.*

GROUP 4.—

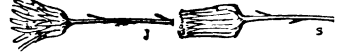
Flowering stems appearing *before* foliage leaves, and *bearing scale leaves* F, PV.

- Capitula *solitary* F;  florets *yellow*. — XX. **Tussilago** L., p. 98. *Coltsfoot.*
- Capitula *in raceme* PV;  florets *pink or white*. — XXI. **Petasites** Hill, p. 98. *Petasites.*

Flowering stems *bearing foliage leaves.*

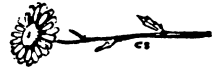
Fruit *curved*, dorsal ribs toothed, *pappus absent* CA;  florets yellow or orange-yellow. — XXII. **Calendula** L., p. 98. *Marigold.*

Fruits *elongated*, *with pappus* (at least at centre); florets yellow.

- Bracts of involucre in *1 row* and almost equal J, S; heads in corymbs; pappus present.  — XXIV. **Senecio** L., p. 98. *Senecio.*
- Bracts of involucre in *2 rows*; heads solitary or almost so; outer fruits without pappus, inner fruits with pappus. — XXIII. **Doronicum** L., p. 98. *Doronic.*

GROUP 5.—

Ray-florets *ligulate*.

- Florets all *white or pinkish*; capitula in corymbs. → XXV. **Achillea** L., p. 100. *Achillea.*
- Florets all *yellow*; capitula solitary, terminating long branches.
  - Plant glabrous; *scales absent* between flowers. [See XVI. **Chrysanthemum segetum.**] 
  - Plant downy; *scales present* between flowers. [See XIX. **Anthemis tinctoria.**]

Florets *all tubular*.

- Capitula *solitary*.
  - Florets *purple*, seldom white. [See VII. **Centaurea.**] → XXVI. **Cotula** L., p. 100. *Cotula.*
  - Florets *yellow*.
- Capitula *not solitary*.
  - Capitula in *racemes or panicles* AV;  florets dull-yellow, or colour indistinct. → XXVII. **Artemisia** L., p. 100. *Artemisia.*
  - Capitula in *corymbs* TV; florets bright yellow.
    - Plant *cottony, white*; leaves simple; no scales between flowers. → XXVII. **Diotis** Desf., p. 100. *Diotis.*
    - Plant *green*; leaves pinnate; scales present between flowers.  → XXIX. **Tanacetum** L., p. 100. *Tanacetum.*

GROUP 6.—

Florets all tubular.

- Outer bracts of involucre *hooked* at apex LA;  leaves entire or nearly so. → X. **Arctium** L., p. 96. *Bardock.*
- Bracts of involucre *not hooked*.
  - Bracts of involucre *either spinous, or toothed, or ciliate.* → VII. **Centaurea** L., p. 95.
  - Bracts of involucre acute ST, *neither spinous, nor toothed, nor ciliate.*
    - Pappus of *simple hairs*; lower leaves deeply lobed.  → VIII. **Serratula** L., p. 96. *Saw-wort.*
    - Pappus of *feathery hairs*; leaves simple. → IX. **Saussurea** DC., p. 96. *Saussurea.*

GROUP 7.—

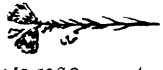
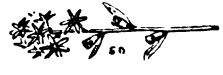
Plant *more or less white* and cottony; leaves not toothed; florets almost enclosed by involucre.

- Involucre globular HE, *golden-yellow*; bracts *not spreading* at maturity.  → XXXI. **Helichrysum** Willd., p. 102.
- Involucre a *dull yellow*, greenish, or whitish; bracts at maturity *spreading in sunlight.* → XXX. **Gnaphalium** L., p. 101. *Cudweed.*

Ray-florets *yellowish, whitish, or purple*; disc florets yellow or *yellowish.*

Plant *green*; leaves always toothed or wavy; florets conspicuous.

Florets *all yellow*.

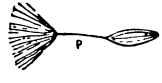
- Florets *all tubular*; leaves very narrow LV;  receptacle pitted; margins of pits raised, membranous, toothed. → XXXII. **Erigeron** L., p. 102. *Erigeron.*
- Ray-florets *ligulate*.
  - *Ligulate florets 5-10* SO; receptacle pitted. → XIV. **Aster** L., p. 96. *Aster.*
  - *Ligulate florets usually numerous*, sometimes almost tubular; receptacle not pitted; bracts spreading at apex.  → XXXIV. **Solidago** L., p. 102. *Golden Rod.* → XXXIII. **Inula** L., p. 102. *Inula.*

GROUP 8. (**Cichoriaceæ or Ligulifloræ.**)—

Fruits *all without pappus of hairs* L, C.

- Florets *yellow*; fruit not crowned L.
  - Leaves *alternate*, toothed LC. 
  - Leaves *all radical* AM. 
- Florets *blue*; fruit crowned by ring of small scales C;  leaves alternate.

Fruits, at least those at centre of capitulum, with *pappus of hairs borne on a beak 1-14 mm.* long F.

- Leaves *all or nearly all radical*; ribs of fruit prickly.
  - Stem *hollow throughout its whole length*; leaves usually glabrous T. 
  - Stem *solid in upper part*; leaves hairy or glabrous.
- *Cauline leaves* present, alternate.
  - Lower leaves *entire or toothed.*
    - Bracts of involucre *prickly* H;  leaves toothed, with prickly hairs.
    - Bracts of involucre *not prickly*; leaves glabrous, grass-like TP. 
  - Lower leaves *deeply cut.*
    - Involucre *glabrous*; fruit 1-3 mm. broad, beak hair-like P. 
    - Involucre *hairy*; fruit less than 1 mm. broad, insensibly prolonged into a slender beak BT. 



XXXV. **Lapsana** L., p. 103. *Lapsane.*

XXXVI. **Arnoseris** Gærtn., p.103. *Arnoseris.*

XXXVII. **Cichorium** L., p. 103. *Chicory.*

XXXVIII. **Taraxacum** Juss., p. 103. *Dandelion.*

XXXIX. **Hypochœris** L., p. 103. *Cat's-ear.*

XLI. **Helminthia** Juss., p. 103. *Helminth.*

XL. **Tragopogon** L., p. 103. *Salsify.*

XLIII. **Lactuca** L., p. 104. *Lettuce.*

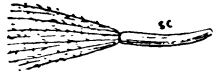
XLVI. **Barkhausia** Mœnch, p. 105. *Barkhausia.*

Fruits at centre of capitulum with *sessile pappus of hairs.* [See opposite page.

Fruits at centre of capitulum with *sessile* pappus *of hairs* T.



Fruit *8-10 mm.* long;



[Fig. SC, natural size]

leaves entire SH or deeply lobed.



XLIV. **Scorzonera** L., p. 104. *Scorzonera.*

Fruit 2-6 *mm.* long;

Involucre of bracts in several whorls, *outer ones spreading* or *reflexed* P;



plant very coarse, hispid; fruit striated transversely.

XLII. **Picris** L., p. 104. *Picris.*

Bracts of involucre *not spreading.*

Leaf-base *sheathing.*

Leaves *sharply toothed* SA,



fruit compressed.

[SA, fragment of leaf.

XLV. **Sonchus** L., p. 104. *Sowthistle.*

Leaves *not sharply toothed*; fruit cylindrical.

Lower leaves usually *less than 3 cm. broad*; base of upper leaves *not heart-shaped.*

XLVII. **Crepis** L., p. 105. *Crepis.*

Lower leaves usually *4-5 cm. broad*, base of upper leaves *heart-shaped.*

[See L. **Hieracium**.]

Leaf-base *not sheathing.*

Fruits of *2 kinds*, outer ones without pappus TH, inner ones with pappus T.



XLVIII. **Thrincia** Roth, p. 105. *Thrincia.*

Fruits *all with pappus.*

Leaves usually toothed and all radical L; fruit narrowed at apex; receptacle *not distinctly pitted.*



XLIX. **Leontodon** L., p. 106. *Hawkbit.*

Fruit not narrowed at apex; receptacle *distinctly pitted* HI.



L. **Hieracium** L., p. 106. *Hawkweed.*

I. Echinops L. *Echinops.*—(Fig. E, p. 89.)
Capitulum solitary; florets all tubular, united in a globular head, bluish-white; 2½-5 ft.

1. **E. sphærocephalus** L. *Globe Thistle.*
Cultivated: July-Aug. P.

II. Carlina L. *Carline.*—(Fig. C, p. 89.)
Inner bracts of involucre pale-yellow, spreading; lobes of leaf few; heads yellowish.

1. **C. vulgaris** L. ✠ *Carline Thistle.*
Dry pastures; roadsides: July-Sept. B.

III. Cirsium Hill. *Plume Thistle.*—(Fig. CE, p. 89.) The Artichoke, *Cynara Scolymus* L. ✠, flowers blue, is closely allied to this genus.

Stem *winged, prickly* LA, PA; flowers purple.

- Capitula *2-3 together* LA;  fruits yellowish; 2-5 ft.
  1. **C. lanceolatum** Scop. *Spear Plume Thistle.* VC.
  Waste places; roadsides: June-Sept. B.
- Capitula *small, clustered* PA;  fruits whitish; 3-5 ft.
  2. **C. palustre** Scop. *Marsh Plume Thistle.* C.
  Marshy places: June-Sept. B.

Stem *neither winged nor prickly*; flowers purple.

Upper surface of leaf *without prickles.*

Upper surface of leaf *covered with small prickles*; upper part of involucral bracts spathulate, apex spinous ER; capitula 2-3 in., cottony, in clusters of 2-3; 2-5 ft. 
  3. **C. eriophorum** Scop. *Woolly-headed Plume Thistle.* Loc.
  Stony places. June-Sept. B.

Stem *more than 8 in.* high.

No tuberous roots.

- Stem *very short*; leaves almost all radical AC;  involucre glabrous; 1-3 in., seldom 3-8 in.
  4. **C. acaule** All. *Dwarf Plume Thistle.*
  Dry pastures: July-Sept. P.
- Rootstock bearing *fleshy root-tubers* BU;  leaves deeply lobed, mostly radical; 1-2 ft.
  5. **C. tuberosum** All. *Tuberous Plume Thistle.* VR.
  Damp shady places June-Aug. P
- Capitulum *solitary* AN; leaves cottony below. Cauline leaves few, margin *prickly* AN; involucre cottony; 1-2 ft. 
  Cauline leaves many; margin *not prickly*; involucre glabrous; 2-4 ft.
  6. **C. anglicum** DC. *Meadow Plume Thistle.*
  Marshes, wet meadows: June-Aug. P.
- Capitulum *several* AR: leaves often almost glabrous below; root-stock creeping; 1½-4 ft. 
  7. **C. heterophyllum** Hill. *Melancholy Plume Thistle.*
  Mountain pastures: July-Aug. P.
  8. **C. arvense** Scop. *Creeping Plume Thistle.* VC.
  Waste and cultivated places: June-Sept. B. or P.

IV. Silybum Gærtn. *Silybum.*—(Fig. SM, p. 89.)
Leaves veined white along nerves, amplexicaul; capitulum solitary, globular, drooping, purple; 1-5 ft.

V. Onopordon L. *Onopord.*—(Fig. O, p. 89.)

Stem and leaves cottony; leaves coarsely toothed; branches few; involucral bracts narrow; florets purple; 2-7 ft. [Scotch Thistle]

VI. Carduus L. *Thistle.*—

Capitula *solitary*, rarely in twos, drooping, *1-2 in. in diameter*; *peduncles long*; involucral bracts narrowed in upper half, apices prickly N; 1½-3 ft.



Capitula *not solitary* TE, CR, *diameter less than 1 in.*, *peduncles short.*

- Upper part of *stem narrower than wings* TE; bracts with bright dots towards the middle; fruits brown; 1-3 ft.
- Upper part of *stem broader than wings* CR; bracts with no bright dots; fruits gray; 1-4 ft.

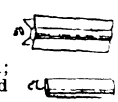


VII. Centaurea L. *Centaurea.*—

Involucral bracts *spinous* CA.



- Spines *unequal*, middle one long.
  - Heads solitary, terminal; florets *yellow*; stem broadly winged SO; 1-2½ ft.
  - Heads sessile, axillary; spines all spreading CA; florets *rose-purple*, seldom white; stem not winged CL; 1-2 ft.
- Spines *nearly equal*, small; heads terminal, solitary; florets purple; 1-2 ft.



Involucral bracts *not spinous.*

- Florets *blue*, seldom white, outer row large and spreading; pappus about as long as fruit CC; upper leaves entire, lower ones usually toothed or lobed; 1-2 ft. [Cornflower.]



- Florets *purple.*
  - Upper leaves *entire* J.



    - Pappus *absent*; inner bracts entire; florets spreading; 1-2 ft.
    - Pappus usually *present*, short, deciduous; inner bracts pectinate, black or brown; florets not spreading; ½-3 ft. [Hardhead.]
  - Leaves all *deeply cut* SC; heads large; outer florets spreading, large, neuter; 1½-3 ft.



*1. **S. Marianum** Gærtn. ✠
Milk Thistle. R.
Waste places: June-Aug. A. or B.

1. **O. Acanthium** L.
Cotton Thistle.
Waste places: July-Sept. B.

1. **C. nutans** L.
Musk Thistle.
Waste ground. May-Sept. B.

2. **C. tenuiflorus** Curt.
Slender Thistle.
Dry waste places near sea: June-Aug. A. or B.

3. **C. crispus** L
Welted Thistle.
Roadsides: June-Aug. B.

*1. **C. solstitialis** L.
Yellow Star Thistle. R.
Corn-fields: July-Sept. A. or B.

2. **C. Calcitrapa** L. ✠
Star Thistle. R.
Waste places: July-Sept. B.

3. **C. aspera** L.
Guernsey Star Thistle.
Waste places: June-Sept. P.

4. **C. Cyanus** L. ✠
Corn Bluebottle.
Corn-fields: June-Aug. A. or B.

5. **C. Jacea** L. ✠ VR.
Pastures: July-Sept. P.

6. **C. nigra.** L.
Knapweed. VC.
Meadows; hedges: June-Sept. P.

7. **C. Scabiosa** L.
Great Knapweed.
Pastures roadsides: July-Sept. P

VIII. Serratula L. *Saw-wort.*—(Fig. ST, p. 91.)
Leaf-lobes finely toothed, glabrous or slightly rough below; heads long in terminal corymb; florets rose-purple.

1. **S. tinctoria** L.
Common Saw-wort.
Thickets: July-Sept. P.

IX. Saussurea DC. *Saussurea.*—
Leaves cottony below; heads in dense terminal corymb, purplish, fragrant like Heliotrope; 3-12 in.

1. **S. alpina** DC.
Alpine Saussurea.
Mountains: July-Sept. P.

X. Arctium L. *Burdock.*—(Fig. LA, p. 91.)

Leaves bearing short hairs, lower ones heart-shaped at base; florets purple.
- Capitula *more than* ¾ *in.*, glabrous, almost globular; petioles angular, solid; 2-4 ft.
- Capitula *less than* ¾ *in.*, cottony, more ovoid; petioles rounded, hollow; 2-3 ft.

1. **A. Lappa** L.
Great Burdock.
Roadsides; woods: July-Aug B.

2. **A. minus** Bernh.
Small Burdock.
Roadsides, woods: July-Aug B.

XI. Bidens L. *Bidens.*—(Fig. B, p. 89.)

Florets greenish- or brownish-yellow.
- Leaves more or less deeply *3-lobed* TR; fruit with minute prickles pointing downwards;  pappus bristles 2; 8-28 in
- Leaves *not lobed* CE, connate; fruit 2-edged;  pappus bristles 3-4; 8-36 in.

1. **B. tripartita** L.
Three-cleft Bur Marigold.
Wet places: Aug.-Sept. A.

2. **B. cernua** L.
Bur Marigold.
Wet places: Aug.-Sept. A

XII. Galinsoga R. and P. *Galinsoga.*—
Leaves simple, toothed; ray-florets white, disc-florets yellow; ½-2 ft.

*1. **G. parviflora** Cav.
Peruvian Galinsoga.
Escape, Kew: July-Sept. A.

XIII. Helianthus L. *Helianthus.*—
Underground stem *with tubers*; capitulum *erect*; 3-6 ft.

*1. **H. tuberosus** L.
Jerusalem Artichoke.
Cultivated: Sept.-Oct. P.

Underground stem *without tubers*; capitulum *drooping*; 3-6 ft.

*2. **H. annuus** L.
Sun-flower.
Cultivated: July-Sept. A.

XIV. Aster L. *Aster.*— The Michaelmas Daisies belong to this genus, and occasionally occur as escapes. The China Asters are closely allied.

Plant glabrous: heads in corymbs.
- Florets *ligulate and tubular*; involucral bracts adpressed TR; leaves succulent; 1-2 ft. 
- Florets *all tubular*, yellow; bracts many, adpressed; leaves thin, narrow, numerous; stem slender, rigid; 1-2 ft. (Fig. LV, p. 91.)

1. **A. Trifolium** L.
Sea Aster.
Salt marshes: July-Sept. P
2. **A. Linosyris** Bernh.
Goldilocks. R.
Limestone cliffs: Aug.-Oct. P.

XV. Bellis L. *Daisy.*—(Fig. B, p. 90.)
Leaves broad towards apex, crenate; capitula solitary; fruits hispid; 2-6 in.

1. **B. perennis L.** *Daisy.* VC.
Pastures: Feb.-Nov. P.

XVI. Chrysanthemum L. *Chrysanthemum.*—
Ray-florets *yellow*; leaves amplexicaul, teeth unequal; inner bracts broadly membranous; plant glabrous, glaucous; 1-1½ ft. (Fig. CS, p. 91.)

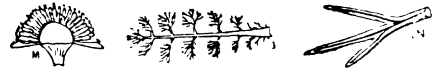
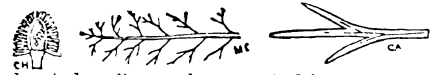
Ray *white.*

- Leaves *coarsely toothed* VV; heads solitary, large;  ripe fruits black, ribs white; 4-32 in.
- Leaves *deeply lobed* PA; heads smaller and in corymbs; plant odorous;  ripe fruits whitish or brown; 12-32 in.

1. **C. segetum L.** *Corn Marigold.* C.
Corn-fields: June-Sept. A.
2. **C. Leucanthemum L.** ✠ *Ox-eye Daisy.* C.
Fields; banks: May-Aug. P.
3. **C. Parthenium** Bernh. *Feverfew.*
Roadsides; waste places: July-Sept. P.

XVII. Matricaria L. *Matricary.*—

Ray-florets *present.*

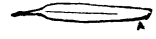
- Receptacle *solid* M; leaf-leaves *furrowed below* I, IN; plant inodorous; 8-24 in. [Scentless Mayweed.] 
- Receptacle *hollow* CH; leaf-leaves *not furrowed* MC, CA; faintly odorous of Chamomile; 8-24 in. 

1. **M. inodora L.**[1] *Scentless Matricary.*
Fields; waste places. June-Oct. A.
2. **M. Chamomilla L.** ✠ *Wild Chamomile.*
Fields; waste places: June-Aug. A.
*3. **M. discoidea DC.** *Rayless Matricary.*
Waste places: June-Aug. A

Ray-florets *absent*; peduncles short; cauline leaves many; bracts broadly membranous; 4-12 in.

XVIII. Anthemis L. *Chamomile.*—
Ray-florets *yellow*; leaves bipinnate, downy beneath; 6-24 in.

Ray-florets *white.*

- Leaves, or at least lower ones, *glabrous or nearly so*; scales between flowers very narrow CT; odour strong, disagreeable; 8-20 in. [Mayweed.] 
- Leaves more or less *hairy.*
  - Scales between flowers often *toothed* in upper part, apex *not rigid or acute* N; ripe fruit greenish, ribs 3, white; aromatic; 4-12 in. 
  - Scales between flowers *rigid and acute* at apex A; fruit 10-ribbed; 8-20 in. 

*1. **A. tinctoria L.** *Yellow Chamomile.*
Waste places: July-Aug. P.
2. **A. Cotula L.** *Fetid Chamomile.*
Fields; waste places: June-Sept. A.
3. **A. nobilis L.** ✠ *Common Chamomile.* Loc.
Sandy fields: July-Sept. P.
4. **A. arvensis L.** *Corn Chamomile.* R.
Fields. June-Aug. A.

1. Var. *maritima* L.: leaves fleshy leathery above ,lobes short; sea-coasts.

XIX .Eupatorium L. *Eupatory.*—(Fig. EU, p. 89.)

Florets all tubular, 5-6 in capitulum; leaves deeply 3-5 lobed, toothed; fruits with pappus; 2½-4 ft.

1. **E. cannabinum** L. ✠ *Hemp Agrimony.*
Damp, shady places; river banks; marshes; July-Sept. P.

XX. Tussilago L. *Coltsfoot.*—(Fig. F, p. 90.)

Outer florets ligulate, very narrow; fruits with pappus; leaves large, broadly cordate at base, angular, white and downy below; 4-8 in.

1. **T. Farfara** L. ✠ *Coltsfoot.* C.
Waste places, damp clay soils: Mar.-Apr. P.

XXI. Petasites Hill. *Petasites.*—(Fig. PV, p. 90.)

Heads *pink*; leaves very large, a few inches to 3 ft., cordate, toothed, downy below; plants almost diœcious; 8-16 in.

1. **P. vulgaris** Desf. ✠ *Butter-bur.*
Marshy ground: Mar.-Apr. P.

Heads *white.*
- Pistillate flowers ligulate, short; plant *fragrant*; 6-12 in.
  - *2. **P. fragrans** Presl. *Winter Heliotrope.* Loc.
  Wet waste places: Apr.-May. P.
- Leaves *smaller*, margin *deeply curved*, white below; 6-12 in.
  - *3. **P. albus** Gærtn.
  Waste places Mar.-May. P.

XXII. Calendula L. *Marigold.*—(Fig. CA, p. 90.)

Leaves hairy, entire or slightly lobed, lowers ones petiolate; 4-16 in.

*1. **C. arvensis** L. ✠ *Marigold.*
Cultivated: Feb.-Oct. A.

XXIII. Doronicum L. *Doronic.*—

Lower cauline leaves oval, *long and narrow at base* PL; heads *solitary*; plant almost glabrous; 2-3 ft.



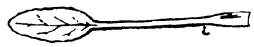
*1. **D. plantagineum** L. *Plantain Doronic.* R.
Woods escape: May-June. P.

Stem leaves broader, *rounded at base*, lower ones amplexicaul; heads usually 3-5; plant very hairy; 2-3 ft.

*2. **D. Pardalianches** L. *Leopard's-bane.* R.
Woods escape: May-June. P.

XXIV. Senecio L.[1] *Senecio.*—

Leaves *entire*
- Radical leaves more or less *spathulate* L; plant white, downy.
  - Lower part of leaf *very narrow* L; 1-3 ft.
  - Lower part of leaf *broader*; 6-15 in.

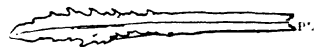


1. S. spathulæfoliu; DC. R.
Cliffs; rocks: June-July. P.
2. **S. campestris** DC. *Field Senecio.*
Chalk downs: May-June. P.

or toothed L, PL, P.

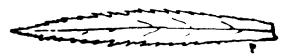
Radical leaves *not spathulate.*

Leaves *coarsely toothed*, somewhat sinuate PL; plant covered with loose down, grey; 2-4 ft.



Leaves more *finely toothed* P.

Leaves sharply serrate, *white and cottony* below; stem hollow; 2½-5 ft.



Leaves irregularly serrate; *glabrous*; stem solid; 2-5 ft.

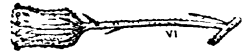
3. **S. palustris** DC.
Marsh Senecio. VR.
Fens: June-July. A. or B.

4. **S. paludosus** L.
Fen Senecio. VR.
Fens: June-July. P.

*5. **S. sarracenicus** L.
Broad-leaved Senecio. R.
Damp places: June-July. P.

Leaves *deeply lobed.*

Plant covered with *viscid glandular hairs* VI; outer bracts of involucre usually more than one-third length of others; 8-32 in.



6. **S. viscosus** L.
Viscous Senecio. Loc.
Waste places: July-Sept. A.

Plant *not glandular or viscous.*

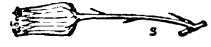
Capitulum *cylindrical or narrowed above* VU, S; ligulate florets scarcely or not developed; plants annual.

Outer bracts *8-10*, *apex black* VU; heads in close clusters; leaf-lobes almost equal; 4-12 in.



7. **S. vulgaris** L.
Groundsel. VC.
Waste places; walls: Jan.-Dec. A.

Outer bracts *4-5*, *apex not black* S; heads in loose corymbs; leaf-lobes very unequal; 1-2½ ft.



8. **S. sylvaticus** L.
Wood Senecio.
Sandy, shady places: July-Sept. A.

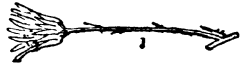
Capitulum *widely open* I, E; ligulate florets spreading; plants usually perennial.

Outer bracts *many*, *half as long as inner* E; leaves downy beneath, lobes narrow; 2-4 ft.

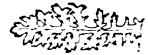


9. **S. erucifolius** L.
Narrow-leaved Senecio.
Roadsides; thickets: July-Sept. P.

Outer bracts *2-5*, *very short* J.



Leaves *deeply lobed* JA; disc-fruits hairy; 2-4 ft. [Ragwort].



10. **S. Jacobæa** L. ✠
Ragwort Senecio. C.
Roadsides; waste places: June-Sept. P.

Leaves deeply lobed, *upper segment large* AQ; fruits glabrous; 2-3 ft.



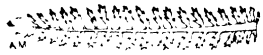
11. **S. aquaticus** Huds.
Water Senecio.
Wet places: July-Aug. P.

Leaf lobes jagged; fruits silky; 1-2 ft.

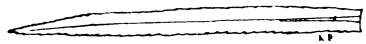
*12. **S. squalidus** L.
Squalid Senecio. Loc.
Walls: June-Sept. A. or P.

1. **S. Cineraria* DC.: leaves white and felted beneath, a Mediterranean species and garden escape, occurs on sea cliffs.

XXV. Achillea L. *Achillea.*—

Leaves *all pinnate, segments deeply cut* AM;  heads numerous; ligulate florets 4-6; 8-24 in. [Yarrow.]

1. **A. Millefolium** L. ✠ *Milfoil.* C.
Roadsides; pastures: June-Sept. P.

Leaves *simple, finely toothed* AP;  heads few; ligulate florets 8-12; 16-24 in.

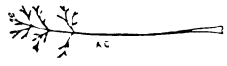
2. **A. Ptarmica** L. ✠ *Sneezewort.* C.
Damp places: July-Sept. P.

XXVI. Cotula L. *Cotula.*—

Leaves succulent, amplexicaul, long and narrow or lobed: heads small resembling a disc; 4-12 in.

*1. **C. coronopifolia** L. R.
Waste places: July-Aug. A.

XXVII. Artemisia L. *Artemisia.*—

Involucre *glabrous, shiny*; leaves pinnate, segments linear AC,  at first hairy, then glabrous; heads drooping; 1-3 ft.

1. **A. campestris** L. *Field Artemisia.* Loc.
Heaths and stony ground: Aug.-Sept. P.

Involucre *hairy.*

Leaf-segments *not fine* AB, VU.

Plant *greyish-white, silky*; leaves much divided AB; receptacle *hairy*; heads *drooping*; 16-36 in. [Wormwood.] 

2. **A. Absinthium** L. ✠ *Absinth.*
Waste ground: July-Sept. P.

Receptacle *smooth*; heads *erect.*

Plant *white, woolly*; leaf-segments broad, obtuse; 1-2 ft.

*?. **A. Stelleriana** Bess. R.
Sea-shore: July-Sept. P.

Leaves *green and glabrous above*, white below; segments broad, acute VU; 2-4 ft. 

4. **A. vulgaris** L. ✠ *Mugwort.* C.
Waste places; roadsides: July-Sept. P.

Leaf segments *fine* MA, woolly; stem glabrous; odour strong, disagreeable; 8-16 in. 

5. **A. maritima** L. *Sea Artemisia.*
Sea-shore: Sept.-Oct. P

XXVIII. Diotis Desf. *Diotis.*—
Leaves sessile, thick, length ¼ in.; heads small; corymbs terminal; 6-12 in.

1. **D. maritima** Cass. *Sea Cotton Weed.* VR.
Sea-shore: Aug.-Sept. P.

XXIX. Tanacetum L. *Tansy.*—(Fig. TV, p. 91.)
Leaves pinnate; leaflets deeply cut; involucre glabrous; bracts membranous at apex; corymb of heads terminal; 2-3 ft.

1. **T. vulgare** L. ✠ *Common Tansy.*
Hedges; waste places: Aug.-Sept. P.

XXX. Gnaphalium L. *Cudweed.*—

Capitula *in small clusters* CA, D, LA, SM, cottony.

Capitula in a *leafy spike* GS; leaves long.

- Leafy spike *long, interrupted* GS; bracts brown at apex; leaves usually cottony on under surface; 8-24 in.



- Leafy spike *shorter, closer*; florets longer relatively to bracts; bracts dark brown; leaves 3-nerved, cottony on both surfaces; 6-12 in.

Upper leaves *little if any longer than capitula.*

Upper leaves *much longer* than capitula GA, U.

- Leaves *very narrow* GA; stem much forked; florets yellowish; 4-8 in.



- Leaves *oblong, broader towards apex* U; stem much branched; florets yellow; 4-8 in.



Leaves *cottony on both surfaces.*

Leaves usually *green above, cottony below*; flowers usually dioecious.

- Stem *herbaceous*, procumbent; lower leaves in a rosette D; capitula few; pink or whitish; 4-8 in. [Cat's-foot.]



- Stem *shrubby*, erect; no rosette of leaves; capitula numerous, yellowish or brownish-white; 1-3 ft.

Plant *annual.*

Plant *perennial*; stem decumbent; leaves tufted; capitula few, brown; 1-4 in.

Bracts *glabrous*, almost quite membranous LU;



capitula in dense clusters LA, pale yellow; plant woolly; 8-12 in.

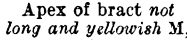


Bracts *cottony*; capitula yellowish.

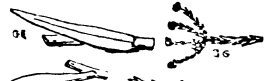
Apex of bract *long, acute* SP, yellowish; capitula 10-30 in a cluster.



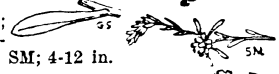
Apex of bract *not long and yellowish* M, AR; capitula 2-8 in a cluster.



Leaves *not narrowed* at base GE; cluster of capitula *not surrounded by long leaves* GG; 4-12 in.



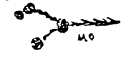
Leaves *narrowed at base* GS; cluster of capitula surrounded by long leaves SM; 4-12 in.



Bracts *cottony at apex* AR; cluster *faintly 8-angled* GA; 8-16 in.



Bracts *glabrous at apex* M; cluster *distinctly 5-angled* MO; 4-8 in.



1. **G. sylvaticum** L. *Wood Cudweed.* Woods; heaths: July-Sept. P.
2. **G. norvegicum** Gunn. *Alpine Cudweed.* VR. Rocks: July-Sept. P.
3. **G. gallicum** Huds. *Narrow-leaved Cudweed.* VR. Fields: July-Sept. A.
4. **G. uliginosum** L. *Marsh Cudweed.* C. Moist places: July-Oct. A.
5. **G. dioicum** L. ✠ *Mountain Everlasting.* Heaths; dry pastures: June-July. P.

*6. G. margaritaceum L. *Pearly Everlasting.* R. Moist meadows; gardens: Aug.-Sept. P.

7. **G. supinum** L. *Dwarf Cudweed.* Rocks: July-Sept. P.
8. **G. luteo-album** L. *Jersey Cudweed.* R. Sandy places: July-Sept. A.
9. G. germanicum Willd.[1] ✠ *Upright Cudweed.* C. Dry fields: June-Sept. A.
10. **G. spathulatum** B. and de L. *Prostrate Cudweed.* Loc. Dry fields: July-Sept. A.
11. **G. arvense** Willd. *Field Cudweed.* Dry fields: July-Sept. A.
12. G. minimum B. and de L. *Dwarf Cudweed.* Dry soils: June-Sept. A.

1, Var. *apiculatum* B. and de L.: plant yellowish or greenish, bracts reddish at apex; sandy soils; R.

XXXI. Helichrysum Willd. *Helichrysum.*—(Fig. HE, p. 91.)

Plant hairy, whitish; some basal branches non-flowering; involucre glabrous; 8-12 in. [Everlasting.

1. **H. arenarium** DC.
Gardens: July-Oct. P.

XXXII. Erigeron L. *Erigeron.*—

Heads *not solitary.*

- Involucre *almost glabrous* C, bracts with membranous margins; outer florets yellowish-white; 1-2 ft.
- Involucre *very hairy* A; outer florets purple, short, 4-16 in. [Blue Fleabane.]

* 1. **E. canadensis** L.
Canadian Erigeron.
Waste places: July-Sept. A.

2. **E. acris** L.
Fleabane Erigeron.
Pastures; dry places: July-Sept. B.

3. **E. alpinus** L.
Alpine Erigeron. VR.
Mountains: July-Aug. P.

Heads usually *solitary*; involucre hairy; outer florets purple, long; 2-8 in.

XXXIII. Inula L. *Inule.*—

Leaves *wared* at margin; pappus surrounded by *membranous crown* D.

- Leaves *amplexicaul, 2-lobed at base* DY; ray longer than involucre; 16-32 in.
- Leaves *rounded at base* V; ray shorter than involucre; 4-20 in.

Leaves *not waved* at margin; pappus *without a crown.*

Leaves *long and broad*, about 12in. × 7 in., white below, toothed, amplexicaul; outer bracts oval HE, very hairy; 3-5 ft.

Leaves *less than 4 in. broad*, slightly or not toothed.

Leaves *glabrous* or only slightly downy below.

- Leaves *flat, not succulent*, sessile and semi-amplexicaul towards middle of stem SA; 1-2 ft.
- Leaves *thick, succulent*, linear; 6-18 in.

Leaves *hairy.*

- Upper leaves completely *amplexicaul* B; bracts narrow, acute; 12-32 in.
- Leaves *semi-amplexicaul or not at all*; bracts almost glabrous, reflexed CO; fruit hairy; 2-4 ft.

1. **I. dysenterica** L. ✠
Fleabane Inula.
Wet pastures, ditches: July-Sept. P.

2. **I. Pulicaria** L.
Small Fleabane. Loc.
Wet places: July-Sept. A.

3. **I. Helenium** L. ✠
Elecampane. R.
Moist pastures. July-Sept. P,

4. **I. salicina** L.
Willow-leaved Inula. VR.
Moist shady places: July-Aug. P.

5. **I. crithmoides** L.
Golden Samphire.
Salt marshes; rocks near sea: July-Aug. P.

*6. **I. britannica** L.
Damp waste places: July-Sept. P.

7. **I. Conyza** DC.
Ploughman's Spikenard.
Chalky ground: July-Sept. B.

XXXIV. Solidago L. *Golden Rod.*—(Fig. SO, p. 91.)

Bracts of involucre yellowish-green; leaves radical and cauline, mostly petiolate, lanceolate; heads in terminal compound raceme; 1-3 ft.

1. **S. Virga-aurea** L.
Common Golden Rod. C.
Dry, shady places: July-Sept. P.

XXXV. Lapsana L. *Lapsane.*—(Figs. L, LC, p. 92.)
Lower leaves with large terminal segment; heads yellow, small; involucre glabrous; 8-32 in.

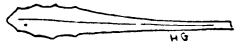
XXXVI. Arnoseris Gærtn. *Arnoseris.*—(Fig. AM, p. 92.)
Leaves all in a rosette at base, sharply toothed; peduncles hollow, enlarged towards apex; heads pale yellow; 4-8 in.

XXXVII. Cichorium L. *Chicory.*—(Fig. C, p. 92.)
Radical and lower cauline leaves with large, acute, terminal segment; upper cauline leaves amplexicaul, less lobed; main nerves very hairy; heads nearly sessile, usually axillary and in pairs; 1½-3 ft. [Succory]

XXXVIII. Taraxacum Juss. *Dandelion.*—(Fig. T, p. 92).
Leaves in rosette, spreading, almost entire or deeply toothed, teeth triangular; flowers yellow; outer bracts recurved; 4-12 in.

XXXIX. Hypochœris L. *Cat's-ear.*—

Stem glabrous; flowers yellow.

- Leaves *glabrous*, slightly toothed HG;  outer fruits not beaked; 6-10 in.
- Leaves *hairy.*
  - Involucre *covered with black hairs* HM;  capitulum 1-1½ in. in diameter; leaves nearly entire or coarsely toothed, often with reddish spots; 1-2 ft.
  - Involucre almost or quite glabrous HR; fruits all beaked;  capitulum about in. in diameter; leaves deeply toothed or lobed; 1-2 ft.

XL. Tragopogon L. *Salsify.* [Goat's Beard.].—

Heads *yellow.*

- Involucral bracts 6-8 about *as long as florets*;  peduncle scarcely thickened below capitulum TP; 16-48 in. [Johnny-go-to-bed-at-Noon.]
- Involucral bracts 8-12, *longer than florets* TM; peduncle distinctly enlarged below capitulum TM; 1-2 ft. [Johnny-go-to-bed-at-Noon.] 

Heads *purple*, large; peduncle distinctly thickened below capitulum; 1-3 ft. [Salsify.]

XLI. Helminthia Juss. *Helminth.*—(Fig. H, p. 92.)
Outer bracts leaf-like, heart-shaped at base; plant covered with stiff prickly hairs; florets yellow; 1-3 ft.

1. L. communis L. ✠
Nipplewort. C.
Waste places: July-Sept. A.

1. A. minima Koch
Lamb's or *Swine's Succory.* R.
Dry fields: June-Aug. A.

1. C. Intybus L.[1] ✠
Chicory.
Dry places: July-Oct. P.

1. T. Dens-leonis Desf.[2] ✠
Common Dandelion. VC.
Cultivated and waste places Apr.-Oct. P.

1. H. glabra L.[3]
Glabrous Hypochœris.
Heathy places: June-Aug. A.

2. H. maculata L.
Spotted Hypochœris. VR.
Hilly shady places. June-Aug. P.

3. H. radicata L.
Cat's-ear. VC.
Roadsides; pastures: June-Sept B. or P.

1. T. pratensis L.
Meadow Salsify.
Meadows: May-July. B.

2. T. minus Mill.
Small Meadow Salsify.
Meadows: June-July. B.

***3. T. porrifolius** L. ✠
Purple Salsify.
Meadows: cultivated: May-July. B.

1. H. echioides Gærtn.
Ox-tongue.
Hedges; fields: July-Oct. A.

1. *C. Endivia* L. ✠ [Endive], upper leaves oval, heart-shaped at base, is often cultivated [Bleached Dandelion, or Barbe-de-Capucin, when cultivated in the dark].—2. Var. *lævigatum* DC., bracts with 2 teeth; var. *palustre* DC., leaves long, entire or slightly toothed; outer bracts not reflexed.—3. Var. *Balbisii* Lois., fruits all beaked, R.; var. *erostris* Coss. and Germ., fruits all without beak, R.

XLII. Picris L. *Picris.*—(Fig. P, p. 93.)

Lower leaves wavy; outer bracts narrow; plant coarse, hispid; florets much longer than involucre, yellow; 2-3 ft. — 1. **P. hieracioides** L. *Hawkweed Picris.* Dry waste places: July-Sept. B.

XLIII. Lactuca L.[1] *Lettuce.*—

Capitulum of *5 florets*; involucre of 5 equal linear bracts, and 2-3 small outer bracts M; florets yellow;  beak of fruit short; upper leaves narrow, amplexicaul; plant glabrous; 20-36 in. — 1. **L. muralis** Fresen. *Wall Lettuce.* Old walls: July-Sept. A.

Capitulum of *more than 5 florets*, yellow.

- Leaf-margin and midrib *smooth*; auricles of median leaves *acute* SA;  beak twice as long as fruit; stem seldom prickly at base; 1-3 ft. — 2. **L. saligna** L. *Willow Lettuce.* R. Dry ground: June-Aug. B.
- Leaf-margin and midrib with *stiff hairs*; auricles of median leaves *rounded* SC; beak as long as fruit; stem prickly at base. 
  - Leaves *deeply cut* SC; upper leaves *erect*; 2½-5 ft. — 3. **L. Scariola** L. ✠ *Prickly Lettuce.* R. Waste places: June-Aug. B.
  - Leaves more or less *deeply toothed*; upper leaves *spreading* 2½-5 ft. — 4. **L. virosa** L. ✠ *Acrid Lettuce.* R. Waste places: June-Aug. B.

XLIV. Scorzonera L. *Scorzonera.*—(Figs. SC, SH, p. 93.)

Bracts of involucre large, few; heads several on one stalk, yellow; fruit glabrous; 1-4 ft. — 1. **S. hispanica** L. ✠ *Black Salsify.* Cultivated: June-July. B.

XLV. Sonchus L. *Sowthistle.*—

Heads *yellow*.

- Involucre and peduncle *nearly glabrous*.
  - Leaves with *pointed auricles* OL; fruit transversely wrinkled; 1-3 ft.  — 1. **S. oleraceus** L. *Common Sowthistle.* C. Waste and cultivated ground: June-Aug. A.
  - Leaves with *rounded, very prickly auricles* AS; fruit not transversely wrinkled; 1-3 ft.  — 2. **S. asper** Vill. *Prickly Sowthistle.* C. Waste places: June-Aug. A.
- Involucre and peduncle with *glandular hairs*.
  - Leaves with *rounded auricles* AR; heads 1-2 in. diameter, bright yellow; 2-4 ft.  — 3. **S. arvensis** L. *Corn Sowthistle.* C. Corn-fields; waste places. Aug.-Oct. P.
  - Leaves with *acute auricles* PA; heads usually under 1 in., lemon-yellow; 3-9 ft.  — 4. **S. palustris** L. *Marsh Sowthistle.* VR. Marshes: July-Aug. P.

Heads *blue*; leaves similar to those of *S. oleraceus*; involucre and peduncle with glandular hairs; 2-3 ft. — 5. **S. alpinus** L. *Alpine Sowthistle.* VR. Rocks: June-Aug. P.

XLVI. Barkhausia Mœnch. *Barkhausia.*—

Heads *yellow.*

- Plant with *strong odour of bitter almonds* when bruised;  inner fruits with beak shorter than that of outer fruits F; plant hairy; 8-20 in. — **1. B. fœtida** DC. R. Dry waste places. June-Aug. A. or B.
- *No strong odour*; beaks all of one length S. 
  - Involucral bracts with *black glandular hairs* TA; leaves very hairy, hairs white; 1-3 ft.  — **2. B. taraxacifolia** DC. Dry or wet places: June-July. B.
  - Involucral bracts with *stiff hairs, not glandular* SE; leaves nearly glabrous; 1-2 ft.  — ***3. B. setosa** DC. R. Cultivated ground: June-Aug. A. or B.

XLVII. Crepis L. *Crepis.* [Hawksbeard.]—

Heads yellow; involucre *hairy*, hairs white intermixed with black ones.

- Black glandular hairs of involucre *elongated*; pappus reddish; leaves glabrous; 8-20 in. — **1. C. paludosa** Mœnch *Marsh Crepis* Damp shady places. June-Sept. P.
- Black and white hairs of involucre *equal in length*; pappus white.
  - Bracts *glabrous within, adpressed* VI; leaves almost glabrous; 4-32 in.  — **2. C. virens** L.[2] *Smooth Crepis.* C. Pastures; waste places: June-Sept. A.
  - Bracts *hairy within*; outer ones *spreading* B.
    - Upper leaves *narrow, margin revolute, auricles acute* T; leaves almost glabrous; 12-20 in.  — ***3. C. tectorum** L. VR. Old walls: May-July. B.
    - Upper leaves *deeply toothed or lobed*; leaves hispid; 2-4 ft.  — **4. C. biennis** L. *Rough Crepis.* R. Waste places. June-July. B.

XLVIII. Thrincia Roth. *Thrincia.*—(Figs. T, TH, p. 93.)

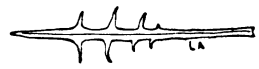
Leaves all radical, hairy; involucre glabrous, bracts many in several whorls; capitulum solitary; florets yellow; 2-9 in. — **1. T. hirta** Roth. Loc. Dry places: July-Aug. P.

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1. *L. sativa* L. ✠, with obtuse leaves, is often cultivated.—2. Var. *diffusa* DC., stem much branched, leaves almost entire.

XLIX. Leontodon L. *Hawkbit.*—(Fig. L, p. 93.)

Heads *yellow.*

- Leaves *glabrous or only ciliated* LA;  hairs of pappus in 1 row; 4-28 in. — 1. **L. autumnalis** L. *Autumnal Hawkbit.* C. Pastures; hedgerows: July-Oct. P.
- Leaves *hispid*; hairs of pappus in 2 rows; 8-20 in. — 2. **L. hispidus** L.[1] *Common Hawkbit.* C. Pastures: June-Sept. P.

L. Hieracium L. *Hawkweed.*—

No creeping branches; flowering-stem bearing *1 or more leaves*; florets yellow.

Branches *creeping*; flowering-stem *leafless* PI.



- Leaves *hairy, white below*; capitulum pale yellow, solitary PI; 4-8 in. — 1. **H. Pilosella** L. *Mouse-ear Hawkweed.* C. Dry places: May-Sept. P.
- Leaves *green on both surfaces*, hairy; peduncle with several capitula, dark orange; 4-20 in. — *2. **H. aurantiacum** L. Damp shady places: June-Aug. P.

Leaves *not amplexicaul.*

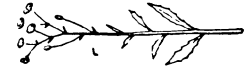
Upper leaves *amplexicaul* AM. 

- Radical leaves *persistent* during flowering, about 2 in. broad; plant clothed with short, yellow-tipped glandular hairs; 4-16 in. — *3. **H. amplexicaule** L. R. Walls; rocks: June-Aug. P.
- Radical leaves *absent*; cauline leaves hairy on both surfaces, glaucous below; 1-3 ft. — 4. **H. prenanthoides** L. *Prenanth Hawkweed.* R. Riversides, mountains: July-Sept. P.

Radical leaves *persistent* during time of flowering M.

- Leaves very *glaucous, thick*; involucre hairy; 4-16 in. — 5. **H. Schmidtii** Tausch R. Rocks, mountain glens: June-Aug. P.
- Leaves *green* or glaucous below, *thin* M.
  - Involucre only *slightly hairy*; capitula several; leaves often glaucous below; 1-2 ft.  — 6. **H. murorum** L. *Wall Hawkweed.* VC. Walls: dry banks: June-Aug. P.
  - Involucre *clothed with long hairs*; capitula solitary; 4-8 in. — 7. **H. alpinum** L. *Alpine Hawkweed.* Mountains: July-Aug. P.

Radical leaves *absent or withering* before flowering period.

- Leaves showing a *gradual decrease* in size from lower to upper part of flowering stem UM, glabrous; 2-4 ft.  — 8. **H. umbellatum** L. *Umbellate Hawkweed.* C. Dry shady places: July-Oct. P.
- Leaves showing a *sudden decrease* in size from lower to upper part of flowering stem, hairy below; stem coarse, solid; 2-4 ft.  — 9. **H. boreale** Fr. Dry shady places: July-Oct. P.

AMBROSIACEÆ. The Burweeds are so closely allied to the *Compositæ* that some botanists consider them as members of that natural order.

I. Xanthium L. *Burweed.* —

Leaves *without spines* X, greyish-green below; 12-32 in.

Leaves *with spines* S, whitish below; 8-24 in.



***1. X. strumarium** L. R.
Waste places: July-Sept. A.

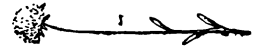
***2. X. spinosum** L. R.
Waste places: July-Aug. A.

CAMPANULACEÆ. Lobelia is poisonous. The roots of *Campanula Rapunculus* and *Phyteuma spicatum* are edible. Several Lobelias and Campanulas are ornamental plants.

Corolla *irregular*, 2-lipped, upper lip 2-lobed, lower lip 3-lobed; anthers closely coherent. (Fig. D, p. XXIV.)

Corolla *regular*.

- Lobes of corolla *long, narrow*.
  - Leaves *sessile* J; anthers united in a ring at base; fruit elongated.
  - Lower leaves *petiolate*; anthers free; fruit inflated.



- Lobes of corolla *short, broad*, anthers free.
  - Leaves *as broad as long* W; fruit opening by 3 valves.
  - Leaves *longer than broad*; fruit opening by lateral pores.
    - Corolla *bell-shaped* (Figs. G, R, P, p. 108); ovary an inverted cone.
    - Corolla *not bell-shaped* (Figs. H, S, p. 108); ovary oblong.



I. Lobelia L. *Lobelia.*—

Leaves *submerged, mostly radical*, almost cylindrical, hollow; flowers pale blue, raceme rising above water; 8-28 in.

Leaves *not submerged, radical and cauline*, lanceolate, slightly toothed; flowers blue, raceme erect; 1-2 ft.

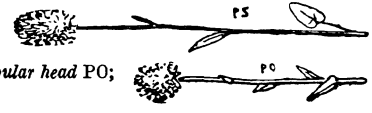
II. Jasione L. *Jasione.*—(Fig. J, above.)

Flowers in a globular umbel, almost a capitulum, blue, seldom white; leaves hairy; 8-16 in.

III. Phyteuma L. *Rampion.*—

Lower cauline leaves *heart-shaped at base;* flowers whitish or bluish in a *cylindrical spike* PS; 20-28 in.

Lower cauline leaves *not heart-shaped at base*; flowers blue in *globular head* PO; 8-24 in.



I. **Lobelia** L., p. 107. *Lobelia.*

II. **Jasione** L., p. 107. *Jasione.*

III. **Phyteuma** L., p. 107. *Rampion.*

IV. **Wahlenbergia** Schrad., p. 108. *Wahlenbergia.*

V. Campanula L., p. 108. *Campanula.*

VI. Specularia Heist., p. 108. *Specularia.*

1. **L. Dortmanna** L. ✠
Water Lobelia.
Shallow parts of mountain lakes: July-Aug. P.

2. **L. urens** L.
Acrid Lobelia. R.
Moist heaths: Aug.-Sept. P.

1. **J. montana** L.[2]
Sheep's-bit.
Dry pastures: June-Sept. A. or B.

1. **P. spicatum** L. ✠
Spiked Rampion. Loc.
Damp thickets: June-July. P.

2. **P. orbiculare** L.
Round-headed Rampion. Loc.
Chalk downs: July-Aug. P.

1. Var. *hastilis* L., leaves glabrous or nearly so; VR.—2. Var. *littoralis* Fr.: branches numerous, slender, prostrate.

IV. Wahlenbergia Schrad. *Wahlenbergia.*—(Fig. W, p. 107.)

Plant glabrous; branches very slender, prostrate; flowers solitary on slender peduncles, pale blue, rarely white; 4-12 in.

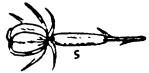
1. **W. hederacea** Rchb. *Ivy Campanula.* Loc.
Moist shady places: June-Aug. P.

V. Campanula L.[1] *Campanula.* [Bell-flower.]—

Flowers *stalked*, in racemes.

- Flowers *sessile*, in a spike or head; sepals acute G;  lower leaves with long stalks; 8-20 ft.
  1. **C. glomerata** L. *Clustered Campanula.*
  Dry chalky pastures: July-Aug. P.
- Fruits *drooping.*
  - Lower leaves *heart-shaped* at base.
    - Sepals *very narrow at apex* R, *glabrous*; leaves glabrous, upper ones narrow; 4-20 in. [Scottish Bluebell.] 
      2. **C. rotundifolia** L. *Harebell* or *Hairbell.* C.
      Dry hilly pastures: July-Sept. P.
    - Sepals *ciliated*; leaves hairy.
      - Sepals *erect* T;  upper leaves triangular T; 2-4 ft.
        3. **C. Trachelium** L. ✠ *Nettle-leaved Campanula.*
        Woods; thickets: July-Sept. P.
      - Sepals *reflexed* RO;  upper leaves oval or lanceolate; 1-3 ft.
        4. **C. rapunculoides** L. *Creeping Campanula.* R.
        Hedges; woods: July-Aug. P.
  - Lower leaves *ovate-lanceolate*, toothed; sepals narrow, toothed, glabrous; 3-5 ft.
    5. **C. latifolia** L. *Giant Campanula.*
    Thickets and woods: July-Aug. P.
- Fruits *erect*; leaves ovate-lanceolate.
  - Petals free throughout ½ *their length* PA; leaves finely hairy; root slender; 1-3 ft. 
    6. **C. patula** L. *Spreading Campanula.* R.
    Hedges; thickets: July-Sept. B.
  - Petals free throughout ¼ *or* 1/5 *of their length.*
    - Flowers *small*, 1-2 cm.; stem *hairy*; sepals very narrow RA; 16-36 in. 
      *7. **C. Rapunculus** L. ✠ *Rampion* ou *Ramps.* R.
      Roadsides: July-Aug. B.
    - Flowers *large*, 3-4 cm.; stem *glabrous*; sepals enlarged at base P; 16-36 in. 
      *8. **C. persicifolia** L. VR.
      Woods; cultivated: June-Aug. P.

VI. Specularia Heist. *Specularia.*—

Corolla *as long as calyx* S;  flowers purple; 4-20 in. [Venus' Looking-glass.]

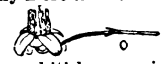
1. **S. Speculum** Alph. DC.
Gardens: June-Aug. A.

Corolla *shorter than calyx* H;  flowers purple; 4-12 in. [Venus' Looking-glass.]

2. **S. hybrida** Alph. DC. *Corn Specularia.*
Corn-fields: July-Sept. A.

VACCINIACEÆ.—

Corolla *globular or bell-shaped*; stems erect or procumbent; leaves usually more than 7 mm. broad.

Corolla *spreading*; petals separate almost to their base O: stems creeping;  leaves less than 7 mm. broad.

I. **Vaccinium** L. *Whortleberry.*—

Leaves *pointed* at apex M, deciduous;  flowers solitary, axillary, whitish or pinkish; fruit black, glaucous; 12-28 in. [Bilberry, Blaeberry, Whinberry.]

Leaves *broadly rounded* at apex; flowers pink.
- Stem *glabrous* U; leaves not leathery, deciduous, pale-green above, glaucous below, margins *not revolute* U; fruit black, glaucous; 6-18 in. 
- Stem *hairy* V; leaves very leathery, evergreen, shining above, dotted below, margins *revolute* V; fruit red; 4-8 in. [Cowberry.] 

II. **Oxycoccos** Hill. *Cranberry.*—(Fig. O, above.)

Stems slender, much branched, length variable; leaves small; flowers rose.
- Leaves ovate or lanceolate, shining above, glaucous below, margins *revolute*; flowers *terminal*; fruit red, drooping.
- Leaves oblong, margins *not revolute*; flowers *axillary*.

ERICACEÆ. Many of the ornamental shrubs of gardens and shrubberies belong to this N.O., e.g. Rhododendrons, Azaleas.

Calyx and corolla *5 lobed.* *Stamens 10.*
- Fruit a *berry.*
  - Fruit *not smooth*, resembling a strawberry, chambers 5, several seeded.
  - Fruit *smooth*, chambers 5, 1-seeded.
- Fruit a *capsule*, 5-valved.
  - Fruit opening *mid-way between partitions*, flowers rose.
  - Fruit opening *along partitions*; flowers purplish-blue.

Stamens 5; fruit a capsule, 2-3 valved, valves bi-fid.

Calyx and corolla *4-lobed*; *stamens 8.* Corolla *persistent.*
- Corolla *4-toothed*, *globular*, longer than calyx. (Figs. EC, TE, p. 110.)
- Corolla and calyx *deeply 4-lobed* C; calyx longer than corolla. 

Corolla *deciduous*, ovoid, lobes short and spreading.

I. **Vaccinium** L., p. 109. *Whortl berry.*
II. **Oxycoccos** Hill, p. 109. *Cranberry.*
1. **V. Myrtillus** L. ✠ *Common Whortleberry.* Heaths: Apr.-May. P.
2. **V. uliginosum** L. *Bog Whortleberry.* Loc. Bogs, mountains: May-June. P.
3. **V. Vitis-idæa** L. *Red Whortleberry.* Heaths, mountains. June-July. P
1. **O. palustris** Pers. ✠ Peat bogs: July-Aug. P.
*2. **O. macrocarpus** Pers. Peat bog: July-Aug. P.
I. **Arbutus** L., p. 110. *Arbutus.*
II. **Arctostaphylos** Adans, p. 110. *Bearberry.*
III. **Andromeda** L., p. 110 *Andromeda.*
IV. **Bryanthus** Gmel., p. 110. *Bryanthus.*
V. **Loiseleuria** Desv., p. 110. *Loiseleuria.*
VI. **Erica** L., p. 110. *Heath.*
VII. **Calluna** Salisb., p. 111. *Ling.*
VIII. **Boretta** Neck., p. 111. *Boretta.*

1. The Canterbury-bell belongs to this genus [*C. medium* L.].

I. Arbutus L. *Arbutus.*—

Shrub or small tree; leaves evergreen, lanceolate, sessile; flowers in panicles, pendulous, terminal, greenish-white or pinkish; fruit red; 8-12 ft. — 1. **A. Unedo** L. *Strawberry-tree.* Woods: Sept.-Oct. P.

II. Arctostaphylos Adans. *Bearberry.*—

Stems woody, *straggling*; flowers few, small, in terminal racemes.
- Leaves *evergreen*, shining, entire; flowers pink; fruit red; 4-24 in. — 1. **A. Uva-ursi.** Spr. *Common Bearberry.* Heaths, mountains: May-June. P.
- Leaves *not evergreen*, thin, toothed; flowers white; fruit black; 3-12 in. — 2. **A. alpina** Spr. *Black Bearberry.* R. Mountains: June-Aug. P.

III. Andromeda L. *Andromeda.*—

Leaves evergreen, oval, entire, margins revolute, white and glaucous below; racemes terminal; corolla ovoid V; plant glabrous; 4-16 in. — 1. **A. polifolia** L. *Marsh Andromeda.* R. Peat bogs: June-July. P.

IV. Bryanthus Gmel. *Bryanthus.*—

Leaves evergreen, linear, bordered with minute glandular teeth; flowers large, purplish-blue; racemes short, terminal; 4-10 in. — 1. **B. cæruleus** Dip. *Blue Heath.* VR. Mountain heaths: June-July. P.

V. Lciseleuria Desv. *Loiseleuria.*—

Stems procumbent; leaves evergreen, small, opposite, margins revolute; flowers small, rose, in short terminal clusters; 2-4 in. [Mountain Azalea.] — 1. **L. procumbens** Desv. *Loiseleura.* Loc. Highland mountains: May-July. P.

VI. Erica L. *Heath.*—

Leaves and sepals *glabrous.*
- *Anthers included* within corolla, awned; leaves *3 in a whorl*; flowers deep rose in terminal raceme EC; 1-3 ft. — 1. **E. cinerea** L. *Bell Heath.* Moors; heaths: July-Sept. P.
- *Anthers protruding from corolla*, not awned.
  - Leaves *4-5 in a whorl*; flowers pink, axillary, anthers much protruded; racemes leafy, long, terminal; 1-2 ft. — 2. **E. vagans** L. *Cornish Heath.* Loc. Heaths: July-Aug. P.
  - Leaves *4 in a whorl*; flowers pale pink, anthers half protruding; racemes leafy, terminal; 1-5 ft. — 3. **E. mediterranea** L. *Mediterranean Heath.* Loc. Boggy heaths: Apr.-May. P.

Leaves and sepals *ciliated* TE, T; leaves *4 in a whorl*; anthers included in corolla.
- Branches *erect*; flowers pale rose, almost umbellate; anthers awned; ovary downy; 1-2 ft. — 4. **E. Tetralix** L. *Cross-leaved Heath.* Damp heaths: July-Sept. P.
- Branches *straggling*; flowers deep rose; anthers not awned; ovary glabrous; racemes unilateral, terminal; 1-1½ ft. — 5. **E. ciliaris** L. *Ciliated Heath.* R. Heaths: June-Sept. P.

VII. **Calluna** Salisb. *Ling.*—(Fig. C, p. 109.)

Leaves small, in 4 rows; calyx membranous, rose, sometimes white; corolla very small, hidden by calyx, rose or white; 12-32 in. [Heather.] — 1. **C. vulgaris** Salisb. *Ling.* VC. Dry heaths, moors. July Sept. P.

VIII. **Boretta** Neck. *Boretta.*—

Branches decumbent; leaves white and cottony beneath; flowers large, purple or pinkish, sometimes white, drooping; racemes terminal, unilateral; 1-2 ft. — 1. **B. cantabrica** O. Kuntze. *St. Dabeoc's Heath.* Loc. Heaths: July-Sept. P.

PYROLACEÆ.

Flowers in *racemes*. — I. **Pyrola** L., p. 111. *Winter-green.*

Flowers *solitary*. — II. **Moneses** Salisb., p. 111. *Moneses.*

I. **Pyrola** L. *Winter-green.*—(Fig. PY, p. XXIII.)

Sepals *lanceolate*; style *curved* R;  flowers white; raceme 2-6 in. long; 8-16 in.

Sepals *triangular*; style *straight* or nearly so MI.

- Sepals *acute*; flowers white.
  - Stamens *as long as style*; 8-12 in. — 1. **P. rotundifolia** L.[1] ✠ *Round-leaved Winter-green.* R.
  - Stamens *shorter than style*; 8-12 in. — 2. **P. minor** L. *Common Winter-green.* Damp shady places: June-July. P.



3. **P. media** Sw. *Intermediate Winter-green.* Loc. Woods: June-Aug. P.

Sepals *rounded*, *notched*; flowers greenish-white; stamens shorter than style; 2-6 in. — 4. **P. secunda** L. *Serrated Winter-green.* Loc. Woods, mountains. July-Aug. P.

II. **Moneses** Salisb. *Moneses.*—
Flowers terminal, drooping, white, fragrant; style straight or nearly so, stamens shorter than style; 1-3 in. — 1. **M. grandiflora** Salisb. *One-flowered Winter-green.* R. Woods: July-Aug. P

MONOTROPACEÆ.

The plants are saprophytic on the débris of branches and dead leaves.

I. **Monotropa** L. *Monotrope.*—(Fig. MO, p. XXI.)
Leaves whitish, in the form of scales on a succulent stem; raceme curved, later erect; flowers yellowish-white; 4-12 in. — 1. **M. Hypopitys.** L. *Yellow Bird's-nest.* Woods. June-Aug. P.

1. Var. *arenaria* Koch pedicel scarcely as long as calyx, sepals rounded at apex, dunes.

LENTIBULARIACEÆ. The shape of the corolla in this N O. resembles that of certain members of the N.O. Scrophulariaceæ.

Leaves all *radical, entire* P; calyx 5-toothed.



I. **Pinguicula** L., p. 112. *Butterwort.*

Leaves *not radical, much divided* (Figs. V, UM, below), floating; calyx 2-lobed.

II. **Utricularia** L., p. 112. *Bladderwort.*

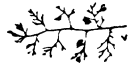
I. **Pinguicula** L. *Butterwort.*—(Fig. P, above.)

Leaves in contact with soil, fleshy, viscid, margins revolute; flowers solitary.

- Flowers *purplish-blue*; spur long.
  - Corolla lobes *not in contact*; flower ½-¾ in.; 2-6 in. — 1. **P. vulgaris** L. *Common Butterwort.* Bogs: May-July. P.
  - Corolla lobes *in contact*; flower 1 in.; 4-6 in. — 2. **P. grandiflora** Lam. *Irish Butterwort.* Bogs: May-July. P.
- Flowers *yellowish or purplish*; spur short.
  - Spur *conical*, nearly straight; peduncle glabrous; 2-4 in. — 3. **P. alpina** L. *Alpine Butterwort.* VR. Bogs, mountains: June-July. P.
  - Spur *cylindrical*, curved; peduncle hairy; 2-4 in. — 4. **P. lusitanica** L. *Western Butterwort.* Bogs: June-Sept. P.

II. **Utricularia** L. *Bladderwort.*—

Leaf with *principal segments lateral, alternate* V, margin spinous;



corolla-spur adpressed, rounded at apex UV; peduncle 8-12 in.



1. **U. vulgaris** L.[1] *Common Bladderwort.* Pools: June-Aug. P.

Leaf with *principal segments resembling the ribs of a fan* UM.



- Leaf-segments with small *spinous* teeth; corolla-spur *acute* UI; peduncle 4-8 in. —  2. **U. intermedia** Hayne *Intermediate Bladderwort.* Loc. Pools: June-Aug P.
- Leaf-segments *not spinous*; corolla-spur *rounded*, very short M; peduncle 2-6 in. —  3. **U. minor** L. *Lesser Bladderwort.* Pools: June-Aug. P.

PRIMULACEÆ. Varieties of Primula are cultivated as ornamental plants, e.g. Polyanthus.

Corolla absent GM; calyx pinkish-white; flowers sessile, solitary, axillary. 

Flowers *with both calyx and corolla.*

Leaves mostly in a *terminal rosette* TR. 

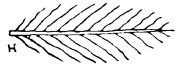
Leaves *not in a terminal rosette*

Leaves *all radical.*

Leaves *not heart-shaped*; corolla-segments spreading or cup-shaped.

Leaves *heart-shaped*; corolla-segments reflexed.

Leaves *not all radical.*

Leaves *deeply divided* H; 

plant aquatic.

Leaves *not divided.*

Flowers *yellow*; leaves opposite or whorled.

Flowers *not yellow.*

Leaves *opposite* or in threes; petals united only at base.

Leaves *alternate.*

Flowers in *racemes* SV; radical leaves in rosette. 

Flowers *solitary*, axillary, *almost sessile* CM; no rosette of leaves at base. 

I. **Glaux** L., p. 113. *Glaux.*

II. **Trientalis** L., p. 113. *Trientale.*

III. **Primula** L., p. 114. *Primula.*

IV. **Cyclamen** L., p. 114. *Cyclamen.*

V. **Hottonia** L., p. 114. *Hottonia.*

VI. **Lysimachia** L., p. 114. *Lysimachia.*

VII. **Anagallis** L., p. 115. *Pimpernel.*

VIII. **Samolus** L., p. 115. *Samole.*

IX. **Centunculus** L., p. 115. *Centuncle.*

I. Glaux L. *Glaux.*—(Fig. GM, above.)

Leaves opposite, entire, sessile, slightly fleshy; plant glabrous, somewhat glaucous; 2-8 in. [Black Saltwort.]

1. **G. maritima** L. *Sea Milkwort.* Salt marshes: June-July. P.

II. Trientalis L. *Trientale.*—(Fig. TR, above.)

Leaves entire, sessile, upper ones acute; peduncle slender, 1-3 flowered; corolla white or pinkish; 4-8 in.

1. **T. europæa** L. *Trientale.* **R.** Damp woods: June-July. P.

1 Var. *neglecta* Lehm.: plant slender; margin of lower lip of corolla spreading; R

III. **Primula** L. *Primula.*—

Flowers *yellow*; leaves wrinkled.

- Calyx *inflated*, very open, teeth broad O ; not in contact with fruit;  corolla deep yellow, spotted orange; flowers umbellate, drooping; 4-12 in. — **1. P. officinalis** Jacq.[1] ✠ *Cowslip.* Meadows and shady pastures: Apr.-May. P.
- Calyx *not inflated*, teeth very narrow G; corolla pale yellow. 
  - Leaves *abruptly* narrowed at base E; umbel on a long peduncle; 4-12 in.  — **2. P. elatior** Jacq. *Oxlip.* Loc. Shady meadows: Apr.-May. P
  - Leaves *gradually* narrowed at base PG, peduncle of umbel very short, usually radical; 4-12 in.  — **3. P. vulgaris** Huds. *Primrose.* C. Banks; thickets: Mar.-May. P.

Flowers *not yellow*, umbellate; leaves mealy below.

- Corolla lobes *not contiguous*, about as long as tube, pale lilac with yellow centre; calyx-teeth narrow; 2-9 in. — **4. P. farinosa** L. *Bird's-eye Primrose.* Mountain pastures: May-July. P.
- Corolla lobes *contiguous*, about ½ as long as tube, violet purple with yellow centre; calyx-teeth broad; 1-4 in. — **5. P. scotica** Hook. Dry heaths: June-Aug. P.

IV. **Cyclamen** L. *Cyclamen.*—

Rootstock tuberous; flowers large, pink or white, solitary; fruiting peduncle burying its capsule in soil; 4-8 in. [Sow-bread] — ***1. C. hederifolium** Ait. *Cyclamen.* R. Woods: Aug.-Sept. P.

V. **Hottonia** L. *Hottonia.*—(Fig. H, p. 113.)

Flowers in succesive whorls, pale pink or purplish; sepals very narrow; corolla larger than calyx; flowering-stem solitary, erect; 1-2 ft. [Featherfoil.] — **1. H. palustris** L. *Water Violet.* Ponds, ditches: May-July. P.

VI. **Lysimachia** L. *Lysimachia.*—

Leaves *rounded* N; sepals *cordate* LN;   stem and peduncles 4-angled; plant prostrate, creeping; 4-24 in. [Creeping Jenny.] — **1. L. Nummularia** L. ✠ *Moneywort.* Damp shady places: June-Aug. P.

Sepals *not cordate* LV, NE.

Leaves *ovate* NM.

Stem *erect*.

Flowers in *panicles*, terminal and axillary; sepals ciliate, margin reddish; stem and leaves hairy; 2-3 ft.



2. L. vulgaris L.
Yellow Loosestrife.
River-banks: July-Aug P.

Flowers usually *solitary*, axillary.

Sepals narrow; petals ciliate with glandular hairs; *leaves dotted*; 1-1½ ft.

***3. L. punctata** L. R.
Waste places: June-July. P.

Corolla spreading, pale; *leaf-stalks ciliate*; 1-3 ft.

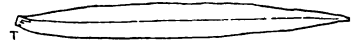
***4. L. ciliata** L. R.
Waste places: June-July. P.

Stem *procumbent*; flowers solitary, axillary; sepals not ciliate; 4-16 in. [Yellow Pimpernel.]



5. L. nemorum L.
Wood Lysimachia.
Damp woods: June-Aug. P.

Leaves *lanceolate* T; stem erect; flowers in dense racemes, axillary; sepals not ciliate; 1-3 ft.



6. L. thyrsiflora L.
Tufted Lysimachia. R.
Sides of ponds and ditches; marshes: June-July. P.

VII. **Anagallis** L. *Pimpernel.*—

Leaves *ovate, sessile* A;



sepals with membranous margin; corolla spreading, usually scarlet, sometimes pink or white; 4-12 in. [Shepherd's or Poor Man's Weather-glass.]

1. A. arvensis L.[2]
Scarlet Pimpernel. C.
Corn-fields; dunes June-Oct. A.

Leaves *rounded, shortly stalked* T;



sepals with non-membranous margin; corolla not spreading, veined rose; 2-10 in.

2. A. tenella L.
Bog Pimpernel.
Mossy banks; bogs: June-Aug. P.

VIII. **Samolus** L. *Samole.*—(Fig. SV, p. 113.)

Leaves entire, glabrous; ovary and calyx united; calyx crowning fruit; corolla crowned with 5 scales, white; 4-20 in.

1. S. Valerandi L.
Brookweed.
Marshes usually near sea: June-Sept. P.

IX. **Centunculus** L. *Centuncle.*—(Fig. CM, p. 113.)

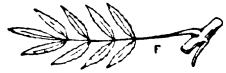
Leaves entire, alternate; stems very slender; flowers very small, usually 4-partite; corolla nearly globose; 1-3 in. [Bastard Pimpernel.]

1. C. minimus L.
Chaffweed. Loc.
Moist shady, sandy places: June-Aug. A.

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1. Plants having characters intermediate between those of *P. officinalis* and *P. vulgaris* are often found; they are hybrids between the two species.
2. Var. *cærulea* Schreb.: flowers blue, peduncles about equalling leaves; R.

OLEACEÆ. This N.O. owes its name to one of its members, i.e. the Olive (*Olea*). Forsythia and Jessamine are other species belonging to this order.

Tree; leaves *pinnate*, petiolate F;  fruit flattened, winged FE.  — I. **Fraxinus** L., p. 116. *Ash.*

Srub; leaves *simple* V, S.

- Leaves *almost without petiole*, narrowed at base V;  fruit fleshy, black. — II. **Ligustrum** L., p. 116. *Privet.*
- Leaves *petiolate*, broader at base S;  fruit dry, 2-valved. — III. **Syringa** L., p. 116. *Lilac.*

I. Fraxinus L. *Ash.*—(Figs. F, FE, above.)

Buds black in spring; flowers greenish or brownish, developing before the leaves; racemes short, axillary; calyx and corolla absent; stamens 2; fruits pendulous; 50-80 ft.

1. **F. excelsior** L. ✠
Common Ash. C.
Woods; hedges: Apr. P.

II. Ligustrum L. *Privet.*—(Fig. V, above.)

Flowers white in panicles; sepals 4, joined; corolla-tube much longer than calyx; bark of branches grey; 4-10 ft.

1. **L. vulgare** L. ✠
Common Privet.
Woods; thickets: June-July. P.

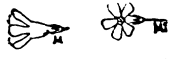
III. Syringa L. *Lilac.*—(Fig. S, above.)

Flowers lilac or white; sepals 4, joined; corolla-tube much longer than calyx; 10-18 ft.

1. **S. vulgaris** L.
Lilac.
Cultivated: Apr.-May. P.

APOCYNACEÆ. The Oleander and other ornamental plants belong to this natural order.

I. Vinca L. *Periwinkle.*—

Leaves *glabrous*; sepals glabrous, much shorter than corolla-tube M, MI;  leaves narrow at base; peduncle usually longer than neighbouring leaf; flowers usually purplish-blue, seldom white; 8-36 in.

1. **V. minor** L. ✠
Lesser Periwinkle.
Thickets, hedges: Mar.-June. P.

Leaves *ciliate*; sepals ciliate, more than half as long as corolla-tube MA;  leaves somewhat cordate at base; peduncle usually shorter than neighbouring leaf; flowers purplish-blue; 16-48 in.

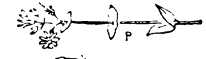
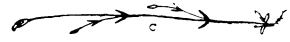
*2. **V. major** L. ✠
Greater Periwinkle.
Thickets; hedges; cultivated: Mar.-June. P.

GENTIANACEÆ. The members of this N.O. contain, principally in their roots, a yellow, very bitter substance (*Gentianine*) which gives to some of them their peculiar medicinal properties.

Leaves *ternate* T;  corolla white or pinkish, densely bearded on upper surface. — I. **Menyanthes** L., p. 117. *Buckbean.*

Leaves *floating* on surface of water, rounded, heart-shaped at base L;  corolla yellow, hairy at base of upper surface. — II. **Limnanthemum** Gmel., p. 117. *Limnanth.*

Leaves *neither ternate nor floating.*

- *Sepals, petals and stamens 8*; flowers yellow; cauline leaves connate P.  — III. **Chlora** L., p. 117. *Chlora.*
- *Sepals, petals and stamens 4-5.*
  - Flowers usually *4-partite*, pink, yellow or yellowish; plant ½-4 in.; stems slender C.  — IV. **Cicendia** Adans., p. 117. *Cicendia.*
  - Flowers usually *5-partite*; plant usually taller than 4 in
    - Corolla tube *wide* at mouth; ripened anthers *not spirally twisted*; flowers blue, lilac or purplish. — V. **Gentiana** L., p. 118. *Gentian.*
    - Corolla tube *narrow* at mouth E; ripened anthers *spirally* twisted; flowers rose, rarely white.  — VI. **Erythræa** Neck., p. 118. *Centaury.*

I. Menyanthes L. *Buckbean.*—(Fig. T, above.)
Bog plant; petiole long with membranous sheath at base; peduncle long; raceme many-flowered; flowers ½-⅔ in., 5-partite; 6-12 in. [Bog-bean; Marsh Trefoil.]

II. Limnanthemum Gmel. *Limnanth.*—(Fig. L, above.)
Aquatic plant; flowers 5-partite, solitary on long peduncles, yellow; stem long, creeping, rooting. [Fringed Water-lily.]

III. Chlora L. *Chlora.*—(Fig. P, above.)
Plant glauco is-green; radical leaves narrowed at base, cauline leaves opposite, broadly connate; corolla-tube short, membranous; 8-24 in.

IV. Cicendia Adans. *Cicendia.*—(Fig. C, above.)

Sepals *separate only at apex* F;  flowers yellow; 1-4 in.

Sepals *separate almost to their base* PU;  flowers pink or pale yellow; ½-3 in.

1. **M. trifoliata** L. ✠ *Buckbean.*
Bogs, marshes: May-July. P.

1. **L. nymphæoides** Hoffm. and Link *Common Limnanth.*
Ponds and still waters: July-Sept. P.

1. **C. perfoliata** L. ✠ *Yellow-wort.* Loc.
Chalky pastures and shady places: June-Sept. A.

1. **C. filiformis** Delarb. *Slender Cicendia.* Loc.
Damp sandy, shady places: June-Oct. A.

2. **C. pusilla** Griseb. *Dwarf Cicendia.* R.
Near pools in shady, sandy places: June-Oct. A.

V. Gentiana L. *Gentian.*—

Throat of corolla *bearded* G, P.

Sepals *more or less equal*, united throughout ½ their length; petals acute G; flowers *5-partite*, purplish.

- Calyx-segments less equal; corolla tube *longer than calyx* G; 4-12 in.  1. **G. germanica** Willd. R. Chalky pastures: Aug.-Oct. A.
- Calyx-segments more equal; corolla-tube *about as long as calyx*; leaves narrow; 4-12 in. 2. **G. Amarella** L. *Autumn Gentian.* Chalky pastures: Aug.-Oct. A.

Sepals *unequal*, separated almost to their base; petals obtuse P; flowers *4-partite*, bluish-purple; 2-12 in.  3. **G. campestris** L. *Field Gentian.* Hillside pastures, limestone Aug.-Oct. A.

Throat of corolla *not bearded*.

Small bi-fid corolla lobes *present* between larger lobes.

- Stem *erect*, slender, leafy, usually branched; flowers solitary, terminal, small, blue; 1-6 in. 4. **G. nivalis** L. *Small Gentian.* VR. Mountains: July-Aug. A.
- Stem *prostrate*; leaves in terminal tufts; flowers solitary, terminal, large, blue; 1-3 in. 5. **G. verna** L. *Spring Gentian.* R. Limestone pastures: Apr.-June. P.

Small bi-fid corolla lobes *not present* between larger lobes; stem erect, leafy; flowers shortly stalked, in opposite pairs near apex PN, blue; 4-20 in.  6. **G. Pneumonanthe** L. *Marsh Gentian.* Loc. Marshes: Aug.-Sept. P.

VI. Erythræa Neck. *Centaury.*—

Stamens inserted at *top* of corolla-tube.

Leaves very *narrow*, *elongated*, obtuse L;  petals rounded at apex; coloured part of corolla-tube as long as colourless part; 1-8 in. 1. **E. linariifolia** Pers. Sandy sea-shores: June-Sept. A.

Leaves on middle of stem more or less *ovate*, *acute* RM.

- Flowers *stalked*, inflorescence not compact EP;  stem branching from the base; 1-8 in. 2. **E. ramosissima** Pers. Sandy pastures: June-Sept. A.
-  Flowers *sessile*; inflorescence compact EC;  stem branching in upper part; 8-24 in. 3. **E. Centaurium** Pers. *Common Centaury.* Dry woods and pastures: June-Sept. A.

Stamens inserted on *base* of corolla-tube; leaves ovate, blunt; flowers sessile; inflorescence compact; 4. **E. capitata** Willd. Downs near coast: July-Aug. A.

POLEMONIACEÆ. The Phlox and Cobæa belong to this natural order.

I. Polemonium L. *Polemonium.*—

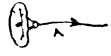
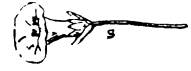
Radical leaves tufted, cauline leaves alternate, pinnate; leaflets many; flowers in corymb or panicle; corolla blue; 1-3 ft.

1. **P. cærulum** L. *Jacob's Ladder.* R. Hilly copses: July. P.

CONVOLVULACEÆ.

I. Convolvulus L. *Bindweed.*—

Stem more or less *twining.*

- Bracts *small*, *not in contact* with flower A;  flowers white or pink; 8-32 in.
  - 1. **C. arvensis** L. *Lesser Bindweed.* C. Fields, roadsides: June-Sept. P.
- Bracts *large*, *in contact* with flower S.
  - Leaves *acute*, triangular SP; stem climbing; corolla white; 3-15 ft.  
    - 2. **C. sepium** L. *Larger Bindweed.* C. Hedges: June-Aug. P.
  - Leaves *rounded* at apex SL; stem prostrate;  corolla pink; 4-8 in.
    - 3. **C. Soldanella** L. *Sea Bindweed.* Sandy sea-shores. June-Aug. P.

CUSCUTACEÆ. The plants of this natural order are not green; they are parasitic and very harmful to their host-plants.

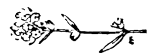
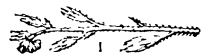
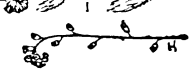
I. Cuscuta L. *Dodder.*—

Flowers in *sessile clusters*, pinkish or yellowish.

- Bract *absent* at base of flower; corolla large, *globular* D;  stamens enclosed by corolla. [Parasitic on Flax.]
  - *1. **C. densiflora** Soy.-Will. *Flax Dodder.* R. Flax-fields: July-Aug. A.
- Bract *present* at base of flower; corolla *bell-shape* M, E.
  - Sepals *obtuse* M; stamens enclosed by corolla. [Parasitic on Nettles, Flax, Hop.] 
    - 2. **C. major** C. Bau. *Greater Dodder.* Loc. Waste places: June-Aug. A.
  - Sepals *acute* E; stamens projecting beyond corolla. [Parasitic on Clover, Gorse, Thyme, Heath.] 
    - 3. **C. epithymum** Murr.[1] *Lesser Dodder.* Heaths: July-Aug. A.

1. Var. *Trifolii* Bab.: flower larger; on Clover chiefly.

BORAGINACEÆ. All the members of this natural order contain a relatively high percentage of potassium nitrate (saltpetre) to which they owe their medicinal properties.

- **Throat of corolla *open* O, LA.**
  - Corolla *irregular* EV;  stamens unequal in length, longer than corolla; fruit wrinkled.
  - **Corolla *regular*; stamens equal in length.**
    - Stamens *longer* than corolla; fruit smooth.
    - **Stamens *shorter* than corolla.**
      - Leaves *obtuse* H; flowers in long spikes;  bracts absent.
      - Leaves *acute*; flowers with stalks or bracts, or both.
        - Throat of corolla with *5 groups of hairs*, alternating with stamens O. 
        - Throat of corolla with *5 small scales*, or corolla-tube with *5 hairy lines* alternating with stamens LA. 
  - Upper leaves with *blade prolonged down the stem* SO;   bracts absent; corolla bell-shaped S. 
- **Throat of corolla *almost closed by 5 small scales* B, P.**
  - Upper leaves *closely arranged in twos or in fours*; stem and leaves prickly A.
  - Upper leaves *not prolonged* down stem, and *not arranged* in twos or fours.
    - Anthers *converging*, prominent B;  corolla scales glabrous; fruit smooth.
    - Anthers *not converging*.
      - Corolla-tube *curved* AR;  scales hairy; fruit wrinkled.
      - Corolla-tube *straight*.
        - Fruits *prickly* EL, C.
          - Flowers *blue*; fruit with rows of prickles on dorsal surface EL; leaves narrow E.  
          - Flowers *purplish*; fruit prickly over whole surface C; lower leaves broad. 
        - Fruits with *membranous* edges, usually toothed.
        - Fruits *not prickly*.
          - Bracts *present* I; corolla funnel-shaped; fruit wrinkled. 
          - Bracts *absent* H; corolla spreading P; fruit smooth.  

I. **Echium** L., p. 121. *Echium.*
II. **Pneumaria** Hill, p. 121. *Pneumaria.*
III. **Heliotropium** L., p. 121. *Heliotrope.*
V. Pulmonaria L., p. 121. *Lungwort.*
IV. **Lithospermum** L., p. 121. *Gromwell.*
VI. **Symphytum** L., p. 121. *Comfrey.*
VII. **Asperugo** L., p. 122. *Asperugo.*
VIII. **Borago** L., p. 122. *Borage.*
IX. **Lycopsis** L., p. 122. *Bugloss.*
X. **Echinospermum** Sw., p. 122. *Echinospermum.*
XII. **Cynoglossum** L., p. 122. *Hound's Tongue.*
XIII. **Omphalodes** Mœnch, p. 122. *Omphalodes.*
XI. **Anchusa** L., p. 122. *Alkanet.*
XIV. **Myosotis** L., p. 123. *Myosote.*

1. Echium L. *Echium.*—(Fig. EV, p. 120.)

Stem erect, ***simple***; radical leaves withering early, secondary veins *not visible*; cauline leaves long, narrow, almost sessile; corolla reddish, then blue, tube narrow; plant hispid, hairs prickly and glandular at their base; 1-2 ft.

Stem *branched* from base, spreading; radical leaves not withering early, secondary veins *clearly visible*; cauline leaves broader, semi-amplexicaul; corolla violet-purple, striated white, tube short and broad; plant hispid; 8-28 in.

II. **Pneumaria** Hill. *Pneumaria.*—

Stem branched, procumbent; leaves simple, entire, obtuse, fleshy, glabrous, rough; flowers in cymes, purplish-blue; plant glaucous, 1-2 ft.

III. **Heliotropium** L. *Heliotrope.*—(Fig. H, p. 120.)

Sepals obtuse, persistent, radiating below ripe fruit; flowers white, throat yellow; 4-20 in.

IV. **Lithospermum** L. *Gromwell.*—

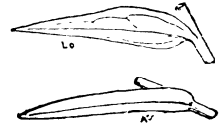
Flowers *blue*; corolla much longer than calyx PC; barren stems *procumbent*;



midrib on leaf alone prominent; 1-2 ft.

Flowers *white* or whitish; corolla little longer than calyx; stems *erect*.

- Midrib and secondary nerves of leaf prominent LO; throat of corolla with *5 small scales*; fruits shining; 16-32 in.
- Midrib of leaf alone prominent AV; tube of corolla with *5 hairy lines* (LA, p. 120); fruits wrinkled; 1-2 ft. [Bastard Alkanet.]



V. **Pulmonaria** L. *Lungwort.*—

Leaves *lanceolate, usually* spotted; flowers first red, then blue; 4-16 in.

Leaves *ovate-lanceolate, always* spotted; flowers pale purple; 4-20 in.

VI. **Symphytum** L. *Comfrey.*—(Figs SO, S, p. 120.)

Upper leaves *very decurrent*; flowers yellowish, white, or purple; fruits smooth, shining; 2-3 ft.

Upper leaves *slightly decurrent*; flowers yellowish-white; fruits covered with small tubercles; underground stem a woody, brown tuber; 1-2 ft.

1. **E. vulgare** L.
Viper's Bugloss.
Roadsides; waste places: June-Aug. B.

2. **E. plantagineum** L.
Purple Bugloss.
Waste places near sea: June-Aug. B.

1. **P. maritima** Hill.
Sea Lungwort. R.
Shingle: May-Aug. P.

1. **H. europæum** L.
Heliotrope.
Gardens: July-Sept. A.

1. **L. purpureo-cæruleum** L.
Creeping Gromwell. R.
Thickets: May-July. P.

2. **L. officinale** L.
Common Gromwell.
Thickets: May-July. P.

3. **L. arvense** L.
Corn Gromwell.
Fields; waste places: May-July. A.

1. **P. angustifolia** L. ✠
Narrow-leaved Lungwort. R.
Thickets: Apr.-May. P.

*2. **P. officinalis** L.
Lungwort. R.
Gardens; thickets: Apr.-May. P.

1. **S. officinale** L. ✠
Common Comfrey.
Wet shady places: May-July. P.

2. **S. tuberosum** L.
Tuberous Comfrey. R.
Damp shady places: May-July. P

VII. Asperugo L. *Asperugo.*—(Fig. A, p. 120.)

Leaves narrowed at base; calyx much enlarged after flowering, compressed; flowers 1-4, axillary; pedicels of fruits recurved; corolla blue; 8-18 in.

1. **A. procumbens** L. *Madwort.* R.
Fields; roadsides: June-July. P.

VIII. Borago L. *Borage.*—(Fig. B, p. 120.)

Plant hispid; lower leaves with long petioles; corolla-lobes spreading; flowers drooping, bright blue, seldom pink or white; 1-2 ft.

*1. **B. officinalis** L. ✠ *Common Borage.*
Waste and cultivated ground: June-Aug. A.

IX. Lycopsis L. *Bugloss.*—(Fig. AR, p. 120.)

Plant very hispid; leaves lanceolate, wavy, lower ones stalked, upper ones semi-amplexicaul; flowers blue, small; 8-20 in.

1. **L. arvensis** L. *Small Bugloss.*
Cultivated ground; hedges: June-Aug. A.

X. Echinospermum Sw. *Echinospermum.*—(Figs. EL, E, p. 120.)

Leaves narrow, bristly; prickles of fruit hooked; flowers blue; 8-20 in.

*1. **E. Lappula** Lehm. R.
Waste places: June-Aug. A. or B.

XI. Anchusa L. *Alkanet.*—

Lower leaves *stalked, ovate* S, cottony below, persistent;  flowers blue; 1-2 ft.

*1. **A. sempervirens** L. *Evergreen Alkanet.* R.
Waste places: May-July. P.

Lower leaves *narrow at base, lanceolate,* hispid; flowers purple or bluish-violet; 1-2 ft.

*2. **A. officinalis** L. *Common Alkanet.* R.
Waste places: June-Aug. P.

XII. Cynoglossum L. *Hound's Tongue.*—(Fig. C, p. 120.)

Calyx *very hairy* OF;  leaves hairy, hoary on both surfaces; flowers purplish-red in spreading racemes; pedicel of fruit not recurved, shorter than calyx; plant fetid; 8-32 in.

1. **C. officinale** L. ✠ *Common Hound's Tongue.*
Waste places: June-July. B.

Calyx *slightly hairy* M;  leaves green, shining above; flowers violet-blue; pedicel of fruit longer than calyx; 1-3 ft.

2. **C. montanum** Link *Green-leaved Hound's Tongue.* R.
Woods: June-July. B.

XIII. Omphalodes Mœnch. *Omphalodes.*—

Radical leaves with long petioles, blade ovate or heart-shaped; flowers usually bright blue, large; calyx closely covered with hairs; plant almost glabrous; 2-6 in.

*1. **O. verna** Mœnch. VR.
Plantations: Apr.-May. P.

XIV. Myosotis L. *Myosote.* [Scorpion-grass.]—

Hairs on calyx *straight, adpressed* PA.



Calyx of fruit spreading; fruit black, shining.

Raceme *leafless*; calyx-teeth short, broad; plant almost glabrous; 1-2 ft.

1. M. palustris With. *Forget-me-not.* C.
Watery places: June-Aug. P.

Raceme slightly *leafy* below; calyx-teeth narrow, half length of calyx; plant hairy.

Stem slightly angular, hairs *spreading*: corolla-limb *flat*, *longer* than tube, pale blue. [Forget-me-not.]

2. M. repens Don
Boggy places: June-Aug. P.

Stem rounded, hairs *adpressed*; corolla-limb slightly *concave*, *equalling* tube, bright blue; 4-18 in. [Forget-me-not.]

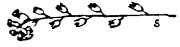
3. M. cæspitosa Schultz. C.
Watery places: June-Aug. P.

Hairs on calyx *hooked*, usually *spreading* MI. [Use a lens.]



Pedicels of fruits more or less *spreading* V, I; hairs on leaves *not hooked*.

Pedicels of fruits more or less *adpressed* S; hairs on leaves often *hooked*;

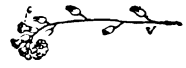


fruiting pedicel shorter than calyx S; corolla blue; 4-8 in.

4. M. stricta Link
Old walls: Apr.-June. A.

Pedicels *not longer* than fruiting calyx.

Corolla yellow, then whitish, changing to reddish and later to blue, tube *longer* than calyx (*c*, Fig. V); 2-16 in.



5. M. versicolor Pers. *Changing Myosote.* C.
Fields; roadsides: Apr.-June. A.

Corolla blue, tube *shorter* than calyx; 1-8 in.

6. M. collina Hoffm. *Early Myosote.*
Dry places: Apr.-May. A.



Lower pedicels *longer* than fruiting calyx I; corolla-tube *not* longer than calyx (*c*, Fig. I).

Calyx of fruit *closed*.

Corolla tube *shorter than* calyx; lower leaves gradually narrowed IT; 8-24 in.



7. M. arvensis Hill. *Field Myosote.* C.
Banks; shady places: May-Sept. A. or B.

Corolla tube *as long as* calyx; lower leaves sharply narrowed SI; 8-24 in.



8. M. sylvatica Hoffm. *Wood Myosote.* R.
Woods; streams: May-June. P.

Calyx of fruit *open*; flowers large; 4-10 in.

9. M. alpestris Schm. *Mountain Myosote.* VR.
Mountains: July-Aug. P.

SOLANACEÆ. Many of the species are poisonous on account of the organic alkalies that they contain (*solanine, atropine, hyoscyamine*, etc.); in minute quantities, several of these alkalies are used in medicine.

Shrub; spinous; flowers purple or lilac; corolla funnel-shaped, slightly irregular L.  — I. **Lycium** L., p. 124. *Lycium.*

Plant usually *herbaceous.*

- Corolla *cup-shaped or spreading* A, N.
  - Calyx *enlarging considerably* after flowering P, and enclosing the fruit; corolla cup-shaped A, whitish with greenish throat; anthers not converging.  — II. **Physalis** L., p. 125, *Physalis.*
  - Calyx *not enlarging* after flowering; corolla spreading, white or purple; anthers converging.  — III. **Solanum** L., p. 125. *Solanum.*
- Corolla *tubular* HN, B, D.
  - Flowers *yellowish*, veined purple or brown, unilateral HN;  leaves lobed; lobes acute; fruit rounded, opening above by a lid HY.  — IV. **Hyoscyamus** L., p. 125. *Henbane.*
  - Flowers *purple or white.*[1]
    - Leaves *entire* B; fruit *fleshy*, globular B, black when ripe.  — V. **Atropa** L., p. 125. *Atropa.*
    - Leaves *sharply toothed* D; corolla with longitudinal folds; fruit *dry*, opening by 4 valves DS.  — VI. **Datura** L., p. 125. *Datura.*

I. Lycium L. *Lycium.*—(Fig. L, above.)

Leaves glabrous, lanceolate, pointed; calyx membranous; fruit fleshy, red or reddish-yellow; shrub straggling; 3-15 ft. [Tea-plant.] — * **1. L. barbarum** L. Hedges: June-Aug. P.

II. Physalis L. *Physalis.*—(Figs. A, P, p. 124.)

Leaves oval; flowers solitary; fruit fleshy, red, surrounded by red, enlarged calyx; 1-2 ft. — **1. P. Alkekengi** L. ✠ *Winter Cherry.* Cultivated: June-Sept. P.

III. Solanum L. *Solanum.*—The Tomato belongs to this genus.

Leaves *deeply divided* with *more than 3 lobes*: flowers white or purple; fruit yellowish; underground stems tuberous at apex; 1-2 ft. — **1. S. tuberosum** L. ✠ *Potato.* Cultivated June-Sept.

Leaves *entire, toothed, or 3-lobed.*

- Flowers *purple*; leaves slightly cordate at base, upper ones often 3-lobed DU; fruit *red*, oval; stem climbing, shrubby at base; 3-6 ft. [Nightshade.] —  — **2. S. Dulcamara** L.[2] ✠ *Bittersweet.* Hedges, thickets: June-Aug. P.
- Flowers *white*: leaves entire or toothed; fruit *black*, globular: stem herbaceous; 2-24 in. [Black Nightshade.] —  — **3. S. nigrum** L.[3] ✠ *Black Solanum.* Waste and cultivated ground: June-Oct. A.

IV. Hyoscyamus L. *Henbane.*—(Figs. HN, HY, p. 124.)

Leaves sometimes deeply lobed; ripe fruit surrounded by enlarged persistent calyx: plant hairy, viscid; 8-32 ft. — **1. H. niger** L. ✠ *Common Henbane.* Waste places: May-July, A or B.

V. Atropa L. *Atropa.*—(Fig. B, p. 124.)

Leaves oval, pointed; flowers purplish-brown, solitary; fruit black, shining: 2-5 ft. [Dwale; Deadly Nightshade.] — **1. A. Belladonna** L. ✠ *Belladonna.* R. Waste places: June-Aug. P.

VI. Datura L. *Datura.*—(Fig. D, DS, p. 124.)

Leaves glabrous or nearly so; calyx tube long; fruit prickly; 1-2½ ft. — ***1. D. Stramonium** L. ✠ *Thorn Apple.* Waste ground: July-Sept. A.

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1. The genus *Nicotiana* L. [Tobacco]—corolla rose [*N. Tabacum* L.] ✠, or greenish-yellow [*N. rustica* L.] ✠—has a non-spinous fruit, 2-valved, later 4-valved.—2. Var. *littorale* Raab.: leaves very hairy; R.—3. Var. *miniatum* Bernh.: ripe fruit red, leaves with musk-like odour; R; var. *ochroleucum* Bast.: fruit yellow, stem angular; R.—4. Var. *Taitula* L.: flowers bluish-purple, stem and leaves purplish; R.

SCROPHULARIACEÆ. The plants belonging to this N.O. show considerable variety of form, particularly in the corolla. In the genera *Bartsia, Pedicularis, Rhinanthus, Euphrasia, Odontites, Melampyrum*, the various species are semi-parasitic on the roots or underground stems of the neighbouring plants, particularly Grasses; they are, therefore, harmful to crops.

Stamens 5; corolla 5-lobed, spreading, slightly tubular, usually yellow; flowers in long raceme or spike. — I. Verbascum L., p. 127. *Mullein.*

Stamens 4; didynamous.

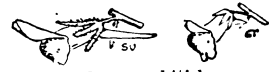
Corolla *without spur or protuberance.*

Leaves in part cauline, *opposite or alternate.*

Corolla-tube with *protuberance at base* M, OR.



Corolla-tube distinctly *spurred at base* SU, ST.



Leaves *all radical* L, entire, petioles long; plant aquatic; flowers whitish or rose.



II. **Antirrhinum** L., p. 127. *Snapdragon.*

III. **Linaria** Hill, p. 128. *Linaria.*

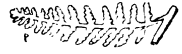
VII. **Limosella** L., p. 129. *Limosel.*

Stamens 4; usually *a fifth stamen is reduced to a scale* (*e*, Fig. S); leaves opposite.



IV. **Scrophularia** L., p. 128. *Scrophularia.*

Leaves *deeply divided*, lobes parallel P; alternate; corolla 2-lipped.



VIII. **Pedicularis** L., p. 129. *Pedicularis.*

Leaves *entire or toothed.* — Leaves *alternate.* — Flowers *large* in *long racemes* D; leaves acute; corolla distinctly irregular.



IX. **Digitalis** L., p. 129. *Foxglove.*

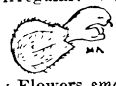
Flowers *small*; leaves obtuse; corolla not distinctly irregular. — Flowers *solitary*, axillary, tube short, lobes spreading. — Flowers in *short raceme*, tube long.

X. **Sibthorpia** L., p. 129. *Sibthorpia.*

VI. **Erinus** L., p. 129. *Erinus.*

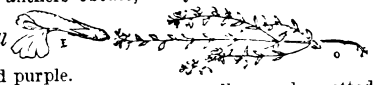
Stamens 4; fifth stamen *not* represented by a small scale.

Calyx *inflated* MA, 4-toothed; anthers obtuse, hairy.



XI. **Rhinanthus** L., p. 129. *Meadow Rattle.*

Leaves *opposite.* — Calyx *not inflated.* — *Upper lip* of corolla *entire.* — Flowers *small* O, usually white, veined purple.

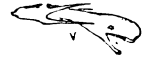


XII. **Euphrasia** L., p. 129. *Eyebright.*

Flowers *large*, showy, yellow, or yellow and spotted purple.

V. **Mimulus** L., p. 129. *Mimulus.*

Upper lip of corolla *2-lobed.* — Upper lip *compressed* V; seeds 2-4.



XIV. **Melampyrum** L., p. 131. *Cow wheat.*

Upper lip *not compressed* R. — Seeds *several.* — Seeds *numerous.*



XV. Odontites Hall, p. 132. *Odontites.*

XVI. **Bartsia** L., p. 132. *Bartsia.*

Stamens 2; corolla 4-lobed, spreading, tube very short, usually blue. XIII. **Veronica** L., p. 130. *Speedwell.*

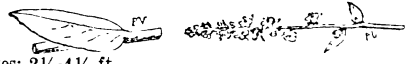
I. Verbascum L. *Mullein.*—The plants comprising this genus are difficult to determine, many of them being hybrids and therefore presenting intermediate characters.

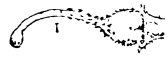
Corolla *yellow* or yellowish, *throat spotted purple*; *hairs on filaments purple.*

- Leaves *slightly hairy or glabrous above, slightly woolly below*, lower ones with *long petiole* NL; pedicel of fruit about twice as long as calyx; 1½-3½ ft.  1. **V. nigrum** L. *Dark Mullein.* Shady banks and roadsides: June-Oct. B.
- Leaves *glabrous or almost so, shining*, lower ones *almost sessile* BL; bracts and sepals with glandular hairs.
  - Pedicels *solitary*, 2-4 times *longer than calyx*; 1½-3½ ft.  2. **V. Blattaria** L. *Moth Mullein.* R. Banks, roadsides. June-Sept B.
  - Pedicels *1-5, shorter than calyx*; glandular hairs more numerous; 1-3½ ft. 3. **V. virgatum** With. *Twiggy Mullein.* R. Banks, roadsides: June-Sept. B.

Corolla *yellow*, sometimes white; *hairs on filaments white or yellowish*, sometimes absent.

Leaves *not decurrent*; *filaments all hairy.*

- Stem *round* even towards apex PV; pedicel as long as or shorter than calyx PU; leaves covered above and below with a mealy down, falling in flakes; 2½-4½ ft.  4. **V. pulverulentum** Vill. *Hoary Mullein.* Loc. Roadsides: July-Aug. B.
- Stem *angular* in upper part LC; pedicel of fruit longer than calyx LY. leaves nearly glabrous above, down white and powdery below; 2-3½ ft.  5. **V. Lychnitis** L. *White Mullein.* R. Waste places: June-Aug. B.

Leaves *decurrent*, very woolly on both sides; the *two longer filaments more or less glabrous*; stigma globular I; corolla somewhat cup-shaped; 2-5 ft. [Aaron's-rod. High-taper.]  6. **V. Thapsus** L. ✠ *Great Mullein.* C. Roadsides, waste places. July-Sept. B.

II. Antirrhinum L. *Snapdragon.*—

Sepals *narrow, longer than corolla* OR;  corolla rose, seldom white; 4-20 in. 1. **A. Orontium** L. *Lesser Snapdragon.* Cultivated ground: July-Sept. A.

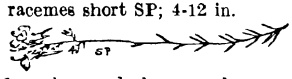
Sepals *broad, shorter than corolla* M;  flowers purplish-red, or white with yellow throat; 16-32 in. *2. **A. majus** L. ✠ *Great Snapdragon.* Old walls: June-Sept. P.

III. Linaria Hill. *Linaria.*—

Stems *trailing*; leaves *not linear*; flowers *solitary*.

- Petiole *short* S, EL; calyx hairy; corolla *yellow*, upper lip purple.
  - Leaves *ovate-rounded* S;  sepals somewhat heart-shaped at base; 8-20 in. **1. L. spuria** Mill. *Round-leaved Linaria.* Corn-fields: July-Oct. A.
  - Leaves *hastate* EL;  sepals narrow at base; 8-24 in. [Fluellin.] **2. L. Elatine** Desf. ✠ *Pointed Linaria.* Corn-fields: July-Oct. A.
- Petiole *long* C; leaf rounded, slightly 5-lobed C; calyx glabrous; corolla *pale purple*, throat yellow; plant glabrous; 4-32 in. [Mother-of-thousands.]  ***3. L. Cymbalaria** Mill. *Ivy-leaved Toadflax.* Old walls: May-Sept. P.

Stems *not trailing*; leaves *linear*.

- Flowers *solitary*, axillary MI; pedicel 3-4 times longer than calyx MI;  sepals unequal; corolla pale purple, throat yellow, hairy, glandular, tube partly open; 4-16 in. **4. L. minor** Desf. *Lesser Linaria.* Fields: June-Oct. A.
- Flowers in *racemes*; pedicel as long as or shorter than calyx.
  - Corolla *yellow.*
    - Calyx *glabrous* V; corolla sulphur yellow, throat orange;  raceme long; 1-2½ ft. **5. L. vulgaris** Mill [1] *Yellow Toadflax.* C. Hedges; waste places. July-Sept. P.
    - Calyx *hairy*, *glandular* SV; corolla pale yellow;  racemes short SP; 4-12 in.  ***6. L. supina** Desf. R. Waste places near sea: July-Sept. A
  - Corolla *purple, or veined purple or blue.* Fruit *shorter* than calyx; corolla purple, striated, paler or darker purple, spur long; seed fringed; 8-16 in. **7.** L. Pelisseriana Mill. VR. Rocks; waste places: June-Sept A.
    - Fruit *longer* than calyx.
      - Spur *short* ST; corolla whitish, veined purple or blue; 8-24 in.  **8. L. repens** Mill. *Pale Linaria.* R. Waste places: July-Sept. P.
      - Spur *long*; corolla purple, lower part sometimes yellow; 1-3 ft. ***9. L. purpurea** Mill. *Purple Linaria.* Old walls: July-Aug. P.

IV. Scrophularia L. *Scrophularia.*—

Scale or barren stamen absent; stem hairy, winged V; leaves cordate at base V; pedicel shorter than calyx; 1-3 ft.  ***1. S. vernalis** L. *Yellow Scrophularia.* R. Damp waste places: Apr.-June. P.

Scale or barren stamen present.

- Leaves *downy*, cordate-triangular; stem 4-angled; pedicel longer than calyx; flowers dull purple; 16-40 in. **2. S. Scorodonia** L. *Balm-leaved Scrophularia.* R. Damp waste places: June-Aug. P.
- Leaves *glabrous*; flowers reddish-brown.
  - Stem *4-angled*; leaves *acute* N, teeth unequal;  underground stem tuberous; 1½-3 ft. **3. S. nodosa** L. ✠ *Figwort.* C. Moist shady places: June-Sept. P.
  - Stem with sharp edges, or *4-winged*; not tuberous.
    - Leaves *obtuse*, *teeth rounded* A; 2-4 ft.  **4. S. aquatica** L. *Water Scrophularia.* C. Wet places: July-Sept. P.
    - Leaves more *pointed*, *teeth acute*, petiole winged and not clearly defined; 2-5 ft. **5. S. Ehrharti** Stev. R. Wet places: July-Sept. P.

V. Mimulus L. *Mimulus.*—

Plant slightly downy or *glabrous, odourless*; flowers more than 1 in. in length, yellow, usually spotted purple; 1-2 ft. [Monkey-flower.]

Plant *hairy, glandular, fragrant*; flowers smaller, yellow; 6-18 in. [Musk.]

*1. **M. luteus** Willd. *Yellow Mimulus.* Wet shady places: June-Sept P.

*2. **M. moschatus** Dougl. *Musk Mimulus.* Wet shady places: July-Aug. P.

VI. Erinus L. *Erinus.*—

Leaves more or less hairy, toothed towards apex, lower ones in a rosette; calyx and corolla bearing short hairs; 2-6 in.

* 1. **E. alpinus** L. Loc. Rocks and wet places: July-Aug. P.

VII. Limosella L. *Limosel.*—(Fig. L, p. 126.)

Underground stem slender, rooting, producing here and there tufts of radical leaves; flowers small, solitary; 1-4 in. [Mudwort.]

1. **L. aquatica** L. *Common Limosel.* R. Muddy places: July-Sept. A.

VIII. Pedicularis L. *Pedicularis.*—

Corolla rose.

Upper lip of corolla bearing a *tooth towards the middle of each lateral margin* PA; calyx 2-lobed, hairy; fruit longer than calyx; stem and branches erect; 4-24 in.



1. **P. palustris** L. *Marsh Lousewort.* Marshes. May-Aug. A.

Upper lip of corolla with *lateral margin entire* SI; calyx unequally 4 or 5 toothed, ciliate; fruit shorter than calyx; main stem erect, branches prostrate, spreading; 4-8 in.



2. **P. sylvatica** L. *Heath Lousewort.* C. Damp heathy places Apr.-Aug. P.

IX. Digitalis L. *Foxglove.*—

Flowers *purple, rose or white*, spotted; calyx hairy P;  leaves hairy below; 2-4 ft.

1. **D. purpurea** L. ✠ *Purple Foxglove.* C. Hedges, woods: June-Aug. B, or P.

Flowers *yellow or whitish-yellow*; stem, calyx and pedicel hairy, glandular; veins of leaves very hairy below; 1-2½ ft.



2. **D. grandiflora** All. Gardens: June-Aug P.

X. Sibthorpia L. *Sibthorpia.*—

Stem slender, creeping; leaves alternate, roundish, 5-7 toothed or lobed, petioles long: flowers small; upper lip of corolla yellow, lower pink; 3-12 in.

1. **S. europæa** L. *Common Sibthorpia.* Damp shady places: June-Aug P

XI. Rhinanthus L. *Meadow Rattle.*—

Corolla yellow; seeds winged.

Calyx teeth *close together* in pairs MI; upper bracts green; 8-18 in.



1. **R. Crista-galli** L. *Common Meadow Rattle.* C. Meadows: May-Aug. A.

Calyx teeth *not close together* in pairs MA; upper bracts membranous; 8-18 in.



2. **R. major** Ehrh. R. Cultivated ground: June-Aug. A.

XII. Euphrasia L. *Eyebright.*—(Figs. E, O, p. 126)

Upper leaves alternate or opposite; anther-lobes unequally pointed, bearded at base, calyx hairy, glandular; colour of corolla various; 1-8 in.

1. **E. officinalis** L.[2] ✠ *Common Eyebright.* C. Heaths, pastures June-Sept. A

1. Hybride between this plant and *L. repens* are sometimes found.—2, This plant varies considerably in size and form, also in the colour of the corolla.

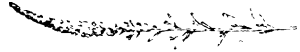
XIII. Veronica L. *Speedwell.*—

Calyx *longer than pedicels of fruits* A, O.

Leaves *entire or toothed.*

Leaves on middle part of stem *6-7 lobed* V;  fruit deeply notched, shorter than calyx; corolla pale blue; 2-5 in.

Raceme *dense, terminal.*

Raceme *long, pointed* S; flowers many, bright blue; leaves ovate-lanceolate; 4-16 in. 

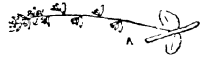
Raceme *short, not pointed;* flowers few.

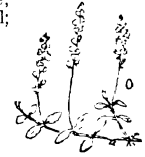
Stem *shrubby* at base; flowers large, bright blue; 2-8 in.

Stem *herbaceous* at base; flowers small, blue; 2-6 in.

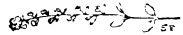
Raceme *lax* A, O.

Leaves more *hairy*, or less

Branches *erect* or spreading; leaves ovate A; fruit *shorter* than calyx;  flowers light blue; raceme terminal; 2-12 in.

Branches *creeping* O, rooting; leaves longer O; fruit longer than calyx; flowers pale blue; raceme axillary; 4-16 in. 

Leaves *glabrous, shining;*

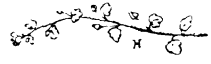
Leaves *glabrous, shining,* oval SE;  style as long as fruit; flowers pale blue or whitish, veined; raceme terminal; 4-8 in.

Leaves *3-7 lobed* TR;  calyx longer than corolla; flowers deep blue; 2-8 in.

Leaves *alternate,* at least upper ones. *pedicels of fruits.*

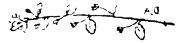
Leaves *covered with hairs.*

Leaves *toothed or only slightly lobed.*

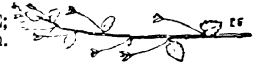
Sepals *cordate* at base; fruit *glabrous,* inflated: leaves slightly lobed, middle lobe large H; flowers pale blue; 4-12 in. 

Sepals *not cordate;* fruit *more or less hairy.*

Pedicels *as long as or slightly longer than leaves* AG; lobes of fruit *inflated, not diverging.*

Sepals *oblong, obtuse;* flowers blue, lower petals white or pink; 4-8 in. 

Sepals *ovate, acute;* flowers larger, bright blue; 4-8 in.

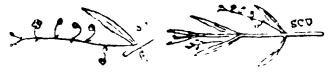
Pedicels *much longer than leaves* PE; lobes of fruit *flat, divergent;* 4-12 in. 

1. **V. verna** L.
Vernal Speedwell. VR.
Sandy heaths: Apr.-May. A.
2. **V. spicata** L. ✠
Spiked Speedwell. R.
Hilly, sandy or chalky places: July-Sept. P.
3. **V. saxatilis** L.
Rock Speedwell. VR.
Rocks. July-Aug. P.
4. **V. alpina** L.
Alpine Speedwell. R.
Mountains: July-Aug. P.
5. **V. arvensis** L.
Wall Speedwell. C.
Walls; dry places: Apr.-Oct. A.
6. **V. officinalis** L. ✠
Common Speedwell. C.
Dry shady places June-Aug. P.
7. **V. serpyllifolia** L.
Thyme-leaved Speedwell. VC.
Pastures, hedges: May-July. P.
8. **V. triphyllos** L.
Fingered Speedwell. R.
Fields, heaths: Apr.-May. A.
9. **V. hederæfolia** L.
Ivy-leaved Speedwell.
Cultivated and waste places. May-July. A.
10. **V. agrestis** L.
Procumbent Speedwell. C.
Waste places; fields. Apr.-Sept. A.
11. **V. didyma** Ten.
Waste places; fields: Apr.-Sept. A.
*12. **V. Buxbaumii** Ten.
Buxbaum's Speedwell.
Fields: Apr.-Oct. A.

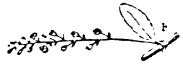
Calyx *shorter than*

Leaves *all opposite.*

Leaves *more or less oval.*

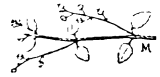
Leaves *narrow, elongated* SC, SCU;  pedicels spreading or reflexed; flowers white or pinkish; 6-16 in. — 13. **V. scutellata** L. *Marsh Speedwell.* Marshes: June-Aug P.

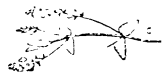
Leaves *glabrous.*

Leaves *petiolate* B;  stem *rounded*, flowers light blue; 8-24 in. — 14. **V. Beccabunga** L. ✠ *Brooklime.* C. Watery places: May-Sept. P.

Leaves *sessile* AN;  stem *almost 4-angled*, flowers pale blue; 8-30 in. — 15. **V. Anagallis** L. *Water Speedwell.* Watery places: July-Aug. P.

Leaves *hairy.*

Leaves all *petiolate* M; fruit flat, toothed, ciliate; flowers pale blue, veined; 4-16 in.  — 16. **V. montana** L. *Mountain Speedwell.* Damp woods. May-July. P.

Leaves *sessile* C, slightly cordate at base, sharply toothed; racemes all axillary C; flowers blue; 4-20 in.  — 17. **V. Chamædrys** L. ✠ *Germander Speedwell.* C. Hedges, woods: May-July P

XIV. **Melampyrum** L. *Cow-wheat.*—

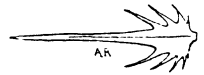
Flowers *axillary in pairs*, all turned one way PR.

Upper bracts *deeply toothed* at base, lower bracts similar to leaves PR; corolla yellow or yellowish; 8-20 in.  — 1. **M. pratense** L. *Common Cow-wheat.* Thickets: June-Aug. A

All bracts *entire* or almost so; corolla deep yellow; flowers smaller; 4-16 in. — 2. **M. sylvaticum** L. *Small-flowered Cowwheat.* R. Thickets and woods, mountains: July-Sept. A.

Flowers in *short spikes.*

Bracts cordate at base, very *finely toothed* C, *green*, rose at base; corolla yellow, tinged with purple; 8-16 in.  — 3. **M. cristatum** L. *Crested Cow-wheat.* R. Thickets; woods: July-Aug. A.

Bracts not cordate at base, *deeply toothed* AR, *rose or purple*; corolla rose, throat yellow; 8-20 in.  — 4. **M. arvense** L. ✠ *Purple Cow-wheat.* R. Corn-fields: June-Aug. A.

XV. **Odontites** Hall. *Odontites.*—

Flowers rose or red, many, in a one-sided spike; stamens and style slightly longer than corolla R ; 4-16 in.



1. **O. rubra** Pers.[1]
Red Odontites.
Shady places: June-Sept. A.

XVI. **Bartsia** L. *Bartsia.*—

Corolla *purple*; spike short; calyx viscid; plant hairy; 4-8 in.

1. **B. alpina** L.
Alpine Bartsia. R.
Pastures, mountains: June-Aug. P.

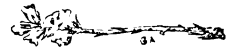
Corolla *yellow*, lower lip slightly longer than upper; spike long; plant hairy, viscid: 4-12 in.

2. **B. viscosa** L.
Viscid Bartsia.
Damp pastures near sea: June-Sept. A.

OROBANCHACEÆ. The plants of this N.O. contain no green colouring matter, and are parasitic on the roots or underground stems of many species of green plants. Several of them are particularly harmful to crops of Flax, Lucerne and Sainfoin. Great care is necessary in the up-rooting of the parasite if its host-plant is to be determined.

Flowers *with pedicels*; nectary prominent, crescent-shaped, at base of pistil.





I. **Lathræa** L., p. 132.
Toothwort.

Flowers *sessile* GA, O.

II. **Orobanche** L., p. 132.
Broomrape.

I. **Lathræa** L. *Toothwort.*—

Pedicel shorter than calyx SQ; flowers all turned one way, white mixed with purple; calyx hairy; underground bearing numerous scales; 3-8 in. [Parasitic on Hazel.]



1. **L. squamaria** L.
Common Toothwort.
Woods: Apr.-May. P.

II. **Orobanche** L. *Broomrape.*—(Figs. GA, O, above.)

Bracts 3 below each flower P; calyx 4-5 toothed.

Stem *branched* R;



corolla yellowish, lightly tinted blue; stigma white or bluish; 4-12 in. [Parasitic on Hemp.]

1. **O. ramosa** L.
Branched Broomrape. VR.
Fields. July-Sept. A.

Stem *not branched.*

Petals *acute* P, blue with darker veins; anthers *glabrous*; stigma whitish; 8-16 in. [Parasitic on Milfoil.]



2. **O. cærulea** Vill.
Blue Broomrape.
Pastures. June-July. P.

Petals *obtuse*, purplish-blue, rarely white; anthers *hairy*, hairs long and woolly; stigma pale yellow or orange; 8-16 in. [Parasitic on *Artemisia campestris.*]

3. **O. arenaria** Borkh.
Sand Broomrape. VR.
Sandy places: June-July. P.

Bract 1 below each flower O; **calyx** deeply 2-lobed.

Stigma *yellow.*

Stamens *inserted on middle part of corolla-tube* H.

Filaments *glabrous or slightly hairy at base*;  corolla pale yellow, veined purple, margin wavy H; 8-24 in. [Parasitic on Ivy.]

4. **O. Hederæ** Duby. *Ivy Broomrape.* Woods June-July. P.

Filaments *very hairy throughout their length*; corolla yellowish, or purple mixed with brown; 1-2 ft. [Parasitic on *Centaurea scabiosa*.]

5. **O. major** L. *Tall Broomrape.* R. Pastures: June-July. P.

Stamens *inserted near base of corolla-tube* RA; filaments glabrous or with short hairs near apex; corolla yellowish-pink; 1-2½ ft. [Parasitic on Broom, Gorse.] 

6. **O. Rapum** Thuill. *Great Broomrape.* Heaths; thickets. May-July. P.

Stigma *purple or rose.*

Stamens *inserted near base of corolla-tube* E, G; stigma dark purple.

Filaments *slightly hairy* at base E; corolla yellowish or reddish with darker veins; 4-10 in. [Parasitic on Thyme.] 

7. **O. epithymum** DC. *Red Broomrape.* R. Rocky heaths: June-Aug. P.

Filaments *very hairy* in lower half G; corolla increasing in diameter from below upwards O, pale red, sometimes tinted purple; 4-12 in. [Parasitic on *Galiums*.] 

8. **O. Galii** Duby. *Clove-Scented Broomrape.* Pastures: June-July. P.

Stamens *inserted on middle of corolla-tube.*

Filaments *very hairy*; upper lip of corolla entire P;  stigma purple; corolla yellowish; 8-16 in. [Parasitic on *Picris hieracioides*.]

9. **O. Picridis** Schultz. *Picris Broomrape.* Pastures: June-July. A.

Filaments *almost glabrous*; upper lip of corolla slightly notched M, AM; stigma rose or purple.

Corolla-tube *not abruptly curved* M; bracts slightly if any longer than flowers; corolla whitish, veined purple; 4-20 in. [Parasitic on Clover.] 

10. **O. minor** Sutt. *Lesser Broomrape.* Stony ground. June-July. A.

Corolla-tube *abruptly curved* AM; bracts much longer than flowers; 8-20 in. [Parasitic on Eryngium.] 

11. **O. amethystea** Thuill. R. Waste places: June-July. P?

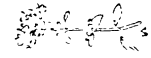
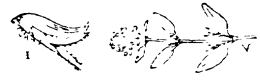
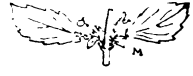
1, Var. *serotina* Rchb.: branches spreading, bracts shorter than flowers.

LABIATÆ. The diverse essences contained in the plants of this N.O. have medicinal properties.—Many Labiates are cultivated in gardens for culinary or medicinal purposes, e.g. Thyme, Sage, Rosemary, Balm, Hyssop, Sweet Basil, Lavender.

2-lipped.

- Corolla *not distinctly 2-lipped*; flower almost regular.
  - *Stamens 2* L; flowers white, spotted red; leaves deeply toothed LY or lobed.   → VI. **Lycopus** L., p. 136. *Lycopus.*
  - *Stamens 4* M;  flowers pink, lilac or whitish. → VII. **Mentha** L., p. 137. ***Mint.***
- Corolla with *lower lip well developed*: *upper lip very short*; stamens 4, didynamous.
  - Lower lip *3-lobed* A;  upper lip very short, entire or notched. → XX **Ajuga** L., p. 141. *Bugle.*
  - Lower lip *apparently 5-lobed* T;  upper lip apparently absent as its two lobes occur below, to the right and left of, the stamens T. → XXI. **Teucrium** L., p. 141. *Germander.*

Calyx 2-lipped.

- Calyx *irregular, unequally 5-toothed*, 3 teeth above, 2 below I.
  - *Stamens 2*, filaments 2-branched, only 1 branch bearing a perfect anther-lobe. → X. **Salvia** L.[1], p. 138. *Sage.*
  - Calyx lips *entire*, upper one bearing a protuberance G;  corolla much longer than calyx. → IX. **Scutellaria** L., p. 138. *Skullcap.*
- Stems *distinctly 4-angled*.
  - Stems *not distinctly 4-angled*, procumbent or spreading; leaves *entire* S, small (3-7 mm. broad); flowers purple; stamens diverging (Fig. I, p. 135).  → III. **Thymus** L., p. 136. *Thyme.*
  - Flowers in a *dense spike* V, intermingled with bracts broader than long; stamens more or less parallel, upper lip of calyx flat I.  → VIII. **Prunella** L., p. 137. *Prunella.*
  - Flowers *not in a dense spike* M; stamens converging CL.
    - Flowers *white*; leaves coarsely toothed M;  corolla-tube *curved*. → IV. **Melissa** L., p. 136. *Melissa.*
    - Flowers *rose, bluish or purplish*; corolla-tube *straight* CL.  → V. **Calamintha** Mœnch, p. 136. *Calamint.*

Corolla *distinctly* *Stamens* 4, didynamous. Calyx *toothed.* Calyx *more or less regular, teeth nearly equal.* Calyx-teeth *neither spinous nor hooked.* Calyx *neither very wide, nor membranous.*

Calyx-teeth 10, hooked MA:  flowers white.

Calyx-teeth *spinous.*

Corolla bearing *2 teeth on lower lip* G;  upper lip arched.

Corolla *not bearing teeth on lower lip.*

Ovary and fruits *flat* above L, LE; leaves lobed LC. 

Ovary and fruits *rounded* (Fig. A, below); leaves *not lobed.*

Anther-lobes arranged *end to end*; stamens reflexed outwards in older flowers.

Anther-lobes *parallel*; stamens not reflexed outwards.

Calyx *very wide* MM, membranous;  flowers large, whitish, 2-3 or solitary, axillary ME. 

Calyx-teeth *neither spinous nor hooked.*

Calyx *neither very wide, nor membranous.*

Leaves *entire or slightly toothed*; filaments *diverging* I. 

Flowers *all turned one way* HY; leaves narrow. 

Flowers in *rounded clusters* O; leaves broad OR. 

Leaves *distinctly toothed*; filaments *converging* under upper lip G, F.

Ovary and fruits *flat* above B;  calyx-teeth long LA. 

Ovary and fruits *rounded* A.

Anthers in pairs *forming a cross* G in the young flowers. 

Anthers *not forming a cross.*

Stamens *hidden* N, calyx *tubular* N. 

Stamens *protruding* F;  calyx *funnel-shaped* F.

XVII. **Marrubium** L., p. 140. *Horehound.*

XI. **Galeopsis** L., p. 138 *Galeopsis.*

XII. **Leonurus** L., p. 139. *Leonurus.*

XIII. **Stachys** L., p. 139. *Woundwort.*

XIV. **Betonica** L., p. 139. *Betony.*

XV. **Melittis** L., p. 139. *Melittis.*

I. **Hyssopus** L., p. 136. *Hyssopus.*

II. **Origanum** L., p. 136. *Marjoram.*

XVI. **Lamium** L., p. 140. *Lamium.*

XVIII. **Nepeta** L., p. 140. *Nepeta.*

XIX. **Ballota** L., p. 141. *Ballota.*

1. ***Rosmarinus officinalis*** L. [Rosemary] has 2 perfect stamens toothed near the base, and narrow revolute leaves.

I. Hyssopus L. *Hyssopus.*—(Fig. HY, p. 135.)
Leaves narrow; branches often very short, bearing smaller leaves; stem woody at base; flowers blue, rarely white; stamens protruding; 8-24 in.

1. **H. officinalis** L. ✠ *Hyssop.*
Cultivated: July-Aug. P

II. Origanum L. *Marjoram.*—(Figs. O, OR, p. 135.)

Leaves petiolate; flowers purple, rarely white; bracts usually purple; plant aromatic; 1-2 ft.

1. **O. vulgare** L. ✠ *Wild Marjoram.*
Shady places: July-Sept. P

III. Thymus L.[1] *Thyme.*—(Fig. S, p. 134.)

Leaves small, oval or oblong; calyx 2-lipped; stamens often not well-developed.
- Stems *procumbent*; flowering branches ascending; inflorescence usually short; 2-10 in.
- Stems *spreading, ascending*, hairs often in 2 opposite lines; inflorescence longer, less dense; 2-10 in. [Wild Thyme.]

1. **T. Serpyllum** L. ✠ *Wild Thyme.* C.
Dry pastures; heaths: June-Sept. P.
2. **T. Chamædrys** Fr.
Dry pastures; heaths: June-Sept. P.

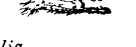
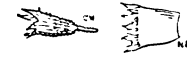
IV. Melissa L. *Melissa.*—(Fig. M, p. 134.)
Leaves larger than axillary inflorescences; calyx 2-lipped: corolla sometimes spotted rose; 1-3 ft.

*1. **M. officinalis** L. ✠ *Common Balm.*
Escape, cultivated: July-Sept. P.

V. Calamintha Mœnch. *Calamint.*—

Leaves *not more than* ⅓ *in. across, toothed in upper part*, shortly stalked AC;  flowers 2-4 in axillary groups AC; calyx-tube curved at base; 4-8 in. [Basil Thyme.]

1. **C. Acinos** Clairv. *Field Calamint.*
Fields, dry waste pla : June-Sept. A.

Leaves *more than* ⅓ *in. across, toothed all round.*
- Inflorescence *dense*, axillary CC;  flowers surrounded by numerous bracts, pointed, bearing long cilia; leaves oval or oblong CC; 8-30 in. [Wild Basil.]
- Inflorescence *not dense*, axillary C; bracts few.  Flowers *longer than* ¾ *in.*; calyx-teeth about ¼ length of calyx, upper ones reflexed; 1-2 ft.
- Flowers *shorter than* ¾ *in.*
  - Calyx-teeth bearing *long cilia* CO, ring of hairs within, *below teeth* O; 1-2 ft. 
  - Calyx-teeth bearing *short cilia* CN, ring of hairs within, *at base of teeth* NE; 1-1½ ft. 

2. **C. Clinopodium** Benth. *Hedge Calamint.*
Hedges, thickets. July-Sept. P.
3. **C. grandiflora** Mœnch *Wood Calaminth.* R.
Woods; hedges: July-Sept P
4. **C. officinalis** Mœnch ✠ *Common Calamint.*
Hedges, thickets July-Sept. P.
5. **C. Nepeta** Clairv. *Lesser Calamint.*
Dry stony places: July-Sept. P.

VI. Lycopus L. *Lycopus.*—(Fig. L, LY, p. 134.)
Leaves opposite: flowers small, axillary, dense; calyx-teeth slightly spinous; plant almost odourless; 1-3 ft.

1. **L. europæus** L. *Gipsywort.*
Banks of streams; wet places: July-Sept. P.

VII. **Mentha** L. *Mint.* The species comprising this genus are often difficult to determine because of their numerous hybrids.

Calyx *very hairy within* at the base of teeth PU [in the figure, 2 teeth have been removed];



leaves small, almost sessile P; stem prostrate; 4-12 in.



1. **M. Pulegium** L. ✠ *Pennyroal.* Wet places: July-Oct. P.

Calyx *not hairy within* SA.

Stem usually *terminated by leaves* longer than inflorescences S, A.



Calyx-teeth *longer than broad* SA; lower leaves much bigger than upper ones; 1-3 ft. [This plant is considered a hybrid between the next two.]



2. **M. sativa** L. ✠ *Whorled Mint.* C. Wet places: July-Sept. P.

Calyx-teeth *as broad as long* AR; lower leaves slightly bigger than upper ones; 6-24 in.



3. **M. arvensis** L. *Corn Mint.* C. Damp fields: July-Sept. P.

Stem *terminated by inflorescences* AQ, R.

Leaves *all petiolate* AQ.

Inflorescences *dense, rounded* AQ; plant *glabrous* or nearly so; 1-3 ft.

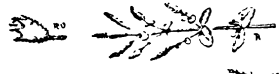
4. **M. aquatica** L. *Water Mint.* C. Marshes: July-Sept. P.

Inflorescences *not dense, elongated*; plant *hairy*; 1-2 ft.

*5. **M. piperita** L. ✠ *Pepper Mint.* Wet places; cultivated Aug.-Sept. P.

Leaves *all sessile*, or lower ones shortly petiolate; inflorescences *elongated* R.

Leaves *obtuse* R; bracts oval; calyx-teeth *triangular* RO; 1-2 ft.



6. **M. rotundifolia** L. ✠ *Round-leaved Mint.* Wet waste places: July-Sept. P.

Leaves *acute*; bracts narrow; calyx-teeth *narrow* SI.

Stem *hairy*; leaves *hairy, whitish below*; 1-2 ft.



7. **M. sylvestris** L. *Horse Mint.* Dampshadyplaces: July-Sept. P.

Stem *glabrous*; leaves *glabrous, green above and below*; 1-2 ft.

* 8. **M. viridis** L. *Spear Mint.* Dampwasteplaces: Aug.-Sept. P.

VIII. **Prunella** L. *Prunella.*—(Figs. I, V, p. 134.)

Filament of stamen *acute* V;



upper lip of calyx equally toothed (Fig. I, p. 134); flowers small, purple or whitish; 4-12 in.

1. **P. vulgaris** L. ✠ *Self-heal.* VC. Moist shadyplaces: June-Sept. P.

Filament of stamen *rounded* G;



upper lip of calyx with short middle tooth; flowers large, purple, rarely white; 4-16 in.

2. **P. grandiflora** Jacq. Gardens: June-Sept. P.

1. *T. vulgaris* L. ✠ [Garden Thyme] has longer leaves with revolute margins.

IX. Scutellaria L. *Skullcap.*—

Leaves *entire* MI, or teeth 1-2, small, at base;  calyx shortly hairy; corolla pink, small, tube straight; 4-8 in.

1. **S. minor** L. *Lesser Skullcap.* Moist heathy, or boggy places: July-Sept. P.

Leaves *toothed* GA; calyx glabrous; corolla blue, large, tube curved; 8-16 in. 

2. **S. galericulata** L. ✠ *Common Skullcap.* Banks of streams: July-Sept. P.

X. Salvia L. *Sage.*—

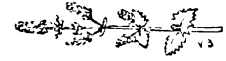
Corolla *3-4 times as long as calyx* P; blue, seldom rose or white;  bracts hairy, glandular; upper leaves sessile; 1-2½ ft.

1. **S. pratensis** L. *Meadow Sage.* R. Waste places: June-Aug. P.

Corolla *not more than twice as long as calyx.*

Corolla *longer than calyx, ring of hairs* within tube T; [Fig. T, corolla laid open.]  leaves all petiolate; flowers blue; 1-2 ft.

*2. **S. verticillata** L.[1] *Verticillate Sage.* R. Stony waste places: June-Aug. P.

Corolla *scarcely longer than calyx*, tube *glabrous* within; upper leaves sessile VB; flowers purplish or rose; 1-2½ ft. [English Clary.] 

3. **S. Verbenaca** L. *Wild Sage.* Dry waste places: May-Aug. P.

XI. Galeopsis L. *Galeopsis.* [Hemp Nettle]—

Leaves *entire or slightly toothed towards the middle* L, LD; corolla rose or red, seldom white; 4-16 in.  

1. **G. Ladanum** L. *Red Galeopsis.* Fields; stony waste places: July-Oct. A.

Leaves *coarsely toothed from base to apex.*

Corolla *yellow or yellowish*, lower lip with tawny stripes or purple spots.

Calyx *very hairy*, teeth triangular D; 4-12 in. 

2. **G. dubia** Leers. *Downy Galeopsis.* R. Corn-fields: July-Sept. A.

Calyx *slightly hairy*, teeth narrow VR; 8-24 in. 

3. **G. versicolor** Curt. *Large-flowered Galeopsis.* Corn-fields: July-Aug. A.

Calyx-teeth triangular IN; leaves ⅛-¼ in. broad; inflorescences distant; 4-16 in. 

*4. **G. intermedia** Vill. *Intermediate Galeopsis.* R. Fields; stony waste places: July-Sept. A.

Corolla *rose*, seldom white.

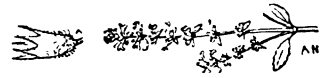
Calyx-teeth narrow TT; leaves ¼-¾ in. broad; inflorescences close together; 1-3 ft. 

5. **G. Tetrahit** L. *Common Hemp Nettle.* C. Woods; hedges· July-Aug. A.

XII. Leonurus L. *Leonurus.*—(Figs. L, LE, LC, p. 135.)
Leaves palmately 3-5 lobed; fruits hairy (Fig. LE, p. 135); corolla rose; 2-4 ft.

*1 **L. Cardiaca** L. ✠
Motherwort. R.
Hedges; roadsides: July-Sept. P.

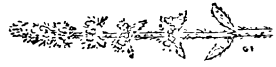
XIII. Stachys L. *Woundwort.*—
Flowers *yellowish-white*; leaves almost glabrous; calyx-teeth ciliate even at apex A; leaves petiolate AN; 4-12 in.



*1. **S. annua** L.
Annual Woundwort. R.
Fields: June-Sept. A.

Flowers *purple or purplish.*

Leaves *not* whitish, woolly or silky.

Leaves *whitish, woolly or silky* GE; 

bracts almost as long as calyx; flowers rose-purple; 1-3 ft.

2. **S. germanica** L.
Downy Woundwort. R.
Roadsides: July-Aug. B.

Bract of flower *very small or absent.*

Bract of flower almost *as long as calyx* AL; 

leaves oval, cordate at base, crenate, hairy; corolla purple, spotted white; 1-2½ ft.

3. **S. alpina** L. R.
Woods: June-Aug. P.

Leaves *sessile or nearly so* SP, slightly cordate at base; 

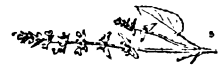
corolla purple, spotted white; 1-3 ft.

4. **S. palustris** L.[2]
Marsh Woundwort. C.
Ditches; damp places: June-Sept. P.

Leaves *petiolate* ST, S.

Leaves *rounded at apex* ST; corolla pale purple, scarcely longer than calyx; 4-20 in. 

5. **S. arvensis** L.
Field Woundwort.
Corn-fields: June-Oct. A.

Leaves *acute* S; corolla dark reddish-purple, striated white, much longer than calyx; smell disagreeable; 1-3 ft. 

6. **S. sylvatica** L.[2]
Hedge Woundwort. VC.
Shady places: June-Aug. P.

XIV. Betonica L. *Betony.*—
Plant hairy, green; corolla reddish-purple, rarely white, longer than calyx BE, tube without ring of hairs inside; inflorescences close together O; 8-24 in. 

1. **B. officinalis** L. ✠
Wood Betony. C.
Woods: thickets: June-Sept. P.

XV. Melittis L. *Melittis.*—(Figs. MM, ME, p. 135.)
Leaves petiolate, ovate, toothed, strongly fragrant when bruised; corolla sometimes spotted purple; 1-2 ft.

1. **M. Melissophyllum** L. ✠
Bastard Balm. R.
Woods: May-June. P.

1. *S. officinalis* L. ✠ [Common or Garden Sage]: stems woody at base, flowers fragrant, purple or rarely white, cultivated.—2. *S. ambigua* Sm. is considered a hybrid between *S. palustris* and *S. sylvatica*; its characteristics are intermediate between those of the two species.

XVI. Lamium L. *Lamium.*—

Flowers *yellow*; anthers glabrous; leaves toothed GA, often spotted white; corolla-tube G with ring of hairs inside, at base; 1-1½ ft.

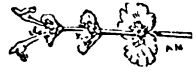


1. **L. Galeobdolon** Cr. ✠ *Yellow Archangel.*
Woods; shady places: May-June. P.

Flowers *purple or white.*

Leaves *all petiolate* PU, H.

Upper leaves ***sessile, amplexicaul*** AM; corolla-tube long, slender, without ring of hairs inside, at base LA, purplish-red; 4-10 in.





2. **L. amplexicaule** L. *Henbit.*
Waste places: Mar.-Oct. A.

Upper lip of corolla ***without folds***; stem not bearing leaves throughout a considerable part of its length.

Leaves ***crenate*** PU; corolla-tube with ring of hairs within, purplish-red; 4-12 in.



3. **L. purpureum** L. *Red Dead-nettle.* C.
Waste places: Mar.-Oct. A.

Leaves ***more deeply and sharply toothed*** H; corolla-tube without ring of hairs, purplish-red; 4-12 in.



4. **L. hybridum** Vill.
Waste places: Apr.-June. A

Upper lip of corolla bearing ***2 prominent diverging folds***; stem regularly leafy.

Corolla ***white***, tube curved backwards A; flowers 10-20 in group; 8-24 in.



5. **L. album** L. ✠ *White Dead-nettle.* C.
Waste places: Apr.-Oct. P.

Corolla ***purplish-red***, tube not recurved M; flowers 6-10 in group; leaves more frequently spotted white; 8-24 in.



*6. **L. maculatum** L. *Spotted Dead-nettle.* R.
Waste places: Apr.-Oct. P.

XVII. Marrubium L. *Horehound.*—(Fig. MA, p. 134.)
Stem erect, hoary; leaves crenate, very hoary below, wrinkled: plant strongly odorant; 1-2 ft.

1. **M. vulgare** L. ✠ *White Horehound.* Loc.
Waste places: July-Oct. P.

XVIII. Nepeta L. *Nepeta.*—
Stem ***creeping***, rooting; leaves rounded, crenate, cordate at base GH; flowers violet, blue or lilac, axillary GH; each pair of anthers forming a cross (Fig. G, p. 135); 8-20 in.



1. **N. hederacea** Trev. ✠ *Ground Ivy.* VC.
Hedges; damp thickets: Apr.-June. P.

Stem ***erect***; leaves acute, sharply toothed, white and downy below; flowers white, often spotted red (Fig. N, p. 135), in dense crowded whorls; anthers not forming a cross; 2-3 ft.

2. **N. Cataria** L. ✠ *Catmint.*
Hedges; waste places: July-Sept. P.

XIX. Ballota L. *Ballota.*—(Fig. F, p. 135.)

Leaves coarsely toothed, hairy; calyx funnel-shaped; corolla purple, rarely white; odour fetid; 2-3 ft. — 1. **B. nigra** L. *Black Horehound.* Roadsides; waste places June-Sept. P.

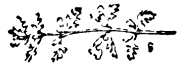
XX. Ajuga L. *Bugle.*—

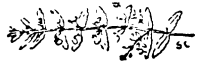
Flowers *yellow*, solitary, axillary C; leaves deeply 3-lobed C, hairy, viscous;  stems spreading; 4-8 in. [Ground Pine.] — 1. **A. Chamæpitys** Schreb. ✠ *Yellow Bugle.* Loc. Dry fields: May-Aug. A.

Flowers *blue, purple or whitish*, whorled; leaves not lobed.

- Stem *hairy on all four sides* G;  branches not creeping; flowers bluish-purple in compact whorled spike; floral leaves about twice length of flowers; 4-12 in. — 2. **A. pyramidalis** L. Shady pastures. May-June. P.
- Stem *hairy on two opposite sides* RE;  creeping branches many, rooting; R; flowers blue, rarely white, whorls distant or close; 4-12 in.  — 3. **A. reptans** L. *Common Bugle.* C. Woods; pastures: May-July P.

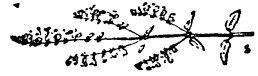
XXI. Teucrium L. *Germander.*—

Leaves *deeply lobed* B, hairy, viscous;  flowers rose in small axillary groups; 4-12 in. — 1. **T. Botrys** L. *Cut-leaved Germander.* R. Dry hilly places: July-Sept. A.

Leaves *sessile* SC;  flowers lilac or purplish in axillary groups of 3-2; 4-12 in. — 2. **T. Scordium** L. ✠ *Water Germander.* R. Marshes: June-Sept. P.

Leaves *toothed* SC, S, TC.

Leaves *petiolate* S, TC.

- Flowers *yellowish*; calyx-teeth unequal SA;  leaves cordate at base S; 6-24 in.  — 3. **T. Scorodonia** L. ✠ *Wood Sage.* C. Woods; shady dry places: July-Sept. P.
- Flowers *rose*; calyx-teeth almost equal CH;  leaves not cordate at base TC; 4-8 in.  — *4. **T. Chamædrys** L. ✠ *Wall Germander.* Old walls: July-Sept. P.

VERBENACEÆ. Many exotic species, herbaceous or shrubby, are cultivated in gardens as ornamental plants.

I. **Verbena** L. *Vervein.*—(Figs. VE, V, p. XXV.)

Leaves opposite; flowers small in long spikes; corolla rose-lilac, funnel-shaped; 1-2½ ft. — **V. officinalis** L. ✠ *Common Vervein.* Roadsides; waste places: June-Oct. P.

PLANTAGINACEÆ. Several species of Plantain are used in medicine.

Leaves *very narrow and all radical* L, *longer* than flowering-stem L; flowers monœcious;  plant aquatic. — I. **Littorella** Berg., p.142. *Littorel.*

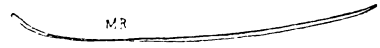
Leaves *not at the same time very narrow and all radical, shorter* than flowering-stem; flowers perfect; plant not aquatic. — II. **Plantago** L., p. 142. *Plantain.*

I. **Littorella** Berg. *Littorel.*—(Fig. L, above.)
Staminate flowers on long stalks, filaments long; pistillate flowers sessile, axillary, hidden by leaves; 2-4 in. [Shore-weed.] — 1. **L. lacustris** L. *Littorel.* Margins of lakes and ponds, or submerged: June-Aug. P.

II. **Plantago** L. *Plantain.*—

Leaves *very narrow, not all radical* A; stem branched; branches having only their first leaves developed;  plant finely hairy, glandular; 4-16 in. — 1. **P. arenaria** W. and K. *Sand Plantain.* Loc. Sandy ground. June-Aug. A.

Leaves *all radical.*

- Leaves *entire or lobed, linear.*
  - Leaves of *equal breadth* from base to apex MR, fleshy, usually grooved at least at the base; wings of calyx not membranous; 4-16 in.  — 2. **P. maritima** L. *Sea Plantain.* Sea-shore: June-Sept. P.
  - Leaves *narrower at base* C.
    - Leaves *entire*, silky; flowering-stem striate; spike almost globular; 4-8 in. — *3. **P. argentea** L. R. Waste places: June-Aug. P.
    - Leaves *deeply lobed* C, hairy; flowering stem not striate; spike elongated;  wings of calyx membranous; 1-10 in. — 4. **P. Coronopus** L. *Buck's-horn Plantain* C. Sandy or gravelly places: June-Sept. A. or B.
- Leaves *entire, not linear.*
  - Leaves *lanceolate, flat, entire* LA, 3-5 ribbed;  flowering-stem 5-ribbed; spike oval, 4-12 in. — 5. **P. lanceolata** L. ✠ *Ribwort Plantain.* VC. Pastures: Apr.-Oct. P.
  - Leaves *more or less oval.*
    - Leaves *abruptly narrowed* into long petiole MA, usually glabrous; flowering-stem not much longer than leaves; 4-16 in.  — 6. **P. major** L. ✠ *Greater Plantain.* VC. Roadsides; pastures: June-Oct. P.
    - Leaves *not abruptly narrowed*, petiole short ME. finely hairy; flowering-stem much longer than leaves; 8-12 in.  — 7. **P. media** L. ✠ *Hoary Plantain.* Pastures: May-Aug. P.

PLUMBAGINACEÆ.

Leaves *broader towards apex* LI;  flowering-stem branched. — I. **Statice** L., p. 143. *Sea Lavender.*

Leaves *linear* (Figs. AM, PG, below); flowering-stem not branched; inflorescence globular. — II. **Armeria** Willd., p. 143. *Thrift.*

I. Statice L. *Sea Lavender.* —

Secondary veins *branching from midrib throughout its length* (Fig. LI, above).
- Calyx *hairy along only 2 of its nerves*; bract of flower longer than broad; spikes dense; 4-16 in. — 1. **S. Limonium** L. *Sea Lavender.* Muddy salt marshes: July-Sept. P.
- Calyx *hairy along all its nerves*; bract of flower as broad as long; spikes less dense; 4-8 in. — 2. **S. bahusiensis** Fr. R. Muddy salt marshes. July-Sept. P.

Secondary veins *absent or branching from base of midrib* only.
- Branches *often flowerless*; bract of flower membranous, white; 3-16 in. — 3. **S. bellidifolia** Gouan *Matted Sea Lavender.* Loc. Salt marshes: July-Aug. P.
- Branches *all or nearly all flowering*; bracts green.
  - Stem *not bearing branches in its lower part*; leaves not acute; 4-16 in. — 4. **S. Dodartii** Girard. Rocky sea-shores: July-Sept P.
  - Stem *bearing branches throughout its length*; leaves almost acute. 4-16 in. — 5. **S. occidentalis** Lloyd Rocky sea-shores: July-Sept. P.

II. Armeria Willd. *Thrift.*—

Leaves *very narrow, margins parallel* AM, only *1 vein* visible;  calyx-teeth shorter than breadth of sepal; 2-8 in. [Sea Pink.] — 1. **A. maritima** Willd. *Common Thrift.* C. Rocky and sandy sea-shores; mountains: May-Sept. P.

Leaves *narrow, gradually becoming acute* PG, *3-7 veined*;  calyx-teeth longer than breadth of sepal; 4-20 in. — 2. **A. plantaginea** Willd. *Plantain Thrift.* Loc. Heaths and sandy places: June-Sept. P

AMARANTACEÆ.

Several exotic species are cultivated as ornamental plants, e g. Love-lies-bleeding, Prince's-feather.

I. Amarantus L. *Amaranth.*—

Flowers *monoecious, greenish.*
- Stem *hairy*; leaves oval, rounded R; *stamens 5*;  bracts spinous, twice as long as flowers; 8-28 in. — *1. **A. retroflexus** L. R. Waste places: July-Sept. A.
- Stem *glabrous*; leaves oval, oblong B; *stamens 3*;  bracts shorter than flowers; sepals acute; 8-24 in. — *2. **A. Blitum** L. R. Waste places; walls: July-Sept. A.

CHENOPODIACEÆ. It is usually difficult to determine members of this N.O.; they should be gathered when in fruit. Sevea are cultivated, e,g. Spinach, Beetroot.

Stem green, *jonted, fleshy; leaves undeveloped*; flowers in dense cylindrical spikes SA.



I. **Salicornia** L.,p.144. *Marsh Samphire.*

Stem *not jointed or fleshy, leafy.*

- Leaves *sessile or enlarged at base.*
  - Leaves *enlarged at base* K; perianth surrounding fruit bearing a membranous appendage.
  - Leaves *semi-cylindrical* SU, membranous appendage absent.



II. **Salsola** L , p. 144. *Saltwort.*



III. **Suæda** Forsk ,p.145. *Sea Blite.*

- Leaves *petiolate or narrowed at base.*
  - Perianth *almost triangular, enlarging considerably after flowering*; fruit surrounded by 2 perianth-segments, almost free.

IV. **Atriplex** L [1], p. 145 *Orache.*

  - Plant *not having above characters.*
    - Leaves *white, silvery on both surfaces, mealy.*

V. **Obione** Gært., p. 146. *Sea Purslane.*

    - Leaves *green, or whitish below.*
      - Perianth *becoming as hard as wood*: lower part of fruit adhering to perianth.

VI. **Beta** L., p. 146. *Beet.*

      - Perianth *green or fleshy*; fruit not adherent.

VII. **Chenopodium** L., p. 146. *Goosefoot.*

I. Salicornia L. *Marsh Samphire.*—(Fig. SA, above.)

Plant *glabrous*; flowers in groups of 3.

- Plant *annual, fleshy*, usually *erect*; root simple; perianth-segments in fruit winged transversely; 4-12 in. [Glasswort]

1. **S. herbacea** L. *Herbaceous Marsh Samphire.* Salt marshes: Aug.-Sept. A.

- Plant *perennial*; *main* branches *woody, creeping, rooting*; fleshy branches erect; perianth-segments in fruit not winged transversely: 8-24 in. [Glasswort]

2. **S. radicans** Sm. *Woody Marsh Samphire* Loc. Salt marshes: Aug.-Sept. P.

II. Salsola L. *Saltwort.*—(Fig. K, above.)

Leaves hairy, spinous; flowers sessile, axillary; stem procumbent, hard, striated white, green or purple; 4-16 in.

1 **S. Kali** L. *Prickly Saltwort.* Sea-shores: July-Aug. A

III. Suæda Forsk. *Sea Blite.*—(Fig. SU, p. 144.)

Leaves *fleshy*, flat above, rounded below; flowers in groups of 2-3.

- Stem *woody, whitish*; lower branches often flowerless; styles 3; 1-3 ft. — **1. S. fruticosa** Forsk. *Shrubby Sea Blite.* Loc. Shingly sea-shores: July-Sept. P.
- Stem more or less *herbaceous*; branches nearly all flowering; styles usually 2; 4-20 in. — **2. S. maritima** Dumort. *Herbaceous Sea Blite.* Salt marshes; sandy sea-shores: July-Sept. A

IV. Atriplex L. *Orache.*—

Plant *shrubby, perennial*; leaves usually entire, white on both surfaces; 2-8 ft.

- ***1. A. Halimus** L. *Shrubby Orache.* Sea-coasts: Aug.-Sept. P

Plant *herbaceous, annual.*

Perianth-segments surrounding fruit *free, flat, circular or oval*; leaves on middle of stem triangular; 1-5 ft.

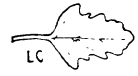
- ***2. A. hortensis** L. ✠ *Garden Orache.* Sea-coasts, kitchen-gardens: Aug.-Sept. A.

Perianth-segments surrounding fruit *more or less united, thickened, triangular or rhomboidal.*

Leaves *long*; perianth in fruit green.

- Upper leaves *lanceolate* AP; 1-4 ft. —  — **3. A. patula** L. *Common Orache.* C. Waste places. July-Oct. A
- Leaves *linear*, margins parallel; 1-2½ ft. — **4. A. littoralis** L. *Grass-leaved Orache.* Salt marshes: July-Sept. A

Leaves *triangular or rhomboidal.*

- Leaves *deeply toothed* LC, mealy beneath; flowers in dense spikes; perianth *silvery-white*; 6-16 in. —  — **5. A. laciniata** L. *Frosted Orache.* Sea-coasts: July-Sept. A.
- Leaves *less deeply toothed*, more nearly triangular, lower ones hastate; spikes less dense or interrupted; perianth in fruit *green*; 8-32 in. — **6. A. hastata** L. *Hastate Orache.* C. Waste places: June-Sept. A.

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1. The genus *Spinacia* [Spinach] differs from *Atriplex* in having 3-4 styles instead of 2, and in not being mealy. Two species are cultivated *S. glabra* Mill ✠ perianth not spinous, and *S. oleracea* L. ✠, perianth spinous.

V. Obione Gærtn. *Sea Purslane.*—

Fruiting perianth stalked PE; leaves *alternate*: stem herbaceous, erect, 6-12 in.



1. **O. pedunculata** Moq. *Stalked Sea Purslane.* VR.
Salt marshes: Aug.-Sept. A.

Fruiting perianth sessile: leaves *opposite*; stem woody, decumbent; 1-2 ft.



2. **O. portulacoides** Moq. *Sea Purslane.* C.
Sea cliffs, salt marshes: Aug.-Oct. P.

VI. Beta L. *Beet.*—

Leaves *ovate* VL; stems erect; main root fleshy, rootlets slender; 1-4 ft.



1. **B. vulgaris** L.[1] ✠ *Common Beet.*
Cultivated: July-Sept. A or B.

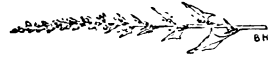
Leaves somewhat *triangular, acute* MA; stems prostrate or decumbent; root not fleshy, hard, ramifying; 1-3 ft.



2. **B. maritima** L. *Sea Beet.*
Shingly or sandy sea-shores June-Aug. P

VII. Chenopodium L. *Goosefoot.*—

Leaves *hastate, 2-pointed at base* BH; plant *perennial*;



spikes not bearing large leaves; seeds brown, smooth; 4-32 in. [Allgood.]

1. **C. Bonus-Henricus** L. ✠ *Good King Henry.*
Roadsides: June-Sept. P.

Leaves having at least *20 sharp, irregular teeth* M;



leaves green, shining, mealy when young; seeds finely rugose; 8-20 in.

2. **C. murale** L. *Nettle-leaved Goosefoot.* R.
Waste places: July-Sept. A.

Leaves *entire*, oval PO;



seeds black, shining: plant odourless; 4-32 in.

3. **C. polyspermum** L. *Many-seeded Goosefoot.*
Fields, waste places: July-Sept. A.

Plant *annual*; leaves *not hastate*.

Leaves *with less than 20 teeth*.

Leaves *not mealy*.

Leaves *mealy*, at least on one surface.

Leaves *toothed or notched* H, RV.

Spikes *not leafy* H.

Leaves with *few, coarse teeth* H; seeds large, rugose; 1-3 ft.



4. C. hybridum L.
Maple-leaved Goosefoot. R.
Fields; waste places: July-Sept. A.

Leaves *slightly toothed*; fruit red, succulent; ½-2 ft.

***5. C. capitatum** Asch.
Strawberry Blite. R.
Waste places: July-Sept. A.

Spikes *leafy* RV; seeds smooth.

Leaves *coarsely toothed* RV; spikes dense, leafy RV; 4-24 in.

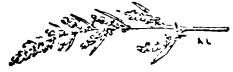


6. C. rubrum L.
Red Goosefoot.
Waste places. July-Sept. A.

Leaves *slightly toothed*, fleshy; spikes dense, less leafy; 4-12 in.

7. C. botryodes Sm. R.
Sea-coasts: Aug.-Sept. A

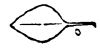
Upper leaves *6-10 times longer than broad* AL, narrow, entire or nearly so; seeds smooth, sharply keeled; 1-2½ ft.



8. C. album L.[2]
White Goosefoot. C.
Fields; waste places: July-Sept. A.

[Fat Hen.]

Leaves *entire, oval* O, mealy on both surfaces:



plant procumbent, odour fetid; 8-20 in.

9. C. Vulvaria L.
Stinking Goosefoot. R.
Waste places. July-Oct. A.

Upper leaves *less than 6 times longer than broad.*

Leaves *toothed*; plant not fetid.

Seeds *not smooth* U.

Leaves *almost as broad as long* UR;

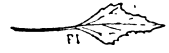


seeds finely tubercular U; 1-2 ½ ft.



10. C. urbicum L.[3]
Upright Goosefoot. R.
Waste places: July-Sept. A.

Leaves *2-3 times longer than broad* FI; seeds



very tubercular; 12-20 in.

11. C. ficifolium Sm. R.
Damp waste places: July-Sept. A.

Seeds *almost or quite smooth* G.

Leaves *almost as broad as long* OP; seeds not keeled; 12-20 in.



***12. C. opulifolium** Schrad. R.
Waste places: July-Sept. A.

Leaves *longer than broad* GL; seeds acutely keeled; 4-16 in.

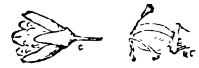


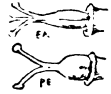
13. C. glaucum L.
Glaucous Goosefoot. R.
Waste places: July-Sept. A.

1. It is the var. *rapaceæ*. The Mangel Wurzel and Beetroot are varieties.—2. Var. *viride* L.: leaves green, scarcely mealy.—3. Var. *intermedium* M. and K. Leaves deeply toothed; mealy below; R.

OLYGONACEÆ. As the various species are difficult to determine, it is usually necessary to choose plants with well developed fruits.

Stigmas *fringed* RC; flowers greenish or reddish.

- *Perianth segments 4*, 2 inner ones enlarged in fruit; *stigmas 2*. — I. **Oxyria** Hill, p. 148. *Oxyria.*
- *Perianth segments 6* C, 3 inner ones enlarged in fruit; *stigmas 3* RC.  — II. **Rumex** L., p. 148. *Dock.*

Stigmas *entire, rounded, 3 or 2* FA, PE;  *perianth segments 5* F, almost equal, flowers white, pink, rose or greenish-white.  — III. **Polygonum** L., p. 150. *Polygonum.*

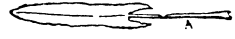
I. Oxyria Hill. *Oxyria.*—

Leaves almost all radical, kidney-shaped, petiole long; inflorescence branched, erect; fruit surrounded by a large wing; 4-8 in. [Mountain Sorrel.]

1. **O. digyna** Hill. *Kidney Sorrel.* Rocky mountain pastures: July-Aug. P

II. Rumex L. *Dock.*

Leaves *acid, 2-lobed at base or laterally* S, A, AL; flowers dicœcious, monœcious, or perfect.

- Leaves *about as long as broad* S;  fruiting perianth membranous, 1-2 ft — '1. **R. scutatus** L. *French Sorrel.* Walls, rocks; waste places. May-Aug. P.
- Leaves *much longer than broad* A, AL.
  - Lobes of leaf *pointing downwards* A, 1-2½ ft.  — 2. **R. Acetosa** L. ✠ *Sorrel.* C. Meadows, pastures: May-July. P.
  - Lobes of leaf *spreading, or pointing upwards*, AL; 4-20 in.  — 3. **R. Acetosella** L. *Sheep's Sorrel.* VC. Dry pastures. May-July. P.

Leaves lanceolate, lower ones *1-2 ft. long*; whorls crowded, upper ones leafless AQ.

- *Leaves all tapering at base* AQ; inner perianth-segments tubercled, triangular; 3-6 ft.  — 4. **R. Hydrolapathum** Huds[1] *Great Water Dock.* Margins of rivers; ditches: July-Aug. P.
- *Lower leaves somewhat cordate at base*; inner perianth-segments smooth, cordate; 3-4 ft. — 5. **R. aquaticus** L. *Smooth-fruited Dock.* Wet places: July-Aug. P

Leaves *not acid, and not 2-lobed at base or laterally.*

Radical leaves *less than 1 foot in length.*

Radical leaves *not in a rosette, and not fiddle-shaped.*

Inflorescence *not leafy at apex.*

Radical leaves *in a rosette, fiddle-shaped* PU;



groups of flowers all provided with a small bract; inner perianth-segments toothed, teeth stiff; 1-1½ ft.

6. **R. pulcher** L.
Fiddle Dock.
Dry waste places: July-Sept P.

Inflorescence *leafy from base to apex.*

Teeth longer than breadth of perianth-segment M; branches short; 8-24 in.



7. **R. maritimus** L.
Golden Dock.
Marshes: July-Sept. P.

Teeth shorter than breadth of perianth segment PA, branches slender; 8-24 in.



8. **R. limosus** Thuill
Yellow Marsh Dock. R.
Marshes July-Sept. P

Inner perianth-segments *cordate* C.

Inner perianth-segments *entire or minutely crenate* C, *upper one tubercled*; leaves wavy, lanceolate; 2-3 ft.



9. **R. crispus** L.
Curled Dock. VC.
Roadsides; pastures. June-Aug. P.

Inner perianth-segments *entire, smooth*; leaves cordate at base, petioles grooved; 1-3 ft.

*10. **R. alpinus** L.
Monk's Rhubarb.
Waste places. Aug.-Sept P.

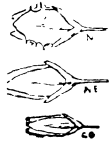
Inner perianth-segments *3-5 toothed* on each side O, one or more tubercled; 2-3 ft.



11. **R. obtusifolius** L.
Broad-leaved Dock. C.
Roadsides, pastures. June-Sept P.

Inner perianth-segments *not cordate* O, N, NE, CG.

Inner perianth-segments *toothed or entire.* N, NE, CG.



Upper segment tubercled.

Stem and veins of leaf *red*, 1-3 ft.

12. **R. sanguineus** L.
Red-veined Dock. R.
Woods damp waste places. June-Aug. P.

Stem and veins of leaf *green*; 1½-3 ft.

13. **R. nemorosus** Schrad.
Wood Dock. C.
Woods; shady waste places. June-Aug. P.

All 3 segments tubercled.

Segments *narrow*, leaves ovate-lanceolate; 1½-3 ft.

14. **R. conglomeratus** Murr.
Clustered Dock.
Wet waste places July-Sept P.

Segments *broader*; leaves narrower; branches erect; 1½-3 ft.

15. **R. rupestris** Le Gall.
Sea-coasts June-Sept. P.

1. Var. *maximus* Schreb.: radical leaves heart-shaped at base. R.

III Polygonum L. *Polygonum.* —

Leaves *cordate or sagittate* FG, CO.

- Stems *not twining* FG.
  - Stem *not prickly* FG.
    - Leaves *gradually acute* FG; flowers white or pinkish; 1-2 ft. 
      - *1. **P. Fagopyrum** L. ✠ *Buckwheat.* Cultivated; waste places. July-Sept. A.
    - Leaves *abruptly acute*; flowers greenish-white; 3-6 ft.
      - *2. **P. cuspidatum** S. & Z. *Japanese Polygonum.* Gardens; waste places: Aug.-Sept. P.
  - Stem *prickly*, prickles reflexed: flowers white; ½-2 ft. [Tear Thumb.]
    - *3. **P. sagittatum** L. VR. Margins of streams: July-Oct. A
- Stems *twining* CO; flowers greenish.
  - Fruiting perianth *3-winged* D; fruits shining; stem *rounded*; 1-5 ft. 
    - 4. **P. dumetorum** L. *Copse Polygonum.* Woods; thickets July-Sept. A.
  - Fruiting perianth *not winged* CV; fruits dull; stem *angular*; 1-6 ft.  
    - 5. **P. Convolvulus** L. *Black Bindweed.* C. Fields; waste places: June-Sept. A.

a b ase.

Inflorescence *terminal, solitary*, or rarely branched.

- Petiole *winged* B;  fruit triangular; underground stem thick, twisted; 8-24 in. [Snakeweed]
  - 6. **P. Bistorta** L. ✠ *Bistort.* Loc. Damp meadows: June-Sept P.
- Petiole *not winged* A.
  - Leaves *narrow*, margins *revolute*; fruit triangular; small red bulbs in axils of lower leaves; 4-8 in.
    - 7. **P. viviparum** L. *Viviparous Bistort.* Mountain pastures: June-Aug. P.
  - Leaves *oblong* A, usually floating, margins *not revolute*; fruit oval, flat; plant usually aquatic, rooting, variable; 1-3 ft. spike sometimes branched; 1-3 ft. 
    - 8. **P. amphibium** L. *Amphibious Persicaria.* C. Ponds; streams; damp fields: July-Aug. P.

Leaves *lanceolate or oblong, not lobed*

Inflorescences *many, terminal and axillary* AVI, PC.

Flowers *in spike-like racemes* PC; stipules *not ragged.*

Flowers in *small clusters, axillary* AVI; stipules *ragged* AV, glabrous; leaves almost sessile.

Stem *woody* at base: leaves glaucous, margins revolute; fruits shining; 4-16 in.

9. P. maritimum L.
Sea Knotgrass. Loc.
Sandy coasts: Aug.-Sept. P.

Stem *herbaceous*; leaves flat.

Fruits *not shining*; 4-24 in.





10. P. aviculare L.
Knotgrass. VC.
Waste places: June-Oct. A.

Fruits *shining*; 4-24 in

11. P. Robertii Lois.
Sandy coasts: Aug.-Sept

Taste hot and biting like pepper; stipules fringed with long and short cilia H;



petiole glabrous H; 1-3 ft.

12. P. Hydropiper L.
Water-pepper Persicaria. C.
Wet places: July-Oct. A.

Taste *not hot and biting*; petioles and stipules usually hairy L, PS.

Cilia *short* L; sepals *glandular, strongly veined.*

Stipules *not always fringed*;



raceme dense, cylindrical; 1-3 ft.

13. P. lapathifolium L.
Pale Persicaria.
Damp places. July-Sept A.

Stipules *always fringed*; raceme long, slender; 1-3 ft.

14. P. tomentosum Schrk.
Large Persicaria.
Damp places: July-Sept. A.

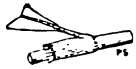
Cilia *long* PS; sepals *not glandular, not strongly veined* P.

Racemes *dense, oblong or cylindrical* PC; ½-3 ft.



15. P. Persicaria L. ✠
Persicaria. VC.
Damp places: July-Sept. A.





Racemes *slender.*

Racemes interrupted, *usually drooping*; ½-3 ft.

16. P. mite Schrk. R.
Wet places: July-Sept. A.

Racemes lax, *erect*; branches many, spreading: ½-2 ft.

17. P. minus Huds.
Slender Persicaria. R.
Wet places: July-Sept. A.

THYMELACEÆ. The Daphnes, being early-flowering and sweet-scented, are cultivated in gardens. *Laurus nobilis* [Bay Laurel or Bay-sweet] belongs to the closely allied N.O. *Laurineæ*.

I. Daphne L. *Daphne.*—

Shrub; calyx falling early.

Flowers *yellowish-green*; leaves leathery, *evergreen*; flowers and fruits near apex of stem LA; berries *black*; 2-4 ft.



1. D. Laureola L. *Spurge Laurel.* Loc. Woods: Feb.-Apr. P.

Flowers *rose or purple*, rarely white; leaves soft, appearing after the flowers, *deciduous*; flowers and fruits occurring throughout length of stem M; berries *red*; 1-3 ft.



2. D. Mezereum L. ✠ *Mezereon.* R. Woods: Feb.-Apr. P.

SANTALACEÆ.

I. Thesium L. *Thesium.*—(Figs. TH, T, p. XXX.)

Plant green, semi-parasitic on roots and underground stems of neighbouring plant; branches procumbent, spreading; root branched; fruit longer than perianth HM; 8-12 in.



1. T. humifusum DC. *Bastard Toadflax.* Loc. Limestone pastures June-Aug P.

ELÆAGNACEÆ.

I. Hippophae L. *Hippophae.*—(Fig. HI, p. XXVII.)

Shrub, thorny; leaves linear-lanceolate, silvery below; flowers greenish, berries orange-yellow, 3-8 ft

1. H. rhamnoides L. ✠ *Sea Buckthorn.* Loc. Sand dunes: May-June P.

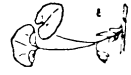
ARISTOLOCHIACEÆ. Certain species are cultivated in gardens; e.g. *Aristolochia Sipo*, a tall climbing plant with reflexed flowers.

Perianth *globular at base, funnel-shaped above* CL;



stamens 6; stem erect. **I. Aristolochia** L., p. 152. *Aristolochia.*

Perianth *bell-shaped* E; *stamens 12*; stem creeping E.



II. Asarum L., p. 152. *Asarum.*

I. Aristolochia L. *Aristolochia.*—(Fig. CL, above.)

Leaves alternate, petiolate, cordate-triangular, glabrous; mouth of perianth oblique; flowers yellowish, 16-32 in.

***1. A. Clematitis** L. ✠ *Birthwort.* R. Shady wasteplaces June-Sept. P.

II. Asarum L. *Asarum.*—(Fig. E, above.)

Leaves opposite, cordate at base, rounded, evergreen, petiole long; flowers solitary, greenish-purple; plant with a pepper-like odour; 4-6 in.

***1. A. europæum** L. ✠ *Asarabacca.* R. Damp shady places: Apr.-May. P

EMPETRACEÆ.

I. Empetrum L. *Crowberry.*—(Fig. E, p. XXI.)

Shrub, heath-like; leaves leathery, evergreen, dark-green above, whitish below, margins revolute, almost meeting; flowers dicœcious, small, sessile, purple; fruit fleshy, black; 4-18 in.

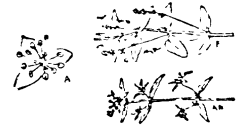
1. E. nigrum L. *Crowberry.*
Moors. Apr.-May. P

EUPHORBIACEÆ. It is often difficult to determine the species in the genus *Euphorbia*, plants bearing fruits should, therefore, be examined.

Shrub:  flowers monœcious, clusters axillary, leaves leathery, evergreen, entire BU.

I. **Buxus** L., p. 153. *Box.*

Stem *herbaceous.*

Plant *not containing a milky juice*; flowers usually dicœcious, staminate PE, pistillate AN; stamens 8-12 A. 

II. **Mercurialis** L., p. 153. *Mercury.*

Plant *containing a milky juice*, escaping when any part is broken; flowers monœcious, stamens 4 P, pistillate flower reflexed P, E;  inflorescence a small umbel of 1 pistillate and several staminate flowers.

III. **Euphorbia** L., p. 154. *Spurge.*

I. Buxus L. *Box.*—(Fig. BU, above.)

Leaves opposite, oval, shining above; stamens 4; styles 3; flowers greenish-yellow; 1-10 ft.

1. B. sempervirens L. ✠ *Common Box.* R.
Hilly chalky districts: Mar.-May. P.

II. Mercurialis L. *Mercury.*—

Flowering stem not branched from the base, *springing from an underground stem*; pistillate flowers on long stalk M; 8-16 in. 

1. M. perennis L. *Dog's Mercury.* C.
Woods; hedges: Mar.-May. P.

Flowering stem branched usually from base, *continuous with slender root*; pistillate flowers almost or quite sessile; 8-16 in.

2. M. annua L. ✠ *Annual Mercury.*
Cultivated and waste places: June-Nov. A.

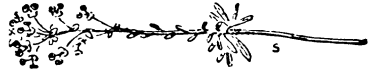
III. Euphorbia L. *Spurge.*—

Involucral *glands notched, forming a crescent* P, E.

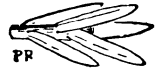


Leaves *neither opposite nor crowded in a rosette towards middle of stem.*

Leaves *opposite*; bracts forming a cross L;  leaves glaucous below; umbel of 2-5 forked rays; fruit smooth; 2-4 ft. — **1. E. Lathyrus** L. ✠ *Caper Spurge.* Near villages: June-July. B.

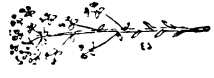
Leaves *crowded in a rosette* near middle of stem S;  bracts rounded, connate; fruit almost smooth; 1½-3 ft. — **2. E. amygdaloides** L. *Wood Spurge,* Woods; shady places: Apr.-May. P.

Leaves *neither leathery, nor crowded, nor very glaucous.*

Leaves *leathery, crowded,* oblong PR, *very glaucous*;  fruit finely tubercular; bracts longer than broad; 12-20 in. — **3. E. Paralias** L. *Sea Spurge.* Sandy coasts: July-Sept. P.

Main umbel of *many forked rays.*

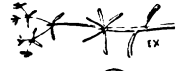
Branches *often barren* C;  leaves narrow, particularly those on barren branches; 8-20 in. — **4. E. Cyparissias** L. *Cypress Spurge.* VR. Roadsides: June-Sept. P.

Branches *usually flowering* ES;  leaves oblong; 1-3 ft. — **5. E. Esula** L. *Leafy Spurge.* Near water: June-Aug. P.

Plant *perennial*; leaves glaucous, narrow, broader above; umbel usually of 5 forked rays; 6-12 in. — **6. E. portlandica** L. *Portland Spurge.* Sandy coasts: May-Sept. P.

Main umbel of *2-5 forked rays.*

Plant *annual*; umbel usually of 3 forked rays.

Leaves *sessile, linear* EX; bracts narrow EX; 4-8 in.  — **7. E. exigua** L. *Dwarf Spurge.* C. Fallow fields: May-Oct. A.

Leaves shortly *petiolate, ovate* PE; bracts oval; 6-12 in.  — **8. E. Peplus** L. *Petty Spurge.* C. Fields; waste places: June-Oct. A.

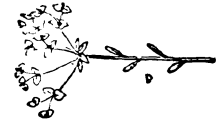
Involucral *glands rounded or oval* H.



Leaves *not opposite or stipulate.*

Leaves *opposite*, minutely *stipulate*, petiolate, falling before flowers appear; bracts oblique, resembling foliage leaves; plant prostrate, glaucous, purplish; 2-14 in.
9. **E. Peplis** L.
Purple Spurge. VR.
Sandy coasts: July-Sept. A.

Glands *dark red or purple*; leaves narrowed at base D or slightly petiolate; fruit tubercled; 12-20 in.



*10. **E. dulcis** L. R
Woods: May-June. P

Glands *yellow, or sometimes brown.*

Fruit *smooth*; leaves finely toothed in upper half, broad and rounded at apex HE; 8-20 in.



11. **E. Helioscopia** L. ✠
Sun Spurge. C.
Fields. June-Oct. A.

Fruit *tubercled*; leaves not broad and rounded at apex.

Plant *perennial* with an underground stem.

Leaves *minutely toothed*, hairy on both surfaces; fruit hairy or smooth, *tubercles small*; 1-2 ft.

12. **E. pilosa** L.
Hairy Spurge. VR.
Damp shady places June-July. P.

Leaves *entire*, glabrous or hairy below; fruit glabrous, *tubercles large and cylindrical*; glands brown; 1-2 ft.

13. **E. hibernia** L.
Irish Spurge. Loc.
Shady places: June-July. P.

Plant *annual* with a slender root.

Fruit *slightly furrowed*, tubercles *small* PL; 1-3 ft.;



14. **E. platyphyllos** L.
Broad Spurge. R.
Fields; shady places: June-Sept. A.

Fruit *deeply furrowed*, tubercles *prominent* ST; 1-4 ft.



15. **E. stricta** L. R.
Fields; shady places: June-Sept. A.

CALLITRICHACEÆ. The plants are all aquatic. Several species have been described; they are difficult to determine, their characters not being easy to define. Three of them are given, but as varieties, in the foot-note.

I. **Callitriche** L. *Water Starwort.*—(Fig. CA, p. XXX.)

Stem creeping and rooting in mud, or floating in water; leaves all submerged and linear; or, apical leaves floating on water, oval, and forming a rosette; flowers minute, solitary, axillary, often monœcious.

1. **C. aquatica** Huds. [1] *Water Starwort.* C.
Shallow running water; wet mud: Apr.-Sept. A or P.

CERATOPHYLLACEÆ. Aquatic plants, usually submerged.

I. **Ceratophyllum** L. *Hornwort.*—

Leaf segments fine, linear, coarsely toothed, almost smooth; fruit armed with *2 spines at base and terminated by style, curved and as long as itself* D.



1. **C. demersum** L. *Hornwort.*
Slowly running water: June-July. P.

Leaf segments finely toothed, rough to the touch; fruit *without spines and terminated by short style* S. [Hornwort.]



2. **C. submersum** L.
Slowly running water. June-July. P.

ULMACEÆ. Many species, hybrids and varieties of Elm are planted in parks and avenues.

I. **Ulmus** L. *Elm.*—(Fig. U, p. XXVII.)

Fruit winged, notched, 1-seeded.
- Seed-cavity *above centre of wing*; leaves rough, twice toothed, secondary veins often forked, apex acute, base oblique, petiole short; 60-120 ft.
- Seed-cavity *at or below centre of wing*; leaves larger, rougher, apex with a longer point; 60-120 ft.

1. **U. campestris** L. ✠ *Common Elm.*
Woods, hedges: Mar.-Apr. P.

2. **U. montana** Sm. *Wych Elm.*
Woods, hedges: Mar.-Apr. P.

CANNABINACEÆ.

Stem *erect*; leaves digitate C.



I. **Cannabis** L., p. 156. *Hemp.*

Stem *twining*; leaves 3-5 lobed H.



II. **Humulus** L., p. 156. *Hop.*

I. **Cannabis** L. *Hemp.*—(Fig. C, above.)

Flowers diœcious, green: leaves opposite, petiolate, lobes toothed; plant strongly odorous; 1-6 ft.

*1. **C. sativa** L. ✠ *Hemp.*
Cultivated; waste places: June-Sept. A.

II. **Humulus** L. *Hop.*—(Fig. H, above.)

Flowers diœcious, greenish or yellowish; fruits and scales bearing yellow, odorous glands; 4-12 ft.

1. **H. Lupulus** L. ✠ *Hop.*
Hedges: July-Sept. P.

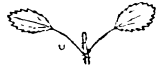
URTICACEÆ. The two preceding natural orders, particularly the latter are often included in the N.O. Urticaceæ. Cultivated and closely allied plants are the Fig and the Mulberry.

Leaves *opposite*, *toothed* (Figs. D, U, below): flowers dicœcious or monœcious; plant covered with stinging hairs. — I. **Urtica** L., p. 157. *Nettle.*

Leaves *alternate*, *entire or almost entire* P; flowers monœcious or sometimes perfect;  no stinging hairs — II **Parietaria** L., p. 157. *Pellitory.*

I. **Urtica** L. *Nettle.*—

Flowers *dicœcious*; plant *perennial*; leaves cordate at base D; spikes longer than petiole, branched D; 1-5 ft.  — 1. **U. dioica** L. ✠ *Common Stinging Nettle.* C.
Waste places. June-Sept. P

Flowers *monœcious*; plant *annual*. Leaves *ovate* U;  spikes shorter than petiole, almost unbranched; 8-20 in. — 2. **U. urens** L. *Small Stinging Nettle.* C.
Waste places. May-Oct. A

Leaves *broader at base* or slightly cordate; pistillate flowers in globular heads; 8-40 in. — *3. **U. pilulifera** L. *Roman Nettle.* VR.
Waste places. July-Oct. A

II. **Parietaria** L. *Pellitory.*—(Fig. P, above.)

Leaves hairy; flowers in axillary sessile clusters, greenish or brownish; 8-24 in. — 1. **P. officinalis** L. ✠ *Wall Pellitory.*
Old walls; stony places. June-Oct. P

JUGLANDACEÆ. The wood, bark, leaves and fruits of the Walnut all have their various uses.

I. **Juglans** L. *Walnut.*—

Tall tree; leaves alternate, pinnate (Fig. J, p. XXVII), glabrous, strongly odorous; staminate flowers in pendulous spikes, greenish. — 1. **J. regia** L. ✠ ***Walnut.***
Cultivated: Apr.-May. P.

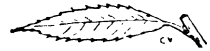
1. Var. ***platycarpa*** Kütz. (C. stagnalis Scop.): upper leaves oval; styles persistent, recurved at maturity; var. ***hamulata*** Kütz. (C. intermedia Hoffm.): leaves all linear bracts falling early; styles persistent, later recurved; var. ***vernalis*** Koch (C. palustre L.): upper leaves oval; styles erect, falling early

CUPULIFERÆ. This N.O. includes the greater number of our forest trees.

Leaves *entire or obscurely toothed* F;  staminate flowers in *globular spikes*, pendulous. — I. **Fagus** L., p. 158. *Beech.*

Leaves *sinuate or deeply crenate* Q;  staminate flowers in *long interrupted spikes*, pendulous. — II. **Quercus** L., p. 158. *Oak.*

Leaves *toothed*; staminate flowers in *dense spikes.*

- Leaves *glabrous*, about 4 times longer than broad CV; flowers appearing *after the leaves.*  — III. **Castanea** Hill, p.158. *Spanish Chestnut.*
- Leaves *more or less hairy*; flowers appearing *before or with the leaves.*
  - Leaves *hairy*; young stem glandular A; flowers appearing *before the leaves.*  — IV. **Corylus** L., p 158. *Hazel.*
  - Leaves *hairy below*, along veins; secondary veins unbranched B; flowers appearing *with the leaves.*  — V. **Carpinus** L., p. 158. *Hornbeam.*

I. Fagus L. *Beech.*—(Fig. F, above.)

Stamens 8-12: nuts surrounded by involucre of 4 prickly bracts S; young leaves ciliate; stipules becoming brown and pendulous, falling early; 60-100 ft. 

1. **F. sylvatica** L. ✠ *Common Beech.* C. Woods: Apr.-May. P.

II. Quercus L. *Oak.*—(Fig. Q, above.)

Stamens 5-10; nut surrounded at base by cup-shaped involucre; 60-125 ft.

1. **Q. Robur** L [1] ✠ *British Oak.* C. Woods: Apr.-May. P.

III. Castanea Hill. *Spanish Chestnut.*—(Fig. CV, above.)

Staminate flowers in long cylindrical spike; stamens 8-15; nuts surrounded by spinous involucral bracts; 50-90 ft. [Sweet Chestnut.]

*1 **C. vulgaris** Lam. ✠ *Spanish Chestnut.* Plantations: May-June. P.

IV. Corylus L. *Hazel.*—(Fig. A, above.)

Spikes of staminate flowers long, pendulous, already formed before beginning of winter; styles of pistillate flower red; nut surrounded by large leafy involucre; 6-15 ft.

1. **C. Avellana** L. ✠ *Common Hazel.* VC. Woods; hedges: Feb.-Apr. P.

V. Carpinus L. *Hornbeam.*—(Fig. B, above.)

Pistillate flowers in loose catkins; nut at base of leafy, 3-lobed involucre CB; leaves doubly toothed; 15-90 ft. 

1. **C. Betulus** L. ✠ *Hornbeam.* Loc. Woods: Apr.-May. P.

SALICACEÆ.

Stamens many AL; bracts *toothed or cut* AL, TR; perianth cup-shaped surrounding base of pistil TR.



1. **Populus** L., p. 159. *Poplar.*

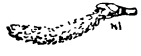
Stamens 1-5 V, PU, T; bracts *entire* V, CL; perianth absent.



II. **Salix** L., p. 159. *Willow.*

I. **Populus** L. *Poplar.*—Several species are often planted, including the Lombardy Poplar which is recognised by its erect branches and in this country bears only staminate flowers.

Stamens 12 or more; bracts *glabrous* NI;



leaves longer than broad, apex tapering and not toothed N; 30-90 ft.



1. **P. nigra** L. ✠
Black Poplar.
Damp places: Mar.-Apr. P.

Stamens 8; bracts *hairy* (Figs. AL, TR, above.)

Bracts *deeply cut* (Fig. TR, above); leaves coarsely toothed T, *glabrous, or slightly hairy below*, easily shaken by the wind; young branches not white; 30-75 ft.



2. **P. tremula** L. ✠
Aspen.
Woods: Mar.-Apr. P.

Bracts *not so deeply cut* (Fig. AL, above.)

Leaves often *shortly lobed* A, very *white and cottony below*, sometimes less cottony at end of summer; young branches white; 30-90 ft.



3. **P. alba** L. ✠
White Poplar.
Damp places: Mar.-Apr. P.

Leaves *rounded, never shortly lobed*, smaller, not so cottony and white; 30-90 ft.

4. **P. canescens** Sm.
Grey Poplar.
Damp places: Mar.-Apr. P.

II. **Salix** L. *Willow.* — Many of the species are difficult to determine; as the flowers usually appear before the leaves, it is often necessary to mark the tree the flowering branches of which have been examined, in order to gather its foliage later. Many hybrids occur and show intermediate characters.

1. Var. *sessiliflora* Sm.: leaves petiolate, peduncles of fruits shorter than petioles; var. *pedunculata* Ehrh.: leaves almost sessile; peduncles of fruits long.

Plants *not confined to mountains and high elevations.*

Tree or shrub; more than 3 ft. high.

Stamens 2 or 3, distinct, anthers *yellow*; buds *not opposite.*

Branches *long, slender, supple, not knotted.*

Branches *not glaucous*; catkins *stalked.*

Branches more or less *erect.*

Undershrub usually less than 3 ft. high; stem creeping underground, rooting; catkins cylindrical R; leaves often silky below; stalk of pistil 2-3 times as long as the yellow nectary at its base.

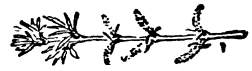


Stamens usually 5; leaves shining when old, viscous when young, fragrant, glabrous, toothed, thick ; staminate catkins slightly pendulous; ovary glabrous.

Stamen 1, formed by 2 united stamens PU;



bud or catkins *often opposite* P; branches glabrous, *greenish-yellow or purple*; anthers purple or black.



Branches more or less *knotted, not supple*; bracts brown or black.

Buds *glabrous*; leaves wrinkled lengthwise.

Height usually more than 6 ft.; leaves ovate, *older ones green and shining above, glabrous.*



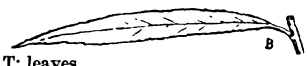
Height usually less than 6 ft.; leaves broader in upper part AU; *remaining greyish and hairy.*



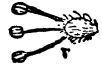
Buds *very hairy*, also young branches CN; leaves hairy, greyish below; seldom wrinkled lengthwise.



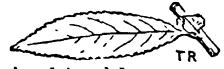
Branches *all drooping*; fruit glabrous; leaves linear-lanceolate B, glabrous.



Branches *glabrous, breaking easily* at their base, particularly during spring.



Stamens 3 T; leaves glabrous ; stipules persistent TR; bracts yellowish.



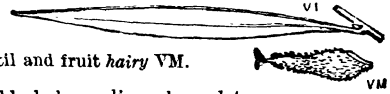
Stamens 2 F; leaves hairy, later glabrous, often glaucous below, stipules falling early; bracts yellowish.

Branches more or less *hairy* in upper part, *not breaking easily* at their base.

Bracts *yellowish*; leaves lanceolate A; pistil and fruit *glabrous* AL.



Bracts *brown or nearly black*; leaves linear VI; pistil and fruit *hairy* VM.



Branches *glaucous*; catkins *sessile*; bracts black; leaves linear-lanceolate.

1. **S. repens** L.[1]
Creeping Willow. C.
Damp sandy heaths: Apr.-May. P.

2. **S. pentandra** L.
Bay-leaved Willow.
River banks: May-June. P.

3. **S. purpurea** L.[2] ✠
Purple Willow.
River banks: Mar.-Apr. P.

4. **S. Caprea** L. ✠
Goat Sallow. C.
Woods near rivers: Mar.-Apr. P.

5. **S. aurita** L.
Round-eared Sallow. C.
Woods near rivers : Mar.-Apr. P.

6. **S. cinerea** L.
Grey Sallow.
Woods near rivers: Mar.-Apr. P.

7. **S. Babylonica** L.
Weeping Willow.
Gardens: Mar.-May. P.

8. **S. triandra** L.[3]
Almond-leaved Willow.
River banks: Apr.-May. P.

9. **S. fragilis** L.[4]
Crack Willow.
Damp places: Apr.-May P

10. **S. alba** L.[5] ✠
White Willow. C.
Damp places: Apr.-May. P.

11. **S. viminalis** L.[6] ✠
Osier.
Damp places: Apr.-May. P.

12. **S. daphnoides** Vill.
River banks: Mar.-Apr. P.

Plants *usually confined to mountains and high elevations.*

- Stems *not underground*, all *more or less erect, not supple.*
  - Leaves *toothed*, becoming *glabrous.*
    - Catkins *terminal or near apex* of leafy shoot; anthers purplish-blue; leaves ovate-lanceolate, shining, strongly veined; 4-16 in. — 13. **S. Myrsinites** L. *Whortle-leaved Willow.* R. Bogs: June-July. P.
    - Catkins *lateral*; leaves elliptical.
      - Margin of leaf *thickened*; leaves turning black in drying; 3-9 ft. — 14. **S. nigricans** Sm. *Dark-leaved Willow.* Watery places: Apr.-May. P.
      - Margin of leaf *not thickened*, only lightly toothed; leaves not turning black so readily; 3-9 ft. — 15. **S. phylicifolia** L. *Tea-leaved Willow.* Damp places: Apr.-May. P.
  - Leaves *entire, hairy.*
    - Leaves *lanceolate, cottony below and silky above*, often recurved at apex; catkin scales with silky long white hairs; 1-5 ft. — 16. **S. Lapponum** L. *Downy Willow.* Damp places: May-June. P.
    - Leaves *oval, shaggy*; catkin scales with silky long yellow hairs; 1-3 ft. — 17. **S. lanata** L. *Woolly Willow.* VR. Rocky places: May-July. P
- Stems all *underground, creeping*, except flowering branches.
  - Leaves *glaucous or silvery below*, hairy when young, *entire*, petiolate; catkin stalk long; 4-8 in. — 18. **S. reticulata** L. *Reticulate Willow.* Rocky places: May-July. P.
  - Leaves *green and shining on both surfaces*, always glabrous, *toothed*, almost sessile; catkin stalk very short; 1-4 in. — 19. **S. herbacea** L. *Dwarf Willow.* Rocky places: June-July. P.

1. Var. *argentea* Sm. : leaves rounded, very silvery below.—2. Var. *rubra* Huds.: filaments of stamens united only in their lower half, R.; var. *Lambertiana* Sm.: catkins larger, leaves very broad; var. *Helix* L.: catkins narrow, leaves very narrow, branches slender.—3. *S. undulata* Ehrh.: bracts hairy at apex, fruit stalk as long as nectary, considered a hybrid between *S. triandra* and *S. alba*; R.—4. Var. *Russelliana* Sm.: branches reddish, leaves very narrow. —5. Var. *vitellina* L. [Golden Osier] : branches bright yellow.—6. *S. Smithiana* Willd.: differs chiefly from *S. viminalis* in its leaves being white and not silvery below; considered a hybrid between that species and *S. caprea.*

PLATANACEÆ. Several species and varieties of *Platanus* are planted in parks and avenues.

I. Platanus L. *Plane Tree.*—(Fig. PL, p. XXVII.)

Leaves 3-7 lobed, toothed, hairy below along veins; flowers monœcious, yellowish or greenish; 30-120 ft. — 1. **P. vulgaris** Spach. *Plane Tree.* Cultivated: Apr.-May. P.

BETULACEÆ. The Birch grows readily even in poor soil; the Alder is often planted in watery places and near rivers to bind the soil.

Pistillate catkins *pendulous* B, *solitary*; scales membranous, deciduous;  leaves usually *acute* BA.  — I. **Betula** L., p. 162. *Birch.*

Pistillate catkins *erect* G, *several together*; scales thick, woody, persistent;  leaves *rounded at apex* AG.  — II. **Alnus** Hill, p. 162. *Alder.*

I. Betula L. *Birch.*—(Figs. B, BA, above.)

Fruits flat, *winged.*

- *Tree*; bark *white and silvery*; leaves acute, sharply toothed.
  - Leaves *wedge-shape at base* (Fig. BA); scales of fruiting catkin spreading; young shoots resinous; 20-75 ft. — 1. **B. alba** L. ✠ *White Birch.* Woods: Apr.-May. P.
  - Leaves *rounded at base*, broader towards middle; scales of fruiting catkin erect; young shoots downy; 20-30 ft. — 2. **B. pubescens** Ehrh. *Birch.* Woods: Apr.-May. P.
- *Shrub*; bark *dark, purplish*; leaves rounded, not acute, crenate, length usually less than ½ in., petiole very short; 1-2 ft. — 3. **B. nana** L. *Dwarf Birch.* Loc. Bogs; moors: May. P.

II. Alnus Hill. *Alder.*—(Figs. G, AG, above.)

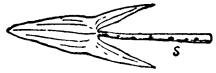
Tree; bark grey; leaves wedge-shaped at base, sharply toothed; staminate catkins long, pendulous; fruits not winged; 20-80 ft. — 1. **A. glutinosa** Gærtn. ✠ *Common Alder.* C. Wet places: Feb.-Mar. P.

MYRICACEÆ. This small N.O., represented in the British Flora by a single species, comprises several North American trees and shrubs.

I. Myrica L. *Gale.*—(Fig. MY, p. XXVII.)

Shrub; leaves simple, oval or lanceolate, slightly toothed, fragrant when bruised; flowers dicœcious; 1-4 ft. [Bog Myrtle.] — 1. **M. Gale** L. *Sweet Gale.* Bogs: Apr.-May P.

ALISMACEÆ. The species are all aquatic and are remarkable for the varied form of their leaves.

Flowers *monœcious*; *stamens many*;  leaves arrow-shaped S. — I. **Sagittaria** L., p. 163. *Arrow-head.*

Flowers *perfect.*

- *Stamens 6.*
  - Carpels usually many, free, *in a ring* P, *or head* R.   — II. **Alisma** L., p. 163. *Water Plantain.*
  - Carpels 5-8, *radiating* D,  united at base. — III. Damasonium Hill, p. 163. *Damasonium.*
- *Stamens 9*; carpels 6, united at base. — IV. **Butomus** L., p. 163. *Flowering Rush.*

I. Sagittaria L. *Arrow-head.*—(Fig. S, above.)
Leaves arrow-shaped and aerial, cordate and floating, ribbon-like and submerged; carpels many, free, in a head; flowers whorled, white, purple at centre; stem creeping, rooting, tuberous, length variable.

1. **S. sagittifolia** L. *Common Arrow-head.* Ditches; rivers: July-Aug. P

II. Alisma L. *Water Plantain.*—

Plant usually *floating*; *stems submerged* N; *carpels 6-15*:  leaves linear and ovate N; flowers white; length variable.

1. **A. natans** L. *Floating Water Plantain.* VR. Still waters: July-Aug. P.

Plant *rooted*; *carpels more than 15.*

- Carpels *rounded, arranged in a ring* P;  inflorescence of many whorls PL; flowers pale rose; leaves ovate and lanceolate; 8-40 in. 
  - 2. **A. Plantago** L.[1] *Common Water Plantain.* C. Margins of rivers and ponds: June-Aug. P.
- Carpels *acute, arranged in a head* R;  inflorescence an umbel or 2-whorled; flowers pale purple; leaves linear and lanceolate; 4-20 in.
  - 3. **A. ranunculoides** L. *Lesser Water Plantain.* Ditches; marshes: June-Aug. P.

III. Damasonium Hill. *Damasonium.*—(Fig. D, above.)
Stems usually spreading, rooting; leaves all radical, floating, 3 prominent veins; flowers white, whorled; 2-16 in. [Thrum-wort.]

1. **D. stellatum** Rich. *Star Damasonium.* R. Ponds; ditches: June-Aug. P.

IV. Butomus L. *Flowering Rush.*—(Fig. BU, p. XXXI.)
Stem creeping, rooting; leaves radical, long, narrow, 3-angled; flowers large, rose, umbellate; involucre 3-leaved; 2-4 ft.

1. **B. umbellatus** L. *Flowering Rush.* Ditches; margins of rivers: June-July. P.

1. Var. *lanceolatum* Rchb.: leaves narrowed at base and apex.

LILIACEÆ. Many species are cultivated as ornamental plants; others are edible, e.g. Asparagus, Onion.

Underground stem *short, bulbous, or hard and thickened like a corm.*

Stem *bulbous* at base, FL.

Perianth-segments *free, or distinct* E, N.

Flowers *solitary or in racemes* N.

Flowers *ovoid, 6-toothed* M;  perianth-segments *almost completely united*, dark blue. — I. **Muscari** Mill., p. 165. *Muscari.*

Flowers in an *umbel*; bracts 1-2 SM, FL.  — II. **Allium** L., p. 166. *Allium.*

Flowers *yellow, purple, or white and striated rose or purple.*

Flowers *solitary.*

Style *very short*; flowers yellow, erect. — III. **Tulipa** L., p. 167. *Tulipa.*

Style *long* ME.

Flowers *white, veined rose or purple*, yellow at base, erect. — IV. **Lloydia** Salisb., p. 167. *Lloydia.*

Flowers *brownish-purple*, with darker spots, drooping.  — V. **Fritillaria** L., p. 167. *Fritillary.*

Flowers *racemose.*

Perianth-segments *spreading.* — VI. **Gagea** Sal., p. 167. *Gagea.*

Perianth-segments *reflexed.* — VII. **Lilium** L., p. 167. *Lily.*

Flowers *white, greenish-white or blue.*

Stamens *attached above base of perianth* E; flower bell-shaped N.  — VIII. **Endymion** Dumort., p. 167. *Blue-bell.*

Stamens *attached near base of perianth.*

Filaments flattened; perianth *white* or greenish-white, *persistent.* — X. **Ornithogalum** L., p. 168. *Ornithogalum.*

Filaments flattened or not; perianth *blue* or purplish, *deciduous.* — IX. **Scilla** L., p. 167. *Squill.*

Stem *hard and thickened* at base like a corm; perianth-tube long (Fig. CO, p. XXXI); flowers radical. — XIII. **Colchicum** L., p. 168. *Colchicum.*

Undergroundstem *not bulbous or corm-like, usually creeping.*

Plant *herbaceous.*

Stamens 6; perianth-segments 6.

Flower *bell-shaped or tubular*; fruit a berry.

Perianth-segments *spreading* RA; fruit a capsule. 

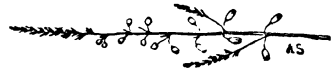
Filaments *bearded* N.

Flowers *white inside, purplish outside.*

Flowers *bright yellow.* 

Filaments not *bearded*; flowers yellowish-green.

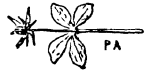
Leaves *green.*

Leaves *reduced to membranous scales*; branches many, fine AS, green. 

Flowers *bell-shaped* C; leaves radical. 

Flowers *tubular* P; leaves cauline P. 

Stamens 4; perianth-segments 4;  leaves 2, alternate M.

Stamens 8; perianth-segments 8; leaves 4, whorled PA. 

Plant *shrubby*, spinous R;  stamens 3; berry red.

XI. **Pubilaria** Rafin., p. 168. *Pubilaria.*

XII. **Narthecium** Huds., p. 168. *Narthecium.*

XIV. **Tofieldia** Huds., p. 168. *Tofieldia.*

XV. **Asparagus** L., p. 168. *Asparagus.*

XVI. **Convallaria** L., p. 168. *Convallaria.*

XVII. **Polygonatum** Hill, p. 169. *Solomon's Seal.*

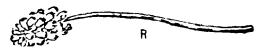
XVIII. **Maianthemum** Wigg., p. 169. *May Lily.*

XX. **Paris** L., p. 169. *Herb-Paris.*

XIX. **Ruscus** L., p. 169. *Ruscus.*

I. **Muscari** Mill. *Muscari.*—(Fig. M, p. 164.)

Raceme *very short* R, BO; leaves long, linear.

Leaves *spreading, margins parallel*; flowers with a prune-like odour; 4-12 in. 

Leaves *erect, increasing in breadth from base to apex* BO; flowers not scented; 4-16 in. 

1. **M. racemosum** Mill. *Grape Hyacinth.* Loc. Dry pastures: Apr.-May. P.

2. **M. botryoides** DC. Cultivated: Mar.-May. P.

II. Allium L.[1] *Allium.*—

Leaves 1-2 *in. broad* U, oval, acute;  stamens shorter than perianth; flowers white; odour of garlic; 4-16 in. — 1. **A. ursinum** L. ✠ *Ramsons.* Damp shady places: Apr.-June. P.

Leaves long, and *less than 1 in. in breadth.*

Leaves more or less *flat.*

Stamens *longer* than perianth C.

Leaves *channelled at base*; filaments not 3-cleft; flowers rose; 8-24 in.  — *2. **A. carinatum** L. Loc. Dry places: July-Aug. P.

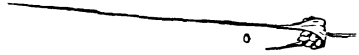
Leaves *not channelled at base*; inner stamens 3-cleft flowers pale purple; 3½-4 ft. — 3. **A. Ampeloprasum** L. *Wild Leek.* Loc. Waste places: July-Aug. P

Stamens *shorter* than perianth SC.

Stem *rounded* S: inner filaments 3-cleft; umbel including bulbils; flowers purple; 2-3 ft.  — 4. **A. Scorodoprasum** L. *Sand Garlic.* Loc. Sandy places: June-July. P.

Stem *3-angled*; filaments not 3-cleft; umbel not including bulbils flowers white; 8-16 in. — * 5. **A. triquetrum** L. *Triquetrous Leek.* Loc. Moist shady places: Apr.-June. P.

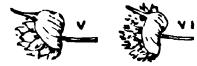
Leaves *rounded or partly rounded*, at least at the base.

Bracts *much longer than umbel* O; umbel including many bulbils O; flowers pinkish or brownish, mixed with green; 16-30 in.  — 6. **A. oleraceum** L. *Field Garlic.* R. Margins of fields: July-Aug. P.

Bracts *shorter or scarcely longer* than umbel V, VI, SM.

Stamens *shorter than perianth*, not 3-cleft; umbel without bulbils; flowers purplish or rose; 4-12 in. — 7. **A. Schœnoprasum** L. ✠ *Chives.* R. Rocky pastures: June-July. P.

Stamens *longer than perianth*, inner ones 3-cleft.

Stamens *not much longer* than perianth; umbel *with bulbils* V; bract not divided V, VI; flowers pink; 16-36 in.  — 8. **A. vineale** L. *Crow Garlic.* Dry fields: June-July. P.

Stamens *twice as long* as perianth; umbel *without bulbils*; bract simple or divided in two SM; flowers red; 12-30 in.  — 9. **A. sphærocephalum** L. *Round-headed Garlic.* R. Sandy places: June-July. P.

III. Tulipa L. *Tulip.*—

Leaves long, oval, pointed, glaucous; perianth bell-shaped T; segments hairy at apex; 1-1½ ft.



1. **T. sylvestris** L. *Wild Tulip.* R.
Shady waste places: Apr.-May. P.

IV. Lloydia Salisb. *Lloydia.*—

Leaves very few, almost as long as flowering stem; bulb less than ½ in-in diameter; 2-5 in.

1. **L. serotina** Rchb. *Mountain Lloydia.* VR.
Rocky mountains: June-July. P.

V. Fritillaria L. *Fritillary.*—(Fig. ME, p. 164.)

Leaves alternate, linear-lanceolate F, glaucous; 8-16 in.

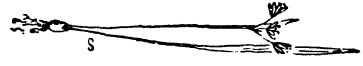


[Snake's Head.]

1. **F. Meleagris** L. *Common Fritillary.* Loc.
Damp meadows: May-June. P

VI. Gagea Salisb. *Gagea.*—

Leaf radical, usually solitary, narrow, longer than flowering stem S; bracts opposite; raceme flattened and resembling an umbel or a corymb; flowers yellow with green bands; 6-10 in.



1. **G. lutea** Ker. *Yellow Gagea.* R.
Damp woods and meadows: Mar.-Apr. P.

VII. Lilium L. *Lily.*—

Lower leaves *whorled*; flowers distant from leaves, rose, spotted purple; style somewhat slender; 1 ½-4 ft.
[Turk's-cap Lily.]

1. **L. Martagon** L. *Martagon Lily.* R.
Woods: June-July. P.

Lower leaves *not whorled*; flowers surrounded by leaves, yellow; style thick; 1½-2½ ft.

*2. **L. pyrenaicum** *Gouan Pyrenean Lily.* VR.
Shady banks: June-July. P.

VIII. Endymion Dumort. *Wild Hyacinth*; *Blue-bell.*—(Figs. E, N, p. 164.)

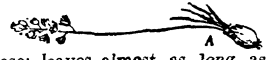
Leaves all radical, numerous, narrow; flowers blue, fragrant; bracts often bluish, in pairs; 4-16 in.

1. **E. nutans** Dumort. *Blue-bell.* C.
Woods: Apr.-May. P.

IX. Scilla L. *Squill.*—

Leaves radical, linear.

Bracts *absent*; raceme not corymbose A; leaves much shorter than flowering stem A; 4-9 in.



1. **S. autumnalis** L. *Autumnal Squill.* Loc.
Dry pastures: Aug.-Sept. P.

Bracts *long*, *1 below each flower*; raceme flattened and corymbose; leaves almost as long as flowering stem; 4-6 in.

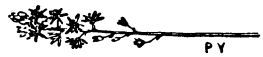
2. **S. verna** Huds. *Spring Squill.* Loc.
Dry pastures: Apr.-May. P.

1. The following species are often cultivated:—*A. sativum* L. ✠ [Garlic], leaves becoming recurved, flowers whitish; *A. Porrum* L. ✠ [Leek], leaves broad and glaucous, flowers whitish and striated red; *A. Cepa* L. ✠ [Onion], flowers greenish-white; *A. fistulosum* L. ✠ [Scallion or Green Onion], stem swollen towards middle; *A. ascalonicum* L. ✠ [Shallot], elongated bulb containing small purplish bulbils; *A. Schœnoprasum* L. ✠ [Chives], flowers rose, without bulbils in umbel.

X. **Ornithogalum** L. *Ornithogalum.*—

Raceme *long* PY. { Leaves *as long as or longer than* flowering stem; filaments trifid; raceme drooping; 8-18 in.

Leaves *shorter than* flowering stem, often dying away before flowering period; filaments not cleft; raceme erect PY, branched; 2-3 ft.



Raceme *flattened, corymbose* U; 

leaves about as long as flowering stem; 4-12 in.

*1. **O. nutans** L.
Drooping Ornithogalum. R.
Garden escape: Apr.-May. P.

2. **O. pyrenaicum** L.
Spiked Ornithogalum. Loc.
Woods: June. P.

3. **O. umbellatum** L.
Star of Bethlehem.
Fields; shady places: Apr.-May. P.

XI. **Pubi'laria** Rafin. *Pubilaria.*—

Roots thick, fleshy; leaves radical, grass-like; flowering stem branched; 6-18 in

1. **P. bicolor** Rafin.
Variegated Pubilaria. R.
Heaths: May-June. P.

XII. **Narthecium** Huds. *Narthecium.*—(Fig. N, p. 165.)

Flowers in a raceme O; leaves narrow, long, smooth; underground stem scaly; 6-10 in.



1. **N. ossifragum** Huds.
Bog Asphodel.
Bogs: July-Aug. P.

XIII. **Colchicum** L. *Colchicum.*—(Fig. CO, p. XXXI.)

Leaves radical, appearing in spring and dying away before flowering period; flowers large, purplish or lilac; 6-12 in.

1. **C. autumnale** L. ✠
Meadow Saffron.
Meadows: Aug.-Oct. P.

XIV. **Tofieldia** Huds. *Tofieldia.*—

Leaves radical, narrow, short: flowers in a dense, short spike; perianth persistent; 4-8 in.

1. **T. palustris** Huds.
Scottish Asphodel.
Mountain bogs: July-Aug. P.

XV. **Asparagus** L. *Asparagus.*—(Fig. AS, p. 165.)

Stems erect, much branched; flowers diœcious, greenish-yellow; berry small, red; 1-3 ft.

1. **A. officinalis** L.[1] ✠
Common Asparagus. R.
Sea coasts: June-July. P.

XVI. **Convallaria** L. *Convallaria.*—(Fig. C, p. 165.)

Leaves usually 2, oblong, radical; flowers fragrant, white; berry red; 6-12 in.

1. **C. majalis** L. ✠
Lily of the Valley.
Woods: May. P.

XVII. Polygonatum Hill. *Solomon's Seal.*—(Fig. P, p. 165.)

Flowers axillary, drooping VR, greenish-white.

- Leaves *whorled* VR; stem angular, hollow; flowers several together; berries purplish; 1½-2½ ft. 
  - **1. P. verticillatum** All. *Whorled Solomon's Seal.* VR. Woods: May-June. P.
- Leaves *alternate*; berries bluish.
  - Stem *angular* V;  flowers 1-2 together; filaments glabrous; 1-1½ ft. — **2. P. officinale** All. *Angular Solomon's Seal.* R. Woods: May-June. P.
  - Stem *rounded* PM;  flowers 3-5 together; filaments hairy; 1-2 ft. — **3. P. multiflorum** All. *Common Solomon's Seal.* Loc. Woods: May-June. P

XVIII. Maianthemum Wigg. *May Lily.*—(Fig. M, p. 165.)

Underground stem creeping; leaves oval, cordate at base, stalked; flowers white; berries red; 4-8 in. — **1. M. bifolium** DC. *May Lily.* R. Woods: May-June. P

XIX. Ruscus L. *Ruscus.*—(Fig. R, p. 165.)

Shrub evergreen; leaves reduced to minute scales; branches flattened, green, leaf-like, spinous at apex; flower usually solitary, small, sessile, near middle of flattened branch, greenish; 1-3 ft. — **1. R. aculeatus** L. ✠ *Butcher's Broom.* Woods; thickets: Mar.-Apr. P.

XX. Paris L. *Herb Paris.*—(Fig. PA, p. 165.)

Leaves oval, sessile; flowers solitary, terminal, yellowish-green, styles 4; berry bluish-black; 8-12 in. — **1. P. quadrifolia** L. ✠ *Herb Paris.* Loc. Woods: May-June. P.

DIOSCOREACEÆ.

I. Tamus L. *Black Bryony.*—(Fig. TA, p. XXXII.)

Stem twining; leaves thin, shining, veins netted, apex pointed, base cordate; flowers yellowish-green, in axillary racemes; berries red; 3-12 ft. — **1. T. communis** L. *Black Bryony.* Woods; hedges: May-June. P.

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1. Var. *prostratus* Dumort.: stems 1-2 ft., prostrate; branches short, thick, hard; R.

IRIDACEÆ. Several species of Iris and Gladiolus are cultivated as ornamental plants.

Flowers *irregular*, 2-lipped; stigmas 3.

- Flowers *regular*; stigmas 3.
  - Stigmas *petal-like*.
    - *Upper and lower lips of each stigma deeply cleft*; fruit 1-celled. — **Gladiolus** L., p. 170. *Gladiolus.*
    - *Upper lip only of each stigma deeply cleft*, lower lip entire or notched; fruit 3-celled. — II. **Hermodactylus** Adans., p. 170. *Hermodactylus.*
  - Stigmas *not petal-like*.
    - Stigmas *entire*; filaments united below; flowers 1-6. — III. **Iris** L., p. 170. *Iris.*
    - Stigmas *not entire*; filaments free; flowers solitary.
      - Stigmas bi-fid; perianth-tube *short*, above the soil. — IV. **Sisyrinchium** L., p. 170. *Sisyrinchium.*
      - *Stigmas fringed*; perianth-tube *long*, passing below the soil. — V. **Romulea** Mar., p. 170. *Romulea.* VI. **Crocus** L., p. 171. *Crocus.*

I. **Gladiolus** L. *Gladiolus.*—

Leaves sword-shaped, spreading around stem; anthers shorter than filaments; capsule longer than broad; flowers rose or purplish; 1-2 ft.

1. **G. illyricus** Koch *Gladiolus.* VR. Damp woods: June-July. P.

II. **Hermodactylus** Adans. *Hermodactylus.*—

Flowers solitary, brown; outer perianth-segments reflexed at apex; stigmas greenish; root with several ova tubers; 8-16 in.

*1. **H. tuberosus** Salisb. VR. Hedges: June-July. P.

III. **Iris** L.[1] *Iris.*—



- Inner segments of perianth *p much shorter than* outer *c* and stigmas *s* (Fig. P); flowers yellow; flowering stem branched; 2-4 ft. [Yellow Flag.] — 1. **I. Pseudacorus** L. ✠ *Yellow Iris.* C. Wet places: June-July. P.
- Inner segments of perianth *p longer than or as long as* outer *c* and stigmas *s* (Fig. F).
  - *Flowers bluish*; flowering stem simple; 1-3 ft. [Gladdon.] — 2. **I. fœtidissima** L. *Fetid Iris.* Dry shady places: May-July. P.
  - *Outer segments yellowish-white, veined blue; inner segments violet*; apex of capsule long, pointed; 1-3 ft. — *3. **I. spuria** L. *Bastard Iris.* VR. Wet places: May-July. P.

IV. **Sisyrinchium** L. *Sisyrinchium.*—

Leaves radical, grass-like, shorter than flowering stem; flowers blue; capsule small, globular; 6-12 in.

1. **S. angustifolium** Mill. *Blue-eyed Grass.* Loc. Moist grassy or shady places: June-July. P.

V. **Romulea** Mar. *Romulea.*—

Inner segments of perianth slightly shorter than outer and with 3 principal veins a dark rose; stamens slightly longer than pistil; stigmas not cleft to their base; fruit-stalk curved; flowers purple, lilac or pale blue; leaves grass-like; 2-5 in.

1. **R. Columnæ** S. and M. *Romulea.* Loc. Heathy and sandy places near sea: Mar.-May P

VI. Crocus L. *Crocus.*—

Flowers *without leaves at base*, appearing in autumn, leaves in spring; stigmas finely and deeply fringed; flowers purple; 4-8 in.

Flowers *with leaves at base*; stigma coarsely fringed.
- Stigmas *about as long as perianth*; flowers purple; 4-8 in.
- Stigmas *shorter than perianth*; flowers violet and white, or white; 2-8 in.

1. **C. nudiflorus** Sm. *Autumnal Crocus.* R. Meadows: Sept.-Oct. P.
2. **C. sativus** All. ✠ *Saffron Crocus.* Cultivated: Sept.-Nov. P.
3. **C. vernus** All. *Spring Crocus.* R. Meadows: Mar.-Apr. P.

AMARYLLIDACEÆ. Most of the species are cultivated as ornamental plants.



Perianth *not crowned*, white.
- *Inner segments of perianth greenish, smaller than outer* G; anthers pointed.
- *Segments of perianth all equal and similar* (Figs. V, Œ, below); anthers not pointed.

Perianth *crowned* (Figs. P, PN, below), yellow or white.

I. Galanthus L. *Snowdrop.*—(Fig. G, above.)

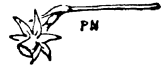
Foliage leaves 2, linear, blunt, glaucous; flower solitary, drooping, outer segments rounded, inner notched; 8-12 in.

I. **Galanthus** L., p. 171. *Snowdrop.*

II. Narcissus L. *Narcissus.*—



Crown *very short* P.
- ***Flowers usually solitary***, white, crown yellow with red margin; 1-1½ ft.
- ***Flowers*** 2-3, yellowish-white, crown yellow; 1-1½ ft.

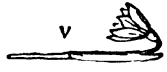


Crown *long* PN; flowers solitary, yellow; 8-12 n

III. **Leucojum** L., p. 171. *Snowflake.*

II. **Narcissus** L., p. 171. *Narcissus.*

III. Leucojum L. *Snowflake.*—



Flowers 1-2 V; peduncle triangular; 8-16 in.

Flowers 4-6 Œ; peduncle flattened; 1-2 ft. [Loddon Lily.]



1. **G. nivalis** L. *Snowdrop.* Woods; fields: Feb-Mar. P.

*1. **N. poeticus** L. *Pheasant's-eye Narcissus.* R. Fields: Apr.-May. P.

*2. **N. biflorus** Curt. *Jonquil.* R. Fields: Apr.-May. P.

3. **N. Pseudo-narcissus** L. *Daffodil.* Woods: Mar.-Apr. P.

1. **L. vernum** L. *Spring Snowflake.* R. Woods; fields: Feb.-Apr. P.

2. **L. æstivum** L. *Summer Snowflake.* Loc. Damp meadows: May-July. P.

1. *I. germanica* L.: flowers purplish, inner segments of perianth bearing coloured hairs, 2-4 ft., and *I. pumila* L. [Dwarf Iris]: flowers purplish, inner segments bearing coloured hairs, 2-8 in., are often cultivated.

ORCHIDACEÆ. Many exotic Orchids are cultivated in green-houses as ornamenta)plants.

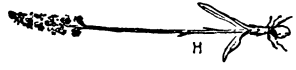
Plant having *well-developed green leaves.*

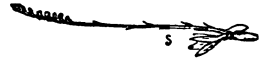
- Lip *spurred* (Figs. CO, PU, etc. pp. 174-5.) — V. **Orchis** L. p. 174. *Orchis.*
- Lip *not spurred* A, E, C.
  - Stem *with tubers* at base MO, MA, S.
    - Sepals *spreading.*
      - Lip *hanging*; stem *not angular.* — I. **Ophrys** L., p. 173. *Ophrys.*
      - Lip *erect*; stem *angular.*
        - Stem *3-angled*, almost winged; bracts very short. — II. **Liparis** Rich., p. 173. *Liparis.*
        - Stem *5-angled*: bracts elongated. — III. **Malaxis** Sw., p. 173. *Bog Orchis.*
    - Sepals *erect* A.
      - *Middle lobe of lip cleft* A; lip hanging. — IV. **Aceras** R. Br., p. 173. *Man Orchis.*
      - *Middle lobe of lip not cleft.*
        - Spike *not 1-sided* H; only 1 tuber well developed H. — VI. **Herminium** R. Br., p. 176. *Musk Orchis.*
        - Spike *1-sided* S, spirally twisted; tubers several, long S. — VII. **Spiranthes** Rich., p. 176. *Lady's Tresses.*
  - Stem *without tubers.*
    - *Flowers 1-2*, large; lip inflated resembling a slipper. — VIII. **Cypripedium** L., p. 176. *Lady's Slipper.*
    - Flowers *many*; lip not inflated.
      - Flowers *greenish*; lip 2-cleft LI. — IX. **Listera** R. Br., p. 176. *Tway-blade.*
      - Flowers *white, pink or red*; lip not 2-cleft.
        - Flowers *stalked* E; lip bearing two protuberances (*l*, Fig. E). — X. **Epipactis** Adans., p. 176. *Epipactis.*
        - Flowers *sessile* C.
          - Spike *1-sided*; lip entire. — XI. **Goodyera** R. Br., p. 177. *Goodyera.*
          - Spike *not 1-sided*; lip interrupted (*l*, Fig. C). — XII. **Cephalanthera** Rich., p. 177. *Helleborine.*









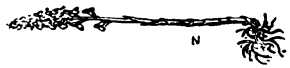


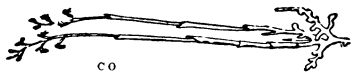






Plant brownish; *no green leaves.*

- Underground stem bearing *many unbranched fibres or roots* N; lip *not spurred, 2-cleft.* 

- Underground stem *branched like coral* CO; *no true roots*; lip *not cleft.*
  - Flowers small; lip usually *not spurred.* 

  - Flowers rather large; lip *spurred.*

XIII. **Neottia** Adans., p. 177.
Bird's-nest Orchis.

XIV. **Corallorrhiza** Hall, p. 177.
Coral-root Orchis.

XV. **Epipogium** Sw., p. 177.
Epipogium.

I. Ophrys L. *Ophrys.*—

Lip *scarcely lobed* AC, OA.

- Lip with a yellow *terminal appendage curved inwards* (*a*, Figs. A, AC): 



lip purple with a greenish spot; 8-16 in.
- Lip *entire or with a small tooth* (*d*, Figs. AR, OA); 



lip brown with 4 whitish or greenish lines; 8-16 in.

Lip *deeply lobed* MF, AP.

- Middle lobe of lip *bi-fid* at apex MU, MF; 

sepals usually greenish, lip brownish-purple; 8-20 in.
- Middle lobe of lip *3-lobed* AF, lobes recurved AP: 



sepals pink with green lines; lip brown, velvety; 8-16 in.

1. **O. arachnites** Hoffm. *Late Spider Orchis.* VR. Shady hilly pastures: May-June. P.
2. **O. aranifera** Huds. *Spider Orchis.* R. Shady hilly pastures: Apr.-May. P.
3. **O. muscifera** Huds. *Fly Orchis.* Loc. Shady hilly pastures: May-June. P.
4. **O. apifera** Huds. *Bee Orchis.* Loc. Shady hilly places: June-July. P.

II. Liparis Rich. *Liparis.*—

Leaves 2, oblong, keeled, yellowish-green; spike 3-10 flowered; flowers greenish-yellow; 4-8 in. [Fen Orchis.]

1. **L. Lœselii** Rich. *Two-leaved Liparis.* VR. Bogs: June-July. P.

III. Malaxis Sw. *Bog Orchis.*—
Stem 5-angled; leaves 2-5, fringed with small bulbils; flowers yellowish-green, small, many, in long spike; 2-4 in.

1. **M. paludosa** Sw. *Bog Orchis.* R. Spongy bogs: July-Sept. P.

IV. Aceras R. Br. *Man Orchis.*—(Fig. A, p. 173.)
Flowers greenish-yellow with brown rays; lip longer than ovary, lobes narrow; 8-16 in.

1. **A. anthropophora** R. Br. *Man Orchis.* Loc. Shady pastures: June. P.

V. Orchis L.[1] *Orchis.*—

Tubers *lobed* MA.



Spur *shorter than or as long as ovary.*

Spur (*e*) *twice as long as ovary* (*o*, Fig. CO);  bracts 3-nerved; leaves narrow, 4-8 in. long; flowers rose, fragrant; spike 3-5 in. long; 1-2 ft. — 1. **O. conopsea** L. *Fragrant Orchis.* Hilly pastures: June-July. P.

Flowers *greenish*; spur (*e*) 2-5 times shorter than ovary (*o*, Fig. V).

- Lip *longer than the other petals*, 3-lobed, *lobes narrow* V; flowers yellowish-green; 4-8 in.  — 2. **O. viridis** All. *Frog Orchis.* *Pastures: June-July.* P.
- Lip *about as long as the other petals*, 3-lobed, *lobes broad* A; flowers greenish-white, fragrant; 4-8 in.  — 3. **O. albida** Scop. Loc. Hilly pastures: June-Aug. P.

Flowers *purple or purplish*; spur fairly long.

- Bract (*b*, Fig. LA) *longer* than flower; flowers purple; 1-2½ ft.  — 4. **O. latifolia** L.[2] *Marsh Orchis.* Damp places: May-June. P.
- Bract (*o*, Fig. MC) *shorter* than flower; flowers rose or whitish, streaked purple; leaves spotted purple; 1-2 ft.  — 5. **O. maculata** L. *Spotted Orchis.* C. Woods; pastures: May-June. P.

long and twisted V, PU, MT, MS.

Bract (*b*, Fig. PU) *at least 3 times shorter than ovary o.*

- Bract *6-8 times* shorter than ovary PU;  middle lobe of lip broad P;  flowers dark purple, lip variegated; 1-2½ ft. — 6. **O. purpurea** Huds. *Purple Orchis.* R. Woods: May-June. P.
- Bract *3-4 times* shorter than ovary; flowers rose, purplish or ash-coloured.
  - Middle lobe of lip *narrow* S; 1-2 ft.  — 7. **O. Simia** Lam. *Monkey Orchis.* R. Woods: May-June. P.
  - Middle lobe of lip *broad* MI; 1-2 ft.  — 8. **O. militaris** L.[3] *Military Orchis.* R. Woods: May-June. P.

Lip entire or lobed; *lobes not*

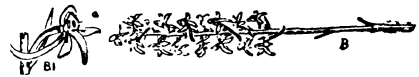
Tubers *entire* MO.



Bract *almost as long as or longer than ovary.*

Lip *narrow, entire* BI, MT; spur much longer than ovary.

Anther-lobes *parallel* (*a*, Fig. BI); spur narrow B, BI; flowers fragrant, white; 8-20 in.



9. **O. bifolia** L.
Small Butterfly Orchis.
Pastures; woods: June-July. P.

Anther-lobes *diverging at base* (*a*, Fig. MT;)

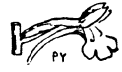


spur often enlarged at apex MT; flowers larger, not fragrant, white; 1-2 ft.

10. **O. montana** Schmidt.
Large Butterfly Orchis.
Pastures; woods: May-June. P.

Lip *broad, lobed* C, MS.

Lip *bearing 2 small protuberances above* PY; spur long; flowers bright rose; 1-1½ ft.



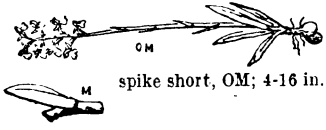
11. **O. pyramidalis** L.
Pyramidal Orchis.
Hilly pastures: June-Aug. P.

Lip *not bearing protuberances.*

Middle lobe of lip *entire or almost so* MR.



Upper bracts *1-nerved* M; flowers purple, green-veined;



spike short, OM; 4-16 in.

12. **O. Morio** L.
Green-winged Orchis.
Pastures: May-June. P.

Upper bracts *3-nerved* LX; flowers red;



spike short or long; 1-2 ft.

13. **O. laxiflora** Lam.
Loose-flowered Orchis. R.
Moist places: May-June. P.

Middle lobe of lip *notched at apex* MS, U.

Spur (*e*, Fig. MS) *almost as long as ovary*; flowers rose-purple, rarely white; 1-2 ft.



14. **O. mascula** L.
Early Purple Orchis.
Moist shady places: Apr - June. P.

Spur (*e*, Fig. U) *about ½ length of ovary*; flowers purple, lip white, spotted purple; 6-8 in.



15. **O. ustulata** L.
Burned Orchis.
Pastures: May-June. P.

Lip lobed; *lobes long and twisted* LO; spur short: flowers greenish-white, spotted purple, odour fetid; tubers entire; 1½-3 ft.



16. **O. hircinia** Cr.
Lizard Orchis. VR.
Pastures: June-July. P.

1. Be careful not to mistake the long and often twisted ovary at the base of the flower for the flower-stalk; the ovules can be easily seen when the ovary is cut across or lengthwise.—2. Var. *incarnata* L.: leaves light green, not spotted, bracts all longer than flowers, R.—3. Many hybrids have characters intermediate between those of this and the two preceding species.

VI. Herminium R. Br. *Musk Orchis.*—(Fig. H, p. 172.)

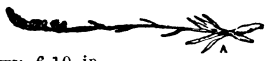
Leaves usually 2; flowers greenish-yellow; lip erect, 3-lobed, lobes narrow; 4-8 in.

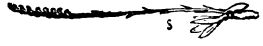
1. **H. Monorchis** R.Br. *Musk Orchis.* Loc. Hilly pastures: June-July. P.

VII. Spiranthes Rich. *Lady's Tresses.*—

Flowers *white*; leaves long, somewhat narrow A, S.

- Leaves *all round base of stem* A.
  - Spike *lax* A; flowers in one row, fragrant; 4-12 in.
  - Spike *dense*, shorter; flowers in three rows; 6-10 in.
- Leaves *in a lateral rosette at base of stem* S; flowers in one row, fragrant with a vanilla-like smell; 4-10 in.





1. **H. æstivalis** Rich. *Summer Lady's Tresses.* R. Bogs; marshes: July-Aug. P.
2. **H. Romanzoffiana** Cham. *Irish Lady's Tresses.* VR. Boggy places: Aug.-Sept. P.
3. **H. autumnalis** Rich. *Common Lady's Tresses.* Dry hilly pastures: Aug.-Oct. P.

VIII. Cypripedium L. *Lady's Slipper.*—

Stem leafy; leaves ovate, pointed, 1½-3 in. broad; sepals and petals 1-2 in. long, brown; lip yellow, variegated purple; 1-1½ ft.

1. **C. Calceolus** L. *Lady's Slipper.* VR. Woods: May-July. P.

IX. Listera R.Br. *Tway-blade.*—

Leaves 2, large, cauline; lip hanging.

- Leaves *ovate*; spike long (Fig. LI, p. 172); lip not toothed at base; 1-1½ ft.
- Leaves *cordate*; spike short; lip with 2 lateral teeth at base; 4-8 in.

1. **L. ovata** R.Br. *Common Tway-blade.* Moist woods: May-June. P.
2. **L. cordata** R.Br. *Lesser Tway-blade.* Turfy moors: June-Aug. P.

X. Epipactis Adans. *Epipactis.*—

Lip *shorter than* sepals (*l*, Fig. E;)  lower leaves ovate, broad; 1-3 ft.

1. **E. latifolia** All. ✠ *Broad-leaved Epipactis.* Shady hilly places: July-Sept. P.

Lip *as long as, or longer than* sepals (*l*, Fig. PA);  leaves all lanceolate EP; 1-2 ft. 

2. **E. palustris** Cr. *Marsh Epipactis.* Marshy places: July-Aug. P.

[Marsh Helleborine.

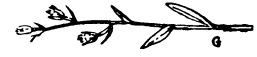
Goodyera R.Br. *Goodyera.*—

Leaves ovate, spreading; bracts narrow, adpressed; flowers small, white, almost odourless; 2-12 in. — 1. **G. repens** R.Br. *Creeping Goodyera.* R. Rocky woods: July-Sept. P.

XII. Cephalanthera Rich. *Helleborine.*—

Bract (*b*, Fig. EN) *much shorter than* ovary;  leaves narrow, long E; sepals acute EN; flowers white; 1-2 ft.  — 1. **C. ensifolia** Rich. *Narrow-leaved Helleborine.* R. Woods: May-June. P.

Bract (*b*, Fig. R) *about as long as* ovary.

- Ovary *glabrous*; sepals rounded; flowers white; leaves oval or oblong G; 1-1½ ft.  — 2. **C. grandiflora** Bab. *Large-flowered Helleborine.* Woods: May-June. P.
- Ovary *hairy* R; sepals pointed R; flowers rose; leaves narrow; 1-2 ft.  — 3. **C. rubra** Rich. *Red Helleborine.* VR. Woods: June-July. P

XIII. **Neottia** Adans. *Bird's-nest Orchis.*—(Fig. N, p. 173.)

Leaves reduced to brown scales; bracts brownish-white; flowers reddish; roots many; plant living on leaf-débris; 1-1½ ft. — 1. **N. Nidus-avis** Rich. *Bird's-nest Orchis.* Woods: May-June. P.

XIV. **Corallorhiza** Hall. *Coral-root Orchis.*—(Fig. CO, p. 173.)

Leaves reduced to sheaths, pale brown; flowers 3-12, drooping, white or greenish; spike lax; plant living on decaying leaves; 4-12 in. — 1. **C. innata** R.Br. *Coral-root Orchis.* R. Boggy woods: June-Aug. P.

XV. Epipogium Sw. *Epipogium.*—

Stem sheathed; raceme 1-8 flowered; flowers yellowish, lip whitish marked purple; plant living on decaying leaves; 4-8 in. — 1. **E. aphyllum** Sw. *Leafless Epipogium.* VR. Woods: July-Aug. P.

HYDROCHARIDACEÆ. All the species are aquatic. Elodea is a N. American plant which has spread with great rapidity in the rivers and of Europe.

Leaves *rounded, cordate, stalked* H;  staminate flowers in groups of 3, stamens 12; pistillate flowers solitary. — I. **Hydrocharis** L., p. 178. *Frog-bit.*

Leaves more or less *elongated, sessile* E, S.

- Leaves usually *in whorls of 3 along the stem* E, transparent; pistillate flowers solitary, tube long.  — II. **Elodea** Michx., p 178. *Elodea.*
- Leaves *all radical* S, rigid, thick, acute, erect S; stamens many.  — III. **Stratiotes** L., p. 178. *Water Soldier.*

I. **Hydrocharis** L. *Frog-bit.*—(Fig. H, above.)

Plant usually floating; stipules membranous; petals white, yellow at base. — 1. **H. Morsus-ranæ** L. *Frog-bit.* Still water July-Aug. P.

II. **Elodea** Michx. *Elodea.*—(Fig. E, above.)

Plant submerged, floating; leaves finely toothed; flowers pinkish-white. — *1. **E. canadensis** Rich. *Water Thyme.* Still water: July-Sept. P.

American Water-weed.]

III. **Stratiotes** L. *Water Soldier.*—(Fig. S, above.)

Plant creeping in mud; leaves sword-shaped, erect, sharply toothed, thick, rigid, acute; flowers white; 1-2 ft. — 1. **S. aloides** L. *Water Soldier.* Loc. Still water. July-Aug. P.

NAIADACEÆ.

Leaves rush-like, *not submerged or floating*; perianth-segments 6.

- Leaves *all radical*; raceme long. — I. **Triglochin** L., p. 179. *Arrow-grass.*
- Leaves *alternate* on stem; raceme short. — II. **Scheuchzeria** L., p. 179. *Scheuchzeria.*

Leaves *submerged or floating*; perianth-segments less than 6.

- *Fresh-water* plants.
  - *Perianth-segments and stamens 4*; flowers in *spikes or heads* above water, perfect. — III. **Potamogeton** L., p. 179. *Pondweed.*
  - *Perianth 0 or tubular*; flowers *solitary, axillary* NM; imperfect.
    - Leaves *fine, long* Z; style 1. — IV. **Zannichellia** L., p. 181. *Horned Pondweed.*
    - Leaves *broader*, toothed NM; styles 2-3 NM. — V. **Naias** L., p. 181. *Naiad.*

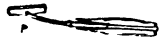


- *Salt-water* plants.
  - Leaves *very narrow or filiform* R; flowers perfect; carpels 4; fruits on long stalks R. — VI. **Ruppia** L., p. 181. *Ruppia.*
  - Leaves *linear, long, grass-like*; flowers imperfect; carpel 1. — VII. **Zostera** L., p. 181. *Grass-wrack.*

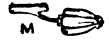


I. Triglochin L. *Arrow-grass.*—

Fruit *long* P, 3-carpelled; raceme lax, slender; underground stems slender, long; 1-2 ft. — 1. **T. palustre** L. *Marsh Arrow-grass.* C. Marshes: June-Aug. P.



Fruit *oval* M, 6-carpelled; raceme dense; underground stems thick, short; 8-16 in. — 2. **T. maritimum** L. *Sea Arrow-grass.* C. Salt marshes: June-Sept. P.



II. Scheuchzeria L. *Scheuchzeria.*—

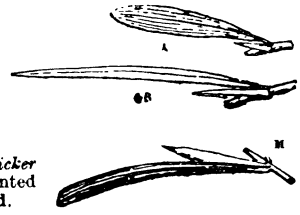
Peduncle few-flowered; pedicels of unequal length; flowers yellowish-green; 4-8 in. — 1. **S. palustris** L. *Marsh Scheuchzeria.* VR. Bogs: June-July. P.

III. Potamogeton L. *Pondweed.*—Several of the species are difficult to determine, and it is sometimes necessary to gather the specimens when their fruits are nearly or quite ripe.

Peduncle (*p*, Fig. G) *thicker than stem t*, often swelling upwards. — 1. **P. lucens** L. *Shining Pondweed.* Rivers: June-July. P. 2. **P. gramineus** L. *Grass-leaved Pondweed.* Ponds; ditches: June-July. P.



- Lower leaves *shortly stalked* L, submerged.
- Lower leaves *sessile* GR, M.
  - Peduncle *much thicker* than stem; leaves gradually pointed at apex GR, submerged, upper ones floating or not developed.
  - Peduncle *only slightly, if any, thicker* than stem; leaves abruptly pointed at apex M, 5-nerved, submerged. — 3. **P. mucronatus** Schrad. *Mucronate Pondweed.* Ditches: June-Aug. P.



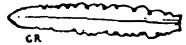
Peduncle *not thicker than stem*. (See next page.)

Continuation of key of genus Potamogeton.

Peduncle of spike *not thicker than stem.*

Leaves *not coarsely waved and crisped* at margin

Spike *more than 10-flowered.*

Leaves coarsely *waved and crisped* at margin CR;  fruit with a recurved beak, half its own length; leaves submerged.

Leaves *linear*, 2-4 in. long, less than ⅛ in. broad, submerged.

Leaves grass-like, *sheathing stem*; stems thread-like PC. 

Leaves *not or only slightly sheathing stem*; stems compressed.

Leaves *3-nerved.*

Stems *winged*, resembling the leaves.

Stem *not winged*.

Leaves *5-nerved.*

[See **P. mucronatus.**]

Upper leaves *petiolate* R;  lower leaves submerged, *upper* ones floating.

Leaves, or at least lower ones, *sessile.*

Leaves *all sessile*, amplexicaul PE, submerged.

Leaves *cordate at base* PE; fruit not keeled. 

Leaves *not cordate at base* P; fruit acutely keeled PP. 

Leaves *much broader* than ⅛ in.

Leaf-blade *not folded* at base PL;  leaves all similar, submerged.

Leaves *all stalked.*

Leaf-blade *with 2 folds* at base N; lower leaves linear and submerged, upper broad and floating. 

Fruit about ⅛ *in. long* NA; spike of fruits thick, several fruits often aborted; lower leaves not persistent after flowers. 

Fruit about $^{1}/_{12}$ *in. long* PO; spike of fruits slender, compact; lower leaves persistent after flowers. 

4. **P. crispus** L.
Curly Pondweed. C.
Streams; ditches: June-Aug. P.

5. **P. pectinatus** L.
Fennel Pondweed.
Streams; ponds: July-Aug. P.

6. **P. compressus** L.
Compressed Pondweed.
Streams; June-Aug. P.

7. **P. obtusifolius** M. & K.
Obtuse-leaved Pondweed.
Ponds; ditches: July-Aug. P.

8. **P. rufescens** Schrad.
Reddish Pondweed.
Ditches; streams: June-Aug. P.

9. **P. perfoliatus** L.
Perfoliate Pondweed.
Rivers; ponds: June-Aug. P.

10. **P. prælongus** Wulf.
Long Pondweed.
Rivers; ponds: June-July. P.

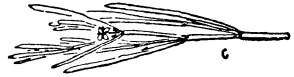
11. **P. plantagineus** Ducros.
Plantain-leaved Pondweed.
Stagnant peaty water: June-Aug. P.

12. **P. natans** L.[1]
Broad-leaved Pondweed.
VC.
Streams; ponds; ditches: June-Aug. P.

13. **P. polygonifolius** Pourr.
Polygonum-leaved Pondweed.
Streams; ponds ditches: June-Aug. P.

Spike *4-10 flowered*; leaves submerged.

Stem *compressed* C; spikes erect; leaves linear, acute C, 1/2 amplexicaul, 3-veined, 2-3 in. long.



14. P. acutifolius Link
Acute-leaved Pondweed.
Ditches; ponds: June-Aug. P.

Stem *not compressed.*

Stem *not thread-like* D; peduncle recurved D; leaves *oval*, acute, opposite D.



15. P. densus L.
Opposite-leaved Pondweed.
Streams; ponds: July-Sept. P.

Stem *thread-like*; peduncle straight; leaves *linear, very fine* PU.

Leaves usually *3-veined*; fruit bluntly keeled.



16. P. pusillus L.
Slender Pondweed.
Ponds; ditches: June-Aug. P.

17. P. trichoides Cham. & Schlecht.
Hair-like Pondweed. R.
Ditches: July-Aug. P.

Leaves usually *1-veined*, bristle-like; fruit half rounded.

1. Z. palustris L.
Common Horned Pondweed.
Ponds; streams May-Aug. A. or P.

IV. Zannichellia L. *Horned Pondweed.*—(Fig. Z, p. 179.)
Plant submerged; stems and leaves filiform; flowers monœcious; fruit with a long beak.

1. N. marina L.
Holly-leaved Naiad. VR.
Broads: July-Aug. P.

V. Naias L. *Naiad.*—
Sheath *entire or nearly so*; leaves strongly spinous; flowers dicœcious; anther 4-celled.

2. N. flexilis Rostk.
Slender Naiad. Loc.
Lakes: Aug.-Sept. P.

Leaves *linear, sheathing* at base.

Sheath *toothed*; flowers monœcious.

Leaves very narrow, finely toothed; sheaths *ciliate*; anther 1-celled.

Leaves narrow, finely and sharply toothed; sheaths *lobed at base*; anther 4-celled.

***3. N. graminea** Delile
Grassy Naiad. R.
Stagnant water: July-Sept. A.

VI. Ruppia L. *Ruppia.*— (Fig. R, p. 179.)

1. R. maritima L.
Tassel Pondweed.
Salt marshes; creeks: July-Oct. P.

Leaves *sheathing* at base.

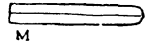
Sheath *inflated*; fruiting peduncle very long, spirally coiled.

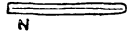
Sheath *not inflated*; fruiting peduncle shorter, not longer than 1 ½ in., flexuous; fruit with elongated beak; plant very slender.

2. R. rostellata Koch
Slender Tassel Pondweed.
Salt marshes; creeks: July-Oct. P.

VII. Zostera L. *Grass-wrack.*—

1. Z. marina L. ✠
Long-leaved Grass-wrack. C.
Salt water: June-Aug. P.

Leaves *2-8 mm. broad* M, 1-3 ft. long, 1-7 veined;  seeds furrowed.

Leaves *1-2 mm. broad* N, 3-8 in. long, 1-3 veined;  seeds smooth.

2. Z. nana Roth.
Dwarf Grass-wrack. Loc.
Salt water: June-Aug. P.

1. Var. *fluitans* Roth: floating leaves long, narrowed at base and apex.

ERIOCAULACEÆ.

I. Eriocaulon L. *Eriocaulon.*—

Stem slender, creeping; leaves tufted, linear, nearly transparent; flowers membranous, small; 4-24 in. [Pipe-wort.

1. **E. septangulare** L. *Jointed Eriocaulon.* R. Shallow lakes: July-Aug. P.

LEMNACEÆ.

I. Lemna L. *Duckweed.*—These tiny plants often completely cover the surfaces of ponds and ditches.

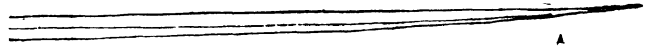
Fronds *arranged cross-wise*, 3 or 2, *narrow at apex* T;  plant often submerged; flowers rarely.

1. **L. trisulca** L. *Ivy-leaved Duckweed.* Still waters: June. A.

Fronds *not arranged cross-wise, rounded at apex*; plants floating on surface.

- Roots *many* on under surface of each frond P;  plant reddish or purplish below.
  2. **L. polyrrhiza** L. *Greater Duckweed.* Still waters: not flowering in Britain. A.
- Roots *solitary* on under surface of each frond M, G.
  - Fronds *almost flat* below M. 
    3. **L. minor** L. *Lesser Duckweed.* C. Still waters: June-July. A.
  - Fronds *spongy and rounded* below G; flowers rarely.
    4. **L. gibba** L. *Gibbous Duckweed.* Still waters: June-Aug. A.
- Fronds *rootless*, very small, swollen below A. 
  5. **L. arrhiza** L. *Rootless Duckweed.* R. Still waters: not flowering in Britain. A.

ARACEÆ. Though represented in the British flora by only three species, this N.O. includes many plants growing in tropical regions.

Plant *more than 2 feet* in height; perianth-segments 6; flowers perfect; leaves and bract long and narrow. 

I. **Acorus** L., p. 182. *Acorus.*

Plant *less than 1½ feet* in height; perianth. segments 0; flowers monœcious; leaves hastate M; bract broad (Fig. AR, p. XXIX.) 

II. **Arum** L., p. 183. *Arum.*

Acorus L. *Acorus.*—

Leaves erect, ½-¾ in. broad, 2-3 ft. long, apex acute (Fig. A, above); spike dense C, yellowish-brown; plant fragrant when bruised. [Sweet Sedge.] 

1. **A. Calamus** L. ✠ *Sweet Flag.* Loc. Margins of lakes and streams: June-July. P.

II. Arum L. *Arum.*—(Fig. M, above; Fig. AR, p. XXIX.)

Underground stem tuberous; berries bright red.

- Leaves usually *spotted purple*, appearing in spring and disappearing before fruits are ripe; *inflorescence axis purple in upper part*, half length of bract; ½-1½ ft. [Cuckoo-pint; Wake Robin, Lords and Ladies.] — **1. A. maculatum** L. ✠ *Common Arum.* C. Hedges; thickets: Apr.-May. P.
- Leaves *sometimes spotted rose*, appearing before winter; *inflorescence axis yellow in upper part*, one-third length of bract; 1-2 ft. — **2. A. italicum** Mill. *Italian Arum.* Loc. Hedges, thickets. Apr.-May. P.

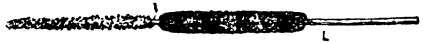
TYPHACEÆ. The Reed-mace and Bur-reed, often wrongly called Rushes, are used as litter and also for thatching roofs

Flowers in *long, dense, cylindrical spikes* (Figs. L, A, below). — **I. Typha** L., p. 183. *Reed-mace.*

Flowers in *globose heads* (Figs. R, S, N, below). — **II. Sparganium** L., p. 183. *Bur-reed.*

I. Typha L. *Reed-mace.*—

Staminate flowers *scarcely separated* from pistillate (*i*, Fig. L); stigmas oval, acute; 3-7 ft. [Cat's-tail.] — **1. T. latifolia** L. *Great Reed-mace.* C. Margins of ponds, lakes and rivers: June-July. P.



Staminate flowers *distinctly separated* from pistillate (*i*, Fig. A); stigmas very narrow; 3-6 ft. — **2. T. angustifolia** L. *Narrow-leaved Reed-mace.* Margins of ponds, lakes and rivers: June-July. P.



II. Sparganium L. *Bur-reed.*—

Heads several on each branch of inflorescence R; leaves 3-sided, at least at their base; 2-3½ ft. — **1. S. ramosum** Huds. ✠ *Branched Bur-reed.* C. Margins of water: June-Aug. P.



Heads *solitary on each branch* of inflorescence S, N.

- Lower leaves *3-sided at base*; heads usually many S; plant not submerged; 1-3 ft. — **2. S. simplex** Huds. *Unbranched Bur-reed.* Margins of water: June-Aug. P. **3. S. minimum** Fr. *Small Bur-reed.* Lakes; ditches; rivers: July-Aug. P.



- Lower leaves *2-sided at base*; heads few N; plant usually submerged, floating; length variable.

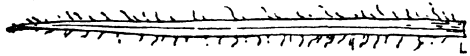


Fruit *sessile*, beak very short.

Fruit *stalked* with beak about half its own length. — **4. S. affine** Schnizl. *Slender Bur-reed.* R. Lakes: July-Aug. P.

JUNCACEÆ. The species of the genus Juncus are difficult to determine.

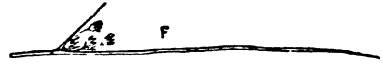
Leaves *glabrous, long and cylindrical, or reduced to scales*; fruit 3-chambered.

Leaves *hairy, flat* LC;  fruit 1-chambered.

I. **Juncus** L. *Rush.*—

Leaves *reduced to brown scales* around base of stem.

Flowering stems *filiform, less than 1 mm. in diameter* F, striate; flowers few F, pale brown, perianth-segments acute; 4-8 in.



Flowering stems *not filiform, more than 1 mm. in diameter.*

Stems *pliable*; pith continuous EF; scales not shining; stamens 3.



Inflorescence *globose, dense* E, brown; 1½-3 ft. [Common Rush.]



Inflorescence *lax, spreading*, paler; 1½-3 ft. [Common Rush.]

Stems *rigid*; stamens 6.

Stem with an *interrupted pith* GL, glaucous; scales shining; inflorescence not dense G; 1-3 ft.





Stem with a *continuous pith*, not glaucous; inflorescence denser; underground stem creeping; 1-2 ft.

Leaves long, *all radical* C.

Flowers in *rounded clusters or heads* C.

Perianth-segments *acute*, apex recurved, *twice as long as fruit*; 2-4 in.



Perianth-segments *blunt, shorter than fruit.*

Stem *round*; leaves *bi-tubular* within; bracts shorter than inflorescence; flowers usually 3 in cluster; 3-10 in.

Stem *channelled*; leaves *septate* within; bracts slightly longer than inflorescence; flowers 2 in cluster; 2-6 in.

Flowers *not in heads* S.

Leaves *about* 1/8-1/3 *in. broad, few, sharp at apex*; underground stem long, creeping.

Inflorescence *lax*; fruit as long as perianth; 2-3 ft.

Inflorescence *dense*; fruit larger, twice as long as perianth; 2-4 ft.

Leaves *about* 1/8 *in. broad, numerous, tufted, not sharp at apex*; underground stem short; 8-12 in.



I. **Juncus** L., p. 184. *Rush.*

II. **Luzula** DC., p. 186. *Wood Rush.*

1. **J. filiformis** L. *Slender Rush.* VR.
Margins of lakes: July-Aug. P.
2. **J. conglomeratus** L. *Dense-flowered Rush.* C.
Wet places: June-Aug. P.
3. **J. effusus** L. ✠ *Lax-flowered Rush.* C.
Wet places: June-Aug. P.
4. **J. glaucus** Ehrh. ✠ *Hard Rush.*
Wet places: June-Aug. P.
5. **J. balticus** Willd. *Baltic Rush.* Loc.
Sea coasts: June-Aug. P.
6. **J. capitatus** Weig. R.
Damp sandy and heathy places: June-July. A.
7. **J. triglumis** L. *Three-flowered Rush.*
Mountain bogs: Aug.Sept. P.
8. **J. biglumis** L. *Two-flowered Rush.* R.
Mountain bogs: Aug.-Sept. P.
9. **J. maritimus** Lam. *Sea Rush.*
Salt marshes: July-Aug. P.
10. **J. acutus** L. *Sharp Sea Rush.* R.
Sandy coasts: June-July. P.
11. **J. squarrosus** L. *Heath Rush.* C.
Damp sandy and heathy places: June-July. P.

Leaves *green, not reduced to scales.*

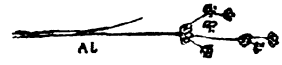
One or several leaves cauline, long AL, BU.

Stamens 6.

Leaves neither knotted nor jointed.

Fruit *longer than perianth* A; flowers blackish, clusters few and erect AL; 4-32 in.





Stamens 3.

Fruit *not longer than perianth.*

Flowers *often mixed with leaves* S; plant *perennial;*



fruit about as long as perianth; 4-12 in.

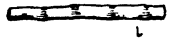
Flowers *never mixed with leaves* P; plant *annual;*



fruit much shorter than perianth; 1-6 in.

Leaves *knotted* O, L, or *jointed within.*





Flowers *greenish-white or yellowish;* fruit about as long as perianth OB;



perianth-segments obtuse OB; 2-3 ft.

Flowers *brown;* fruit longer than perianth SI, LA.

Perianth-segments *acute, incurved* at apex SI; inner longer than outer: 2-3 ft.



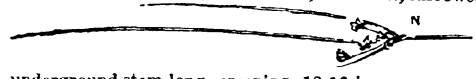
Perianth-segments about equal, *outer acute, inner obtuse* LA; 8-24 in.



Fruit *shorter than perianth* B; perianth-segments very acute B.

Bracts *much longer than flowers* N.

Flower clusters stalked N; fruit brown; leaves flat, furrowed;



underground stem long, creeping; 12-16 in.

Flower clusters sessile; fruit pale yellowish-brown; leaves filiform; underground stem short, creeping; 4-16 in.

Bracts *little if any longer than flowers* BU; flowers solitary; leaves narrow BU; 2-12 in.





Fruit *longer than perianth* BB.

Fruit *twice as long as perianth;* flowers dark brown, *in clusters or heads;* perianth-segments acute; 6-12 in.



Fruit *only slightly longer than perianth* BB; flowers brown mixed with green, *not in clusters or heads* BL; perianth-segments obtuse BB; 8-20 in.



12. **J. alpinus** Vill. *Alpine Rush.* R.
Mountain bogs: July-Aug. P.

13. **J. supinus** Mœnch *Procumbent Rush.*
Damp places; sand: June-Aug. P.

14. **J. pygmæus** Thuill. *Dwarf Rush.* Loc.
Damp places: June-Aug. A.

15. **J. obtusiflorus** Ehrh. *Obtuse-flowered Rush.*
Marshy places; sand: June-Aug. P.

16. **J. sylvaticus** Reich. *Wood Rush.* C.
Damp shady places: June-Aug. P.

17. J. lamprocarpus Ehrh. *Shining-fruited Rush.* C.
Damp places: June-Aug. P.

*18. **J. tenuis** Willd. *Slender Rush.* R.
Damp woods and roadsides: July-Aug. P

19. **J. trifidus** L. *Three-leaved Rush.* Loc.
Damp rocky places: Aug.-Sept. P.

20. **J. bufonius** L.[1] *Toad Rush.* C.
Damp places; sand: June-Aug. A.

21. **J. castaneus** Sm. *Chestnut Rush.* R.
Damp rocky places: July-Aug. P.

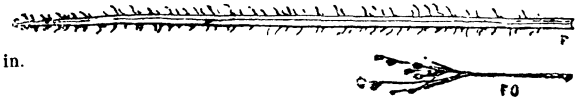
22. **J. bulbosus** L. *Round-fruited Rush.*
Wet places: June-Aug. P.

1. Var. *fasciculatus* Bert.: stem shorter, flowers 2-3 together.

II. Luzula DC. *Wood Rush.*—

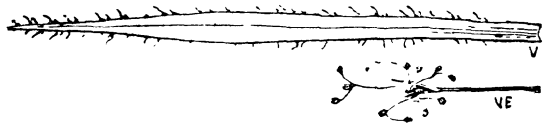
Flowers *solitary and distinct* on each pedicel FO, VE.

- Leaves *very narrow* F, 2-5 mm. broad; fruiting peduncles *erect* FO; 6-12 in.



1. **L. Forsteri** DC. *Forster's Wood Rush.* Loc. Woods; pastures: Apr.-May. P.

- Leaves *broader* V, 7-10 mm. across; fruiting peduncles *reflexed* VE; 6-12 in.



2. **L. vernalis** DC. *Hairy Wood Rush.* Woods; pastures: Mar.-Apr. P.

Flowers *in clusters* A, C.

- Clusters 2-5 *flowered, not spike-like* A; seed without basal appendage.
  - Peduncles *many, straight* A.
    - *Peduncles 3-5, outer recurved*; 1-5 in.
      3. **L. arcuata** Sw. *Curved Wood Rush.* High mountains: June-July. P.
    - Bract *longer than or as long as inflorescence* A; flowers whitish, yellowish or pinkish; leaves $\frac{1}{4}$-$\frac{2}{5}$ in. broad; 1-2 ft.



      4. **L. albida** DC. *White Wood Rush.* R. Woods; pastures. June-July. P.
    - Bract *much shorter than inflorescence*; flowers brown mixed with white; leaves less than $\frac{1}{4}$ in. broad; 1-2 ft.
      5. **L. maxima** DC. *Great Hairy Wood Rush.* Woods: May-June. P.
- Clusters *many-flowered, spike-like* C; seed with basal cone-shaped appendage.
  - Spikes *several* C, central one sessile, outer ones stalked and sometimes umbellate; 2-20 in.



    6. **L. campestris** DC.[1] *Field Wood Rush.* C. Dry pastures; heaths: Mar.-June. P.
  - Spike *solitary*, dense, drooping; 4-12 in.
    7. **L. spicata** DC. *Spiked Wood Rush.* Mountains: June-Aug. P.

CYPERACEÆ. The members of this N.O. often resemble the Grasses but they have solid and usually triangular stems, grow in damp places and do not make good hay.

Flowers *monœcious*, rarely dicœcious.

- Ovary and fruit *completely enclosed* in bottle-shaped perianth, style protruding at apex. VIII. **Carex** L., p. 191. *Carex.*
- Ovary and fruit *not completely enclosed* in perianth, latter open at side. VII. **Kobresia** Willd., p. 191. *Kobresia.*

Flowers *perfect*.

Fruit *without hairs at its base, with or without bristles no longer than the scales*.

Fruit *surrounded by very long white hairs* A;  spikelets usually many-flowered, bearing small white tufts as fruits ripen hyphen. — V. **Eriophorum** L., p. 190. *Cotton-grass*.

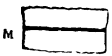
Spikelets *with or without hairs at its base, with or without bristles no longer than the scales*.

Spikelets *compressed* FL and *flowers in 2 opposite rows* FL.  — III. **Cyperus** L., p. 190. *Cyperus*.

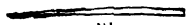
Spikelets *either not compressed, or flowers not in 2 opposite rows*.

Lower scales of each spikelet *equal to or larger than the others*. — II. **Scirpus** L., p. 188. *Scirpus*.

Lower scales of each spikelet *smaller than the others*.

Plant *at least 3 ft. high*; leaves with *sharp cutting teeth along margins and middle* M, 5-9 mm. *broad*; spikelets numerous, many-flowered CM.   — VI. **Cladium** Pat. Br., p. 190. *Cladium*.

Plant *seldom more than 2 ft. high*; leaves 1-3 mm. broad.

Leaves *stiff, prickly* NI; bracts broad at base C; style not persistent.   — IV. **Schœnus** L., p. 190. *Schœnus*.

Leaves *not prickly* R; bracts narrow; style persistent (Figs. RA, F, below).  — I. **Rhynchospora** Vahl., p. 187. *Beak-sedge*.

I. Rhynchospora Vahl. *Beak-sedge*.—

Spikelets *whitish*; lower bract about as long as first flowering branch RA; fruit surrounded by 10-13 bristles with teeth pointing downwards; 4-20 in.  1. **R. alba** Vahl. *White Beak-sedge*. Bogs: June-Aug. P.

Spikelets *brown*; lower bract much longer than first flowering branch F; fruit surrounded by 5-6 bristles with teeth pointing upwards; 4-16 in.  2. **R. fusca** R. and S. *Brown Beak-sedge*. Bogs: June-Aug. P.

1. Var. *multiflora* Lej.: underground stem not creeping, filaments of stamens almost as long as anthers var. *congesta* Lej.: flowers in an irregular head; var. *pallescens* Hoppe: flowers very pale brown, R.

II. Scirpus L. *Scirpus.* [Club-rush.]—

Spikelets *solitary* SF, PA, PC.

Stems *without well-developed leaves, not floating.*

Stem *prostrate or floating with well-developed leaves* SF; leaves very narrow; scales of flowers obtuse, green, white at margin; stigmas 2; length variable.



Leaf-sheaths *not terminated by a limb* P.

Leaf-sheaths surrounding base of stem *terminated by a short limb* C.



- Limb *green*, narrow, oblique; 2-16 in.
- Limb *a short point*. 1-5 in. [See S setaceus.]

Stem *creeping* with erect tufted branches A.

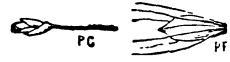
- Spikelets *2-5 flowered* usually; erect stems narrow; 1-4 in.
- Spikelets *more than 5-flowered.*
  - Erect stems *very narrow* A; stigmas 3; fruits whitish; 1-6 in.
  - Erect stems *rather thick* PA; stigmas 2; fruits yellowish; 6-20 in.





Stem *not creeping*; stigmas 3.

- Spikelets *2-7 flowered* PC; fruit *greyish-white*, bristles long PF; flower scales striated; 2-12 in.
- Spikelets *many-flowered*; fruit *dark brown or greenish*; bristles short M; flower scales not striated; 4-12 in.





Stems usually *not longer than 12 in.*

Spikelets *in 2 opposite rows* C.

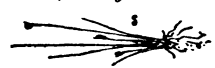
- Stems *triangular* in upper part; leaves flat, rough; bract slightly longer than spike C; 4-12 in.
- Stems *cylindrical* and leaves nearly so, smooth; length of bract variable; 4-12 in.



Spikelets *solitary or in small clusters* SE, S; stems slender, cylindrical.

- Bract *long* SE; fruit minutely furrowed; 1-4 in.
- Bract *little if any longer than* spikelets S; fruit with minute points; 2-8 in.





1. **S. fluitans** *L.* *Floating Scirpus.* Ponds; ditches: June-Sept. P.
2. **S. cæspitosus** L. *Tufted Scirpus.* Damp heaths and moors: June-Aug. P
3. **S. parvulus** R. and S. *Small Scirpus.* R. Wet places near coast: July-Sept. A.
4. **S. acicularis** L *Needle Scirpus.* Margins of lakes and rivers: June-Sept. P.
5. **S. palustris** L.[1] *Marsh Scirpus.* Wet places: June-Aug. P.
6. **S. pauciflorus** Lightft. *Few-flowered Scirpus.* Pools; marshes; sands: June-Sept. P.
7. **S. multicaulis** Sm. *Many-stalked Scirpus.* Marshes: June-Aug. P.
8. **S. compressus** Pers. *Compressed Scirpus.* Marshes: June-Aug. P.
9. **S. rufus** Schrad. *Seaside Scirpus.* Loc. Marshes near sea: July-Aug. P.
10. **S. setaceus** L. *Bristle Scirpus.* Wet sand and gravel: June-Sept. A or P.
11. **S. Savii** S. and M. *Savi's Scirpus.* Loc. Wet places: June-Sept. A. or P.

Spikelets *not solitary* LC, SI, MA.

Stems usually *longer than 12 in.*

Flower scales *fringed at apex* LA.

Stems *quite cylindrical*; bract



scarcely if any longer than inflorescence and appearing to continue the stem LC; 3-9 ft.

12. S. lacustris L.[1] *Bulrush.* C.
Margins of water: June-Aug. P.



Stems *triangular*, two sides flat, one channelled; bract very long O; 1-4 ft.



13. S. triqueter L. *Triangular Scirpus.* R.
Tidal rivers: July-Aug. P.

Flower scales *not fringed at apex* S, M.

Spikelets *more than 50, very small, 5-6 mm. long*, in clusters of 2-3; inflorescence much branched SI; flower scales oval S; 1½-3 ft.





14. S. sylvaticus L. *Wood Scirpus.*
Damp woods, banks of streams. June-Sept. P

Spikelets 2-30, inflorescence *not much branched* H, MA, R.

Spikelets small, 2-7 mm. long, *in globular clusters* H; stems cylindrical; 2-4 ft.



15. S. Holoschœnus L. *Clustered Scirpus.* VR.
Damp sandy shores: July-Sept. P.

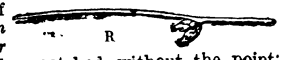
Spikelets oval, 7-15 mm. long, *not in heads* MA, R.

Inflorescence of *6-25 spikelets, outer ones stalked, or of 2-3 in a sessile cluster* MA; flower scales notched with rough point in notch M; 2-4 ft.



16. S. maritimus L. *Sea Scirpus.*
Margins of water; salt marshes: June-Oct. P.

Inflorescence of *2-6 spikelets in a sessile cluster* R; flower scales notched without the point; 12-20 in.



17. S. Rothii Hoppe. *Roth's Scirpus.* VR.
Sandy banks near sea: July-Aug. P.

1. Var. *uniglumis* Link: lowest scale flowerless, almost surrounding base of spikelet.—2. Var. *Tabernæmontani* Gmel. stem glaucous green, fruit compressed.

III. Cyperus L. *Cyperus.*—

Plant *more than 1 ft. high*; inflorescence *not compact* CL; flower scales 5-7 nerved; stamens 3; stigmas 3; leaves 3-5, very long and unequal, forming an involucre CL; 2-4 ft.



1. **C. longus** L.
Galingale. R.
Wet places: July-Sept. P.

Plant usually *less than 1 ft. high*; inflorescence *more compact* FU; flower scales 1-nerved; stamens 2; stigmas 3; leaves 3, shorter, unequal, forming involucre; 2-8 in.



2. **C. fuscus** L.
Brown Cyperus. VR.
Wet places: July-Sept. A.

IV. Schœnus L. *Schænus.* [Bog-rush.]

Stem bearing at base many blackish shining leaf-sheaths; leaves stiff, prickly at apex (Fig. NI, p. 187), 3-sided.

- Stems *cylindrical*; bract *long*; spikelets 3-10 in rounded head (Fig. C, p. 187); bristles shorter than fruit; 8-24 in.
  1. **S. nigricans** L.
  Black Bog-rush.
  Bogs; marshes; wet sandy places: June-July. P.
- Stems *grooved*; bract *no longer than spike*; spikelets 1-4 in a slender spike; bristles longer than fruit; 4-12 in.
  2. **S. ferrugineus** L.
  Brown Bog-rush.
  Bogs; wet places: June-July. P.

V. Ericphorum L. *Cotton-grass.*—

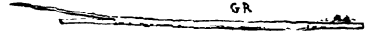
Stems bearing *a single spike* V; 

leaves rough along edges; fruits brown; 8-18 in.

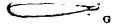
1. **E. vaginatum** L.
Hare's-tail Cotton-grass.
Bogs: Apl.-May. P.

Stems bearing *several spikes.*

- Peduncles of spikes *smooth*, *glabrous*; fruits black, acute A; leaves triangular in upper part; 12-24 in.
  

  2. E. angustifolium Roth.
  Narrow-leaved Cottongrass.
  Bogs: May-June. P.
  3. **E. gracile** Koch
  Slender Cotton-grass. R.
  Bogs: June-July. P.
- Peduncles of spikes *rough or hairy*; fruits obtuse G, brown or yellowish.
  - Peduncles of spikes *not very rough but very hairy*; leaves triangular from base to apex GR; 8-16 in.
    

  - Peduncle of spikes *very rough*, *not very hairy*; leaves flat except at apex L; 12-24 in.
    

  4. **E. latifolium** Hoppe
  Broad-leaved Cotton-grass.
  Marshes: May-June. P.

VI. Cladium Pat. Br. *Cladium.*—(Figs. M, CM, p. 187.)
Stems strong, almost cylindrical; leaves stiff; spikelets brownish; fruits brown; 2½-4 ft. [Twig-rush.]

1. **C. Mariscus** R.Br.
Prickly Cladium. Loc.
Wet places: July-Aug. P.

VII. Kobresia Willd. *Kobresia.*—

Stems densely tufted; leaves slender, shorter than stems; spikes short, terminal; spikelets 4-5, few-flowered; 6-8 in.

1. **K. caricina** Willd. *Sedge-like Kobresia.* Loc. Moors: July-Sept. P.

VIII Carex L. *Carex.* [Sedge.]—The fruit is enclosed in a bottle-shaped sac or perianth which at first sight appears to be the fruit itself. The characteristics of this sac are important for the determination of the species and it is therefore necessary to examine plants which are in fruit.

Spike terminal, *simple* **P, D, DI** [i.e. each flower is attached directly to the main stalk].

Flowers *not dense* P, *monœcious*, staminate in upper part of spike, pistillate in lower part.

Stems *cylindrical*; *stigmas 2*; fruits tapering, reflexed; 8-12 in.



1. **C. pulicaris** L. *Flea Carex.* Bogs: May-June. P.

Stem *3-angled*; *stigmas 3.*

Spikelet *few-flowered*; fruit tapering, reflexed F; 3-6 in.

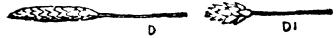


2. **C. pauciflora** Light. *Few-flowered Carex.* Loc. Boggy moors: June-July. P.

Spikelet about *12-flowered*; fruit obtuse, not reflexed; 3-8 in.

3. **C. rupestris** All. *Rock Carex.* R. Mountain rocks: July.-Aug. P.

Flowers *dense, dicecious*; spike of staminate flowers D, of pistillate DI.



Fruit-sac with a *long beak* DA; stem 3-angled, rough; leaves rough, not channelled; 4-8 in.



4. **C. Davalliana** Sm. *Davall's Carex.* Bogs (now extinct): May-June. P.

Fruit-sac with a *short beak* CD; stem rounded, smooth; leaves channelled, smooth; 4-8 in.



5. **C. dioica** L. *Dicecious Carex.* Spongy bogs: May-June. P.

Spike *compound* DS, TF, D, GL [i.e. the flowers are in groups or spikelets; each spikelet is attached to the main stalk].



(See pp. 192-3).

In form A, PA, R, EL; stigmas 2.

horizontally.

Spikelets *many.*

Underground stem *very long, horizontal, rooting* A.

Flower-scales brown, *no green nerve along back, but sometimes apex is long and green.*

Fruit-sac with a *short beak* DV; stem smooth; leaves flat;  upper spikelets mostly staminate; 8-20 in. 

6. C. divisa Huds.
Divided Carex. Loc.
Wet places: May-June. P.

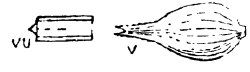
Fruit-sac with a *tapering beak* DC; stem rough at edges; leaves 3-angled;  middle spikelets mostly staminate DS; 1-2 ft.

7. C. disticha Huds.
Intermediate Carex.
Wet places: May-July. P.

Flower-scales brown *with a green nerve along back;* fruit-sac veined, tapering, margin membranous and winged AR; spike ovoid, dense A, spikelets many, light brown; 4-12 in. 

8. C. arenaria L.
Sand Carex. C.
Sandy shores: June-Aug. P.

Fruit-sac *strongly ribbed from base to apex* V, PR.

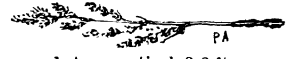
Fruit-sac *about half as broad as* Fig. V; stem sharply 3-angled VU; 1-2 ft. 

9. C. vulpina L.
Fox Carex.
Wet places: May-July. P.

Fruit-sac *about half as broad as* Fig. PR; stem 3-angled, angles not sharp; 1-2 ft. 

10. C. paradoxa Willd.
Paradoxical Carex. R.
Marshes: June-July. P.

Fruit-sac *smooth except at base where it is slightly ribbed* PN, T.

Fruit-sac with *whitish, membranous margin* in upper part PN;  *inflorescence* not dense PA; sides of stem flat; underground stem vertical; 2-3 ft. 

11. C. paniculata L.
Panicled Carex.
Wet places: May-July. P.

Fruit-sac *without a membranous margin* T;  inflorescence dense TE; sides of stem rounded; underground stem oblique; 1-2 ft. 

12. C. teretiuscula Good.
Round-stemmed Carex. R.
Bogs: June-July. P.

Spikelets *all similar*

Underground stem *not very long*

Spikelets *12 or fewer.*

Fruits *not spreading and star-shaped when ripe.*

Bracts *very short* MU, LP.

Fruits *spreading, star-shaped* when ripe S;



fruit-sac with a long beak ST, flat on one side; flower-scales pale brown, green in middle; 4-12 in.



13. C. stellulata Good.
Star-headed Carex.
Wet places: May-July. P.

Bracts *longer than stem* R;



spikelets distant below, crowded above R; fruit-sac finely 5-7 nerved; 1-2 ft.

14. C. remota L.
Distant-spiked Carex.
Damp shady places: May-July. P.

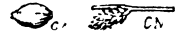
Fruit-sac *not ribbed from base to apex* at least on one side M, CA, *greenish, whitish, or reddish-green.*

Fruit-sac smooth on one side M, *ribbed* on the other; spikelets oval MU, upper ones crowded; 1-1½ ft.



15. C. muricata L.[1]
Prickly Carex.
Pastures; roadsides: May-July. P.

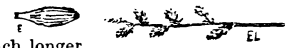
Fruit-sac *scarcely ribbed at base* CA, margin thickened; spikelets oval CN, 4-6; 1-1½ ft.



16. C. canescens L.
Whitish Carex.
Bogs: May-July. P.

Fruit-sac *ribbed on both sides* E, LE, *brownish.*

Fruit-sac *without a membranous margin* E; spikelets 7-12, distant EL; fruits much longer than the scales; 1-2 ft.



17. C. elongata L.
Elongated Carex. R.
Marshes: May-July. P.

Fruit-sac *with toothed membranous margin* LE; spikelets 4-6, close LP; fruits about as long as scales; 8-24 in.



18. C. leporina L.[1]
Oval Carex.
Damp pastures: May-July. P.

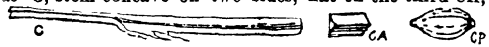
Spikelets *not all similar in shape*; terminal spikelet or spikelets staminate and slender, the others pistillate and thicker or more rounded; E, AT, MA.



(*See pp. 194-5.*)

1. Var. *divulsa* Good.: ligule of leaf obtuse, fruit-sac not spongy at base; fruits almost erect.—2. Var. *argyrochlin* Horn.: spikelets slender, scales whitish.

Sheaths of lower leaves *torn in threads* C; stem concave on two sides, flat on the third CA; fruit-sac whitish-green, oval CP; 1½-3 ft.



19. **C. stricta** Good. *Tufted Carex.* R.
Marshes; ponds: Apr.-June. P.

Stigmas 2, CD.



Sheaths of leaves *not torn in threads*; underground stem long, horizontal.

Lower bract *shorter* than stem GO; lower leaves longer than stems; fruit-sac about 1 mm. broad; 8-20 in.



20. **C. vulgaris** Fr. *Common Carex.* C.
Wet places: May-June. P.

Lower bract *longer* than stem AT; lower leaves shorter than stem; fruit-sac 2-3 mm. broad.

Stems *smooth, sides convex*; spikelets oval T; 8-16 in.



21. **C. trinervis** Desgl. *Three-nerved Carex.* VR.
Near sea: May-July. P.

Stems *rough at top, sides concave*; spikelets long, more distant AT; 1-3 ft.



22. **C. acuta** L. *Acute Carex.*
Wet places: May-July P

Fruit-sac with *long hairs* H, F, *beak 2-toothed*; bracts long; staminate spikelets 1-3.

Fruit-sac with a *long beak* H;



leaf-sheaths *hairy* HI; flower-scales green; 1-2 ft.



[Hammersedge.]

23. **C. hirta** L. *Hairy Carex.*
Wet pastures: May-July. P.

Fruit-sac with a *short beak* F;



leaf-sheaths *glabrous* FI; flower-scales brown; 1½-3 ft.



24. **C. filiformis** L. *Slender Carex.* R.
Bogs: May-June. P.

Stigmas entire surface.

Beak not very or beak often solitary.

Flowers not in lower.

Flowering-stem *bearing spikelets from its base* to its apex; *leaves much longer* than stems [HU, entire plant]; bracts at base of spikelets membranous and sheathing; 3-4 in.



25. **C. humilis** Leyss. *Dwarf Carex.* R.
Downs; dry places: Mar.-Apr. P.

Flower-scales *brown, no broad green band on back*, sometimes slightly green at apex.

Fruit-sac about *2 mm. long* [½ Fig. ER]; stem distinctly 3-angled, angles rough; flower-scales ciliate; spikelets few E; 4-6 in.





26. **C. ericetorum** Poll. *Heath Carex.* VR.
Dry banks in chalky districts: Apr.-June. P.

Fruit-sac about *4 mm long* [½ Fig. M]; stem obscurely 3-angled, angles smooth; flower-scales blackish-brown; spikelets few; 4-16 in.



27. **C. montana** L. *Hill Carex.* R.
Heaths; sandy woods: Apr.-May. P.

Stigmas 3, H, F.

Fruit-sac *hairy over its*

Fruit-sac *with short hairs, either not beaked distinctly toothed* M, ER; staminate spikelet

Flowering-stems *bearing spikelets in upper part, but*

Flower-scales *with broad green band on back*, from base to apex.

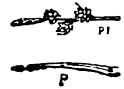
Lowest bract *as long as or longer than its spikelet.*

Lowest bract *much shorter than its spikelet* D; bracts with a short point DG; terminal spikelet later surpassed by the next below D; leaf-sheaths reddish; 4-12 in.



28. **C. digitata** L.[1] *Fingered Carex.* R.
Limestone woods: Apr.-June. P.

Pistillate spikelets *almost globular* PI, about 10 mm. long; fruit-sac greenish; bracts almost without sheath P; 8-12 in.



29. **C. pilulifera** L. *Pill-headed Carex.* C.
Heaths; moors; glens: May-July. P.

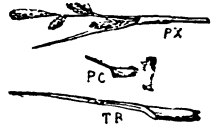
Pistillate spikelets *long* T, PX.

Bracts *all the same shape* T; staminate spikelet narrow T; 8-16 in.



30. **C. tomentosa** L. *Downy-fruited Carex.* VR.
Wet meadows: May-June. P.

Lowest bract *with a long limb* TR, *the others with a short green point* PC; staminate spikelet broad at apex PX; 4-12 in.



31. **C. præcox** Jacq. *Vernal Carex.*
Dry pastures; woods: Apr.-May. P

Fruit-sac *glabrous*, rarely slightly hairy along the angles.

Staminate spikelets *4-7 in. long*; leaves usually about ½in. broad; pistillate spikelets 3-5, drooping, staminate 1-3, drooping later MA; flower-scales brown; 3-5 ft.



32. **C. pendula** Huds. *Pendulous Carex.* Loc.
Damp woods; shady streams: May-July. P.

Staminate spikelets *less than 3 in. long*; leaves usually narrow.

(*See pp. 196-7.*)

1. Var. *ornithopoda* Willd.: staminate spikelets very close together at apex, R.

Staminate spikelets *usually several* GL, RI, VE.

Fruit-sac *scarcely beaked, not ribbed* except slightly at base and side G;  leaves glaucous; bracts green, long GL; staminate spikelets brownish, rarely solitary; pistillate spikelets drooping when ripe; 4-20 in. 

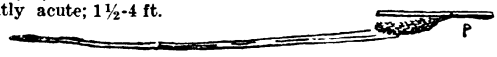
33. **C. glauca** Murr. *Glaucous Carex.* C.
Damp meadows and woods: May-July. P.

Fruit-sac *distinctly beaked and ribbed.*

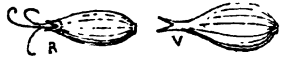
Fruit-sac *obscurely 2-toothed*, almost globular, about 3-4 mm. long [½ Figs. A, PA]. 

Stem *not very sharply angled* AM; fruit-sac inflated, *yellowish*, beak narrow A, AP; flower-scales very acute; 1-2 ft.  

34. **C. ampullacea** Good. *Bottle Carex.*
Bogs; marshes: May-July. P.

Stem *very sharply angled* PL; fruit-sac compressed, *greenish*, beak short PA, P; flower-scales usually slightly acute; 1½-4 ft.  

35. **C. paludosa** Good.[1] *Marsh Carex.*
Wet places; margins of water: May-July P.

Fruit-sac *distinctly 2-toothed*, about 6-8 mm. long [½ Figs. R, V]. 

Fruit-sac with *short beak* R, not inflated, brownish; staminate spikelets broad RI; apices of flower scales very long; 1½-4 ft. 

36. **C. riparia** Curt. *River-side Carex.*
Margins of water; wet places: May-July. P.

Fruit-sac with *long beak* VE, inflated, yellowish; staminate spikelets narrow VE; apices of flower-scales short; 1½-2½ ft. 

37. **C. vesicaria** L. *Bladder Carex.*
Pools; marshes: May-July. P.

or greenish.

Pistillate flower-scales at least *10 times longer than broad*, apex long and *ciliate* PS; staminate spikelet greenish; pistillate ones 4-6, drooping PC; 1½-3 ft. 

38. **C. Pseudo-cyperus** L. *Cyperus-like Carex.*
Wet places: May-July. P.

times

Leaves *hairy, especially the sheaths*; fruit-sac *not beaked*, shining, long; spikelets bent, oval PA; 8-20 in. 

39. **C. pallescens** L. *Pale Carex.*
Damp shady places: May-July. P.

Staminate spikelets usually *solitary terminal* PC, SI, E.

Staminate spikelets *brown, brownish, or yellowish.*

Fruit-sac with beak *less than* ¼ its own length G, PN, X, DI.

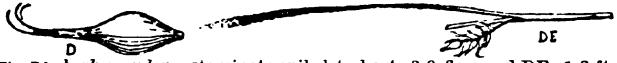
Fruit-sac with beak *more than* ¼ its own length. (*See next page.*)

Staminate spikelets *whitish*

Flower-scales *not ciliate, 3-4 longer than broad.*

Leaves *glabrous.*

Fruit-sac *about 7 mm. long* [½ Fig. D], *beak very long*; staminate spikelet short, 3-9 flowered DE; 1-2 ft.

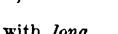


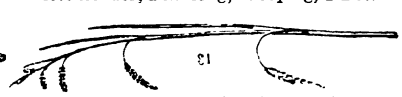
Fruit-sac *about 2-4 mm. long* [½ Figs. ST, S].

Fruit-sac *not beaked* ST, ribbed from base to apex; pistillate spikelets slender, 2 in. long, drooping; 1-2 ft.



Fruit-sac with *long beak* S, not ribbed towards apex; pistillate spikelets about 1 in. long, drooping SI; 1-2 ft.





Fruit-sac *scarcely beaked or veined* PN, G.

Spikelets *erect*, lax-flowered; fruit-sac inflated PN, longer than flower-scale; leaves glaucous; 1-1½ ft. [Carnation-grass.]

Pistillate spikelets *more or less drooping*

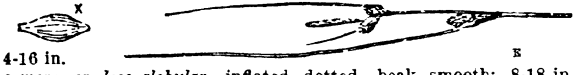
Pistillate spikelets *oval* L; stems slender; fruit-sac finely nerved; leaves narrow, *folded* lengthways; 4-16 in.



Pistillate spikelets *cylindrical*; fruit-sac not or scarcely nerved; leaves *flat*, glaucous; 4-20 in. [See 33. C. glauca.]



Leaves *rolled at margins*; upper two pistillate spikelets close together E; fruit-sac greenish, beak smooth; 4-16 in.



Fruit-sac *distinctly beaked, and ribbed at least near angles.*

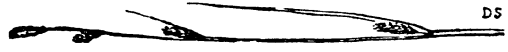
Fruit-sac *more or less globular*, inflated, dotted, beak smooth; 8-18 in.

Leaves *flat.*

Fruit-sac *long* DI, beak rough; spikelets distant DS, DI.

Spikelets *greenish*; fruit-sac *equally ribbed*; leaves light green; 1-2 ft.





Spikelets *brown*; fruit-sac with *2 green ribs*; leaves glaucous; 1-2 ft.



40. **C. depauperata** Good. *Starved Carex.* R.
Dry woods: May-June. P.

41. **C. strigosa** Huds. *Thin-spiked Carex.*
Damp woods: May-June. P.

42. **C. sylvatica** Huds. *Wood Carex.*
Damp woods May-June. P.

43. **C. panicea** L. *Carnation Carex.* C.
Moist places: June-July. P

44. **C. limosa** L. *Mud Carex.* Loc.
Marshes; bogs: June-July. P

45. **C. extensa** Good. *Long-bracted Carex.*
Salt marshes: June-July. P.

46. **C. punctata** Good. *Dotted Carex.* Loc.
Wet places: May-July. P.

47. **C. distans** L. *Distant Carex.* Loc.
Marshes chiefly near sea: May-July. P.

48. **C. binervis** Sm. *Two-ribbed Carex.*
Heaths; moors: June-July. P.

1. **Var.** ***Kochiana*** DC.: pistillate flower-scales with pointed apices longer than fruits.

Leaf-sheath with *two membranous outgrowths*, one free and short, the other long and united to sheath L;



fruit-sac long, distinctly ribbed, beak 2-toothed LŒ; pistillate spikelets cylindrical, erect, greenish; 1½-3 *ft.*



49. **C. lævigata** Sm.
Smooth-stalked Carex. **B.**
Wet thickets: May-July. P.

Leaf-sheath *not having two outgrowths*, one free, the other united; fruit-sac inflated FL.

Bracts *reflexed* F *or spreading*;



fruit-sac yellowish; fruits spreading or reflexed; 2-18 in.



50. **C. flava** L.[1]
Yellow Carex.
Wet places: May-July. P.

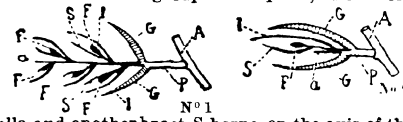
Bracts *erect* FU; fruit-sac greenish; fruits erect, rarely some spreading; 1-2 ft.



51. **C. fulva** Good.
Tawny Carex.
Boggy places: May-July. P.

GRAMINEÆ. The Grasses form the principa part of lawns and pastures; some serve as fodder for animals; others, the Cereals, are valued for their grain, e.g. Wheat, Oat, Barley, Rye Maize, Rice.—As the grasses are somewhat difficult to determine, a short description of the flowers and leaves is given below.

The flowers of the Grasses are always grouped in small spikes known as *spikelets* which in their turn are grouped in spikes, or in more or less branched racemes. A spikelet of several flowers has usually the parts shown in Fig. No. 1. On the principal stem or branch A of the inflorescence is attached the peduncle P of the spikelet. Near its base the peduncle bears two bracts known as *glumes* G, G; these glumes have no flowers in their axils, i.e. they are empty. Above the glumes on the axis *a* of the spikelet are other bracts I, I; *in their axils are flowers* easily recognised because of the swinging anthers and feathery stigmas. These bracts I, I, are the *flowering glumes or inferior glumellæ*. Each flower F is placed between an inferior glumella and another bract S borne on the axis of the flower itself and called the *superior glumella*. The glumellæ are also known as *paleæ*. A spikelet may contain only one flower (Fig. No. 2) with or without an aborted second flower *a*; the letters in this diagram correspond to those in Fig. No. 1. [In the following descriptions *glumellæ* refers always to the *inferior glumellæ* or flowering glumes.)

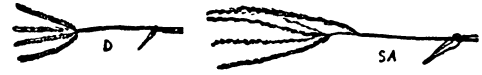


The grass leaf has a small membrane at the junction of the blade and the sheath (Fig. CA). This membrane is called the *ligule* and is often important in the determination of the grass.



Leaves *very broad* (at least 2¼ in.); inflorescence staminate or pistillate. **Group 1**, p. 200.

Spikes several, *arising at the same level or almost so* (examples: D, SA). **Group 2**, p. 200.



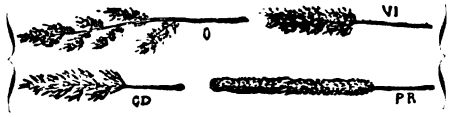
Leaves *narrow and spikes not arising at same level.*

Spikelets *sessile or very shortly stalked.*

Spikelets all *attached directly* to principal axis of inflorescence (examples: VL, MO, RE, P). **Group 3**, p. 200.



Spikelets *attached in groups* to principal axis of inflorescence (examples: O, VI, OD, PR). **Group 4**, p. 202.

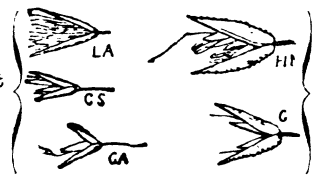


Spikelets on *more or less long stalks* at least at base of inflorescence C, CA, etc.

Glumes *much shorter* than rest of spikelet (examples: E, C, AR, M). **Group 5**, p. 203.



Glumes *not shorter or barely shorter* than rest of spikelet (examples: LA, HM, CS, CA, C). **Group 6**, p. 205.



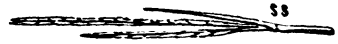
1. Var. *Œderi* Ehrh.: fruit-sac with short beak, fruits spreading but not reflexed plant very small; var. *lepidocarpa* Tausch: spikelets small, scales in fruiting-spikelets brown; stems often rough near apex.

GROUP 1.—See the genus **Zea.**

I. **Zea** L., p. 207.
Zea.

GROUP 2.—

Glumes more or less *hairy, very unequal*; spikelets compressed SS; leaves inrolled.



II. **Spartina** Schreb. p. 207.
Spartina.

Glumes *glabrous*; leaves flat.

- Glumes *very unequal*, one well developed (*g*, Fig. S), the other minute;



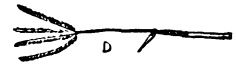
spikes *not arising at quite the same level* SA; spikelets on short stalks.

III. **Digitaria** Adans., p. 207.
Digitaria.

- Glumes *almost equal* (*g,g*, Fig. C);



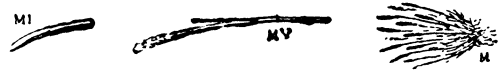
spikes *arising at same level* D; spikelets sessile.



IV. **Cynodon** Rich., p. 207.
Cynodon.

GROUP 3.—

Plant *1-4 in. high* M; leaves *obtuse* MI, MV.



V. **Mibora** Adans., p. 207.
Mibora.

Leaves *very fine*, rolled at margins when dry.

- Glumellæ *acute*; *glumes 2*; plant annual, not tufted I.



VII. **Lepturus** R.Br., p. 207.
Lepturus.

- Glumellæ *awned*; *glumes 0*; spikes one-sided N; plant perennial, densely tufted *N*.



VI. **Nardus** L., p. 207.
Mat-grass.

Plant *more than 4 in. high*; leaves *acute*.

Leaves *flat, not very narrow*.

Spikelets more or less *covering one another* V, VL, S, A, M.

Glumes *long* C, R.

Glumes *broad, concave* VU, TT, *or toothed at apex* TM; spikelets about as broad as long V, VL.



VIII. **Triticum** L., p. 208. *Wheat.*

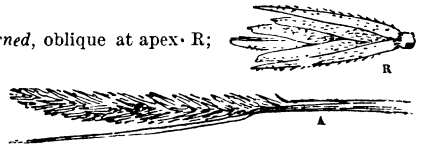
Spikelet *1 on each notch of axis* C, S; glumellæ awned, bearing stiff hairs along margins C.



IX. **Secale** L., p. 208. *Rye.*

Spikelets *several on each notch of axis.*

Glumellæ *not awned*, oblique at apex R; spike 4-9 in. long A.



XI. **Elymus** L., p. 209. *Lyme-grass.*

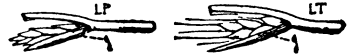
Glumellæ with *long awns* M; spike shorter M.



X. **Hordeum** L., p. 208. *Barley.*

Spikelets *distant* PI.

Glume 1 (*g*, Figs. LT, LP); fruit with a long white point, glabrous.



XII. **Lolium** L., p. 209. *Lolium.*

Glumes 2 (PI at right, R, C, A).

Spikelets *with short stalks* PI, at least the lower ones.



XIII. **Brachypodium** P.B., p. 209. *False Brome.*

Spikelets *sessile* C, R, A.



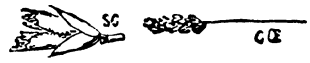
XIV. **Agropyrum** Gærtn., p. 210. *Agropyrum.*

GROUP 4.—

Inflorescence *more or less compact* VI, OD, O, AA.

Leaves *acute*.

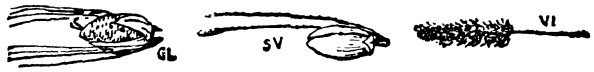
Leaves *obtuse*; spikelet 2-flowered SC; spike dense CŒ, usually bluish.



XV. **Sesleria** Scop., p. 210. *Sesleria.*

Spikelets not surrounded by bristle-like bracts.

Spikelets short, *surrounded by bristle-like rough bracts* GL, SV; glumes unequal.



XVIII. **Setaria** P.B., p. 211. *Setaria.*

Spikelets *not very close together on axis* OD, becoming yellowish; glumes very unequal (*g*, *g*, Fig. AO); roots of plant fragrant.



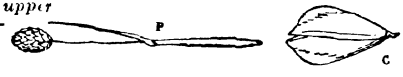
XIX. **Anthoxanthum** L., p. 211. *Anthoxanth.*

Spikelets *soft and hairy*, silky white, in a dense inflorescence O.



XVII. **Lagurus** L., p. 210. *Hare's-tail.*

Glumes *broader in upper part* C, inflorescence oval P.



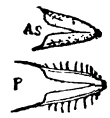
XVI. **Phalaris** L., p. 210. *Phalaris.*

Glumes *not broader in upper part.*

Spikelets *very close together on axis* AA, AR, P, *not soft and hairy*; glumes about equal C, AS, P, AP, G, AG; roots odourless.

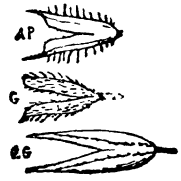


Glumes *not united* AS, P; glumellæ 2.



XX. **Phleum** L., p. 211. *Phleum*

Glumes *united* in lower third AP, AG, or at base G; glumella 1.



XXI. **Alopecurus** L., p. 212. *Foxtail.*

Inflorescence *not compact* SC, O, a panicle.

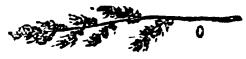
- Glumes and glumellæ acute, *not awned* SC, RI; spikelets 5-10 flowered.





XXII. Scleropoa Griseb., p. 212. *Scleropoa.*

- Glumes and glumellæ with *long awns* O, CG; spikelets 2-flowered.





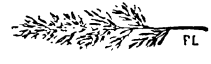
XXIII. Echinochloa P.B., p. 212. *Echinochloa.*

GROUP 5.—

Awn attached to back of glumella FV, S; glumella 2-toothed S; glumes unequal FV.

- Glumes *shorter than 4 mm.* FV; ovary glabrous; fruit not crested or furrowed.





XXVII. Trisetum Pers., p. 213. *Trisetum.*

- Glumes *longer than 5 mm.* S; ovary hairy at top; fruit crested and furrowed.



XXVIII. Avena L., p. 213. *Oat.*

Awn absent, or, at or very near apex of glumella.

Ligule of leaf *replaced by a line of hairs* (example: D).



- Glumellæ *3-toothed* DE; inflorescence green, *spikelets few* DD.





XXV. Sieglingia Bernh., p. 212. *Sieglingia.*

- Glumellæ *entire* M; inflorescence usually purplish; *spikelets numerous* C.
  - Flowers *surrounded by long hairs*; inflorescence feathery C.



XXIV. Phragmites Trin., p. 212. *Reed.*

  - Flowers *not surrounded by long hairs* M; spikelet 1-3 flowered M.



XXXVII. Molinia Schrank, p 219. *Molinia.*

Ligule of leaf ***not replaced*** by a line of hairs. (*See next page.*)

Awn *slightly below apex of glumella* C, S.

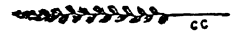


XXIX. **Bromus** L., p. 214. *Brome.*

Awn *absent or at apex of glumella.*

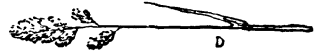
Spikelets *longer than their stalks*; spike 1-sided or very dense.

Spikelets in *long spike-like raceme* CC, *or a head*; leaves very narrow, almost smooth.



XXXII. **Cynosurus** L., p. 217. *Dog's-tail.*

Spikelets in *compact clusters* D; leaves rough.



XXXIII. **Dactylis** L., p. 217. *Cock's-foot.*

Spikelets *shorter than their stalks, distinct* ME; *not compact* ME, O, RU, A, PR.

acute.

Leaves *obtuse.* [See XXXVIII. **Catabrosa.**]

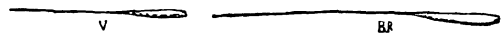
than broad A, H, AR.

Spikelets *broader than or as broad as long* B, almost heart-shaped, very distant one from another ME.



XXXIV. **Briza** L., p. 217. *Quakegrass.*

Glumella with awn *at least as long as itself* V, BR. [See XXXV. **Festuca.**]



than awn.

Glumellæ awnless, back rounded, apex obtuse F, A; glumes membranous, unequal F, A; plant aquatic.



XXXVI. **Glyceria** R.Br. p. 219. *Glyceria.*

Spikelets *usually* Inflorescence — Leaves — Spikelets *longer* — Glumella *awnless, or longer* — Glumellæ *not at the same time having back rounded and apex obtuse.*

Glumellæ *awned or acute, back rounded* H, AR; glumes unequal H, AR.



XXXV. **Festuca** L., p. 218. *Fescue.*

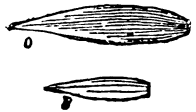
Glumellæ *awnless, back keeled, apex scarcely acute*; glumes scarcely unequal.



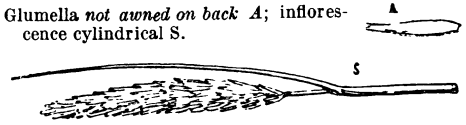
XXXI. **Poa** L., p. 216. *Meadow-grass.*

GROUP 6.—

Glumes *broad* O, P.



Glumella *not awned on back A*; inflorescence cylindrical S.



XXVI. **Psamma** P.B., p. 213. *Marram.*

Glumella *awned on back* S, F; inflorescence a loose panicle.



[See XXVIII. **Avena**.]

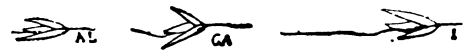
Glumes *less than 1/3 mm. broad.*

Glumellæ *not longer than* 2 mm.

Ligule *sharply toothed laterally* CE; glumellæ shortly awned on back CS. [See XLVI. **Aira**.]



Ligule *not toothed*; glumella with long awns on back AL, CA, I, or awnless.

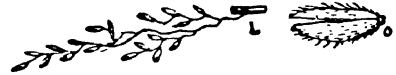


XXXIX. **Agrostis** L., p. 219. *Agrostis.*

Glumellæ *longer than* 2 mm. (*See next page.*)

Glumellæ *awnless.*

Branches of inflorescence *very wavy* L; spikelets *without glumes*; glumellæ 2, very hairy O.



XL. **Leersia** Sw., p. 220. *Leersia.*

Branches of inflorescence *not wavy*; spikelets *with glumes.*

Leaves *obtuse* CA; glumellæ 3-nerved.



XXXVIII. **Catabrosa** P.B., p. 219. *Catabrosæ.*

Leaves *acute.*

Inflorescence close K, *axis hairy*; glumes 1-3 nerved; spikelets 2-7 flowered.

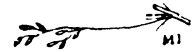


XXX. **Kœleria** Pers., p. 216. *Kœleria.*

Inflorescence *axis glabrous* or nearly so.

Glumellæ *3-4 mm. long.*

Spikelets *distant* MI.



XLI. **Milium** L., p. 22 . *Millet-grass.*

Spikelets in *compact clusters* P. [See XVI. **Phalaris.**]

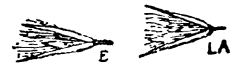


Glumellæ *5-7 mm. long*; spikelets in a raceme-like panicle.

XLII. **Melica** L., p. 220. *Melick.*

Glumellæ *awned.*

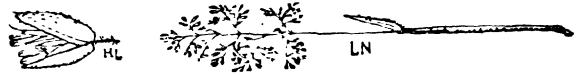
Glumellæ *mixed with long silky hairs* E, LA.



XLIII. **Calamagrostis** Adans., p. 220. *Small Reed.*

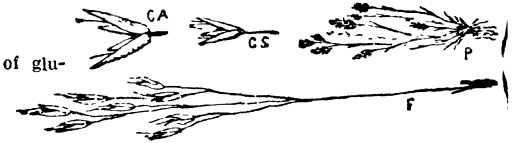
Glumellæ *not mixed with long hairs* HL, CA.

Leaf-sheaths hairy LN; awn of glumella bent HL



XLIV. **Holcus** L., p. 220. *Holcus.*

Leaf-sheaths glabrous; awn of glumella straight CA, CS.



XLV. **Aira** L., p. 221. *Hair-grass.*

I. Zea L. *Zea.*—

Staminate inflorescence terminal, a panicle; pistillate inflorescence lateral, a spike, ensheathed by leaves; 3-7 ft. [Indian Corn.]

1. **Z. Mais** L. ✠
Maize.
Cultivated: June-Sept. A.

II. Spartina Schreb. *Spartina.*—

Ligule of leaf short, toothed; leaf shorter than spikes; axis of spike not prolonged beyond spikelets; spikelets closely pressed together; plant very rigid; 1-2 ft. (Fig. SS, p. 200.)

1. **S. stricta** Roth
Cord-grass. Loc.
Muddy salt marshes: July-Sept. P.

Ligule of leaf replaced by hairs; leaf as long as or longer than spikes; axis of spike prolonged beyond spikelets; spikelets loosely pressed together, distinctly alternate; 2-3 ft.

2. **S. alterniflora** Lois.
Alternate-flowered Spartina. Loc.
Mud flats: July-Sept. P.

III. Digitaria Adans. *Digitaria.*—

Leaf-blade *hairy on both surfaces*, leaf-*sheath hairy* DS;



upper glume narrower than glumella (*g*, Fig. S, p. 200); 4-20 in.

*1. **D. sanguinalis** Scop.
Hairy Digitaria. Loc.
Waste and cultivated places: July-Oct. A.

Leaf-blade *glabrous*, leaf-*sheath hairy only at apex* F;



upper glume as broad as glumella; spikes fewer; 4-9 in.

*2. **D. humifusa** Pers.
Glabrous Digitaria. Loc.
Sandy places: July-Oct. A.

IV. Cynodon Rich. *Cynodon.*—(Figs. C, D, p. 200.)

Stems bearing, near their base, branches with short scale leaves, creeping, rooting; leaves often hairy below; inflorescence usually purplish; 8-20 in. Dog's-tooth Grass; Bermuda Grass.]

1. **C. Dactylon** Pers. ✠
Creeping Cynodon. Loc.
Sandy shores: July-Oct. P.

V. Mibora Adans. *Mibora.*—(Figs. MI, MV, M, p. 200.)

Stems forming small tufts; leaves short, channelled; inflorescence usually purplish-red, sometimes green; 1-4 in.

1. **M. verna** Adans.
Spring Mibora. R.
Sandy coasts: Mar.-May. A.

VI. Nardus L. *Mat-grass.*—(Fig. N, p. 200.)

Plant tufted, glabrous; stems stiff; leaves mostly radical, fine, stiff; spikelets 1-flowered, usually purplish or bluish; spike simple, slender; 4-8 in.

1. **N. stricta** L.
Mat-grass. C.
Moors; heaths: June-Aug P.

VII. Lepturus R.Br. *Lepturus.*—(Fig. I, p. 200.)

Stems slender; leaves rolled at margins; spikes long, slender; spikelet 1-flowered; glumes 4-5 mm. long; 4-12 in. [Hard-grass.]

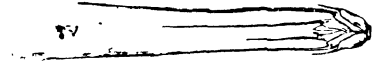
1. **L. filiformis** Trin.
Slender Lepturus.
Sea coasts: June-Sept. A.

VIII. Triticum L. *Wheat.*—

Glumes *3-toothed* at apex TM :  TM — spike slightly compressed, axis fragile; spikelets in 2 distinct opposite rows MO; ligule of leaf very short; 2-4 ft.  MO

1. **T. monococcum** L. ✠ *Small Spelt.* Cultivated: June-July. A. or B.

Glumes with a *long pointed apex* VU, TT.

- Glume glabrous, *keel not prominent* at base VU;  VU — stem hollow throughout its length; glumellæ awned TV, or awnless VG (Figs. V, VL, p. 201); 2½-5 ft.  VG  TV

2. **T. sativum** Lam. ✠ *Common Wheat.* Cultivated: June-Aug. A. or B.

- Glume *distinctly keeled*, almost winged, usually hairy TT;  T T — stem solid, at least in the upper part; glumellæ with long awns or awnless; 4-6 ft.

3. **T. turgidum** L. ✠ *Rivet Wheat.* Cultivated: June-July. A.

IX. Secale L. *Rye.*—(Figs. C, S, p. 201.)

Spike often drooping; glumes narrow, pointed; glumellæ ciliated on the back, with long awns; 2½-4 ft.

1. **S. cereale** L. ✠ *Rye.* Cultivated: May-June. A. or B.

X. Hordeum L. *Barley.*—

Leaf-sheath *smooth.*

- Stem *erect*; glumes equal; spike with 4-6 prominent angles, thick V; 2-3½ ft. [Winter Barley.]  V

1. **H. vulgare** L.[1] ✠ *Common Barley.* Cultivated: June-Aug. A. or B.

- Stem *decumbent*; glumes unequal, ciliate or awn-like; spike without prominent angles M.  M

2. **H. murinum** L. *Wall Barley.* Roadsides; waste places: June-Sept. A. or B.

Leaf-sheath *hairy*, at least in lower leaves.

- Leaf-sheath *very hairy in upper part* EU; hairs reflexed EU.
  - Leaves *5-8 mm. broad*; stem *erect*; spike *about 3 in. long*; 1½-3 ft. (Figs. E, EU.)  E  EU

3. **H. sylvaticum** Huds. *Wood Barley.* Loc. Woods and thickets: June-July P.

  - Leaves *3-4 mm. broad*; stem *prostrate*, bent at nodes; spike short, thick; 4-12 in. [Squirrel-tail Grass.]

4. **H. maritimum** With. *Sea Barley.* Sea coasts: June-July. A.

- Leaf-sheath *uniformly hairy*; leaves narrow; spike somewhat compressed; glumes all awn-like; 1-2 ft.

5. **H. pratense** Huds. *Meadow Barley.* Moist meadows: June-July. P.

XI. Elymus L. *Lyme-grass.*—(Figs. R, A, p. 201.)

Plant glaucous; underground stem long, creeping; leaves long, inrolled, stiff, apex hard and acute, ligule ciliate; spike 8-12 in; 2-4 ft.

1. **E. arenarius** L.
Sea Lyme-grass.
Sandy shores: July-Aug. P.

XII. Lolium L. *Lolium.*—

Glume *shorter than* spikelet (*g*, Fig. LP); glumellæ awnless LP, I, PE, or awned.







Plant *annual*; no leafy barren branches; leaves *flat.*

Spikelet oval, 7-11 flowered; glumellæ *awnless*; 12-20 in.

*1. **L. linicolum** Sond.
Flax Lolium. R.
Flax fields: June-July. A.

Spikelet elongate, 10-20 flowered; glumellæ *awned*; 1-2 ft.

*2. **L. multiflorum** Lam.
Many-flowered Lolium.
Cultivated fields: June-July. A.

Plant *perennial* with leafy barren branches; leaves *folded at margin or rolled* when young; spikelets few-flowered, LP; glumellæ *awnless*; 1-2 ft.

3. **L. perenne** L.[1] ✠
Rye-grass. VC.
Meadows; pastures: May-Sept. P.

Glume *longer than* spikelet (*g*, Fig. LT);



glumellæ awned LT; no leafy barren branches; leaves flat; 1-2 ft.

*4. **L. temulentum** L. ✠
Darnel.
Fields: June-Aug. A.

XIII. Brachypodium P.B. *False Brome.*—

Awn *longer than the rest of glumella*; inflorescence more or less drooping S; spikelet 5-10 flowered; 1-3 ft.



1. **B. sylvaticum** R. and S.
Wood False Brome. C.
Woods; shady places: June-July. P.

Awn *shorter than the rest of glumella*; inflorescence erect P; spikelet 8-25 flowered; 1-2 ft.



2. **B. pinnatum** P.B.
Heath False Brome.
Dry places: June-Aug. P.

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1. *H. hexastichum* L. ✠ [Six-rowed Barley]: spikelets in 6 rows all equal in fruit; *H. distichum* L. ✠ [Two-rowed Barley]: spike compressed, spikelets in six rows, 2 rows pistillate and more prominent than the others; both are sometimes cultivated.— 2. Var. *italicum* A.Br. ✠ [Italian Rye-grass]: young leaves rolled at margins, spikelets distant from axis during flowering, plant perennial.

XIV. Agropyrum Gærtn. *Agropyrum.*—



Underground stem *short, not creeping*; awns longer than glumellæ C, CA; glumes 3-5 nerved; leaves rough on both surfaces; 1½-3 ft.

1. **A. caninum** R. and S. *Fibrous Agropyrum.*
Woods; shady places: June-Aug. P.

Underground stem *long, creeping.*

Leaves *not covered above with very short hairs.*

Leaves *covered above with very short hairs*, later inrolled at margins; spike brittle; glumes 9-11 nerved; plant glaucous; 1-2½ ft. [Sea Couch-grass]

2. **A. junceum** P.B. *Jointed Couch-grass.*
Sandy shores: June-Aug. P.

Glumes *acute* PU, R.



Leaves usually *flat* RP, broad, finely nerved; plant not closely tufted; 1-3 ft. [Twitch.]



3. **A. repens** P.B. ✠ *Couch-grass.* C.
Fields; waste places: June-Aug. P.

Leaves *inrolled at margins*, narrow P. strongly nerved, pungent; plant closely tufted; 1-3 ft.



4. **A. pungens** R. and S. *Pungent Couch-grass.*
Sandy shores: June-Aug. P.

Glumes *obtuse* J, A.



Leaves *flat*; plant not closely tufted; 1-2 ft.

5. **A. acutum** Rœm. *Acute Couch-grass.*
Sandy shores: June-Aug. P.

Leaves *inrolled at margins*; plant closely tufted; 1-3 ft.

6. **A. pycnanthum** G.G. *Dense-flowered Couch-grass.*
Sandy shores: May-June. P.

XV. Sesleria Scop. *Sesleria.*—(Figs. SC, CŒ, p. 202.)

Stem almost leafless in upper part; leaf-sheath not split; spikelets usually bluish; 4-20 in. [Moor-grass.

1. **S. cærulea** Ard. *Blue Sesleria.*
Dry mountain pastures; rocks: Apr.-May. P.

XVI. Phalaris L. *Phalaris.*—

Spikelets *sessile, dense*; glumes with 2 green bands, winged; leaves rough on both surfaces; 1-3 ft. (Figs. C, P, p. 202).

*1. **P. canariensis** L. *Canary-grass.*
Cultivated ground, waste places: June-Sept. A.

Spikelets *stalked, compact*; glumes green-nerved, keeled; inflorescence narrowed at base and apex, glaucous green or purplish; leaves rough, apex long and acute; 2-5 ft. (Fig. P, p. 202.)

2. **P. arundinacea** L. ✠ *Reed-grass.* C.
Watery places: June-July. P.

XVII. Lagurus L. *Hare's-tail.*—(Fig. O, p. 202.)

Stems slender; leaves lanceolate, downy; spike oval, dense, soft, hairy; 4-16 in.

1. **L. ovatus** L. *Hare's-tail.*
Sandy places: May-June. A.

XVIII. Setaria P.B. *Setaria.*—

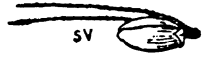
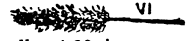
Bristle-like bracts with *hairs directed downwards* VE;  spike rough to the touch; upper glume about as long as glumella; leaves rough at margins and above; 1-2 ft.

*1. **S. verticillata** P.B. *Rough Setaria.* R.
Waste places: July-Oct. A.

Bristle-like bracts with *hairs directed upwards* SV.

- Bracts *ruddy-yellow*; glumella wrinkled transversely GL;  upper glume shorter than glumella; 4-20 in.

*2. **S. glauca** P.B. *Glaucous Setaria.* R.
Waste places: July-Oct. A.

- Bracts *green or reddish*; glumella almost smooth SV;  upper glume about as long as glumella; 4-20 in. 

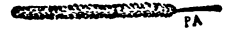
*3. **S. viridis** P.B. *Green Setaria.* R.
Waste places: July-Oct. A.

XIX. Anthoxanthum L. *Anthoxanth.*—(Figs. AO, OD, p. 202.)

Upper part of leaf-sheath ciliated; glumes membranous at margin; spikelet having 1 developed flower, stamens 2; awns equalling glumes; 4-20 in.

1. **A. odoratum** L.[1] ✠ *Vernal-grass.* VC.
Meadows; woods: May-June. P.

XX. Phleum L. *Phleum.*—

Glumes *rough, keel not ciliate* AS;  leaf-sheath slightly inflated; inflorescence long PA, glaucous green; 4-12 in. 

*1. **P. asperum** Jacq. *Rough Phleum.* VR.
Dry places: June-Aug. A.

Glumes *ciliate on keel* PB, P, AN.

- Glumes *rough*, awn short PB; inflorescence often pinkish or yellowish-green, long B; 8-20 in.  

2. **P. Bœhmeri** Wib. *Bœhmer's Phleum.* R.
Dry places: June-Aug. P.

- Glumes *smooth.*
  - Glumes *awned* P.
    - *Awn about ⅓ length of glume* P; inflorescence cylindrical PP; leaf-sheath not inflated; 1-3 ft. [Cat's-tail Grass.]  

3. **P. pratense** L.[2] *Timothy-grass.* C.
Meadows; pastures: June-July. P.

    - *Awn about ½ length of glume*; inflorescence shorter; leaf-sheath inflated; 8-16 in.

4. **P. alpinum** L. *Alpine Phleum.* R.
Rocks, pastures: June-Sept. P.

  - Glumes *not awned*, apex very short AN;  inflorescence blunt and broader at apex AB; 4-8 in. 

5. **P. arenarium** L. *Sand Phleum.*
Sandy places: June-July. A.

1. Var. *Puelii* Lec. and Lam.: plant annual, stem much branched at base, awns longer than glumes, introduced in fields.—2. Var. *nodosum* L.: stem swollen at base, spike shorter, C.

XXI. Alopecurus L. *Foxtail.*—

Glumes *obtuse, united only at base, ciliate* G;  stem prostrate, bent upwards at apex GE; marsh plant; 1-2 ft. 

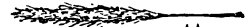
1. **A. geniculatus** L.[1] *Marsh Foxtail.* C.
Wet places: May-Aug. P.

Glumes *acute, united throughout the lower ¼ or ⅓ of their length* AP, AG.

- Glumes *with long cilia* AP. 

  - Spike *short*, ovoid, silky; awns scarcely longer than glumes; leaves soft; 6-18 in.
  - Spike *long* PR, 2-3 in., soft; awns twice as long as glumes; leaves rough at edges; 1-2½ ft. 

- Glumes *without long cilia* AG; 

  spike tapering at each end AA; 8-24 in. 

  Black-grass.]

2. **A. alpinus** Sm. *Alpine Foxtail.* R.
Mountains: July-Aug. P.

3. **A. pratensis** L. *Meadow Foxtail.* C.
Meadows: Apr.-July. P

4. **A. agrestis** L. *Field Foxtail.*
Fields; waste places: Apr.-Sept. A.

XXII. Scleropoa Griseb. *Scleropoa.*—(Figs. SC, RI, p. 203.)

Stems many, tufted.

- Spikelets *stalked*; inflorescence greenish, rarely purplish; branches almost 3-angled; 2-8 in.
- Spikelets *almost sessile*; inflorescence variegated green and white, axis notched where spikelets are attached; 2-8 in.

1. **S. rigida** Griseb. *Hard Scleropoa.*
Dry stony places: June-July. A.

2. **S. loliacea** G.G. *Darnel Scleropoa.* Loc.
Sandy shores: June-July. A.

XXIII. Echinochloa P.B. *Echinochloa.*—(Figs. O, CG, p. 203.)

Leaf-sheath flattened; blade often rough at margins; ligule not developed; 8-32 in.

*1. **E. Crus-galli** P.B. *Cock's-spur Echinochloa.* R.
Fields; waste places: July-Sept. A.

XXIV. Phragmites Trin. *Reed.*—(Fig. C, p. 212.)

Inflorescence purplish, rarely yellowish, more or less drooping, branches hairy where attached to axis; leaves broad, long, flat; 5-6 ft.

1. **P. communis** Trin. ✠ *Common Reed.* C.
Marshes; ditches; margins of rivers: Aug.-Sept. P.

XXV. Sieglingia Bernh. *Sieglingia.*—(Figs. DE, DD, p. 203.)

Stems leafy throughout rather more than lower half; leaf-blades and sheaths hairy; spikelets fairly large, greenish; 4-16 in.

[Heath-grass.]

1. **S. decumbens** Bernh. *Decumbent Sieglingia.*
Dry heaths and pastures: June-Aug. P

XXVI. Psamma P.B. *Marram.*—(Figs. A, S, p. 205.)

Leaves glaucous, involute, stiff, long, apex hard and prickly; underground stem long, creeping.
- Inflorescence *dense*; glumes acute; 1-3 ft.
- Inflorescence *interrupted*; glumes very acute; 2-4 ft.

1. **P. arenaria** R. and S. *Marram.*
Sandy shores: June-July. P.

XXVII. Trisetum Pers. *Trisetum.*—(Figs. FV, FL, p. 203.)

Leaves flat; spikelets shining, yellowish, rarely purplish, 2-3 flowered; 1-2 ft. [Yellow-Oat.]

1. **T. flavescens** P.B. *Yellow Trisetum.*
Dry fields: June-July. P.

XXVIII. Avena L. *Oat.*—

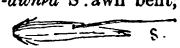
Spikelets *drooping* SA.

Glumes *7-9 nerved.*

Glumes *9-11 nerved* O;  inflorescence 1-sided: awn of glumella straight; 1½-4 ft.

1. **A. orientalis** Schreb. ✠
Cultivated: June-Aug. A

Glumella *hairy at base only* S.

Inflorescence *not 1-sided; glumella 1-awned* S. awn bent; 2-4 ft.  

2. **A. sativa** L. ✠ *Oat.*
Cultivated: July-Aug. A.

Inflorescence *1-sided*; *glumella 2-awned*, awns straight; 2-3 ft.

3. **A. strigosa** Schreb.
Cornfields: July-Aug. A.

Glumella *very hairy* F, hairs long and reddish; inflorescence not 1-sided; glumella falling early, 1-awned F, awn bent; 2-3 ft. Havers.] 

4. **A. fatua** L. *Wild Oat.* C.
Cultivated and waste places: Ju e-July. A.

Spikelets *not drooping* BL.

Lower glume *3-nerved* P; spikelet 3-6 flowered;  leaves and sheaths glabrous; lower branches of inflorescence solitary or in twos; 1-2 ft.

5. **A pratensis** L. *Field Oat.*
Dry pastures; rocky places: June-July. P.

Lower glume *1-nerved.*

Spikelet *3-4 flowered* PU;  lower leaves hairy on both surfaces; spikelets often variegated reddish and silvery; 1-2 ft.

6. **A. pubescens** L. *Downy Field Oat.*
Dry pastures; rocky places: June-July. P.

Spikelet *2-flowered* E; leaves rough, sheaths glabrous; spikelets whitish-green, shining; 2-3 ft. [Couch.]  

7. **A. elatior** L. *False Oat.* C.
Meadows; hedges; thickets: June-July. P.

1. Var *f. lævis* Sm.: awn not longer than glumes, inflorescence a glaucous green, R.

XXIX. Bromus L. *Brome.*—

Awn *longer than glumella* G, S, T.

Plant *3-6 ft. high*; leaves dark-green, almost glabrous, often recurved at apex, spikelets 3-9 flowered G; stem glabrous.



1. B. giganteus L.
Tall Brome.
Shady places: June-Aug. P.

Plant ½-2½ *ft. high.*

Awns and glumellæ *bent outwards* at maturity; panicle erect, branches rough; upper part of stem glabrous; 6-12 in.

2. B. madritensis L.
Compact Brome. R.
Dry sandy places: June-July. A.

Awns and glumellæ *not bent outwards*; panicle usually drooping.

Branches of panicle *rough.*

Upper part of stem *glabrous*; spikelets glabrous, awns curved slightly inwards S; ligule short, ragged; 1-2½ ft.



3. B. sterilis L.
Barren Brome. C.
Waste places; fields: June-Sept. A.

Upper part of stem *hairy*; spikelets downy, awns straight; ligule long, prominent; 1-3 ft.

4. B. maximus Desf.
Great Brome. R.
Sandy places: June-Aug. A.

Branches of panicle *not rough*; upper part of stem hairy; spikelets usually hairy T, all drooping and 1-sided TE; 8-24 in.



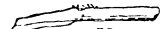


***5. B. tectorum** L.
Roof Brome. R.
Waste places; walls; roofs: June-July. A.

Glumes about *6 times as long as broad*; glumellæ *angular* on back; spikelets elongated E.



Branches of panicle *erect*; lower leaves narrower than the others; sheaths more or less hairy ER; 2-3½ ft.



6. B. erectus Huds.
Upright Brome.
Fields; woods; sandy places: June-Aug. P.

Branches of panicle *drooping*; leaves all equally narrow; lower sheaths bearing more or less reflexed hairs A; 3-6 ft.



7. B. asper Murr.
Hairy Brome.
Fields; thickets; woods: June-Aug. P

Awn *about as long as, or shorter than glumella* E, SE, M.

Glumellæ *spreading* at maturity SE; panicle loose, more or less drooping; 1-3 ft.



8. **B. secalinus** L.
Rye Brome.
Fields: June-July. A.

Glumes *3-4 times as long as broad*; glumellæ *rounded* on back; spikelets slightly elongated SE, M, C, A.

Glumellæ *not spreading*, always closely imbricated M, C, A.

Awns *curving outwards* at maturity.

Longest peduncles *much longer than spikelet*; panicle spreading or drooping, compound; 9-18 in.

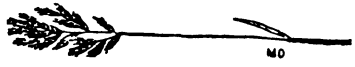
*9. **B. patulus** Parl.
Waste places: June-July. A.

Longest peduncles *shorter than spikelet*; panicle drooping, simple; 8-20 in.

*10. **B. squarrosus** L.
Waste places: June-July. A. or B.

Awns *not curving outwards* C, A.

Spikelets *covered with fine hairs* M; panicle not spreading MO; 8-30 in. [Lop-grass.





11. **B. mollis** L.
Soft Brome. C.
Fields; waste places: May-July. A.

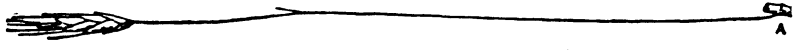
Spikelets *glabrous* or nearly so C, A.

Spikelets glabrous C, *stalks short* C, *not spreading*; leaf-sheaths hairy; 1-2½ ft.



12. **B. racemosus** L.[1]
Smooth Brome. C.
Fields; waste places: June-July. A.

Spikelets almost glabrous, stalks *very long* A, *spreading horizontally* after flowering; 1-3 ft.



*13. **B. arvensis** L.
Field Brome.
Fields; waste places: June-Aug. A.

1. Var. *commutatus* Schrad.: spikelets drooping, R.

XXX. Kœleria Pers. *Kœleria.*—

Fibres of old leaf-sheaths *not forming a net-work around base of stem* CR leaves usually hairy; 6-18 in. (Fig. K, p. 206.)



1. **K. cristata** Pers.[1] *Crested Kœleria.*
Dry pastures: June-July. P.

Fibres of old leaf-sheaths *persistent, forming a net-work around base of stem*; leaves glaucous; 4-12 in.

2. **K. valesiaca** DC. *Valois Kœleria.* R.
Dry places: July-Aug. P.

XXXI. Poa L. *Meadow-grass.*—

Stem *bulbous at base* BU; ligule of leaf acute BL; flowers spreading PB, webbed at base, often modified as leaves; 4-12 in.



1. **P. bulbosa** L. *Bulbous Meadow-grass.* R.
Sandy places near sea: Apr.-June. P.

Stem *not bulbous at base.*

Stem *flattened, 2-edged* C.

Leaves *hooded at apex* S; spikelet 3-5 flowered; 2-3½ ft.



2. P[1] **sudetica** Hænke *Silesian Meadow-grass.* R.
Woods: June-July. P.

Leaves *folded in two lengthwise* C; spikelet 5-9 flowered; branches of inflorescence usually in twos; 1-1½ ft.



3. **P. compressa** L. *Flattened Meadow-grass.*
Walls; rocks; sandy places: June-Aug. P.

Stem *rounded.*

Plant *2-12 in. high.*

Plant an *annual*; branches of inflorescence spreading, solitary or in twos A; leaves folded lengthwise or involute; ligule of upper leaves rounded; 2-12 in.



4. **P. annua** L. *Annual Meadow-grass.* VC.
Fields; walls; roadsides; lawns: Jan.-Dec. A.

Plant *perennial*; ligules acute.

Inflorescence *lax*, usually not spreading; spikelets 2-3 flowered; 4-8 in.

5. **P. laxa** Hænke *Lax-flowered Meadow-grass.* VR.
Pastures; rocks: July-Aug. P.

Inflorescence *denser*; spikelets more or less crowded, 4-6 flowered; flowers often modified as leaves; 4-12 in.

6. **P. alpina** L. *Alpine Meadow-grass.* Loc.
Pastures; rocks: July-Aug. P.

high.

Ligule of leaf *long*, acute T.



Glumella *strongly 5-veined*, slightly acute; 1-2½ ft.

7. **P. trivialis** L. *Roughish Meadow-grass.* VC.
Moist places: May-July P.

Glumella *obscurely 5-veined*, acute; 1-3 ft.

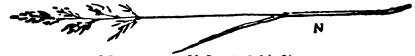
*8. **P. palustris** L. *Marsh Meadow-grass.* R.
Near rivers: June-July. P.

Plant *1-3 ft.*

Ligule of leaf *very short or almost undeveloped* P.



Sheath of upper leaf usually *shorter than blade* N; lateral nerves of glumella glabrous; spikelets seldom purplish; 1-2½ ft.



9. **P. nemoralis** L. *Wood Meadow-grass.*
Woods; moist rocks: June-Aug. P.

Sheath of upper leaf usually *longer than blade* PR; lateral nerves of glumella hairy; spikelets often purplish; 1-2½ ft.



10. **P. pratensis** L.[1] ✠ *Smooth Meadow-grass.* VC.
Meadows; pastures; waste places: June-Aug. P.

XXXII. Cynosurus L. *Dog's-tail.*—

Inflorescence *long, 1-sided* (Fig. CC, p. 204); awn shorter than glumella; ligule of leaf short; plant perennial; 8-24 in. [Bents.]

1. **C. cristatus** L. *Crested Dog's-tail.* C.
Dry hilly pastures: June-Aug. P.

Inflorescence *dense, ovoid*; awn about twice as long as glumella; ligule long; plant annual; 8-24 in.

2. **C. echinatus** L. *Rough Dog's-tail.* Loc.
Waste places: May-July. A.

XXXIII. Dactylis L. *Cock's-foot.*—(Fig. D, p. 204.)

Leaves rough on margins; lower leaves die away when plant flowers; glumes unequal; 1-4 ft.

1. **D. glomerata** L. *Cock's-foot Grass.* VC.
Fields; waste places: May-Aug. P.

XXXIV. Briza L. *Quakegrass.*—

Spikelets usually *few*, 7-10 mm. broad, many-flowered, reddish or shining white ; 8-20 in.

*1. **B. maxima** L. *Large Quakegrass.* Loc.
Waste places; gardens: May-June. A.

Spikelets *very numerous*, 2-5 mm. broad, few-flowered, greenish or purplish. (Figs. B, ME, p. 204.)

Ligule of leaf *short, obtuse*; leaf usually 2-4 mm. broad; 8-18 in.

2. **B. media** L. *Common Quakegrass.* C.
Meadows; waste places: June-July. P.

Ligule of leaf *long, more or less acute*; leaf usually 4-6 mm. broad; 4-12 in.

3. **B. minor** L. *Lesser Quakegrass.* R.
Dry fields: June-July. A.

1. Var. *albescens* DC.: plant bearing short hairs; leaves rolled; dunes.—2. Var. *angustifolia* L.: lower leaves narrow, rolled.

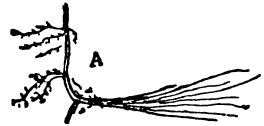
XXXV. Festuca L. *Fescue.*—

Awn *shorter than glumella* R, H, PR, AR.

Leaves *more or less rolled.*

All or nearly all leaves rolled A, O.

Underground stem *very long, creeping* A; ligule bifid, one lobe very prominent; 1-2 ft.



1. **F. oraria** Dumort. *Sea-side Fescue.* R.
Sandy shores: June-Aug P.

Underground stem *short*; leaves tufted; ligule bifid, lobes short; 4-20 in.

2. **F. ovina** L.[1] *Sheep's Fescue.* VC.
Dry pastures: June-July. P.

Lower leaves rolled, upper ones flat.

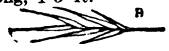
Spikelets *5-10 flowered* R, green or purplish; inflorescence erect RU; underground stem long; 1-3 ft.





3. **F. rubra** L. *Red Fescue.*
Dry places May-June. P.

Spikelets *4-5 flowered* H, usually green; inflorescence often drooping; underground stem short; 1½-3 ft.



4. **F. heterophylla** Lam. *Various-leaved Fescue.* R.
Shady places: June-July. P.

Leaves *all flat.*

Spikelets *5-12 flowered* PR.



Stem *1-2½ ft*; plant perennial; stalks of lower spikelets fairly long.

Stem *2-8 in.*; plant annual, tufted; stalks of lower spikelets short. [See Scleropoa, p. 212.]

5. **F. pratensis** Huds. *Meadow Fescue.* C.
Wet meadows: June-July. P.

Ligule of leaf *very short*; ovary glabrous; 2-6½ ft.

6. **F. arundinacea** Schreb. *Tall Fescue.*
Wet places: June-July. P.

Spikelets *4-5 flowered* AR.



Ligule of leaf *3-5 mm.* S; ovary hairy near apex; 2-4 ft.



7. **F. sylvatica** Vill. *Reed Fescue.* R.
Woods: June-July. P.

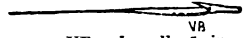
8. **F. uniglumis** Soland. *One-glumed Fescue.* Loc.
Sandy shores: June-July. A.

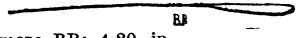
Awn *as long as or longer than glumella* BR, V.

Lower glume *minute or absent*; *stamens 3*; upper glume about ½ in. long, acute; 6-12 in.

Lower glume *distinct*; *stamen 1.*

Upper glume *about 1 in. long, with long awn* VB; glumellæ 1 in. or more BR; 4-20 in.

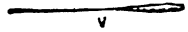




9. **F. bromoides** L. *False-brome Fescue.*
Walls; rocks; dry places: June-July. A.

Upper glume *about ¼ in. long, acute* MY; glumellæ less than 1 in. V; 4-20 in.





10. **F. Myuros** L.[2] *Rat's-tail Fescue.*
Walls; rocks; dry places: May-July. A.

XXXVI. Glyceria R. Br. *Glyceria.*—

Plant usually *more than 1½ ft.*; *glumellæ 7-nerved*; leaves flat.

- Spikelets long, *5-18 flowered* F; stems prostrate at base and rooting, or floating; leaves often floating on water; 1½-4½ ft. [Flote-grass.]
- Spikelets short, *5-9 flowered* A; stems erect; leaf-sheaths with 2 fawn spots in upper part; 1½-6 ft.

Plant usually *not more than 1½ ft.*; *glumellæ 5-nerved or fewer.*

- Leaves *rolled at margins*; branches of inflorescence becoming erect M; 4-16 in.
- Leaves *flat.*
  - Branches *not bearing spikelets at their base* D; nerves of glumellæ faint; ½-1½ ft.
  - Branches *bearing spikelets at their base* P; nerves of glumellæ prominent; 4-8 in.

1. **G. fluitans** R. Br.[3] *Floating Glyceria.* C. Watery places: June-Aug. P.
2. **G. aquatica** Wahlb.[4] *Reed Glyceria.* Watery places: July-Aug. P.
3. **G. maritima** M. and K. *Sea Glyceria.* Damp shores: June-July. P.
4. **G. distans** Wahlb. *Reflexed Glyceria.* Sea shores: June-Aug. P.
5. **G. procumbens** Sm. *Procumbent Glyceria.* R. Sea shores: June-July. A.

XXXVII. Molinia Schrk. *Molinia.*—(Fig. M, p. 203.)

Stem erect; leaves, except 2-4, tufted and radical; branches of inflorescence usually in twos; 1-3½ ft.

1. **M. cærulea** Mœnch *Purple Molinia.* C. Wet heaths; moors: July-Sept. P

XXXVIII. Catabrosa P. B. *Catabrose.*—(Fig. CA, p. 206.)

Leaves flat, bright green; inflorescence spreading; glumellæ distinctly 3-nerved; 1-2½ ft. [Whorl-grass.]

1. **C. aquatica** P.B. *Water Catabrose.* Shallow water: June-July. P.

XXXIX. Agrostis L. *Agrostis.*—

Leaves *involute*; awn of glumella bent CA.

- Leaves *narrow*; radical leaves involute; leaf-sheaths smooth; branches of inflorescence spreading when in flower CN, not bearing spikelets at their base CN; 1-2 ft.
- Leaves *bristle-like*, short, glaucous; leaf-sheaths rough; branches of inflorescence erect; 8-16 in.

1. **A. canina** L. *Bent-grass.* Wet heathy places: June-Sept. P.

Leaves *flat*; glumella awnless or awn straight.

- Awn *short* AL, *or absent*; upper glume *shorter* than lower AL; spikelets whitish or purplish; 4-36 in.
- Awn *much longer than spikelet* I; upper glume *longer* than lower I; spikelets many, greenish or purplish; 1-3 ft. [Wind-grass.]

2. **A. setacea** Curt. *Bristle Agrostis.* Loc. Dry heaths: July-Aug. P
3. **A. alba** L.[5] *Fiorin-grass.* VC. Pastures; waste places: June-Sept. P.
4. **A. Spica-venti** L.[6] *Silky Agrostis.* R. Fields: June-July. A.

1. Var. *tenuifolia* Sm.: glumellæ acute, not awned, inflorescence narrow, C; var. *duriuscula* L.: leaves folded, stiff, almost smooth, C; var. *glauca* Schrad.: leaves glaucous, stiff, almost smooth.—2. Var. *pseudo-myuros* Soy.-Will.: inflorescence long, very close to upper sheath; var. *sciuroïdes* Roth: inflorescence short, not close to upper sheath.—3. Var. *plicata* Fr.: lower branches of inflorescence in fours or fives, glumella rounded at apex, R.—4. Var. *Borrerî* Bab.: leaves short, stems tufted, no creeping branches, plant glaucous, glumellæ acute, salt marshes, R.—5. Var. *vulgaris* With.: ligule very short, inflorescence large, spreading, C; var. *maritima* Lam.: leaves rolled, yellowish-white, dunes.—6. Var. *interrupta* L.: inflorescence narrow, not spreading, interrupted, anthers oval.

XL. Leersia Sw. *Leersia.*—(Figs. L, O, p. 206.)

Inflorescence greenish-white; stem hairy at nodes; leaves rough, sheaths compressed; 2-4 ft. [Cut-grass.]

1. **L. oryzoides** Sw. *False-rice Leersia.* VR. Wet places: Aug.-Oct. P.

XLI. Milium L. *Millet-grass.*—(Fig. MI, p. 206.)

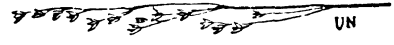
Spikelets often purplish, many, on very long branches; leaves flat, rough-edged; 2-4 ft.

1. **M. effusum** L. ✠ *Spreading Millet-grass.* C. Woods: June-July. P.

XLII. Melica L. *Melick.*—

Ligule of leaf *very short, blunt,* hairy N;  spikelets 2-flowered, drooping NU; 1-2 ft. 

1. **M. nutans** L. *Mountain Melick.* Loc. Woods in hilly districts: May-June. P.

Ligule of leaf drawn out into a *long point* U; spikelets 1-flowered, erect UN; 1-2 ft.  

2. **M. uniflora** Retz. *Wood Melick.* Woods; shady places: May-June. P.

XLIII. Calamagrostis Adans. *Small Reed.*—

Glumes *about as long as hairs* E, LA.

Inflorescence *close* EP; spikelets *crowded* EP; awn on back of glumella, slightly longer than hairs E; 2-4 ft.  

1. **C. Epigeios** Roth *Wood Small Reed.* Damp shady places: July-Aug. P.

Inflorescence *loose* L; spikelets *spreading* L; awn at apex of glumella, very short LA; 2-4 ft.  

2. **C. lanceolata** Roth *Purple Small Reed.* R. Boggy places: July-Aug. P.

Glumes *longer than hairs*; inflorescence close, narrow, long; awn on back of glumella, slightly longer than hairs; 1-2 ft.

3. **C. neglecta** Fl. de Wett. *Narrow Small Reed.* VR. Marshes: June-Aug. P.

XLIV. Holcus L. *Holcus.*—

Glumes *acute* HM;  awn of staminate flower *much longer than glumes* HM; leaves more or less hairy; underground stem very long; 1½-3 ft. [Soft-grass.]

1. **H. mollis** L. ✠ *Soft Holcus.* Meadows; woods sandy soils: June-Aug. P.

Glumes *obtuse* HL;



awn of staminate flower *little if any longer than glumes* HL; leaves very hairy; underground stem short; 1½-3ft. [Yorkshire Fog.]



2. **H. lanatus** L. ✠ *Woolly Holcus.* VC.
Meadows; waste places: June-Sept. P.

XLV. **Aira** L. *Hair-grass.*—

Awns *longer than glumes.*

Annual; roots slender CR, P; awn straight.

Spikelets *shorter* than their stalks, spreading CR; ligule not lobed; 4-12 in.



1. **A. caryophyllea** L. *Silvery Hair-grass.*
Heaths dry pastures May. July. A.

Spikelets *longer* than their stalks, close together P; ligule lobed; 2-8 in.



2. **A. præcox** L. *Early Hair-grass.*
Dry places: Apr.-June. A.

Perennial; underground stem present; awn bent at base.

Ligule *long, acute*; stalks of spikelets almost straight T, upper flower shortly stalked; 1-2½ ft.



3. **A. discolor** Thuill. *Marsh Hair-grass.*
Wet places; bogs; July-Sept. P.

Ligule of leaf *very short, blunt*; stalks and branches of inflorescence wavy F; upper flower of spikelet scarcely stalked; 2-2½ ft.



4. **A. flexuosa** L. *Wavy Hair-grass.*
Rocks, heaths: June-Aug. P.

Awns *shorter or scarcely longer than glumes* CA, CS.

Leaves *rolled*, ligule *not lobed*; glumes *equal* CA, C;



awn thickened at apex, ring of hairs towards middle CN :4-12 in.



5. **A. canescens** L. *Grey Hair-grass.* R.
Sandy coasts: June-Aug. P.

Leaves *flat*, ligule *cut at apex* CE; glumes *unequal* CS, AC; awn fine; 2-4 ft.





6. **A. cæspitosa** L. *Tufted Hair-grass.* VC.
Meadows; pastures; thickets: June-Aug. P.

Seeds *enclosed in dry cones* EX.

Scales of cone *many*; leaves *not pressed against stem.*

Leaves *attached singly* L, P.

Leaves *attached in pairs* S, *or in fives*, on dwarf branches; scales of cone hard, woody, very thick near apex M.





V. **Pinus** L., p. 223. *Pine.*

Leaves *clustered, on dwarf branches* L.



Leaves *soft, falling each autumn*; cones small.

I. **Larix** Mill., p. 222. *Larch.*

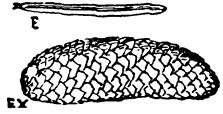
Leaves *hard, evergreen*; cones very large.

II. **Cedrus** Barrl., p. 223. *Cedar.*

Leaves *not clustered, on long branches* P.



Leaves almost *4-angled* E; cone falling as a whole EX.



III. **Picea** Don, p. 223. *Spruce.*

Leaves almost *flat* A; scales of cone falling separately, therefore no cones found beneath the trees.



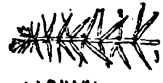
IV. **Abies** Salisb., p. 223. *Fir.*

Scales of cone *few*; leaves *pressed against stem.*

VI. **Cupressus** L., p. 223. *Cypress.*

Seeds *enclosed in a fleshy covering.*

Fleshy covering formed by scales of cone; *leaves in whorls of 3, prickly* J.



VII. **Juniperus** L., p. 223. *Juniper.*

Fleshy covering an aril; *leaves not in whorls, not prickly* T.



VIII. **Taxus** L., p. 223. *Yew.*

I. Larix Mill. *Larch.*—(Fig. L, above.)

Tree; branches spreading or pendulous; leaves bright green, almost flat, deciduous; cones oval, scales thin.

*1. **L. europæa** DC. *Larch.*

Planted: Apr.-May P

II. Cedrus Barrl . *Cedar.*—

Tree, evergreen; cones 3-5 in. long, 2-3 in. across, stalked, brown when ripe; scales of cone thin, eventually falling away.

1. **C. Libani** Barrl. *Cedar of Lebanon.* Sometimes planted: Sept.-Oct. P.

III. Picea Don. *Spruce.*—(Figs. P, E, EX, above.)

Tree; branches spreading or drooping; leaves evergreen, seldom glaucous; scales of cones thin. [Spruce Fir.]

1. **P. excelsa** Lam. ✠ *Norway Spruce.* Planted: May-June. P.

IV. Abies Salisb. *Fir.*—(Fig. A, above.)

Tree; branches spreading or almost drooping; leaves evergreen, 2 white lines on under surface.

1. **A. pectinata** DC. ✠ *Silver Fir.* Planted: Apr.-May. P.

V. Pinus L. *Pine.*—

Tree, evergreen.

- Leaves *in groups of five*, 3-sided; cones slender, cylindrical, bent, 4-5 in. long, 1 in. across.
- Leaves *in pairs* (Fig. S, above), 2-sided, one side flat and the other rounded S.
  - Leaves *4-6 in. long*; scale of cone *pyramidal* at apex with small projection at centre M. [Bournemouth Pine.]



  - Scale of fruit *flattened* at apex with minute point at centre SV, AU.
    - Leaves *slightly glaucous, 2-2½ in. long*; cones recurved. (Fig. SV.) [Scotch Fir.]



    - Leaves *not glaucous, about 4 in. long*; cones spreading. (Fig. AU.)



1. **P. Strobus** L. *Weymouth Pine.* Planted: May-June. P.

*2. **P. Pinaster** Ait. ✠ *Cluster Pine.* Planted and naturalised: May-June. P.

3. **P. sylvestris** L. ✠ *Scots Pine.* Mountains; planted: May June. P.

4. **P. austriaca** Hœss. *Austrian Pine.* Sometimes planted. May-June. P.

VI. Cupressus L. *Cypress.*—

Tree; leaves small, evergreen, closely imbricated around stem; cones oval, about 1 in. across, scales peltate.

1. **C. fastigiata** DC. *Cypress.* Sometimes planted: Apr.-May. P.

VII. Juniperus L. *Juniper.*—(Fig. J, above.)

Shrub; leaves glaucous, evergreen ; cones fleshy, 1-3 seeded, bluish-black, resembling a small berry.

1. **J. communis** L. ✠ *Common Juniper.* Dry hilly places: Apr.-May. P.

VIII. Taxus L. *Yew.*—(Fig. T, above.)

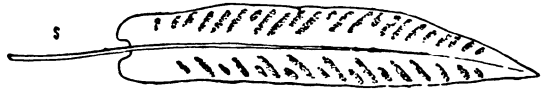
Tree; leaves evergreen, often spreading in 2 ranks; aril red, partly enclosing one seed.

1. **T. baccata** L. ✠ *Common Yew.* Woods· hedges: Mar.-Apr. P.

POLYPODIACEÆ. The Ferns bear clusters of sporangia, known as sori, on the under surface of the frond; in many of the genera, the sorus in its young state is protected by a membrane. For the determination of the Fern, younger and older fronds should be examined.

Fronds entire S, or not divided to midrib V, O, B.

Fronds *entire* S; sori long, linear, parallel S.



→ I. **Scolopendrium** Sm., p. 226. *Hart's-tongue.*

Leaves *deeply cut into segments* V, O, B.

Fronds *not narrower at base* V;



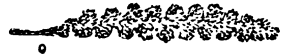
sorus rounded, not covered by a membrane VU.



→ II. **Polypodium** L., p. 226. *Polypody.*

Fronds *narrower at base* O, B.

Back of frond *covered with ruddy shining scales* O; segments rounded O.



→ III. **Ceterach** Willd., p. 226. *Ceterach.*

Back of frond *not covered with ruddy shining scales*; outer fronds barren B; inner fronds with very narrow fertile segments.



→ IV. **Blechnum** L., p. 226. *Blechnum.*

midrib P.

of frond A.

not scaly at base.

Fronds all *similar.*

Sori *linear or oblong*, sometimes uniting when mature; *plant about 2-12 in.* (See Figures, p. 227).

→ VII. **Asplenium** L., p. 227. *Spleenwort.*

→ VI. **Adiantum** L., p. 226. *Maidenhair.*

Stalk and axis of frond *blackish-brown*; plant delicate.

Stalk and axis of frond *green*; plant not delicate.

Frond *solitary, 2-6 ft.*, terminal divisions almost entire P; sori under rolled margin of segments A.



→ V. **Pteris** L., p. 226. *Pteris.*

Fronds *several, 1-2 ft*, segments entire T; sori not under rolled margin.



[See XI. Aspidium.]

Fronds compound, *principal divisions free as far as*

Sori *rounded or becoming rounded* AA, F, *or protected by margin*

Fronds

Outer fronds *barren*, inner fronds *fertile* C; plants delicate.

Segments of frond *pointed*; sori under rolled margin C.



XII. **Allosurus** Bernh., p. 229. *Allosurus.*

Segments of frond *rounded* at apex; sori nearly covering under surface, not protected by a membrane.

XIII. **Grammitis** Sw., p. 229. *Grammitis.*

Fronds *mostly having brownish scales at base* P.



Sori *not protected by a membrane.*

Fronds *triangular in outline or hairy on both surfaces*; sori not surrounded by hair-like scales. [See II. Polypodium.]

Fronds *lanceolate in outline*; sori surrounded by hair-like scales.

IX. **Woodsia** R Br., p. 228. *Woodsia.*

Sori *protected by a membrane*, at least when young.

Upper divisions of frond *sickle-shaped* AC; membrane protecting sorus attached at its centre AA.





XI. **Aspidium** Sw., p. 228. *Aspidium.*

Divisions of frond *not sickle-shaped*; membrane protecting sori attached laterally FI, F.



Longest *divisions* of frond *not more than 3 times longer than broad* C; teeth rounded C; membrane protecting young sorus attached at base F.





X. **Cystopteris** Bernh., p. 228. *Bladder Fern.*

Longest divisions of frond *more than 3 times longer than broad.*

Segments deeply cut; teeth not very acute AF; *young sori oval.*



VIII. **Athyrium** Roth, p. 227. *Athyrium.*

Segments not deeply cut, or teeth very acute; sori *rounded.*

XI. **Aspidium** Sw., p. 228. *Aspidium.*

I. Scolopendrium Sm. *Hart's-tongue.* (Fig. S, p. 224.)

Underground stem often covered with remains of old leaf bases; sori double, membranes opening towards each other.

1. **S. officinale** Sm. ✠ *Hart's-tongue.* C.
Shady rocks, walls, banks: June-Oct. P.

II. Polypodium L. *Polypody.*—

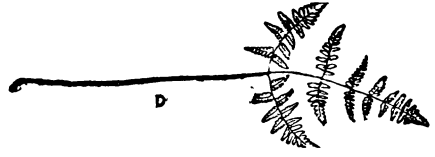
Frond *deeply segmented* V; secondary veins not passing as far as apices of segments; 4-16 in.



1. **P. vulgare** L. ✠ *Common Polypody.* C.
Sheltered banks, walls, trees: June-Oct. P.

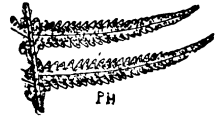
Fronds *compound* D, PH; secondary veins passing to margin.

Fronds *triangular* in outline D, glabrous, bi-pinnate; 4-16 in.



2. **P. Dryopteris** L.[1] *Oak Fern.*
Dry woods: June-Oct. P.

Fronds *ovate* in outline, both surfaces hairy, divisions long PH, pinnate; 8-18 in.



3. **P. Phegopteris** L.[2] *Beech Fern.*
Damp shady places: June-Sept. P.

III. Ceterach Willd. *Ceterach.*—(Fig. O, p. 224.)

Fronds numerous, tufted; sori linear, not protected by a membrane, concealed by chaffy scales; 2-6 in. [Rusty-back Fern.]

1. **C. officinarum** Willd. ✠ *Ceterach.*
Walls; rocks: May-Oct. P.

IV. Blechnum L. *Blechnum.*—(Fig. B, p. 224.)

Barren fronds tufted, persisting during winter; fertile fronds with segments curving downwards late in season; ½-1½ ft. [Hard Fern.]

1. **B. Spicant** Roth *Blechnum.* C.
Moist woods: June-Sept. P.

V. Pteris L. *Pteris.*—(Figs. P, A, p. 224.)

Underground stem horizontal, deeply embedded in the soil; frond annual, very large, much divided; a cross-section near the base of the main stalk has the appearance of a double eagle; 2-6 ft. [Brakes.]

1. **P. aquilina** L. ✠ *Bracken.* VC.
Woods; heaths. July-Oct. P.

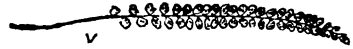
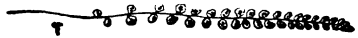
VI. Adiantum L. *Maidenhair.*—

Fronds at least twice divided; segments bright green, glabrous, narrower at base than apex; stalks slender; 4-12 in.

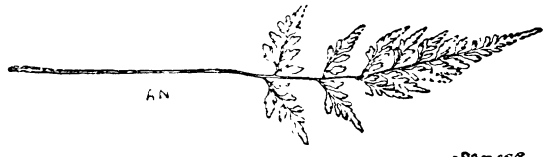
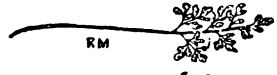
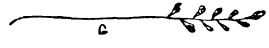
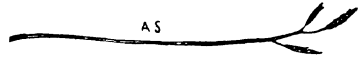
1. **A. Capillus-Veneris** L. *Maidenhair.* VR.
Rocks: June-Sept. P.

VII. Asplenium L. *Spleenwort.*—

Lower divisions of frond usually *smaller*.

- Fronds *pinnate* V, T.
  - Stalk of frond *green*, brown only at base, very narrowly winged; 2-8 in. — 
  - Stalk of frond *brown, shining.*
    - Divisions of frond *thin*, nerves not thickened at apex, bases *equal* T; 2-8 in. — 
    - Divisions of frond *thick*, larger, nerves slightly thickened at apex, bases *unequal*; 4-12 in.
- Fronds *usually bi-pinnate*; stalks green; 4-10 in.

Lower divisions of frond *not smaller* AS, AN, RM, G.

- Frond with *more than 2-3* divisions.
  - Principal parts of frond *gradually narrowed towards apex, much divided* AN; stalk blackish, shining; 4-12 in. — 
  - Principal parts of frond *not pointed, not much divided* RM, G.
    - Stalks *green*; segments thick, broad RM; 2-4 in. — 
    - Stalks *brown at base*; divisions thin, broad at apex, narrow at base G; 2-6 in. — 
- Divisions of frond *2-3*, narrow, pointed at base and apex AS; stalks green; sori linear; 2-6 in. — 

1. **A. viride** Huds. *Green Spleenwort.* Rocks: June-Sept. P.
2. **A. Trichomanes** L. ✠ *Common Spleenwort.* C. Walls; rocks: May-Oct. P.
3. **A. marinum** L. *Sea Spleenwort.* Rocks; walls: June-Sept. P.
4. **A. lanceolatum** Huds. *Lanceolate Spleenwort.* R. Moist rocks: June-Sept. P.
5. **A. septentrionale** Hoffm. *Forked Spleenwort.* R. Rocks; walls: June-Oct. P.
6. A. Adiantum-nigrum L. *Black Spleenwort.* C. Rocks; Walls; banks: June-Oct. P
7. **A. Ruta-muraria** L. *Wall-rue.* Walls; rock Jan.-Dec. P.
8. **A, germanicn** Weiss *German Spleenwort.* VR. Rocks: June-Oct. P

VIII. Athyrium Roth. *Athyrium.*—(Fig. AF, p. 225.)

Fronds tufted, oblong-lanceolate, principal divisions long FF, stalks green; membrane covering sorus fringed; 1½-4 ft. — 

1. **A. Filix-fœmina** Roth. *Lady Fern.* VC. Moist shady places; woods: June-Sept. P.

1. Var. *calcareum* Sm.: fronds stiff, hairy, glandular, leathery; underground stem thick; on limestone rocks.—2. *P rhæticum* L. fronds bi-pinnate, Loc.

IX. Woodsia R.Br. *Woodsia.*—

Fronds tufted.

- Fronds *pinnate*; divisions rounded, almost entire; slightly hairy when young; 2-6 in. — 1. **W. hyperborea** R. Br. *Northern Woodsia.* VR. Rocks: July-Sept. P.
- Fronds *bi-pinnate or divisions deeply lobed*, margins very hairy; 2-6 in. — 2. **W. ilvensis** R.Br. *Alpine Woodsia.* VR. Rocks: July-Sept. P.

X. Cystopteris Bernh. *Bladder Fern.*—

Fronds thin, soft, stalk fairly long; membrane protecting sorus falling early.

- Fronds *tufted, ovate-lanceolate, lower divisions shorter*; sori running together later; underground stem short, thick; 4-16 in. (Figs. C, F, p. 225.) — 1. **C. fragilis** Bernh. *Brittle Bladder Fern.* Damp or shady rocks: June-Sept. P.
- Fronds *not tufted, triangular, lower divisions longer*; sori remaining distinct; underground stem very long, slender; 4-12 in. — 2. **C. montana** Bernh. *Mountain Bladder Fern.* VR. Moist rocks: July-Sept. P.

XI. Aspidium Sw. *Aspidium.*—

Stalk of frond *not scaly*; segments of fronds entire, margins reflexed when old; underground stem narrow, long; 1-2 ft. (Fig. T, p. 224.) — 1. **A. Thelypteris** Sw. *Marsh Shield-fern.* Wet places: June-Oct. P.

Stalk of frond *scaly* SP.

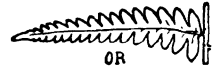
Upper divisions of frond *sickle-shaped*; membrane protecting sorus attached at its centre.

- Fronds *bi-pinnate*; 1-2 ft. (Figs. AC, AA, p. 225.) — 2. **A. aculeatum** Sw. *Prickly Shield-fern.* Shady places: June-Sept. P.
- Fronds *pinnate*, leathery; 6-18 in. — 3. **A. Lonchitis** Sw. *Holly Fern.* Loc. Rocks: June-Sept. P.

Under surface of frond with *dots or stalked glands, yellow and fragrant.*

- Segments of fronds *entire*; PO, OR; sori near margin PO; 1½-3 ft. — 4. **A. Oreopteris** Sw. *Mountain Fern.* Heaths; open woods: July-Sept. P.





- Segments of fronds *toothed*, teeth acute; covered below with minute stalked glands; 1-2 ft. — 5. **A. rigidum** Sw. *Rigid Fern.* R. Rocks: June-Sept. P.

Stalk of frond

Upper divisions of frond *not sickle-shaped*; membrane of sorus attached at its

Fronds *not having yellow fragrant dots or glands.*

Largest main divisions of frond *4-7 times longer than broad* FM; segments toothed particularly at apex F; 2-4 ft.



6. **A. Filix-mas** Sw. ✠ ► *Male Fern.* C.
Woods; damp banks: June-Sept. P.

Largest main divisions of frond *2-3 times longer than broad*; segments toothed all round C, S.

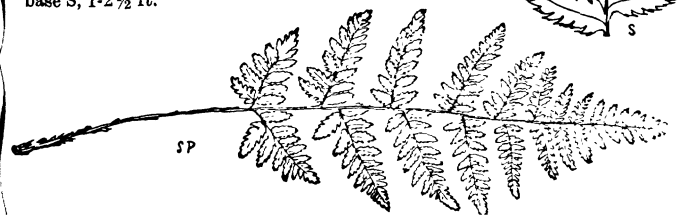
Segments of frond *not acutely toothed* C, distinctly continuous at their base C; 8-24 in.



7. **A. cristatum** Sw. *Crested Fern.* R.
Wet shady places: June-Aug. P.

Segments *acutely toothed* S, scarcely continuous at their base S; 1-2½ ft.





8. **A. spinuolosum** Sw. *Broad Fern.* C.
Moist woods June-Sept. P.

XII. Allosurus Bernh. *Allosurus.*—(Fig. C, p. 225.)
Fronds tufted, much divided; barren ones flat, fertile ones revolute at margins; stalks broad; 4-12 in. [Parsley Fern.]

1. **A. crispus** Bernh. *Rock Bracken.*
Rocks: July-Aug. P.

XIII. Grammitis Sw. *Grammitis.*—
Fronds tufted; segments broad, short; stalks reddish-brown, shining; 2-6 in. [Jersey Fern.]

1. **G. leptophylla** Sw. *Small Grammitis.* VR.
Moist shady banks: Mar.-May. A.

HYMENOPHYLLACEÆ.

Fronds *bi-pinnate or tri-pinnate*; membrane protecting sorus cup-shaped.

I. **Trichomanes** L., p. 230 *Bristle Fern.*

Fronds *pinnate* H; membrane protecting sorus 2-valved.



II. **Hymenophyllum** L., p. 230. *Filmy Fern.*

I. Trichomanes L. *Bristle Fern.*—

Underground stem long; stalks of fronds brown throughout, winged; segments obtuse; axis of sorus projecting slightly, bristle-like; 4-12 in. [Killarney Fern.]

1. **T. radicans** Sw. *European Bristle Fern.* VR. Wet sheltered rocks: June-Oct. P.

II. Hymenophyllum L. *Filmy Fern.*—

Underground stem long, slender; stalks and nerves of fronds brown.

- Segments of frond *spreading*; membrane of sorus *toothed*; 1-3 in. (Fig. H, p. 229.)
- Segments of frond *deflexed*; membrane of sorus *entire*; 1-3 in.

1. **H. tunbridgense** Sm. *Tunbridge Filmy Fern.* Loc. Moist shady rocks: July-Oct. P.
2. **H. peltatum** Desv. *Peltate Filmy Fern.* Loc. Moist shady rocks: July-Oct. P.

OSMUNDACEÆ.

I. Osmunda L. *Osmund.*—

Fronds tufted, bipinnate, lower main divisions barren R, upper main divisions fertile RE; 2-6 ft. [Flowering Fern.]

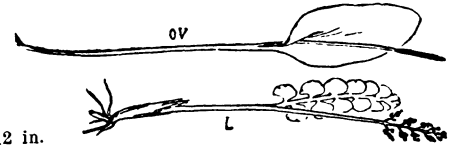


1. **O. regalis** L. ✠ *Royal Fern.* Loc. Boggy places: June-Aug. P.

OPHIOGLOSSACEÆ.

Barren part of frond *entire* OV; fertile part *narrow, long* OV; sporangia embedded.

Barren part of frond *pinnate* L; fertile part *branched* L; sporangia free, sessile.



I. **Ophioglossum** L., p. 230. *Adder's-tongue.*

II. **Botrychium** Sw., p. 230. *Moonwort.*

I. Ophioglossum L. *Adder's-tongue.*—

Barren part of frond *oval, not narrowed into a stalk*; 2-12 in. (Fig. OV, above.)

1. **O. vulgatum** L. *Adder's-tongue.* Moist pastures: May-July P.

Barren part of frond *lanceolate, gradually narrowed into a stalk*; 1-2 in.

2. **O. lusitanicum** L. *Small Adder's-tongue.* VR. Turfy places near sea: Jan.-Apr. P.

II. Botrychium Sw. *Moonwort.*—(Fig. L, above.)

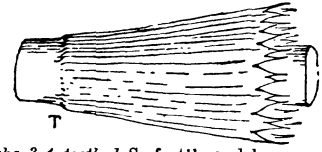
Barren part of frond with thick, half-moon shaped divisions; sporangia marginal; 2-8 in.

1. **B. Lunaria** Sw. *Moonwort.* Dry pastures: May-Aug. P.

EQUISETACEÆ. Some of the species have two kinds of stems; fertile stems appearing in spring, and barren stems usually later in the season.

I. Equisetum L. *Horse-tail.*—

Sheaths *large* (Fig. T, natural size), 20-30 toothed, barren stems 2-6 ft., branched, green;



fertile stems reddish-brown, unbranched; 4-16 in.

1. **E. maximum** Lam. *Great Horse-tail.* Wet places: Mar.-Apr. P.

Sheaths *less than 1 cm. broad.*

Teeth of sheaths *2-3 mm. long*, in more or less close contact with stem (P, natural size.)

Spike of sporangia *obtuse* LI.

Teeth *white and membranous at margins* P; stems deeply furrowed, furrows few (PA, stem cut across); 1-2 ft.



Teeth *not or scarcely membranous* LI; stem furrowed, furrows 15-25, not deep L; 2-4 ft.



5. **E. limosum** L. *Smooth Horse-tail.* C. Wet places: June-July. P.

Spike of sporangia *pointed* H.

Sheath *adpressed to stem even at apex* H; stems rough; 1-3 ft. [Dutch-rush.]



6. **E. hyemale** L. *Rough Horse-tail.* Wet places: July-Aug. P.

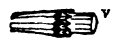
Sheath *slightly enlarged* above R, V.

Diameter of cavity in hollow part of stem *much greater than* that of solid part; 1-3 ft.



7. **E. trachyodon** A. Br. *Long Horse-tail.* R. Wet sandy places: July-Aug. P.

Diameter of cavity in hollow part of stem *equal to* that of solid part; 4-16 in.



8. **E. variegatum** Schl. *Variegated Horse-tail.* Wet sandy places: July-Aug. P.

Teeth of sheaths *5-7 mm. long*, distant from stem (S, A, natural size.)

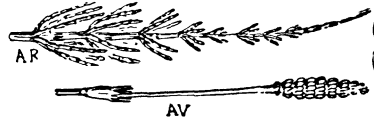
Sheaths *3-4 toothed* S; fertile and barren stems present at same time, almost similar, fertile ones deflexed at base; 4-32 in.



2. **E. sylvaticum** L.[1] *Wood Horse-tail.* Wet shady places: Apr.-May. P.

Sheaths about *8-toothed* A; fertile stems unbranched AV, 4-8 in.; barren stems branched AR, 1-2 ft.





3. **E. arvense** L. *Field Horse-tail.* VC. Damp places: Mar.-May P.

1. *P. pratense* Ehrh. [Shady Horse-tail] has many teeth and simple branches; moist shady places; R.

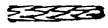
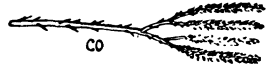
LYCOPODIACEÆ. The various species of this N.O. are common in the north of Europe where their spores are gathered for medicinal purposes.

I. Lycopodium L. *Club-moss.*—

Plant 2-8 in.

- Branches *forked several times* S; stems erect; leaves all similar; 2-8 in. 
  - **1. L. Selago** L. *Fir Club-moss.* Hilly heaths: July-Oct. P.
- Branches *simple* I; stems creeping; leaves with sporangia in their axils broader at base, forming a spike I; 2-8 in. 
  - **2. L. inundatum** L. *Marsh Club-moss.* Boggy heaths: July-Oct. P.

Stems 1-3 ft. creeping; sporangia in spikes.

- Spikes *2-6 at top of a common peduncle* CO, C.
  - Leaves *not having a long hair-like apex*, in 2-4 regular rows C;  leaves leathery; erect branches not hidden by the leaves; 2-2½ ft. 
    - **3. L. complanatum** L. *Compressed Club-moss.* VR. Heaths; shady places: July-Oct. P.
  - Leaves *with a long hair-like apex* CL;  leaves soft; erect branches hidden by the leaves; 2-2½ ft. 
    - **4. L. clavatum** L. ✠ *Common Club-moss.* Hilly heaths: July-Oct. P.
- Spikes *solitary*, sessile at apices of leafy branches AN, AL.
  - Leaves *spreading* AN, or reflexed, finely toothed; 1½-2 ft. 
    - **5. L. annotinum** L. *Interrupted Club-moss.* R. Heaths; woods: June-Aug. P.
  - Leaves *adpressed* against stem AL, entire; 2-3 ft. 
    - **6. L. alpinum** L. *Alpine Club-moss.* Pastures; heaths: June-Aug. P.

SELAGINELLACEÆ.

I. Selaginella P.B. *Selaginella.*—

Plant moss-like; stems prostrate, much forked; leaves spreading, lanceolate; fertile branches erect; spikes with slightly toothed leaves; 1-5 in.

- **1. S. spinulosa** A.Br. *Common Selaginella.* Moist rocks and pastures: June-Oct.

SALVINIACEÆ.

I. **Azolla** Lam. *Azolla.*—

Plant free-floating, fugacious; length variable; upper parts of branches resting on surface of water.
- Stem often *forked*; leaves distinctly dotted. — *1. **A. caroliniana** Willd. R. Still water: June-Oct.
- Stem *irregularly branched*; leaves faintly dotted. — *2. **A. filiculoides** Lam. R. Stil water: June-Oct.

MARSILIACEÆ.

I. **Pilularia** L. *Pillwort.*—(Fig. PI, p. XXXIV.)

Underground stem slender, creeping, sometimes very long; sporangia enclosed in globular, pill-like cases; leaves filiform, erect; 1-4 in. — 1. **P. globulifera** L. *Creeping Pillwort.* Margins of shallow water: June-Sept. P.

ISOETACEÆ.

The plants of this N.O. are often not noticed because of their external resemblance to grasses not in flower.

I. **Isoetes** L. *Quillwort.*—(Fig. I, p. XXXIV.)

Plant *growing in damp soil*, dark or bright green; old leaf-bases persistent; 1-3 in. — 1. **I. hystrix** Dur. R. Sandy hollows: May-July. P.

Plant *aquatic*; leaf-bases not persistent.
- Leaves *dark green, 3-7 mm. broad*; larger spores with blunt tubercles; 2-6 in. — 2. **I. lacustris** L. Loc. Shallow water: May-July. P.
- Leaves *pale green, 1-2 mm. broad*; larger spores with acute tubercles; 2-6 in. — 3. **I. echinospora** Dur. R. Shallow water: May-July. P.

INTRODUCTION TO THE STUDY OF PLANTS

I

THE DIFFERENT PARTS OF A PLANT.

1. The three chief organs of the plant.—Let us take two very common plants in flower, the Buttercup, found on most banks or roadsides (Fig. A) and the Cowslip, either represented by the forms known as Polyanthus and grown in most gardens in the spring, or by the wild plant that we find in the meadows or the woods (Fig. B). Dig up a whole plant in

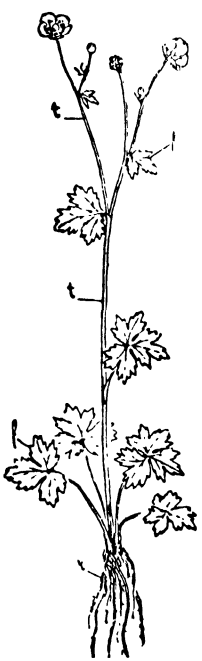


Fig. A.—Buttercup : the whole plant.

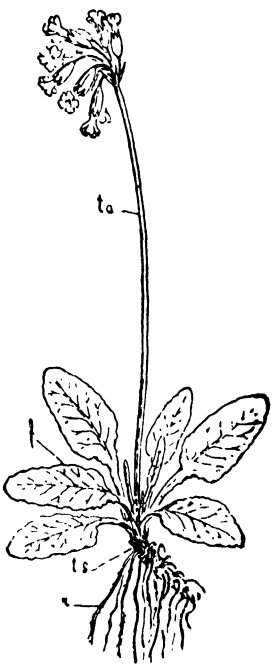


Fig. B.—Cowslip : the whole plant.

each case, and remove the earth which would otherwise prevent a thorough examination of the underground parts.

Taking the Buttercup (Fig. A) first, we see at its base some elongated organs *r* without any leaves on them. These are the *roots*. Above these another elongated organ *t* rises upwards above ground and bears leaves

this is a *stem*. The *leaves* are the flat green structures *f* which are joined to the stem by their bases. The leaf differs from a stem or a root in that it has obviously a right and a left margin, and an upper and an under surface, whilst a stem or a root if turned round and round presents always the same appearance with no right or left margin, no upper or under surface. The stem (*t*, Fig. A) gives off several secondary stems or branches which end in flowers.

If we now examine the Cowslip (Fig. B), we can distinguish, as in the Buttercup, roots *r*, and a stem *ts*, to which a number of leaves *f* are attached below the level of the soil. The main flower stalk *ta* rises erect above the ground to bear the flowers.

We have thus defined the three organs of the plant:—

1. The *root* which does not bear leaves, commonly takes a downward direction, and can continue to grow in length for a very long time.
2. The *stem* which bears the leaves, commonly grows upwards, and can also continue its growth for a long time.
3. The *leaf* which is attached to the stem, has a right and a left margin, and an upper and under surface. The elongation of the leaf usually comes to an end rather soon, directly it has acquired its final shape.

What, in most cases, are the chief functions of these three organs?

The root takes in water charged with mineral substances present in the soil. This absorption takes place throngh numerous little hairs which cover its surface a little above its tip. Every one knows that if the roots of a plant are kept without water, the plant will generally soon die.

The green leaf also serves to nourish the plant. The source of its food material is the surrounding air and to perform its function, it is necessary that the leaf shall be in the light. It is well known that if a plant is put in a dark cupboard, it will soon die, even if the roots are watered.

The function of the stem is to serve as a means of communication between the leaves and the roots. It is through the stem that the liquid taken in by the roots is conveyed to the leaves, and that the food of the plant is distributed to all its parts.

2. The flower.—The flower is made up of a certain number of small leaves of peculiar shapes, and gathered close together at the end of a branch. By examining the flower of the Buttercup, we can easily see what are the various organs that make up this important part of the plant.



Fig. C.—Buttercup: flower cut vertically through the middle.

Outside we find five little green leaves; these are the *sepals* (*s*, Fig. C; one of them is shown in Fig. D). The sepals collectively form the outermost envelope of the flower, known as the *calyx*.

Inside these five sepals we find five other leaves, which in the Buttercup are yellow. These are the *petals* (*p*, Fig. C; one is shown in Fig. E). Collectively the petals form the inner part of the flower, known as the *corolla*.

If we remove the two floral envelopes by taking off all the sepals and all the petals, we shall see a number of threads ending in little swollen oval parts. These are the *stamens* (E, Fig. C). Each stamen is made up of a slender portion, called the *filament* (*f*, Fig. F) which is surmounted by the



Fig. D. — Buttercup: a detached sepal.



Fig. E. — Buttercup: a detached petal.



Fig. F. — Buttercup: a detached stamen.



Fig. G.—Buttercup: a detached carpel cut vertically.

swollen part known as the *anther* (*a*, Fig. F). The anther is the essential portion of the stamen; when ripe, it opens to liberate a fine powder known as *pollen*, which, as we shall see later, is indispensable in bringing about the formation of the seed.

Lastly, if we remove the stamens carefully, we shall find the *carpels* (*c*, Fig. C) grouped at the centre of the flower. These are the little green structures which collectively make up the *pistil*. Each carpel (Fig. C) has at its base a chamber, called the *ovary* (*o*, Fig. G), enclosing a little white oval body known as the *ovule* (*ov*, Fig. G): the ovary is surmounted by an elongated portion (*s*, Fig. G), the *style*, terminating in a sticky or viscid part called the *stigma* (*sg*). It is this viscid stigma which retains on its surface the pollen that escapes from the stamens; it is only after the pollen has reached the stigma that the ovule can change into a seed and the ovary into a fruit.

Summary.—The flower is generally made up of two principal parts, the pistil and the stamens, both essential for the formation of the fruit; usually the flower also has accessory parts (the calyx and corolla), which protect the pistil and stamens during their development and often attract insects.

If we now take the flower of the Cowslip (Fig. H), we shall find the various parts we have just made out in the flower of the Buttercup, though with different shapes.

The calyx is seen on the outside; it is inflated and has its five sepals (*s*, Fig. H) united to one another except at the top, so as to form a sort of tube ending in five teeth (Fig. I). Inside this is the coloured corolla Fig. J), the petals of which, even more united to one another than are the sepals of the calyx, form a long tube spreading out at the top into five divisions corresponding to the five petals (*p*, Fig. H). If we cut the flower lengthways through the middle (Fig. H), we can see that the stamens *e* are in this case joined by their filaments to the corolla, almost throughout the whole of their length.

Lastly, in the centre of the flower is the pistil composed of carpels completely united together forming a single ovary with numerous ovules

(*o*, Fig. H), surmounted by a single elongated style terminating in one slightly swollen viscid stigma.

3. The fruit and the seeds.—The chief function of the flower is to lead to the formation of the seed. When pollen has been transferred to



Fig. H.—Cowslip: Flower cut longitudinally through the middle.



Fig. I.—Cowslip: Calyx detached.

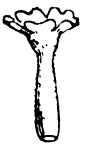


Fig. J.—Cowslip: Corolla detached.

the stigma, the various parts of the flower generally wither, with the exception of the ovary which starts further growth. Gradually the ovary changes into the *fruit*; and meanwhile the ovules inside it also enlarge and become the *seeds* enclosed in the fruit.

In the Buttercup, where each carpel is distinct and only encloses a single ovule, the pistil produces as many fruits as there are carpels; each fruit is made up of a single carpel which has enlarged, become dry (A,



Fig. K.—Buttercup: collection of fruits.



Fig. L.—Cowslip: fruit.

Fig. K), and encloses a seed. Each of the fruits (ripened carpels) remains unopened and falls to the ground with its seed inside it.

In the Cowslip, where the carpels are joined and the ovary contains a number of ovules, the pistil produces a single fruit enclosing a number of seeds. This fruit opens at the top by teeth and so allows the seeds to escape from it (Fig. L).

A single seed falling to the ground can develop and sprout, producing a primary root, a primary stem and leaves, thus forming a young plant resembling in all essential particulars the plant that produced it.

II

THE GROUPING OF PLANTS

4. Classification of plants : Species, Variety.—Distinct plants, like animals, have received different names and, to facilitate their study, they have been arranged in groups. The arrangement of the whole of these groups to show their relation one to another is known as the *classification of plants.*

Plants resembling one another very much are called by the same name and said to belong to the same *species.*

It was stated above that, on germination, the seeds of a plant develop into new plants similar to the one which produced them; from this it follows that a plant and its seedlings belong always to the same species.

The *species* may quite broadly be said to consist of all those plants which resemble one another more than they resemble other plants. Thus, two Sweet Briar bushes resemble each other much more than they resemble the Bramble or even the Dog Rose; the two Sweet Briar bushes are said to belong to *the same species.*

The characters common to all the plants of the same species are included in a description of this species. A comparison of these descriptions, as given in the keys of this Flora, leads to the determination of the species of a particular plant.

Differences less important than those separating two species, determine the *varieties* of a species. Thus amongst the Sweet Briars there are some with the leaves only faintly aromatic and the styles almost glabrous, and these plants are said to belong to the *variety* "*micrantha*" of the species "*rubiginosa*" (p. 58).

5. Genus, Natural Order, Class.—The number of species is very great and, for the convenience of classification, those which show considerable resemblance one to another are united into one group called a *genus.*

Thus the Sweet Briar, the Dog Rose, and the Burnet Rose belong to *the same genus, Rose.* They show more characteristics common to all of them than common to them and the Bramble or Sloe.

The generic name is substantive, while the specific name is adjectival. Both are usually used in naming a plant, and, in English, the specific name is placed before the generic. To distinguish certain species of the genus *Rose*, they are spoken of as the *Burnet Rose*, the *Downy-leaved Rose*, the *Trailing Rose*, and the *Dog Rose.*

It is necessary to make use of some such system of nomenclature to indicate clearly a particular plant as the common names often vary throughout the country, and also as many plants have no common names.

Botanists by preference use the Latin language for designating genera and species in order to facilitate international scientific intercourse. The genus Rose is called *Rosa* and its species named above in English are in descriptive works named *Rosa spinosissima, Rosa tomentosa, Rosa arvensis, Rosa canina*; the generic name is placed first in Latin.

The number of genera also is very great, and those which most resemble one another are brought together in large groups, each one known as a *natural order*.

For example, the genera *Prunus*, *Rubus*, *Rosa*, *Fragaria* comprise plants presenting a certain number of resemblances in the shape and structure of their flowers, fruits and leaves; they therefore belong to the same natural order *Rosaceæ*.

In the same way, the natural orders are united into higher groups known as *classes*, e.g. dicotyledons.

6. The principal groups of plants. — The plants so far named all have flowers and reproduce themselves by seeds; plants having these characters belong to the great *division* of *Flowering Plants* or *Phanerogams*.

There is another great division comprising the plants which never have flowers and produce no seed; this *division* is that of the *Flowerless Plants* or *Cryptogams* and to it belong the Ferns, Mosses, Fungi and Algæ. The flowerless plants usually form small bodies, called *spores*, scarcely visible if at all to the naked eye; the spores germinate and give rise to new plants.

Two *sub-divisions* are recognised in the Phanerogams; they are the *Angiosperms* and the *Gymnosperms*. The latter have naked seeds, and include the Pine, Fir, Yew, and Juniper.

The Angiosperms have their seeds enclosed in ovaries, and form by far the greater of the two sub-divisions. They are grouped in two *classes* : —

1, The *Monocotyledons* or plants with one cotyledon, so called because the seed contains only one food-leaf or cotyledon.

2. The *Dicotyledons* or plants with two or more cotyledons in their seeds.

The Monocotyledons are generally recognised by the parallel venation of their leaves, and by the similar parts of their flowers being arranged in threes; e.g. Tulip, Lily of the Valley, Wheat.

The Dicotyledons are easily known by the netted venation of their leaves, and by the similar parts of their flowers being arranged in fours or fives; e.g. Wallflower, Strawberry, Harebell.

The two great divisions, Phanerogams and Cryptogams are analysed in the following table:—

- **Flowering plants: PHANEROGAMS.**
  - Ovules enclosed in an ovary: **ANGIOSPERMS.**
    - Seed with 2 or more cotyledons; leaves net-veined; similar parts of flower in 4's or 5's. — **Dicotyledons** e.g. Wallflower, Strawberry, Harebell.
    - Seed with 1 cotyledon; leaves parallel-veined; similar parts of flowers in 3's or 6's. — **Monocotyledons** e.g. Tulip, Lily of the Valley, Wheat.
  - Ovules naked, i.e. not enclosed in an ovary..... — **GYMNOSPERMS** e.g. Pine, Fir, Yew.

Flowerless plants: **CRYPTOGAMS.**	Plants with true roots		**PTERIDOPHYTES** e.g. Ferns, Horse-tails.
	Plants not having true roots	Stem and leaf-like parts usually present	**BRYOPHYTES** e.g. Mosses, Liver-worts.
		Stem and leaf-like parts not distinct	**THALLOPHYTES** e.g. Algæ, Fungi, Lichens.

A glossary of the simple descriptive terms used in this Flora will be found on the following pages. The beginner should look through this glossary in the initial stages of his study, and should consult it whenever the need arises during the determination of a plant.

GLOSSARY

OF TERMS USED IN DESCRIBING PLANTS.

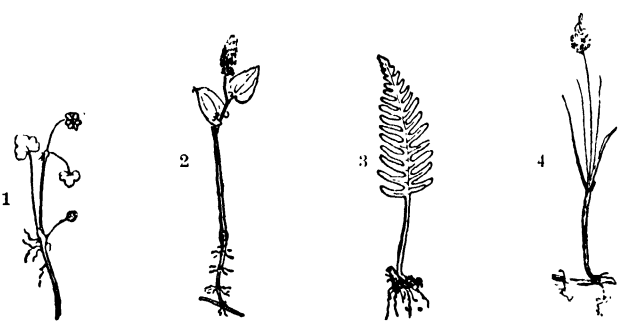
A

Aborted.—An aborted organ is one that is not developed in one plant to the extent that it is in analogous plants.

Adpressed (fruits).—Erect, pressed closed to stem or other part of plant.

Adventitious (roots).—Roots springing from a stem whether aerial, underground, or in water.

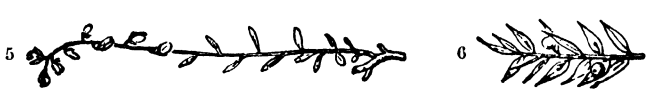
EXAMPLES: 1, adventitious roots on an aquatic stem; 2, 3, 4, adventitious roots on underground stems.



Aerial.—Developed above the soil, such as aerial stems so called in contradistinction to underground stems developed below the soil.

Alternate.—Attached to stem singly at different levels or nodes.

EXAMPLES: 5, 6, stems bearing respectively alternate leaves and branches.



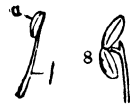
Amplexicaul.—Base of leaf clasping the stem.

EXAMPLES: Fig. G, p. 8; Fig. OL, p. 104.

Androecium.—Collective name for the stamens.

Annual (indicated by the abbreviation A.).—Plant living not more than one season; usually recognised by its slender roots and absence of underground stem.

Anther.—Part of the stamen enlarged and containing the pollen (*a*, Fig. 7).



The anther is usually divided into two parts called *anther-lobes*.

EXAMPLES: 7, stamen with anther-lobes *a* parallel and borne on a filament *f*; 8 stamen with anther-lobes diverging.

Auricles.—Lateral lobes at base of leaf-blade.

Awn.—Stiff hair or bristle attached to the apex or back of an organ.

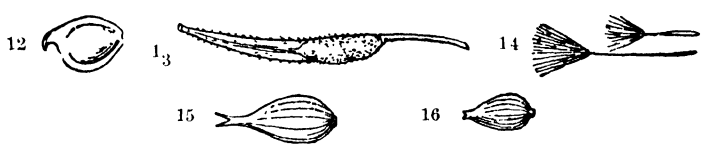
EXAMPLES: 9, 10, terminal awns; 11, dorsal awn.



B

Beak.—Prolongation, more or less narrow, at apex of a fruit.

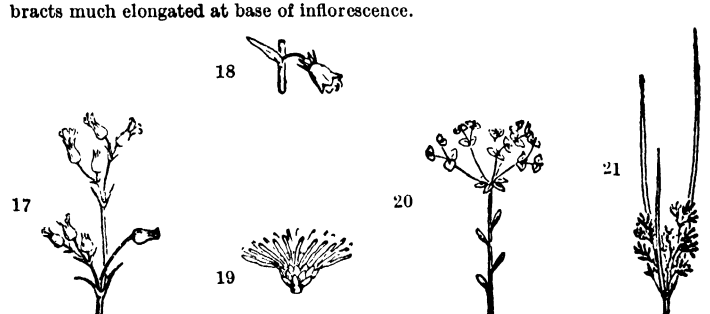
EXAMPLES: 12, beak curved; 13, beak flattened; 14, beak long and terminated by a pappus; 15, 16, beak 2-toothed.



Biennial (indicated by the abbreviation B.).—Plant living during two successive seasons; usually produces a short stem, leaves and roots during first season, flowers and fruits during second season, and then dies.

Bract.—Leaf borne near the flowers, usually at base of pedicel.

EXAMPLES: 17, bracts opposite; 18, bract at base of pedicel; 19, bracts forming an involucre below capitulum; 20, bracts forming an involucre below umbel; 21 bracts much elongated at base of inflorescence.



Bulb.—Swollen part formed most commonly by base of stem (Fig. G) surrounded by thick scale-leaves or leaf-bases.

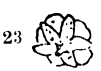


C

Calyx.—Outermost envelope of flower made up of particular leaves called *sepals* either separate, or more or less joined together. The calyx may also be more or less united to other parts of the flower. When only one envelope is present in the flower, it is still called a calyx. The sepals are generally green, but sometimes are coloured and resemble petals.

EXAMPLES: 22, sepals separate below a corolla; 23, sepals joined throughout the lower part of their length; 24, sepals joined except at apex; 25, calyx detached, sepals joined except at apex; 26, calyx resembling corolla, the two envelopes together termed a perianth.











Calyx-tube.—Tube formed by united sepals.

EXAMPLES: 27, calyx tubular at base; 28, calyx split open and laid flat.





Capitulum or **Head of flowers.**—Inflorescence with all its flowers sessile (*f*, Fig. A), inserted side by side on a *common receptacle* (*r*, Fig. A) formed by the enlarged apex of the flowering stem. The collection of flowers or florets is surrounded by whorls of bracts called the *involucre of the capitulum* (*i*, Fig. A). Each floret may be accompanied by a tiny scale-like bract usually called a *scale*.



EXAMPLES: 29, 30, capitula; 31, head of flowers without involucre; 32, vertical section through capitulum showing the convex common receptacle.



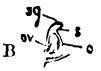






Carpel.—The pistil, in the centre of the flower, is composed of one or more carpels. The carpels are much modified leaves.

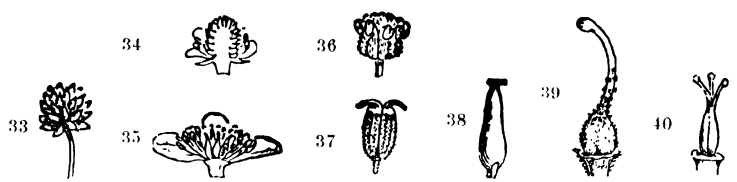
The simplest case to understand is that in which the carpels are free from one another, i.e. not joined. It is then seen that each carpel is usually made up of: (1) An enlarged part or *ovary* (*o*, Fig. B) at the base; enclosing one or more small white rounded bodies named *ovules* (*ov* Fig. B); (2) a more slender part above the ovary, known as the *style* (*s*, Fig. B); (3) a small viscous mass at the apex of the style, known as the *stigma* (*sg*, Fig. B). The stigma retains the dust-like pollen liberated from the stamens; the pollen must necessarily be deposited on the stigma if the ovules are to ripen into seeds.



In other cases, the carpels are united by their ovaries, or by their ovaries and styles, and the flower then has one compound ovary and several styles, or at least several stigmas.

The carpels are sometimes so completely united as to form a single compound ovary, style, and stigma.

EXAMPLES: 33, pistil of many free carpels collected in a head; 34, vertical section through flower showing a pistil of many free carpels on a long receptacle; 35, vertical section of flower showing a pistil of several free carpels; 36, pistil of several carpels arranged circularly; 37, 38, pistil of two carpels having ovaries united and styles free; 39, pistil of two carpels completely united into a single ovary, style, and stigma; 40, pistil of three carpels united only by their ovaries.



Cauline (leaves).—On an aerial stem.

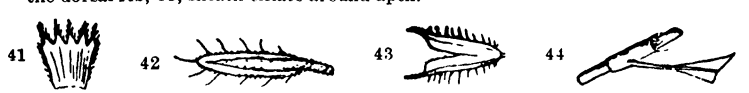
Chambers.—The cells containing the pollen in the anther-lobes; the cells containing the ovules in an ovary.

Cilia.—Hairs in a row bordering any part of a plant.

EXAMPLES: See *Ciliate*.

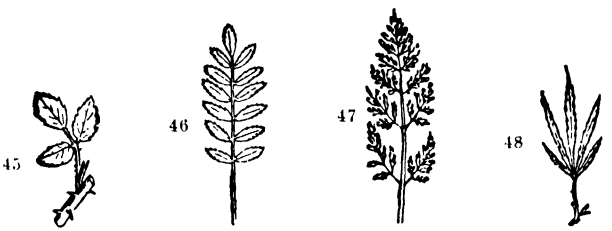
Ciliate.—Bearing cilia.

EXAMPLES: 41, calyx laid open, teeth ciliate; 42, leaf ciliate; 43, scales ciliate along the dorsal rib; 44, sheath ciliate around apex.



Compound (leaf).—Leaf-blade divided to midrib into separate parts called *leaflets*. [P.T.O.]

EXAMPLES: 45, leaf trifoliate, i.e. leaflets three (ternate); 46, leaflets in two rows (pinnate), and one leaflet terminal; 47, leaf twice divided (bi-pinnate); 48, leaf with leaflets arising at one point (digitate).



Connate.—Two similar organs united round the stem.

EXAMPLES: Fig. A, p. 65; Fig. C, p. 83.

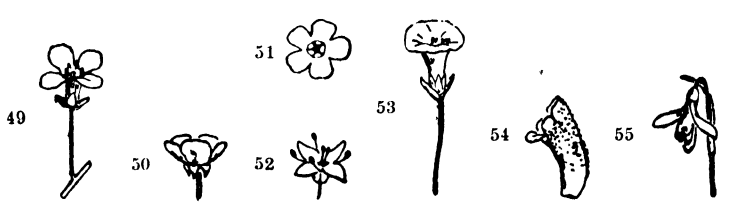
Cordate (leaf).—Heart-shaped.

EXAMPLES: Fig. A, p. 11; Fig. VP, p. 22.

Corm.—Solid underground stem shortened vertically as in the crocus.

Corolla.—When a flower has two different envelopes, the inner is the *corolla*, and the outer the *calyx*. The corolla is composed of a number of particular leaves called *petals* which are either quite free from one another, or more or less joined together. The corolla may be united to other parts of the flower throughout a variable part of its length. It is usually of a colour and texture other than those of the calyx, or may resemble the calyx except in its relative position.

EXAMPLES: 49, 50, petals separate; 51, 52, petals united at the base; 53, 54, petals united throughout the whole or greater part of their length; 55, petals resembling the sepals but recognisable from their position.



Corolla-tube.—Tube formed by united petals.

EXAMPLES: 56, corolla tubular at base; 57, corolla entirely tubular.



Crenate.—Margin with rounded teeth.

EXAMPLES: 58, margin coarsely crenate; 59, margin finely crenate.

58 

59 

D

Deciduous.—Falling early or in the autumn.

Decumbent (stem).—Prostrate but turning upwards at apex.

Decurrent (leaf).—Limb of leaf prolonged down the stem.

EXAMPLE: Fig. 80, p. 120.

Dehiscent.—Opening to liberate pollen or seeds.

Dentate.—Margin toothed.

EXAMPLES: Figs. L, O, p. 83.

Didynamous.—Stamens 2 long, 2 short.

EXAMPLES: Fig. CL, p. 134; Fig. I, p. 135.

Dimorphic.—Anthers and stigmas at two different levels in flowers of the same species.

Dicœcious.—Staminate and pistillate flowers borne on different plants.

E

Entire.—Margin not lobed or toothed.

EXAMPLE: 60, leaf entire.



60

Envelope (Floral).— A general term for calyx or corolla.

Epicalyx.—Supplementary sepals present below ordinary sepals in some flowers, and forming a kind of outer calyx.

EXAMPLE: 61, epicalyx, calyx, and corolla of flower; 62, epicalyx and calyx, petals removed. The smallest structures form the epicalyx.

61 

62 

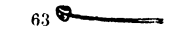
Escape.—See *Garden Escape.*

Extrorse.—Anthers opening and shedding pollen away from stigmas.

F

Filament.—Part of stamen bearing the anther.

EXAMPLE: 63, stamen with a long filament bearing the anther.

63 

Flower.—Collection of particular leaves terminating a stalk. The essential organs of the flower are the stamens and pistil. The function of the flower is the formation of fruit and seed (see *Fruit*). The stamens and pistil are usually protected during their development by one or more envelopes (see *Calyx* and *Corolla*).

Flowering season.—Period during which plant is in flower.

Fronds.—The leaves of Ferns.

EXAMPLES: Figs. V, D, p. 226.

Fruit.—When the flower withers, if pollen has been transferred from the anthers to the stigma, the ovary ripens into a *fruit* containing seeds. The ripe fruit may dehisce and so liberate the seeds, or may become detached as a whole with the seed or seeds inside it. When the fruit is dry, remains closed, and contains only one seed, it is easy to confuse it with a seed; but it can generally be recognised by the scar, or remains of the style or styles at its apex.

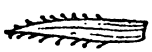
G

Garden escape.—Uncultivated plant growing from seed of a cultivated one.

Glabrous.—Smooth; not hairy.

Glandular (hairs).—Hairs with a rounded mass, often viscid or scented, at their apex or base. An organ is usually termed glandular when it bears glandular hairs, or when its surface is covered with small rounded masses.

EXAMPLE: 64, sepal fringed with glandular hairs; 65, petal with glandular surface.

64 

65 

Glaucous.—Bluish or whitish green due to a waxy bloom on the surface, as on a cabbage leaf, a plum, a grape.

Glume.—See *Gramineæ*, p. 198.

Glumella.—See *Gramineæ*, p. 198.

Grooved.—Marked by longitudinal furrows.

EXAMPLE: F, portion of furrowed stem.



F

Gynæcium.—The pistil.

H

Hastate (leaf).—Auricles of leaf pointing more or less horizontally.

EXAMPLE: Fig. M, p. 182.

Hermaphrodite (flower).—Stamens and pistil present in same flower, i.e. flower perfect.

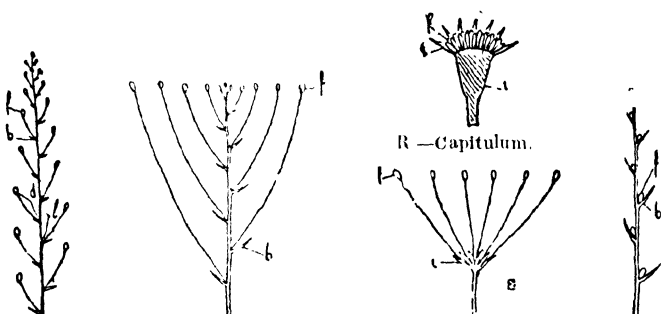
Hispid.—Covered with rather stiff hairs

Hybrid.—Plant developed from a seed produced in a pistil of one species which has received the pollen of another species. Hybrids usually exhibit characters intermediate between those of the two species from which they are derived, and their fruits are often malformed.

I

Indehiscent (fruit).—Not opening to liberate seeds.

Inflorescence.—A flowering branch bearing a single flower or a collection of flowers, sometimes separated from one another only by bracts. The chief simple inflorescences are:—(1) The *raceme*, in which the pedi-

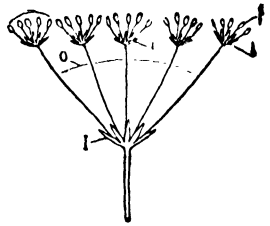


G.—Raceme. C.—Corymb. R.—Capitulum. O.—Umbel. E.—Spike.

(*f*, flower; *b*, bract; *d*, length of pedicel; *l*, distance between the pedicels; *i*, involucre; *r*, common receptacle.)

cels (*d*, Fig. G) are about equal in length, and also equal to the length of the stalk *l* separating two successive pedicels; the *corymb* (Fig. C) is a

raceme in which the lower pedicels are longer than the upper and all flowers are brought to one level.—(2) The umbel (Fig. O), an inflorescence in which the pedicels all arise at one level, and are of equal length; they are usually surrounded at their base by an involucre of bracts (*i*, Fig. O).— (3) The *spike* with its flowers sessile (*f*, fig. E) and at different levels.— (4) The capitulum with its flowers sessile and attached side by side (Fig. R).



M.—Compound umbel.

An inflorescence can be compound, i.e. consist of a collection of several simple inflorescences. Flowers may thus be grouped in an umbel of umbels or compound umbel (Fig. M), in a raceme of racemes or compound raceme, in a corymb of capitula, a raceme of spikes, etc.

Introrse.—Anthers opening and shedding pollen towards stigmas.

Involucel.—Collection of bracts at base of an umbellule, or partial umbel, in a compound umbel (*i*, Fig. M, above).

EXAMPLE: See *Involucre*, Figs. 69, 70.

Involucre.—Whorl or whorls of bracts at base of a capitulum or an umbel, or below one or several flowers.

EXAMPLES: 66, 67, capitula each surrounded by involucre; 68, umbel with involucre at base; 69, compound umbel with involucre at its base, and involucel at base of partial umbel or umbellule (all rays but one have been cut short); 70, compound umbel with involucre and involucels; 71, 72, involucre of three leaf-like bracts below a single flower.



Involute.—Rolled towards upper surface.

Irregular (flower).—Flower in which a right and a left half can be distinguished, i.e. symmetrical in one plane, or, flower not exhibiting any symmetry.

EXAMPLES: Fig. 73, p. 251; Figs. M, SU, p. 126.

K

Keel.—The two more or less united anterior petals, which together resemble the keel of a boat (*cc*, Fig. 73), in the flowers of the N.O. Leguminosæ.



73

L

Labellum.—Petal resembling a lip and so differing considerably from the other petals of an Orchid.

EXAMPLES: 74, Orchid flower showing labellum *d*; 75, Orchid flower showing labellum *l*.

74 

75 

Lamina.—Leaf-blade.

Lanceolate (leaf).—About three times as long as broad, and tapering towards each end.

EXAMPLE: Fig. LA, p. 142.

Leaf.—One of the three primary organs of a plant, always borne on a stem, and usually with a bud or branch in its axil. The leaf generally differs from the stem and root in having a right and a left side and an upper and a lower surface. (See *Compound leaf.*)

EXAMPLE: 76, leaf having a blade or lamina and a petiole, and bearing a small bud in its axil.


76

Leaflets.—The separate parts of a compound leaf-blade. (See *Compound Leaf.*)

Ligulate (flowers).—Those Compositæ flowers with a flattened or strap-shaped corolla (Fig. 77). Before they are fully developed, the ligulate florets can easily be confused with tubular florets.

Lobes (Leaf).—More or less separate parts of the leaf-blade.


77

M

Median (leaves).—Leaves borne on the middle part of the stem.

Membranous.—Thin, having a consistence somewhat resembling parchment.

Monœcious.—Staminate and pistillate flowers borne on the same plant.

N

Naturalised (plant).—Plant that continues to reproduce itself after its introduction into a country through the influence of man.

Nectary.—Structure se creting and exuding little drops of sweet liquid, i.e. nectar.

EXAMPLES: 78, nectary covered by a scale *e* at the base of a petal; 79, nectaries *g* at the base of a leaf-blade; 80, nectary at the base of a pistil.


78


79


80

Node.—Part of stem to which base of leaf is attached. If the leaf sheathes the stem, as in grasses, the node is at the base of the sheath.

O

Obtuse.—Apex more or less rounded, blunt.

EXAMPLES: 81, 82, leaves obtuse; 83 scales obtuse.


81


82


83

Opposite (leaves).—Leaves borne in pairs at the same node.

EXAMPLE: 84, leaves opposite.


84

Ovary.—That part of a pistil or of one carpel of a pistil which encloses the ovule or ovules. (See *Carpel.*)

Ovules.—Small rounded or oval bodies, usually white, attached to the margins of the carpel and enclosed in the ovary. After the flowering period, the ovules ripen into seeds.

P

Papilionaceous.—Corolla resembling a butterfly. (See *Wings.*)

Pappus.—Tuft of hairs or ring of scales borne on a fruit.

EXAMPLES: Figs. P, C, p. 92.

Pectinate.—Resembling a comb.

EXAMPLE: Fig. AR, p. 131.

Pedicel.—Stalk terminating in a flower, and commonly called the flower-stalk. For example, the flower *f* (Fig. P) is borne on a pedicel *p* in the axil of the bract *b* on the peduncle *t*.



Pedicellate.—Having a distinct pedicel.

Peduncle.—The main flower-stalk, i.e. that part of the stem which bears the pedicels (*t*, Fig. P, above).

Peltate (leaf).—One in which the stalk is attached to the under surface of the blade.

EXAMPLE: Fig. H, p. 71.

Perennial (indicated by the abbreviation P.).—Plant living more than two seasons. Trees, shrubs, and herbaceous plants with well-developed underground stems are perennials.

Perfect (flower).—Having both stamens and pistil.

Perfoliate (leaf).—Blade of leaf completely surrounds stem.

EXAMPLE: Fig. R, p. 76.

Perianth.—Term usually used when calyx and corolla are similar in colour and texture.

Persistent.—Existence prolonged beyond that of analogous organs in the majority of plants. Thus, persistent leaves are those that do not fall in the autumn.

Petal.—See *Corolla.*

Petiole.—Relatively narrow part below leaf-blade, and commonly called leaf-stalk.

Petiolate.—Having a petiole.

Pinnate (leaf).—Compound leaf with leaflets in rows on either side of midrib. (See *Compound Leaf.*)

Pistil (*Gynæcium*).—That part of a flower formed by the carpels whether free from or united to one another, and occupying the centre of the flower.

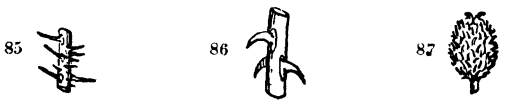
EXAMPLES: See *Carpel.*

Pistillate (flower).—Flower having a pistil but no stamens.

Pollen.—Dust-like grains formed in the anther of a stamen and liberated when anther is ripe. The pollen must be transferred to the stigmas of the pistil before the latter can ripen into a fruit and its ovules into seeds.

Prickle.—Sharply pointed structures borne irregularly on the surface of a stem or other organ.

EXAMPLES: 85, 86, prickles on stems; 87, prickles on a fruit.



R

Raceme.—A *simple raceme* is an inflorescence in which the flowers are distinctly stalked and borne one above the other on a main flower-stalk or peduncle. A *compound raceme* is an inflorescence of groups of flowers arranged in a raceme.

EXAMPLES: 88, simple raceme; 89, compound raceme.



Radical (leaves).—Borne on stem at or slightly below the ground level.

EXAMPLES: Fig. B, p. 235; Figs. AM, T, p. 92.

Receptacle.—The upper part of the pedicel or peduncle on which the various parts of the flower are inserted.

EXAMPLES: 90, 91, vertical sections of flowers showing the parts of flower fixed on a flat receptacle (90) and on an elongated receptacle (91); 92, vertical section of capitulum to show the common receptacle on which the numerous florets are inserted; 93, capitulum with all its florets removed and the bracts of the involucre cut to show the surface of the common receptacle.



Revolute.—Rolled towards under surface.

Root.—One of the three primary organs of a plant. It is distinguished from a stem in bearing neither leaves, nor scales, nor the scars of fallen leaves. It is distinguished from a leaf in having neither a right nor a left side, nor an upper or a lower surface.

Rootlet.—Branch of a root.

Rosette (Leaves in a).—A number of leaves attached very close together on the stem and spreading radially outwards.

EXAMPLE: 94, rosette of leaves.



94

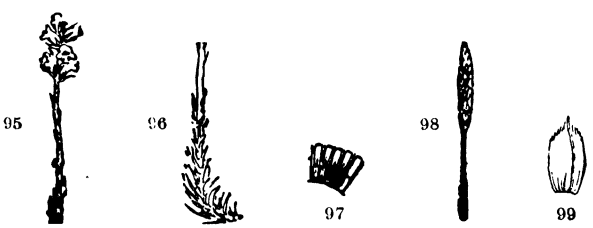
S

Sagittate (leaf).—Auricles of leaf pointing downwards.

EXAMPLE: Fig. A, p. 148.

Scales.—Leaves considerably reduced in size and not performing the usual functions of a leaf; chaffy structures occurring on different parts of a plant; membranous bracts in many inflorescences.

EXAMPLES: 95, plant with all its leaves reduced to scales; 96, chaffy scales on lower part of a fern frond; 97, scales between flowers of a capitulum; 98, scales on a spike; 99, a detached scale.



95 96 97 98 99

Seed.—As the ovary ripens to form the fruit, the ovules in the ovary ripen to form the seeds; thus seeds are enclosed in a fruit except in the *Gymnosperms* (see p. 240). The seed consists of one or more envelopes (*seed coats*) enclosing a *little plant or embryo* which is sometimes imbedded in food (*endosperm*) stored for its future use. When the seed germinates, the embryo grows and produces a plant similar to the parent plants.

Sepal.—See *Calyx.*

Sessile.—Without a stalk.

Sheath.—The expanded base of a leaf more or less surrounding or *sheathing* the stem throughout a variable length.

EXAMPLES: Fig. SL, p. 76; Fig. L, p. 190.

Simple (leaf).—One with its blade not separated into leaflets.

EXAMPLE: Fig. 76, p. 251.

Sinuate (leaf).—Margin bluntly and irregularly lobed.

EXAMPLES: Fig. G, p. 8; Fig. Q, p. 158.

Sorus.—Cluster of sporangia.

Spike.—A *simple spike* is an inflorescence having all its flowers sessile and one above the other. A *compound spike* has groups of flowers arranged in a spike.

EXAMPLES: 100, simple spike; 101, spike of spikes or compound spike.

100  101 

Spikelet.—See *Gramineæ*, p. 198.

Spine.—Leaf, stipule, or part of leaf modified into an elongated and pointed structure.

EXAMPLE: Fig. B, p. XXI.

Sporangia.—Small sacs enclosing the spores in certain cryptogams. (See *Polypodiaceæ*, p. 224.)

Spreading.—Diverging from the point of attachment.

Spur.—The tubular or horn-shaped base of some sepals and petals.

EXAMPLES: 102, 103, 104, spurred flowers (*e*, Fig. 104).

102  103  104 

Stamens (*Andrœcium*).—Organs forming the *pollen*, the coloured dust which must be deposited on the stigmas of the pistil if the ovules are to become seeds. A stamen is generally composed of a stalk or *filament* (*f*, Fig. E) terminated by an enlarged part or *anther* (*a*, Fig. E). The anther contains the pollen and, when ripe, opens to liberate it. The stamens are often free or detached quite to their base, and inserted on the receptacle as are the sepals, petals and carpels. Often also they are united to other parts of the flower, either calyx or corolla. Flowers which have stamens but no pistil are called *staminate flowers*.

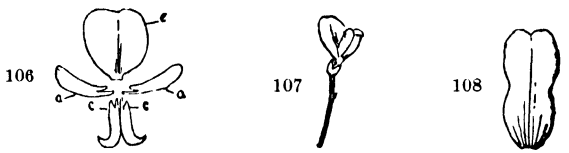



105

EXAMPLE: 105; flower with four stamens around the style.

Standard.—The upper or posterior petal in a papilionaceous flower (N.O. Leguminosæ). The standard (*e*, Fig. 106) overlaps the petals (*wings*) to the right and left (*a*, *a*, Fig. 106) which in turn overlap the two more or less united lower petals or *keel* (*c*, *c*, Fig. 106).

EXAMPLES: 106, detached petals of a papilionaceous flower; 107, papilionaceous flower showing the standard to the left; 108, standard isolated.



Stem.—One of the three primary organs of a plant. It is distinguished from a root by its leaves or leaf-scars, and from a leaf by the absence of right and left sides, and upper and lower surfaces. The stem may be *aerial*, *underground*, or *aquatic*.

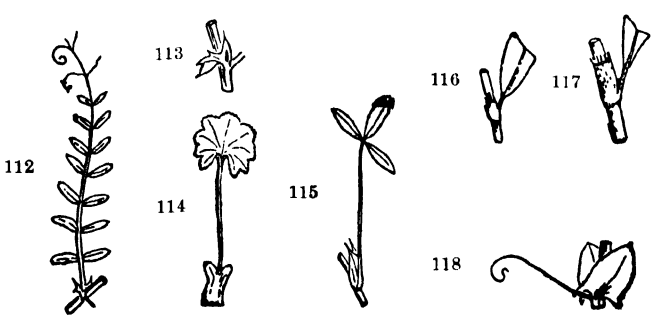
Stigma.—The more or less viscid apex of a carpel, or of a pistil when the carpels are united, often borne on an elongated structure or *style*. The stigma retains on its surface the pollen transferred from the stamens. (See *Pistil.*)

EXAMPLES: 109, pistil having two styles each terminated by a swollen stigma; 110, two stigmas united at base (stigma bifid); 111, pistil with radiating stigmas on a sort of disc.



Stipules.—Parts of a leaf on the right and left of the base of the petiole just where the latter is attached to the stem. Many leaves have no stipules.

EXAMPLES: 112, compound leaf with pair of stipules at its base; 113, one of these two stipules; 114, 115, leaf with pair of stipules united to the petiole; 116, base of a leaf with toothed stipules; 117, base of a leaf with united sheathing stipules; 118, leaf with well-developed leaf-like stipules and a blade modified as a tendril.



Striate.—Slightly grooved longitudinally.

EXAMPLE: 119, striated fruit.



119

Style.—The more or less elongated structure bearing the stigma of a carpel. In some flowers the style is very short or not developed.

EXAMPLES: 120, vertical section of flower showing the style in the middle; 121, flower showing style surrounded by four stamens; 122, vertical section of flower showing ovary surmounted by two styles; 123, fruit with two persistent styles 124, flower showing ovary with five short styles.



120 121 122 123 124

T

Tendril.—Elongated and sensitive parts of a stem or a leaf, responding to the stimulus of contact by twining round or attaching themselves to support, and so enabling the plant to climb.

EXAMPLE: 125, leaf with upper leaflets modified as tendrils.



125

Thorn.—Branch modified to form a sharply pointed structure.

EXAMPLE: 126, branch modified as a thorn.



126

Trimorphic.—Anthers and stigmas at three different levels in flowers of the same species.

Tuber.—Swollen part of a root or underground stem.

EXAMPLES: 127, underground stem with tubers; 128, tuberous roots.

127



128



Tubular (flowers).—Florets with a tubular corolla as in the Compositæ.

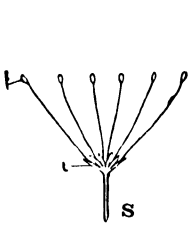
EXAMPLE: Fig. 129.

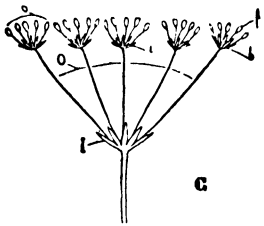
129



U

Umbel.—A *simple umbel* (Fig. S) is an inflorescence with all its flowers borne on pedicels of equal length and attached at the same level. A *compound umbel* (Fig. C) is an umbel of umbels, i.e. an umbel made up of





small umbels known as partial umbels or umbellules (*o*, Fig. C) which are themselves grouped in an umbel (O, Fig. C). The bracts form a main whorl or *involucre* at the base of the umbel (I, Fig. C), and a subsidiary whorl or *involucel* at the base of each partial umbel (*i*, Fig. C).

EXAMPLES: 130, simple umbel; 131, compound umbel; 132, compound umbe having all rays but one cut short.

130 

131 

132 

Umbellule.—See *Umbel.*

V

Valve.—One of the parts into which the wall of a fruit splits when ripe.

EXAMPLES: 133, fruit splitting into three valves and surrounded by a persistent calyx; 134, fruit splitting into four valves.

133 

134 

Veins (of the leaf).—The leaf-blade is traversed by small threads (*veins*) diminishing in thickness from the base of the leaf towards the margins and often projecting on the under surface; as a rule, they can easily be seen by transparence. The median vein is the *midrib.*

Venation.—Arrangement of veins in a leaf.

W

Whorled (leaves).—Leaves, three or more in number, borne at the same node or level on the stem; often called *verticillate.*

EXAMPLES: 135, four leaves in a whorl; 136, six leaves in a whorl.

135 

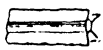
136 

Wild (plant).—A plant growing and reproducing itself naturally, i.e. not cultivated or planted.

Wing.—Thin, flat, projecting part of a plant structure.

EXAMPLES: 137, 138, 139, winged stems; 140, cross-section of a four-winged stem; 141, cross-section of a four-winged fruit; 142, cross-section of an eight-winged fruit.

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141 

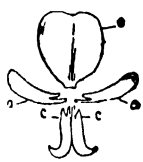
142 

Winged.—See *Wing.*

Wings.—The two lateral petals in a papilionaceous flower.

EXAMPLES: 143, papilionaceous flower showing the two petals called wings *a*, *a*; 144, detached petals of the same flower showing the wings *a*, *a*.

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ABBREVIATIONS OF NAMES OF AUTHORS

A. Br.	Alexandre Braun.
Adans.	Adanson.
Ait.	Aiton.
All.	Allioni.
Alph. DC.	Alphonse de Candolle.
Anders.	Anderson.
Andrz.	Andranz.
Ard.	Arduini.
Arn.	Arnott.
Asch.	Ascherson.
Auct.	Of various authors.
Bab.	Babington.
Balb.	Balbis.
Balf.	Balfour.
Barrl.	Barrelier.
Bart.	Bartling.
Bast.	Bastard.
Bauh.	Bauhin.
B. & de L.	Bonnier and de Layens.
Beauv.	Beauvois.
Benth.	Bentham.
Bernh.	Bernhardi.
Berg.	Bergius.
Bert.	Bertoloni.
Bess.	Besser.
Big.	Bigelow.
Bœn., Bœnning.	Bœnninghausen.
Boiss.	Boissier.
Bor.	Boreau.
Borkh.	Borkhausen.
Bréb.	de Brébisson.
Britt. & Rend.	Britten and Rendle.
Bromf.	Bromfield.
Brong.	Brongniart.
Brot.	Brotero.
Burm.	Burmann.
Camb.	Cambessèdes.
C. A. Mey.	C. A. Meyer.
Cass.	Cassini.
Cav.	Cavanilles.
C. B., C. Bauh.	C. Bauhin.
Cham.	de Chamisso.
Chaub.	Chaubard.
Clairv.	Clairville.
Coss.	Cosson.
Coss. & Germ.	Cosson and Germain.
Coult.	Coulter.
Cr.	Crantz.
Crép.	Crépin.
Curt.	Curtis.
Dal., Dalech.	Dalechamp.
DC.	De Candolle
Dcne.	Decaisne.
Del.	Delile.
Delarb.	Delarbre.
Desf.	Desfontaines.
Desp.	Desportes.
Desr.	Desrousseaux.
Desv.	Desvaux.
Dietr.	Dietrich.
Dill.	Dillenius (Dillen).
Don	David Don.
Dou.	Douglas.
Dub.	Duby.
Duch.	Duchesne.
Dumort.	Dumortier.
Dun.	Dunal.
Dur.	Durieu.
Edm. Bon.	Edmond Bonnet.
Ehrh.	Ehrhart.
Ell.	Elliot.
Endl.	Endlicher.
Engelm.	Engelmann.
Fing.	Fingerhuth.
Fisch.	Fischer.
Fl. d. Wett.	(Flora des Wetterau).
Forst.	Forster.
Frank.	Frankenius.
Fr.	Fries.
Fresen.	Fresenius.
Fuchs.	Fuchsius.
Gærtn.	J. Gærtner.
Gant.	Ganterer.
Gaud.	Gaudin.
G. G.	Grenier and Godron.
Gmel.	Gmelin.
Godr.	Godron.
Good.	Goodenough.
Gren.	Grenier.
Griseb.	Grisebach.
Guers.	Guersant.
Gunn.	Gunner.
Guss.	Gussone.
Hall.	Haller.
Hartm.	Hartmann.
Haw.	Haworth.

Herm.	Hermann.
Hoffm.	Hoffmann.
Hoffms.	Hoffmannsegg.
Hook.	W. J. Hooker.
Hook. fil.	J. D. Hooker.
Horn.	Hornemann.
Huds.	Hudson.
Jacq.	Jacquin.
Jord.	Jordan.
Ken.	Kenyon.
Kit.	Kitaibel.
Kœl.	Kœler.
Kœn.	Kœnig.
Krnck.	Kœrnicke.
Krock.	Krocker.
Kütz.	Kützing.
L.	Linnæus.
L. fil.	The younger Linnæus.
Lag.	Lagasca.
Lah.	Laharpe.
Lam.	de Lamarck.
Lap., Lapeyr.	de La Peyrouse.
Lat.	Latourette.
Lec.	Lecoq.
Ledeb.	Ledebour.
Lehm.	Lehmann.
Lej.	Lejeune.
Leonh.	Leonhardi.
Less.	Lessing.
Lestib.	Lestiboudois.
Leyss.	Leysser.
L'Hérit.	L'Héritier.
Light., Lightft.	Lightfoot.
Lindl.	Lindley.
Lob.	Lobel.
Loefl.	Loefling.
Lois.	Loiseleur.
M. & K.	Mertens and Koch.
Mart.	Martins.
M. B.	Marschall von Bieberstein.
Med.	Medicus.
Mér.	Mérat.
Mert.	Mertens.
Mey.	Meyer.
Mich.	Micheli.
Michal.	Michalet.
Michx.	Michaux.
Mik.	Mikan.
Mill.	Philip Miller.
Mirb.	de Mirbel.
Moq.	Moquin-Tandon.
Moris.	Morison.
Murr.	Murray.
Mut.	Mutel.
Neck.	Necker.
Nees.	Nees von Esenbeck.
Nestl.	Nestler.
Nutt.	Nuttall.
Nym.	Nyman.
Oth.	Otths.
Pall.	Pallas.
Parlat.	Parlatore.
P. B.	Palisot de Beauvois.
Pers.	Persoon.
Planch.	Planchon.
Poir.	Poiret.
Poit.	Poiteau.
Poit. & Turp.	Poiteau and Turpin.
Poll.	Pollich.
Pourr.	Pourret.
Rafin.	Rafinesque.
R. & P.	Ruiz and Pavon.
R. & S.	Rœmer and Schultes.
R. Br.	Robert Brown.
Rchb.	Reichenbach.
Reich.	Reichard.
Retz.	Retzius.
Reut.	Reuter.
Reyn.	Reynier.
Rich.	L. C. Richard.
Riv.	Rivinus.
Rœm.	J. J. Rœmer.
Salisb.	Salisbury.
Salzm.	Salzmann.
St.-Am.	Saint-Amans.
S. & M.	Sebastiani and Mauri.
Schk.	Schkuhr.
Schlecht.	Schlechtendal.
Schleich.	Schleicher.
Schleid.	Schleiden.
Schltz.	Schultz.
Schm.	Schmidt.
Schnizl.	Schnizlein.
Schousb.	Schousboe.
Schrad.	Schrader.
Schreb.	Schreber.
Schrk.	Schrank.
Schult.	Schultes.
Schw., Schweig.	Schweigger.
Scop.	Scopoli.
Sebast.	Sebastiani.
Ser.	Seringe.
Sibth.	Sibthorp.
Sm.	J. E. Smith.
Soland.	Solander.
Sond.	Sonder.
Soy.-Will.	Soyer-Willemet.
Spenn.	Spenner.
Spr.	Sprengel.
Stend.	Stendel.
Ster.	Stern.
Sternb.	Sternberg.
Stremp.	Strempel.
Sutt.	Sutton.
Sw.	Swartz.
Ten.	Tenore.
Thuill.	Thuillier.
Timb.	Timbal-Lagrave.
Tou.	Tourey.
Trin.	Trinius.
Turcz.	Turczaninow.
Turp.	Turpin.
Vaill.	Vaillant.
Vent.	Ventenat.
Vig.	Viguier.
Vill.	Villars.
Viv.	Viviani.

Wahlnb., Whlnb.	Wahlenberg.
Waldst.	Waldstein.
Wallm.	Wallmann.
Wallr.	Wallroth.
Walp.	Walpers.
W. & K.	Waldstein and Kitaibel.
W. & N.	Welbe and Nees.
Wats.	Watson.
Wedd.	Weddell.
Weig.	Weigel.
Wend.	Wenderoth.
Wendl.	Wendland.
Wib.	Wibel.
Wigg.	Wiggers.
Willd.	Willdenow.
Wimm.	Wimmer.
With.	Withering.

INDEX

OF THE

LATIN NAMES OF NATURAL ORDERS, GENERA, SPECIES AND VARIETIES

including etymology of genera, synonyms, properties and localities.

NOTE

Natural Orders are in **HEAVY TYPE CAPITALS.**
Genera are in **heavy type.**
Species and varieties are in ordinary type.
Synonyms are in *italics* connected by the sign = (equals); the last name is always the one under which the plant is admitted in this flora.
The sign ✠ indicates that the plant can be utilised. Its properties and the uses to which it can be put are printed in small type.
An asterisk indicates that the plant is much sought by bees for its nectar or pollen.
Localities are in *small italics.*

Eng. — England; Wa. — Wales; Sc. — Scotland; Ir. — Ireland.
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NAMES OF PLANTS

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DISTRIBUTION OF PLANTS

IN THE BRITISH ISLES

The distribution of plants is determined by the altitude and latitude of the country, by the kind of soil, the amount of rainfall and direct sunlight, and by man.

The influence of man has caused extended areas of soil to be put under cultivation, trees to be cut down, and marshes to be drained. This has been carried out to such an extent that in many districts the indigenous flora tends to disappear, and much interest is consequently attached to those areas where the vegetation is still more or less natural. Though many plants are reduced in number or have become extinct through man's influence, others have been introduced and have become naturalised in the country. Amongst them may be mentioned *Erigeron canadensis*, *Impatiens biflora*, and *Elodea canadensis*, all natives of North America. The latter plant has spread with amazing rapidity in the waterways of the British Isles. Oriental plants such as *Lycium barbarum* and *Veronica Buxbaumii* have established themselves in the hedges and fields, as also have certain southern plants as for example *Xanthium spinosum*, *Berteroa incana*, *Barkhausia setosa*, *Centaurea solstitialis*, *Vicia hybrida*.

The effect of soil on the distribution of plants is well illustrated by the floras of the sea-coast, marshes, calcareous ground, and rocky places. Altitude governs the distribution of some plants as is shown by the floras of hilly districts and mountains as compared with those of the plains. A woodland flora is distinctly different from that of the surrounding open ground; light therefore plays a part in determining what plants shall grow in a given area.

Sea-coast flora.—This flora includes all those plants which grow so near to the sea as to be on the coast-line. The soil and air contain a certain proportion of sea salts; the soil either retains little water or is more or less covered by the sea at high tides. The plants are those which can adapt themselves to the presence of sea salts, and to exposed conditions under which they can obtain little fresh water; in the sand dunes, the plants must also be capable of quick growth that they may fix themselves firmly, and be able to reach the surface afresh should they become buried by drifts. The coast may be of sand, shingle, rock, or have more or less extensive salt marshes; each kind of shore has a distinct flora showing a marked variation of plant life with the substratum.

Shingle.

Beta maritima L.
Glaucium flavum Cr.
Pneumaria maritima Hill
Polygonum maritimum L.
Raphanus maritimus Sm.
Silene maritima With.
Suæda fruticosa Forsk.

Sand.

Agropyrum acutum Rœm.
Agropyrum junceum P.B.
Agropyrum pungens R. & S.
Agropyrum pycnanthum G. G.
Artemisia maritima L.
Atriplex laciniata L.
Cakile maritima Scop.
Carex arenaria L.
Cerastium tetrandrum Curt.
Convolvulus Soldanella L.
Crambe maritima L.
Elymus arenarius L.
Eryngium maritimum L.
Erythræa linariifolia Pers.
Euphorbia Paralias L.
Glyceria distans Wahlb.
Glyceria procumbens Sm.
Hippophae rhamnoides L.
Honckenya peploides Ehrh.
Kœleria cristata Pers., var albescens DC.
Lathyrus maritimus Big.
Matricaria inodora L., var. maritima L.
Plantago maritima L.
Psamma arenaria R. & S.
Sagina maritima Don
Salsola Kali L.
Spergularia salina Presl.

Cliffs.

Armeria maritima Willd.
Aster Linosyris Bernh.
Brassica oleracea L.
Crithmum maritimum L.
Daucus gummifer Lam.
Fœniculum vulgare Mill.
Matthiola incana R.Br.
Matthiola sinuata R.Br.
Statice occidentalis Lloyd

Salt Marsh.

Atriplex littoralis.
Aster Tripolium L.
Carex extensa Good.
Cochlearia officinalis L.
Glaux maritima L.
Glyceria maritima M. & K.
Inula crithmoides L.
Juncus maritimus Lam.
Lepidium latifolium L.
Obione pedunculata Moq.
Obione portulacoides Moq.
Œnanthe Lachenalii Gmel.
Ruppia maritima L.
Salicornia herbacea L.
Salicornia radicans Sm.
Scirpus maritimus L.
Spartina alterniflora Lois.
Spartina stricta Roth
Spergularia media Presl.
Statice Limonium L.
Suæda maritima Dumort.
Trifolium maritimum Huds.
Triglochin maritimum L.
Zostera marina L.
Zostera nana Roth

Marsh and water floras.—Near many streams and rivers are stretches of flat land under water at certain seasons, or with a high level of ground water; some parts of lakes, streams and rivers have quiet water; in ponds and ditches the water is still. The fens, broads and slowly running rivers of the eastern counties of England afford an excellent illustration of such conditions; many others on a smaller scale are present throughout the British Isles. The plants growing in these habitats have an abundant supply of fresh water, but would suffer from insufficient aeration if they were not provided with large air channels throughout their stems, leaves, and roots. These air channels serve the additional purpose of rendering buoyant those plants which grow in the water. The marsh flora often passes gradually into the water flora, and as the depth of water increases, the rooted swamp plants, such as reed-grasses and bulrushes, give place to plants with longer stems or petioles as for example the pondweeds and water-lilies. The free-floating plants are found in still or quiet water of varying depth. The following are some of the more common plants comprising the marsh and water floras :

Acorus Calamus L.
Alisma Plantago L.
Alnus glutinosa Gærtn.
Barbarea vulgaris R.Br.
Butomus umbellatus L.
Callitriche aquatica Huds.
Caltha palustris L.
Carex panicea L.
Carex paniculata L.
Ceratophyllum L. (both species).
Cirsium palustre Scop.
Comarum palustre L.
Elatine hexandra DC.
Epilobium hirsutum L.
Equisetum limosum L.
Eriophorum latifolium Hoppe
Galium palustre L.
Glyceria fluitans R.Br.
Hippuris vulgaris L.
Hottonia palustris L.
Hydrocharis Morsus-ranæ L.
Hydrocotyle vulgaris L.
Hypericum elodes L.
Iris Pseudacorus L.
Juncus conglomeratus L.
Lemna minor L.
Lychnis Flos-cuculi L.
Lycopus europæus L.
Lysimachia vulgaris L.
Lythrum Salicaria L.
Mentha L. (several species).
Myosotis palustris With.
Myriophyllum spicatum L.
Nasturtium officinale R.Br.
Nuphar luteum Sm.
Nymphæa alba L.
Œnanthe crocata L.
Œnanthe fistulosa L.
Orchis latifolia L.
Phalaris arundinacea L.
Phragmites communis Trin.
Polygonum Hydropiper L.
Potamogeton L. (several species).
Ranunculus aquatilis L.
Sagittaria sagittifolia L.
Salix L. (several species).
Scirpus palustris L.
Sparganium ramosum Huds.
Stratiotes aloides L.
Triglochin palustre L.
Typha angustifolia L.
Typha latifolia L.
Valeriana officinalis L.
Veronica Beccabunga L.

Woodland flora.—The dominant plants are one or more of the forest trees; the shade cast by the trees and undergrowth of shrubs influences the ground flora. The light passing through the foliage is at its maximum in the spring, and the floor of the wood is carpeted with the early flowering plants such as primroses and blue-bells; later the plants to be found there are those which thrive best in the shade, as for example, wood avens and the male fern. There is a minimum intensity of light required for plant growth; this is well shown in the beech wood which is usually devoid of shrubs and herbaceous plants owing to the deep shade cast by the dense foliage of the beech trees. The following are some of the plants forming the ground flora of woodland :

Adoxa Moschatellina L.
Allium ursinum L.
Anemone nemorosa L.
Arum maculatum L.
Asperula odorata L.
Aspidium Filix-mas Sw.
Aspidium spinulosum Sw.
Athyrium Filix-fœmina Roth
Betonica officinalis L.
Blechnum Spicant Roth
Brachypodium sylvaticum R. & S.
Carex sylvatica Huds.
Chrysosplene oppositifolium L.
Circæa lutetiana L.
Convallaria majalis L.
Digitalis purpurea L.
Endymion nutans Dumort.
Fragaria vesca L.
Galium Aparine L.
Geranium sylvaticum L.
Geum urbanum L.
Hypericum hirsutum L.
Listera ovata R.Br.
Luzula maxima DC.
Luzula vernalis DC.
Lysimachia nemorum L.
Melampyrum pratense L.
Melica uniflora Retz.
Mercurialis perennis L.
Milium effusum L.
Monotropa Hypopitys L.
Neottia Nidus-avis Rich.
Oxalis Acetosella L.
Poa nemoralis L.
Primula vulgaris Huds.
Ranunculus auricomus L.
Sanicula europæa L.
Scirpus sylvaticus L.
Stachys sylvatica L.
Stellaria Holostea L.
Veronica officinalis L.
Viola sylvestris Lam.

Heath, moor, and bog floras.—Heaths and moors are swept by winds and provide a poor water supply for plants. These conditions are more pronounced in the moors than in the heaths as the former are more exposed, often at a higher altitude, and contain a greater proportion of peat. The wet peaty parts of moors form typical bogs; the water present in the soil is too acid to be taken in readily by the roots of plants. Excellent examples of the floras of heath, moor, and bog are afforded by the heaths of the north of Ireland and many other parts of the British Isles, by the moors of Scotland, Ireland, Wales and the north of England, by the Bog of Allan in Ireland, Chatmoss in Lancashire and Solway Moss in Scotland. The bog-moss or *Sphagnum* often covers large areas of the bogs, and is found also in the wetter parts of the moors and heaths. Some of the more common plants of each of the three floras are given below.

Heaths.

Agrostis canina L.
Aira flexuosa L.
Calluna vulgaris Salisb.
Carex pilulifera L.
Cytisus scoparius Link
Erica cinerea L.
Erica tetralix L.
Euphrasia officinalis L.
Gallum saxatile L.
Genista anglica L.
Luzula campestris DC.
Molinia cærulea Mœnch
Nardus stricta L.
Polygala serpyllacea Weihe
Potentilla Tormentilla Sibth.
Pteris aquilina L.
Sieglingia decumbens Bernh.
Thymus Serpyllum L.
Trifolium arvense L.
Ulex europæus L.

Bogs.

Anagallis tenella L.
Andromeda polifolia L.
Carex canescens L.
Drosera rotundifolia L.
Eriophorum angustifolium Roth
Eriophorum vaginatum L.
Hydrocotyle vulgaris L.
Juncus biglumis L.
Menyanthes trifoliata L.
Myrica Gale L.
Narthecium ossifragum Huds.
Oxycoccos palustris Pers.
Parnassia palustris L.
Pinguicula vulgaris L.
Rhynchospora alba Vahl.
Rubus Chamæmorus L.
Schœnus nigricans L.
Sedum villosum L.
Tofieldia palustris Huds.
Utricularia minor L.

Moors.

Betula nana L.
Calluna vulgaris Salisb.
Carex pilulifera L.
Cornus suecica L.
Empetrum nigrum L.
Erica cinerea L.
Erica tetralix L.
Kobresia caricina Willd.
Listera cordata R. Br.
Molinia cærulea Mœnch
Nardus stricta L.
Potentilla Tormentilla Sibth.
Scirpus cæspitosus L.
Vaccinium Myrtillus L.

Hilly districts and mountains.—As the altitude increases so does the degree of exposure to weather conditions, the mean temperature decreases, and the flora becomes less and less extensive. The type of flora also changes; just as certain plants grow only on the plains, others grow only in hilly places, others on the mountains, while a few are to be found only on the highest parts of the highest mountains in Scotland, Ireland, Wales, and the north of England. Local floras are influenced by the type of substratum, moor, bog, rock, or pasture, and by the vicinity of lakes and streams.

Alchemilla alpina L.
Allosurus crispus Bernh.
Anthyllis Vulneraria L.
Arabis petræa Lam.
Arctostaphylos Uva-ursi Spr.
Aspidium Lonchitis Sw.
Campanula rotundifolia L.
Cerastium Cerastoides Britton
Ceterach officinarum Willd.
Dryas octopetala L.
Epilobium alpinum Huds.
Galium boreale L.
Gnaphalium supinum L.
Hieracium alpinum L.
Luzula spicata DC.
Lycopodium clavatum L.
Lycopodium Selago L.
Meconopsis cambrica Vig.
Meum Athamanticum Jacq.
Myrrhis odorata Scop.
Oxyria digyna Hill
Polygonum viviparum L.
Potentilla Sibbaldi Hall
Sagina Saginoides Dalla Torre
Salix herbacea L.
Saxifraga L. (several species).
Sedum roseum Scop.
Selaginella spinulosa A. Br.
Sesleria cærula Ard.
Silene acaulis L.
Trollius europæus L.
Vaccinium Vitis-idæa L.
Vicia Orobus DC.
Vicia sylvatica L.

Calcareous substratum.—Calcareous soil, excluding some plants and favouring others, has a marked influence on the flora. The beech and ash are the dominant trees; many of the herbaceous plants are equally characteristic. Typical chalk floras on a large scale exist in the Peak district of Derbyshire, the wolds of Yorkshire, the downs and surrounding country in the south-east of England, in north-east Ireland, and across Scotland from the Mull of Cantyre to the Firth of Forth. Smaller areas occur in many parts of the British Isles. A few of the herbaceous chalk-loving plants are given below.

Asperula cynanchica L.
Astragalus glycyphyllos L.
Campanula glomerata L.
Carduus nutans L.
Carum Bulbocastanum Koch
Centranthus ruber DC.
Cirsium eriophorum Scop.
Gentiana Amarella L.
Hippocrepis comosa L.
Inula Conyza DC.
Orchidaceæ (many species).
Origanum vulgare L.
Phyteuma orbiculare L.
Plantago media L.
Polygala calcarea F. Sch.
Poterium Sanguisorba L.
Reseda lutea L.
Scabiosa columbaria L.
Senecio campestris DC.
Thesium humifusum DC.

Note.—The map of the British Isles at the end of the book indicates quite roughly some of the larger and more important areas having characteristic floras. The scale is necessarily far too small to permit of the inclusion of the local floras occurring in the larger areas as, for example, in the English Lake district where the main flora is that of heath, moorland and mountain, while the local floras are those of water, marsh, bog, and woodland glens. Another example is that of the Peak district of Derbyshire where there is a dominant moorland flora at the higher altitudes and a chalk flora in the valleys; as the former covers the greater surface, it is the one represented. Woodlands are always small and local in the British Isles and are not indicated in the map.

ABRIDGED KEY TO THE PRINCIPAL NATURAL ORDERS

I.—Leaves with netted venation.

Ranunculaceæ.—*Stamens numerous, free, fixed on receptacle, anthers turned towards exterior of flower.* (See p. 2.)
Cruciferæ.—*Stamens 6, 4 long, 2 short.* (See p. 10.)
Caryophyllaceæ.—*Ovary without partitions; styles several and free to their base; leaves opposite; nodes swollen.* (See p. 26.)
Leguminosæ.—*Corolla papilionaceous* (Fig. 143, p. 260). (See p. 42.)
Rosaceæ.—*Stamens numerous, free, fixed on the calyx.* (See p. 54.)
Umbelliferæ.—*Flowers in simple or compound umbels; stamens 5; styles 2, free.* (See p. 70.)
Rubiaceæ.—*Leaves apparently in whorls; styles 2; petals united at base.* (See p. 84.)
Compositæ.—*Flowers in heads or capitula; anthers joined, forming a tube around the style.* (See p. 88.)
Primulaceæ.—*Ovary without partitions; stamens opposite the petals; petals joined.* (See p. 113.)
Solanaceæ.—*Stamens 5; ovary 2-chambered; petals joined.* (See p. 124.)
Boraginaceæ.—*Stamens 5; ovary externally 4-cleft; petals joined.* (See p. 120.)
Scrophulariaceæ.—*Stamens usually 4, 2 short, 2 long; ovary 2-chambered; flower irregular; petals united.* (See p. 126.)
Labiatæ.—*Stamens 4, 2 short, 2 long; ovary externally 4-cleft; flower irregular; petals united.* (See p. 134.)
Polygonaceæ.—*Perianth coloured or green; stipules sheathing.* (See p. 148.)
Euphorbiaceæ.—The genus *Euphorbia*, comprising in the British Flora most of the species of this N.O., is recognised by its *greenish flowers and milky sap or latex.* (See p. 154.)
Amentaceæ (Cupuliferæ, Salicaceæ, Betulaceæ).—*Trees or shrubs; staminate flowers in catkins.* (See pp. 158-62.)

II. — Leaves with parallel venation.

Liliaceæ.—*Ovary superior; flower regular: stamens 6.* (See p. 164.)
Amaryllidaceæ.—*Ovary inferior; flower regular; stamens 6.* (See p. 171).
Iridaceæ.—*Ovary inferior; flower regular; stamens 3.* (See p. 170.)
Orchidaceæ.—*Flower irregular; stamen usually one, united to style.* (See p. 172.)
Cyperaceæ.—*Flowers membranous, brownish or greenish; leaf-sheaths not split, stems 3-sided.* (See p. 186.)

Gramineæ.—*Flowers membranous, brownish or greenish; leaf-sheaths split; stems rounded.* (See p. 198.)

III. — Flowerless Plants.

Filices (The Ferns).—*Leaves considerably developed as compared with stems.* (See pp. 224-30.)

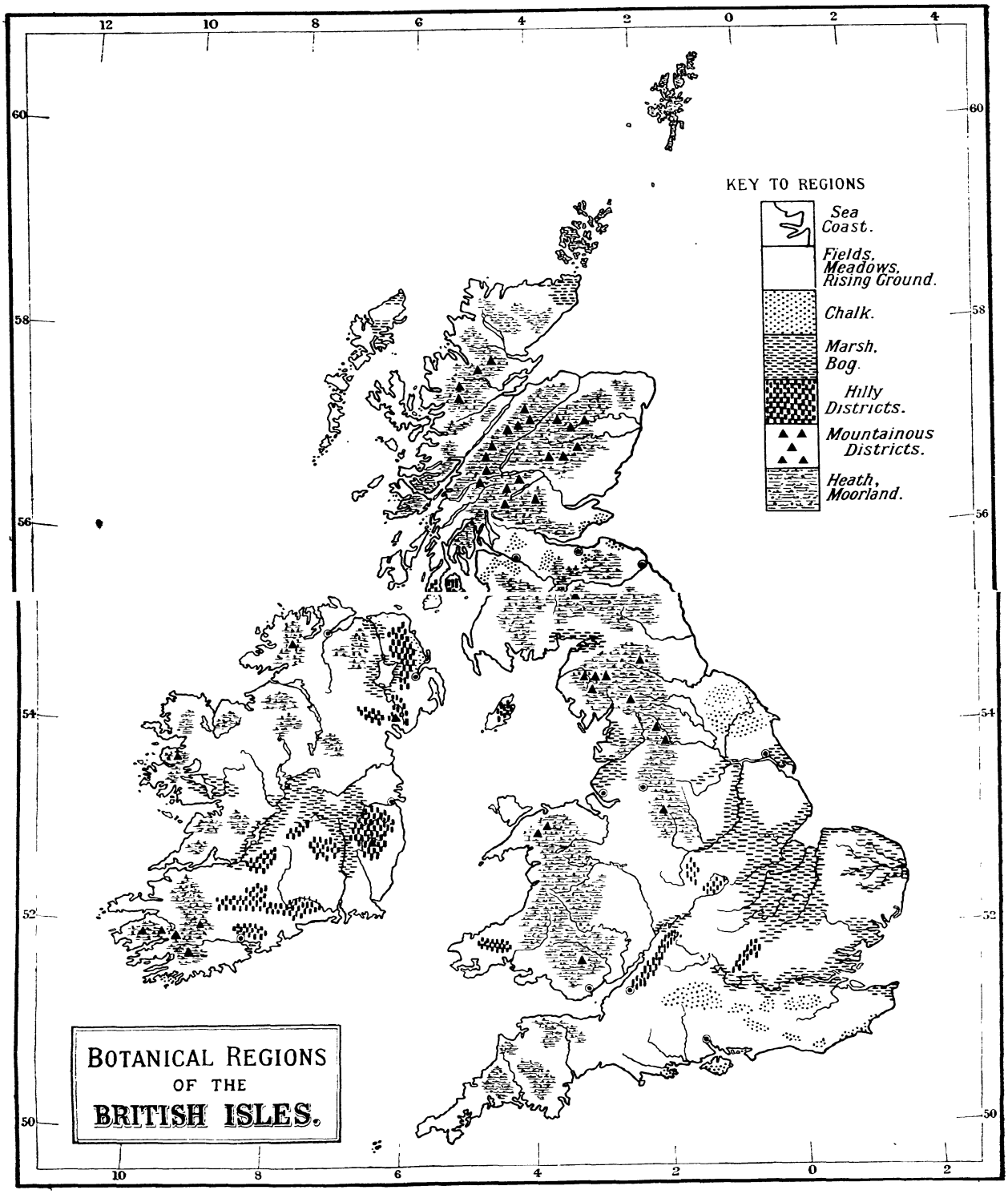
USE OF ABRIDGED KEY.

The natural orders are very unequally represented in the British flora. Some comprise only a single species, others a great number. The latter are easily recognised as having certain main characteristics; more than three quarters of the British plants can be placed in one or other of the natural orders given in the abridged key.

A little practice in the examination of plants and a knowledge of the principal characters of the natural orders given above should enable the observer to recognise at sight a plant belonging to one of these orders. Reference should then be made to the key of the natural order on the page indicated in the abridged key, and the name of the plant found.

The alternative procedure, which must be adopted for those plants which cannot be put directly in their natural orders, is to begin the analysis with the aid of the general key on pp. XIX-XXXIV.

IMPRIMERIE CRÉTÉ. CORBEIL. — FRANCE.


KEY TO REGIONS
Sea Coast.
Fields, Meadows, Rising Ground.
Chalk.
Marsh, Bog.
Hilly Districts.
Mountainous Districts.
Heath, Moorland.
BOTANICAL REGIONS OF THE BRITISH ISLES.