BRITISH WILD FLOWERS IN THEIR NATURAL HAUNTS

HORWOOD
BRITISH WILD FLOWERS
No. 1. Wood Anemone
(Anemone nemorosa, L.)
a, Achene, or fruit. b, Part of plant, with bracts at base of peduncle, petaloid sepals, anthers, and achenes in centre.

No. 2. Goldilocks
(Ranunculus auricomus, L.)
a, Flower, with polysepalous calyx, 2 petals, one (the fifth) often reduced, wanting as a rule. b, Achene, or fruit. c, Plant, with upper linear floral leaves or bracts. d, Plant, with leaves, bracts, and 2 perfect flowers, one showing calyx, the other the numerous stamens and achenes.

No. 3. Green Hellebore
(Helleborus viridis, L.)
a, Flower, showing petaloid sepals, and follicles. b, Part of plant with cauline leaves, flower half-expanded, and 1 open, showing short tubular petals, and stamens within.

No. 4. Columbine
(Aquilegia vulgaris, L.)
a, Follicles. b, Plant with alternately divided leaves, flowers in various stages showing the petaloid sepals, and spurred petals.

No. 5. Sweet Violet
(Viola odorata, L.)
a, Capsule, opening by 3 valves, with seeds within. b, Plant showing root runner, leaves, stipules, and flower bud. Also a flower showing 5 petals, with orange and white throat, also lines or honey guides, and capsule with persistent linear sepals.

No. 6. Red Campion
(Lychnis dioica, L.)
a, Flower, showing gomosepalous calyx, 5 blind petals, and stamens in the centre. b, Capsule, with recurved teeth. c, Part of plant, showing cymose inflorescence, and flowers in bud and later stages.
A New BRITISH FLORA

BRITISH WILD FLOWERS
IN THEIR NATURAL HAUNTS

Described by A. R. HORWOOD
With Sixty-four Plates in Colour
Representing 350 Different Plants
From Drawings by J. N. FITCH
and Many Illustrations from
Photographs

VOLUME III

THE GRESHAM PUBLISHING COMPANY, LTD.
66 CHANDOS STREET, COVENT GARDEN, LONDON
1919
<table>
<thead>
<tr>
<th>CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLUME III</td>
</tr>
<tr>
<td>SECTION V.—FLOWERS OF THE WOODS AND COPSES</td>
</tr>
<tr>
<td>Page</td>
</tr>
<tr>
<td>Wood Anemone or Wind Flower (Anemone nemorosa, L.)</td>
</tr>
<tr>
<td>Goldielocks (Ranunculus auricomus, L.)</td>
</tr>
<tr>
<td>Green Hellebore (Helleborus viridis, L.)</td>
</tr>
<tr>
<td>Columbine (Aquilegia vulgaris, L.)</td>
</tr>
<tr>
<td>Sweet Violet (Viola odorata, L.)</td>
</tr>
<tr>
<td>Red Campion (Lychnis dioica, L.)</td>
</tr>
<tr>
<td>Lime or Linden (Tilia vulgaris, Hayne)</td>
</tr>
<tr>
<td>Wood Sorrel (Oxalis acetosella, L.)</td>
</tr>
<tr>
<td>Holly (Ilex Aquifolium, L.)</td>
</tr>
<tr>
<td>Wild Cherry (Prunus Cerasus, L.)</td>
</tr>
<tr>
<td>Wild Strawberry (Fragaria vesca, L.)</td>
</tr>
<tr>
<td>White Beam (Pyrus Aria, Ehrh.)</td>
</tr>
<tr>
<td>Mountain Ash (Pyrus Aucuparia, Ehrh.)</td>
</tr>
<tr>
<td>Rosebay (Epilobium angustifolium, L.)</td>
</tr>
<tr>
<td>Enchanter’s Nightshade (Circeo Luteiana, L.)</td>
</tr>
<tr>
<td>Sanicle (Sanicula europaea, L.)</td>
</tr>
<tr>
<td>Angelica (Angelica sylvestris, L.)</td>
</tr>
<tr>
<td>Ivy (Hedera Helix, L.)</td>
</tr>
<tr>
<td>Wayfaring Tree (Viburnum Lantana, L.)</td>
</tr>
<tr>
<td>Honeysuckle (Lonicera Periclymenum, L.)</td>
</tr>
<tr>
<td>Woodruff (Asperula odorata, L.)</td>
</tr>
<tr>
<td>Primrose (Primula vulgaris, Huds.)</td>
</tr>
<tr>
<td>Wood Loosestrife (Lysimachia nemorum, L.)</td>
</tr>
<tr>
<td>Small Periwinkle (Vinca minor, L.)</td>
</tr>
<tr>
<td>Lungwort (Pulmonaria officinalis, L.)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Plant Name</td>
</tr>
<tr>
<td>----------------------------------</td>
</tr>
<tr>
<td>Wood Forget-me-not (<em>Myosotis sylvatica</em>, Hoffm.)</td>
</tr>
<tr>
<td>Foxglove (<em>Digitalis purpurea</em>, L.)</td>
</tr>
<tr>
<td>Marjoram (<em>Origanum vulgare</em>, L.)</td>
</tr>
<tr>
<td>Wood Betony (<em>Stachys officinalis</em>, Trev.)</td>
</tr>
<tr>
<td>Yellow Archangel (<em>Lamium Galeobdolon</em>, Crantz)</td>
</tr>
<tr>
<td>Wood Sage (<em>Teucrium Scordonia</em>, L.)</td>
</tr>
<tr>
<td>Wood Spurge (<em>Euphorbia amygdaloides</em>, L.)</td>
</tr>
<tr>
<td>Dog’s Mercury (<em>Mercurialis perennis</em>, L.)</td>
</tr>
<tr>
<td>Wych Elm (<em>Ulmus glabra</em>, Huds. montana, Stokes)</td>
</tr>
<tr>
<td>Oak (<em>Quercus Robur</em>, L.)</td>
</tr>
<tr>
<td>Beech (<em>Fagus sylvatica</em>, L.)</td>
</tr>
<tr>
<td>Aspen (<em>Populus tremula</em>, L.)</td>
</tr>
<tr>
<td>Tway-blade (<em>Listera ovata</em>, Br.)</td>
</tr>
<tr>
<td>Bee Orchis (<em>Ophrys apifera</em>, Huds.)</td>
</tr>
<tr>
<td>Snowdrop (<em>Galanthus nivalis</em>, L.)</td>
</tr>
<tr>
<td>Lily-of-the-Valley (<em>Convallaria majalis</em>, L.)</td>
</tr>
<tr>
<td>Garlic (<em>Allium ursinum</em>, L.)</td>
</tr>
<tr>
<td>Bluebell (<em>Scilla non-scripta</em>, Hoffm. and Link.)</td>
</tr>
</tbody>
</table>

**SECTION VI.—FLOWERS OF THE ROADSIDES AND HEDGES**

<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traveller’s Joy (<em>Clematis Vitalba</em>, L.)</td>
<td>123</td>
</tr>
<tr>
<td>Barberry (<em>Berberis vulgaris</em>, L.)</td>
<td>128</td>
</tr>
<tr>
<td>Winter Cress (<em>Barbara vulgaris</em>, Ait.)</td>
<td>130</td>
</tr>
<tr>
<td>Hedge Mustard (<em>Sisymbrium officinale</em>, Scop.)</td>
<td>133</td>
</tr>
<tr>
<td>Sauce Alone (<em>Sisymbrium Alliaria</em>, Scop.)</td>
<td>135</td>
</tr>
<tr>
<td>Greater Stitchwort (<em>Stellaria Holostea</em>, L.)</td>
<td>137</td>
</tr>
<tr>
<td>Perforate St. John’s Wort (<em>Hypericum perforatum</em>, L.)</td>
<td>139</td>
</tr>
<tr>
<td>Herb Robert (<em>Geranium robertianum</em>, L.)</td>
<td>142</td>
</tr>
<tr>
<td>Spindle Wood (<em>Euonymus europæus</em>, L.)</td>
<td>145</td>
</tr>
<tr>
<td>Tufted Vetch (<em>Vicia Cracca</em>, L.)</td>
<td>148</td>
</tr>
<tr>
<td>Meadow Vetchling (<em>Lathyrus pratensis</em>, L.)</td>
<td>152</td>
</tr>
<tr>
<td>Blackthorn (<em>Prunus spinosa</em>, L.)</td>
<td>154</td>
</tr>
<tr>
<td>Bramble (<em>Rubus fruticosus (= rusticanus</em>, Merc.)</td>
<td>157</td>
</tr>
<tr>
<td>Barren Strawberry (<em>Potentilla sterilis</em>, Garcke)</td>
<td>160</td>
</tr>
<tr>
<td>Dog Rose (<em>Rosa canina</em>, L.)</td>
<td>165</td>
</tr>
<tr>
<td>Crab Apple (<em>Pyrus Malus</em>, L.)</td>
<td>166</td>
</tr>
<tr>
<td>Hawthorn (<em>Crataegus Oxyacantha</em>, L.)</td>
<td>172</td>
</tr>
<tr>
<td>Bryony (<em>Bryonia dioica</em>, Jacq.)</td>
<td>176</td>
</tr>
<tr>
<td>Hemlock (<em>Conium maculatum</em>, L.)</td>
<td>180</td>
</tr>
<tr>
<td>CONTENTS</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Cow-parsnip (Heracleum Spondylium, L.)</td>
<td>186</td>
</tr>
<tr>
<td>Hedge Parsley (Caulitis Anthriscus, Huds.)</td>
<td>188</td>
</tr>
<tr>
<td>Dogwood or Cornel (Cornus sanguinea, L.)</td>
<td>191</td>
</tr>
<tr>
<td>Moschatel (Adoxa Moschatellina, L.)</td>
<td>193</td>
</tr>
<tr>
<td>Elder (Sambucus nigra, L.)</td>
<td>195</td>
</tr>
<tr>
<td>Cleavers (Galium Aparine, L.)</td>
<td>199</td>
</tr>
<tr>
<td>Teasel (Dipsacus sylvestris, Huds.)</td>
<td>202</td>
</tr>
<tr>
<td>Hoary Ragwort (Senecio crucifolius, L.)</td>
<td>204</td>
</tr>
<tr>
<td>Nipplewort (Lapsana communis, L.)</td>
<td>206</td>
</tr>
<tr>
<td>Ash (Fraxinus excelsior, L.)</td>
<td>208</td>
</tr>
<tr>
<td>Great Bindweed (Calystegia sepium, Br.)</td>
<td>212</td>
</tr>
<tr>
<td>Red Bartsia (Bartsia Odontites, Huds.)</td>
<td>214</td>
</tr>
<tr>
<td>Wood Basil (Clinopodium vulgare, L.)</td>
<td>216</td>
</tr>
<tr>
<td>Ground Ivy (Nepeta hederacea, Trev.)</td>
<td>219</td>
</tr>
<tr>
<td>Bugle (Ajuga reptans, L.)</td>
<td>221</td>
</tr>
<tr>
<td>Spurge Laurel (Daphne Laureola, L.)</td>
<td>224</td>
</tr>
<tr>
<td>Common Elm (Ulmus campestris, L. = U. sativa, Mill. = U. surculosa, Stokes)</td>
<td>226</td>
</tr>
<tr>
<td>Nettle (Urtica dioica, L.)</td>
<td>230</td>
</tr>
<tr>
<td>Black Bryony (Tamus communis, L.)</td>
<td>233</td>
</tr>
<tr>
<td>Lords and Ladies (Arum maculatum, L.)</td>
<td>235</td>
</tr>
</tbody>
</table>

SOME GENERAL HINTS AND NOTES - 239

Section V: Woods and Copses - 239

Section VI: Roadsides and Hedges - 251
## PLATES IN COLOUR

### FLOWERS OF THE WOODS AND COPSES

<table>
<thead>
<tr>
<th>Plate</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>XVIII. Wood Anemone; Goldielocks; Green Hellebore; Columbine; Sweet Violet; Red Campion</td>
<td>8</td>
</tr>
<tr>
<td>XIX. Lime; Wild Strawberry; Holly; Wild Cherry; Wood Sorrel; White Beam</td>
<td>24</td>
</tr>
<tr>
<td>XX. Mountain Ash; Rosebay; Enchanter's Nightshade; Sanicle; Angelica; Ivy</td>
<td>44</td>
</tr>
<tr>
<td>XXI. Wayfaring Tree; Honeysuckle; Woodruff; Primrose; Wood Loosestrife; Small Periwinkle</td>
<td>60</td>
</tr>
<tr>
<td>XXII. Lungwort; Wood Forget-me-not; Foxglove; Marjoram; Wood Betony; Yellow Archangel</td>
<td>74</td>
</tr>
<tr>
<td>XXIII. Wood Sage; Wood Spurge; Dog's Mercury; Wych Elm; Oak; Beech</td>
<td>90</td>
</tr>
<tr>
<td>XXIV. Aspen; Tway-blade; Bee Orchis; Snowdrop; Lily-of-the-Valley; Garlic; Bluebell</td>
<td>106</td>
</tr>
</tbody>
</table>

### FLOWERS OF THE ROADSIDES AND HEDGES

<table>
<thead>
<tr>
<th>Plate</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXV. Traveller's Joy; Barberry; Winter Cress; Hedge Mustard; Sauce Alone; Greater Stitchwort</td>
<td>128</td>
</tr>
<tr>
<td>XXVI. Perforate St. John's Wort; Herb Robert; Spindle Wood; Tufted Vetch; Meadow Vetchling; Blackthorn</td>
<td>142</td>
</tr>
<tr>
<td>XXVII. Bramble; Barren Strawberry; Dog Rose; Crab Apple; Hawthorn; Bryony</td>
<td>160</td>
</tr>
<tr>
<td>Plate</td>
<td>Image</td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>XXVIII.</td>
<td>Hemlock; Cow-parsnip; Hedge Parsley; Dogwood; Moschatel; Elder</td>
</tr>
<tr>
<td>XXIX.</td>
<td>Cleavers; Teasel; Hoary Ragwort; Nipplewort; Ash; Great Bindweed</td>
</tr>
<tr>
<td>XXX.</td>
<td>Red Bartsia; Wood Basil; Ground Ivy; Bugle; Spurge Laurel; Common Elm</td>
</tr>
<tr>
<td>XXXI.</td>
<td>Nettle; Black Bryony; Lords and Ladies</td>
</tr>
</tbody>
</table>
PLATES IN BLACK-AND-WHITE

<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland, with Hazel Coppice</td>
<td>5</td>
</tr>
<tr>
<td>Mountain Ash (Pyrus Aucuparia, Ehrh.)</td>
<td>43</td>
</tr>
<tr>
<td>Ivy (Hedera Helix, L.)</td>
<td>57</td>
</tr>
<tr>
<td>Foxglove (Digitalis purpurea, L.)</td>
<td>81</td>
</tr>
<tr>
<td>Spindle Wood (Euonymus europaeus, L.)</td>
<td>149</td>
</tr>
<tr>
<td>Elder (Sambucus nigra, L.)</td>
<td>197</td>
</tr>
</tbody>
</table>
Section V

FLOWERS OF THE WOODS AND COPSES
FLOWERS OF THE WOODS AND COPSES

In this section we have a group of shade-loving plants or Hylophytes. Each plant is influenced by the juxtaposition of other plants, and so the woodland plants are bound together. In extended form a wood with scattered trees tends to assume the character of a meadow of the type included in Section II. The hedgerows which divide fields and roadways give shelter to a few such woodland plants. The woodland plants are Mesophytes with regard to water requirements.

Several alterations in the surrounding conditions are brought about by the association of trees, which influence—

- Light (woods are shaded and dark),
- Warmth (woods are cold and dank),
- Moisture (woods are moist and attract moisture).

In a wood, moreover, plants are exposed to greater enemies, such as:—

1. Fungi.
2. Animal pests.

There are several types of woodland which may be briefly referred to.

First of all there is what we may call bushland. This is not the result of a low temperature, as in Polar tracts, but of cultivation. There are numerous districts where the borders of virgin forest are repeatedly cut down and treated as plantations with saplings, which are mesophytic bushland.

Then wherever fox coverts as in the shires are planted, or coverts for game are made, there is usually a mixture of bush, deciduous wood, and coniferous woodland put down artificially which may answer to this type. Here we find Sloe, Hawthorn, Brier, Dogwood, Barberry, Bramble, &c., which sometimes form locally a distinct feature. They may also be the normal result, as in Blackthorn coverts, of leaving country to return to a wild state. There is a characteristic ground flora of meadow or pratal species depending on altitude.
FLOWERS OF THE WOODS AND COPSES

True forests in the Temperate regions (excluding conifers) are mainly made up of deciduous trees, the regions of winter following the fall of the leaf. The leaves, their texture, form, and position are all adapted to meet the necessary conditions of light. Below the tall trees are shrubs and bush, and below these a characteristic ground flora of plants with broad, flat, smooth leaves, as in Wood Sorrel, Wood Anemone, Wood Balsam, Enchanter's Nightshade, Moschatel, Dog's Mercury, Lily-of-the-Valley, &c.

Woods are especially characterized by the predominance of some one species which grows there at its best, e.g. Beech, Oak, and Birch. The Beech wood forms a dark wood where the ground is bare or strewn with leaves, and the soil may be mild humus or sour humus. In the first one finds Woodruff, Wood Sorrel, Wood Anemone, Sweet Violet, Dog's Mercury, Melic Grass, Millet, Ivy, Great Stitchwort, Lungwort, Sedges, Poa nemoralis, Winter Aconite, Moschatel, Woundwort, Enchanter's Nightshade, Herb Paris, Lily-of-the-Valley, Solomon's Seal, Helleborines, Twayblade, Bird's Nest Orchid, also Coral Root, Monotropa, Epipogium, &c., Gagea, &c. On a sour humus one finds Deschampsia flexuosa, Trientalis, May Flower, Cow Wheat, Ling, Whortleberry, and so on.

The Oak forest or wood lets in more light between its branches and neighbouring trunks. Amongst the oaks are found Lime, Maple, Aspen, Elm, Ash, and Hornbeam. The ground flora is abundant, and there are numerous shrubs forming a bush of Hazel, Hawthorn, Maple, Sloe, Hornbeam, Spindle Tree, Willow, Guelder Rose, Bramble, Honeysuckle. Amongst the ground flora are the Wood Anemone, Violets, Vetches, Meadow Vetchling, St. John's Wort, Cinquefoil, Bluebell, Milfoil. The Common Brake Fern forms dense brakes here (hence the name).

True Birch forests are not prevalent in Britain, being found in higher latitudes, and they are often planted here. Ashwoods occur on limestone and chalk soils.

The Sylvestral, or Septal plants as they are also called, are a large section of the British flora numbering some 300, including some dry-soil heath plants which survive from a former woodland association.

We have included some 42 of the woodland plants here, some of which are common to Beech, some to Oak woods, some found on ordinary humus, some on sour humus, and so on.

In the shaded depths and open clearings amongst hazels and sallows the shy and delicate Wind Flower finds a shelter in the woods. Here, too, Goldilocks lurks in the shade, seldom having all
WOODLAND, WITH HAZEL COPPICE
its petals intact. In hazel copses in the south we shall find with good fortune the Green Hellebore. An oak wood carpeted with Bluebells in spring, and clad in a rich russet coat of bracken in autumn, where rocky knolls abound, is the place for the Columbine. A shade-lover, the Sweet Violet adds richly to the heavy perfume of the woods, aromatic already with the smell of humus, leaf-mould, and resin, perchance, from the pines. A new setting is conveyed by the bright pink masses of Red Campion blooms which give a bright colour to the green depths around. The Linden, when summer is at its zenith, is like attar of roses to the bees which hover amid its boughs on honey intent. Wood Sorrel is here the sensitive plant of the woods, by some called Shamrock. It luxuriates in the sides of a mossy leafy dell.

Holly makes thick coverts for the pheasants on stony banks. The Wild Cherry dangles its "whitehearts" in the wooded seclusion, fit treasures for the birds. Open banks in the glades are spread with luscious fruits of the Wild Strawberry by Midsummer Eve. The grey undersides of the leaves in the well-roofed shelters of White Beam flicker in the breeze, thus revealing themselves. Close by Mountain Ash spreads wide mealy panicles of white flowers, ready for the autumn's promise of a rich red feast for the woodland tribes.

On the open rocky slopes in the woods the rose-purple clumps of bloom of the Rosebay enliven the grey-clad stony banks. Beneath the dripping oaks the lowly Enchanter's Nightshade and Sanicle hide with retiring modesty. Along the pathways through the woods rise the noble umbels of Angelica, with spreading foliage. Ivy clings to the Oak like a parasite upon some scion of a noble house. Wayfaring Tree fills the damp hollows forming dense coverts by the decoys. Clambering up the stem of Hawthorn, or bole of Oak or Ash, the Honeysuckle or Sweet Eglantine disperses sweet perfume in the night. Woodruff, too, in the daytime makes the air heavy with the odour of new-mown hay.

A sulphur hue is lent by the sweet-tinted Primrose, which finds shade and safety in the woodland depths. Wood Loosestrife or Yellow Pimpernel trails delicately over the damper soil. The Small Periwinkle brings again to the woods the colours of the deep-blue skies, and the versicolorous Lungwort is as gay here as in the long borders in the garden. In sheltered, open glades a wide patch of Wood Forget-me-not makes the woods blue, and so choice a beauty is not so soon forgot.

The tall spikes, with spotted blooms of the Foxglove into which the humble bees come and take their toll, stand gracefully on the
stony slopes of the valleys, and Marjoram gives a rich perfume to the downs in the south and elsewhere. Wood Betony lingers by the sides of the pathways or out on the open heaths. Under the deep shades of the hazels in early May the yellow helmets spotted with crimson of the Archangel make wide patches over which bees linger lovingly. Rich-scented the Wood Sage covers the rubbly flanks of the hillsides. In the south the Wood Spurge hides in the undergrowth or below the hedge.

Everywhere in the shade are beds of Dog's Mercury, so common in woods. Tall monarchs of the forest rise here and there in the shape of the Wych Elm, Oak, Birch, and now and again the shivering Aspen. Under the ash-trees the Twayblade hides, and rarely the Snowdrop, Bee Orchis, Lily-of-the-Valley, and Ramsoms are found amid the sylvan depths.

Wood Anemone or Wind Flower (Anemone nemorosa, L.)

So far this has not been found in any deposit earlier than the recent. It is a plant of the Arctic and Cold Temperate Zones, found in Arctic Europe generally, W. Siberia, and in North America. It is general in England and Wales, except S. Lines, Mid Lancs, where it is absent. It does not occur in Scotland in Sutherland, Caithness, or any of the Northern Isles, but ascends in the Highlands to the height of 2800 ft., and is found in Ireland.

In the spring every wood and copse is carpeted with the dainty Wind Flower, which delights the poet, the swain, and the townsman alike. It prefers the sheltered flat expanses which are protected overhead from the sun's heat, and at the side by clustering shrubs or undergrowth. It is perhaps more fond of a dry than a wet soil, and some humus; but is found alike where the Lesser Celandine and Bluebell grow. In some secluded spots the woods are as white with Wood Anemones as a damask sheet, just as the same sylvan depths are blue in spring with the Bluebell or yellow with the Lesser Celandine. They are mesophytes, adapted to a moderate supply of moisture. The Wood Anemone, unlike most other plants, can flourish beneath the shade in a beech wood.

The Wood Anemone is a tuberous-rooted plant, or plant with subterranean fleshy shoots or creeping underground stem, which can be propagated by division of the roots which grow deep in the soil. It is a tender, fragile plant, which in the shade stands erect, with flowers wide open, but in the open, under a strong sun, it closes its
flower and droops its head. This drooping of the flower is a character by which to recognize it.

The Wood Anemone is more or less prostrate in habit, with ascending or erect scapes. The rootstock or rhizome is woody and horizontal, giving rise to leaves and scapes. The leaves are few, radical, distant from the scapes, ternate or quinate, 3- or 5-lobed, stalked, the leaflets narrow, lobed and cut, or deeply divided, nearly stalkless, and the involucral bracts are the same.

The scape or flower-stalk bears no leaves but bracts, forming an involucre. The flowers are solitary, with 6 or 5-9 oblong, hairless, spreading sepals, which replace the petals, and are white, rose, or rarely purple. The stamens are all perfect. The achenes are downy, as long as the style, keeled not awned. The styles are short and straight.

The Wood Anemone grows to a height of 3-4 in. Flowers may be seen from March to May. The plant is perennial.

As a rule there is no honey in the flower, but Van Tieghem found plants containing honey. Insects, moreover, may be seen trying to bite through the bottom (or top, as it is drooping and the bottom is at the top) of the flower, presumably to get at sweet sap, by aid of which they moisten the pollen, which is abundant, to facilitate its being carried away. The anthers and stigma are ripe at the same time. The flowers are erect when they first open, when it is sunny. They bend
flowe over in a drooping position at night and when rain falls. This protects the pollen or the honey in all such drooping flowers.

The sepals do duty for the petals. The stigmas are covered up in bud, and the stamens lie over them, but when the flowers open both are mature, and insects can touch either. They alight in the centre or on the sepals, and may touch anthers or stigma first, causing self- or cross-pollination. The drooping character of the flower also causes pollen to fall on the stigma.

Bees pierce the base of the flower and lick the pollen. The visitors are Hymenoptera of the genera Halictus, Osmia, Apis; Diptera, Scatophaga; Coleoptera, Meligetes.

The Wind Flower has the achenes dispersed by the wind, by the hairs, or by processes developed as a long awn or appendage, but not feathery, as in the Pasque Flower, to aid in dispersal by the wind.

The Wild Anemone, which dwells in woods, is fond of humus, requiring a humus soil which is partly peat, partly humus. It is not addicted to a lime soil as a rule.

A fungus, Urocystis anemones, forms irregular swellings on the stems and midribs of the leaves. Puccinia fusca also forms small blackish pustules on the leaves. The Anemone Sclerotinia, Sclerotinia tuberosa, Plasmopora pygmaea, and Aecidium leucospermum also infest it.

The Scarlet Tiger, Callimorpha dominula and Adela degeerella are moths that feed on it.

Anemone was the name given it by Dioscorides, from the Greek anemos, wind, and the Latin nemorosa means “of the woodland”. The English names in vogue are Bow Bells, Cowslip, Wood Crowfoot, Cuckoo-flower, Cuckoo-spit, Darn-grass, Drops of Snow, Enemy, Granny’s Nightcap, Wild Jessamine, Moonflower, Nemines, Smell Foxes, Smell Smock, Soldiers, Undergrounds, Wind Flower.

“Doon i’ the wild enemies.”

TENNYSON, Northern Farmer (Old Style).

The plant is called Darn-grass in Scotland because it is said to give rise to a disease called Darn or black water, causing dysentery among cattle, a notion also held in Sweden.

Their fragile blossoms were said to give shelter to fairies in wet weather, closing up. In Greece Anemones were used as garlands.

The Chinese planted them over their graves.

“The winds forbid the flowers to flourish long,
Which owe to winds their name in Grecian song.”
This is in allusion to their brief flowering period. The Wind Flower was held sacred to Venus. In some countries people have an aversion to them, the air being said to be tainted with them, those inhaling it being said to be sick on this account.

The species of Anemone are all acid. The Pasque Flower, an allied species, was till recently retained in the Pharmacopoeia, but it has no such remedies as described by Gerarde and Culpeper. It is usually sold by weight, the roots, like ginger, being employed. It was held by the older writers to be injurious to cattle. A species in Kamschatka was utilized to poison the tips of arrows, the juice being applied proving fatal.

**Essential Specific Characters:**—

**Goldielocks** (*Ranunculus auricomus*, L.)

No deposits have as yet yielded achenes of this plant. It is distributed over the Arctic and Cool Temperate Zones, in Arctic Europe, N. and W. Asia, to the Himalayas. Goldielocks is absent from Monmouth, and in Wales only occurs in Glamorgan, Denbigh, and Anglesea. It is absent from S. Lines and the Isle of Man. In Scotland it is not found in any of the following counties:—Dumfries, Wigtown, Peebles, Selkirk, Linlithgow, Banff, Elgin, Westerness, Main Argyll, W. Highlands or N. Highlands, or Northern Isles. In the Highlands it is found at an altitude of 1600 ft., and in S. and W. Ireland it is rare.

The Goldielocks is a shade-loving hedgerow and woodland plant, which appears to delight in sandy soil where also some humus is present, and clusters in patches of a yard square beneath the shelter of a bank. There it forms a rich contrast with the surroundings with its yellow (rarely perfect) petals and delicate foliage. It is fond of ground where there are inequalities of the surface, as well as banks, on which it often grows.

This is one of the terrestrial Crowfoots, with a smooth, shiny stem, with divided leaves, having the lower leaves broadly lobed and the upper more divided, with an erect flowering stem, the flowers being central, and the general shape is pyramidal, as in most plants with radical leaves on long stalks, rounded or kidney-shaped, and more or less leafless flowering stems. A feature of this species is the variation in the type of the leaves at the base.
The petals are usually imperfect, and the honey-gland has no scale. The sepals are constantly as yellow as the petals. The carpels, seated on raised points of the receptacle, are downy. Unlike some other Crowfoots the root is fibrous.

The stem is 1 ft. to 15 in. in height. Goldielocks flowers from April to May, before the trees are in bud or leaf. The plant is perennial, deciduous, and herbaceous.

The nectary assumes a great variety of forms. The corolla is seldom regular, and some petals are usually wanting or functionless, some or all being stunted, while the sepals have a bright yellow flat portion, and partly or wholly take the place of petals. The sepals may be fringed. The honey-glands are at the base of the modified petals. Some petals are reduced to honey-secreting cavities, as in Winter Aconite, and all sorts of transitions to this stage may be found.

In the more perfect petals the underside of the triangular base of the petal has a thickened border each side, which fuses below and forms a pit for the honey where they meet. In the more perfect petals, too, honey is secreted by two small pits, to the right and left, on the broader thickened margin. In very stunted petals on the inner side of the base of the two laminae or blades two honey canals, separated by a fold, are deeply sunk. There are two types of pollen. In some intermediate forms no honey is secreted. Hymenoptera (Apidae, Formicidae), Diptera (Syrphidae, Muscidae), Thysanoptera (Thrips) visit it.

Goldielocks (Ranunculus auricomus, L.)
The fruits of Goldielocks are dispersed by the wind, and the achenes are downy and adapted for wind dispersal.

This plant is partly a humus-loving plant requiring a humus soil, derived from ordinary humus, and grows best in peaty loam, being found on Precambrian, Carboniferous, Triassic, and Liassic rock soils.

*Peronospora ficaria* is a fungus which infests this plant. It flowers early, and no insects feed on it.

The name *auricomus* is from the Latin *aurum*, gold, and *coma*, hair. Goldielocks is called Buttercup, Wood Crow-foot, Goldylocks.

**Essential Specific Characters:**


**Green Hellebore** (*Helleborus viridis*, L.)

No seeds of the Green Hellebore have been found in a fossil condition. It is a plant of the Warm Temperate Zone of W. and Central Europe, ranging from Holland southwards, but is not found in Russia. It has been introduced into the United States of America. It is found in South England, in S. and N. Somerset, Dorset, Hants, Sussex, East Kent, Surrey, Essex, Herts, Bucks, Carnarvon, Flint, Gloucs, W. Lancs, York, Durham, Northumberland, and Westmorland. Elsewhere it is regarded as only introduced. It is often naturalized. Watson calls it a denizen.

The Bear's Foot or Green Hellebore is a woodland plant, being fond of copses of hazel, and other types of thicket in the south and east of England, chiefly on chalk soil, which it prefers. It is largely a xerophile, though it may be found on humus within the chalk areas. Its associates are the Wood Spurge, Herb Paris, Melic Grass, amongst common plants. Doubtless its reputed use (*vide* below) has been responsible for its introduction in other southern, eastern, or midland districts.

Except that the stem is purple and usually single, or divided into two nearly to the base, this plant has much the habit of Marsh Marigold. It stands erect, and with spreading divisions of the leaves, which spring from a foot-stalk directly, and with the sheathing bases of its stalkless stem-leaves it looks palm-like when not in flower.

The leaves are hard and leathery, finger-shaped or nearly stalkless, and with lobes radiating from the centre on the stem.

The calyx is spreading, and the 5 green sepals are oblong, longer
than the 8-10 petals, which are tubular and bilobed, and are shorter than the stamens, which are numerous, curved, and veined one side. The leaves also have prominent veins below. The honey-glands are half as long as the stamens. The few fruits are 1-celled fruits with many seeds, with an erect style.

The plant grows to a height of 2 ft. It flowers from March to April and is perennial and deciduous.

The stigma is ripe first. The petals are minute but secrete honey. The 3-4 yellowish-green flowers open widely, and there is abundant honey, but the inconspicuous character of the flower causes it to be less visited than would be expected. Owing to the pendulous nature of the flower it is protected from the rain and from some classes of insects. The styles turn outwards and then are just beneath the nectar-bearing petals. Afterwards they turn upwards. By this time the anthers are ripe and take their place. The flower is visited by bees and humble bees.

Hellebore is aided in dispersal by the wind. The follicle which opens above contains many seeds, which are blown out of the ripe fruit by the wind.

This plant is more or less a lime-lover, frequenting chalk or limestone districts, but is also fond of humus, requiring the humus soil of a woodland habitat in which there is also a lime soil mixed.

A fungus, Phyllosticta helleborella, is parasitic upon this plant, and on the Continent Phytomyza hellebori attacks it.

The generic name is the Latinized form of the Greek name, while viridis is the Latin for green.

The English names for this plant are: Bear's-foot, Boar's Foot,
Fellon-grass, Green Hellebore, Bastard Hellebore, Peg-roots, Setter-wort.

It was said to guard the home from ill, and to be a powerful antidote against madness. Burton, in his *Anatomy of Melancholy*, says:

"Borage and hellebore fill two scenes,  
Sovereign plants to purge the veins  
Of melancholy, and cheer the heart  
Of those black fumes, which make it smart.  
To clear the brain of misty fogs,  
Which dull one's senses and soul clogs,  
The best medicine that e'er God made  
For this malady, if well assay'd."

Floors were strewn with it formerly, but instead of being beneficial it only introduced evil odours into the house. The plant has been used as a cure for worms since Hippocrates' time (fourth century). It was retained in the British Pharmacopoeia up till 1851, but is now discarded. It was used in the same way as Black Hellebore, but in any form is very dangerous.

**Essential Specific Characters:**—

12. *Helleborus viridis*, L.—Stem few-flowered, leaves digitate or pedate, veins below prominent, cauline leaves sessile, sepals petaloid, spreading, yellowish-green, petals small, shorter than the stamens, tubular.

**Columbine** (*Aquilegia vulgaris*, L.)

This beautiful plant has not been found in any early deposits. It ranges throughout the Northern Warm Temperate Zone in Europe, Morocco, the Canaries, Siberia, and Asia as far as the west part of the Himalayas. It is absent from Hunts, Brecon, Radnor, Montgomery, S. Lines, S.E. Yorks. In Scotland it is found in Dumfries and Kirkeudbright, doubtfully elsewhere. In Yorkshire it is found at 1000 ft., and is common to the N.E. and W. of Ireland.

The Wild Columbine is one of those plants which, though conspicuous enough, elude the grasp of all but the more diligent botanists and plant-hunters. Such plants, when discovered, serve to mark a red-letter day in the annals of the collector. It is fond of rocky knolls in woods, where it secures shelter from heat and wind. Nestled amid such fastnesses on a small scale it presents one of the most pleasing pictures in a woodland scene, standing erect and graceful in a natural clearing in the oakwood amid wide patches of bracken or the bluebell, relieved by graceful hanging panicles of Millet Grass.
Accustomed as we are to this plant in the garden we know its tall, graceful habit, with large, drooping, blue flowers in a raceme or group, and leafy stem below. In habit it resembles Meadow Rue, but differs from it and all other flowers of the Buttercup group in many particulars.

The inbent hollow bottom of the petal in the corolla gave it the name Aquilegia, in allusion to the incurved talons of an eagle's claws. Columbine, again, refers to the flower's shape, like a dove's nest. The flat part of the petal of the flower is blunt and shorter than the stamens. The five sepals are petaloid. There are five follicles, which are erect, open above. The seeds are black and shining, minutely granular.

This plant is often 2 ft. high or even 3 ft. It is in flower from May to July and is perennial.

The five petals are large and conspicuous, each one hollowed from the claw upwards, to form a hollow spur or horn-shaped cavity, 15–22 mm. long, with a cup-like mouth, admitting a humble bee's head, and the narrow tubular part is curved inwards and downwards above, containing the honey secreted by a fleshy thickening in the spur. Bees with a long proboscis hold on to the flower below, clutching hold of the base of the spur with their fore legs, and with their mid and hind legs they clasp the stamens and pistil, which project obliquely downwards in the middle. They introduce the head into the aperture of the spur where the outer wall touches the end of the proboscis following the curve of the spur. In younger flowers the hind part of the bee's body touches the anthers, closely surrounding the carpels covered outside with pollen, and in older flowers the same parts touch the carpels which have become elongate, and spread the stigmas farther apart. So cross-pollination follows.

The visitors are Bombus hortorum, B. terrestris, B. agrorum, Halictus. B. terrestris cannot reach the honey and bites a hole at the base of the spur in order to obtain it. Holes may frequently be seen and are due to this cause.

The Columbine is adapted to wind dispersal, the numerous seeds being shaken out of the follicle, open above, when the latter is ripe.

It is a rock plant, choosing a rock soil, which may be granitic, schistose, or even a sand rock with some humus.

Ecidium aquilegic is a cluster-cup fungus which lives on this plant. The moths, Gray Chi, Polia chi, Anistoma uhmaria, Small Ranunculus, Hecatera dysodea, Pterophorus cosmodactylus, the Homopteron, Hyalocteri trirhoda, and the fly, Phytomyza aquilegic, frequent it.
Columbine is from the Latin columba, pigeon, in allusion to the shape of the flower. Aquilegia, a name given by Tragus, is from aquila, an eagle, the spur of the corolla being like an eagle's claw. Vulgaris means common, though it is rather rare. Its English names are Blue Starry, Boots-and-shoes, Capon's-feather, Capon's-tail, Cock's-foot, Colourbine, Cullavine, Culverkeys, Culverwort, Curranbine, Dove's-foot, Granny's Night-cap, Hawk's-feet, Hen and Chickens, Lady's Shoes, Lady's Slippers, Snapdragon, Sowwort, Two Faces under a Hat.

Culverkeys is given in allusion to the shape, like a door or culver, culver being columba, and the little flowerets little keys (compare also Culverwort). It was once known as Herba iconis, and believed to be the lion's favourite plant.

In the fourteenth century it was recommended as a remedy for quinsy. Then a tincture of it was employed to strengthen the gums. The plant has long been cultivated in the garden, and is a delightful flower.

Essential Specific Characters:—

13. Aquilegia vulgaris, L.—Stem with few leaves, leaf biternate, lobed, flower blue or white, 5 sepals petaloid, spur of petal incurved containing honey, limb shorter than stamens, capsule a follicle, hairy.

Sweet Violet (Viola odorata, L.)

This plant has not been discovered in any ancient deposits in which seeds of living plants are preserved. At the present day it is found in Europe, North Africa, North and West Asia, as far as the Himalayas. In Great Britain it is absent from Radnor, Cardigan, in S. Wales; in N. Wales it occurs only in Carnarvon, Flint, Denbigh, and Anglesea; in the Mersey province it is absent in Mid Lanes; and is found also in Scotland in Dumfries, Kirkcudbright, Renfrew, Peebles, Selkirk, Rox-
burgh, Linlithgow, Mid and North Perth. In some of these it was doubtless introduced. It is wild in the east and south of England, and perhaps also in the east of Ireland. It occurs in the Channel Islands.

The Sweet Violet is the very breath of the woods in early spring, and banks of violets with deep-blue flowers carpet the woods and thickets over the greater part of the country. One may pick the Lesser Celandine with the sweet-scented Violet growing side by side. Besides the shaded woods the Sweet Violet lurks under hedges along the shadier lanes or in the fields. Its existence near houses and villages has cast doubt on its being native everywhere.

The Sweet Violet is generally social in habit, many plants being produced around an older one yearly by the loose procumbent stems which are put forth from the axils of the terminal rosettes, the runners being long and creeping. It is thus a prostrate plant, which extends itself laterally.

The habit is the loose rosette or prostrate habit. The underground stems are thick, scaly, with rooting stolons. The plant does not flower the first year. The stipules are broad, lance-shaped, glandular, fringed with hairs, shortly pointed. The normal leaves are shining, heart-shaped to kidney-shaped, as broad as long, smooth or with few hairs. The autumn leaves have the lamina and leaf-stalks slightly hairy, with depressed hairs, the lamina longer than broad, with an open sinus. Some or no leaves persist till next spring.

The flowers are dark bluish-purple, fragrant. The flower-stalks are hairless, the bracts usually above the middle. The sepals are oval, blunt. The petals are egg-shaped, deep violet inside with a bluish-white base, dark blue outside with a deep violet spur. The green cleistogamic summer flowers are fertile, as are the spring flowers.

The capsule is round, bluntly 3-angled, downy, often purplish.

The Sweet Violet is rarely more than 6 in. high. May is the latest month in which it flowers, beginning in March. It is perennial.

The flowers, though concealed by the leaves, are sweet-scented. The end of the pistil which bears the stigma is not globular, but like a bird's head, standing a little distance from the lower petal, though close to and bent down into a hook, and fills the mouth of the flower. The pistil is pushed up by a visitor inserting its head below the stigma. The insect parts the ring of anthers and its proboscis is covered with pollen. The base of the pistil secretes a fluid which moistens the insect's proboscis, and causes the pollen, which is dry, to adhere to it. The pollen is dry so that it may fall into the cavity, otherwise the insect would not touch it.
The insects visiting it are Hymenoptera (Apidae), Diptera (Bombyliidae), Lepidoptera (Small Tortoise-shell Butterfly, Vanessa urticae, Brimstone, Rhodocera rhanni). To prevent rain reaching the honey the flower is borne on a long stalk, and the pollen is by this means allowed to fall and to be secreted between the free ends of the stamens and the pistil, i.e. not at their base. The pollen is loose and dry, assisting it to remain between the anthers and the pistil. The style is thin below, for insects to bend it, and is curved. The membranous extremity of the upper anther-stalks overlaps the ends of the two middle stigmas, so that the bee can move the pistil and get at the pollen more easily by setting it free. There are lines on the carpels which serve as honey-guides.

There are two kinds of flowers, one large and much visited by insects; the other smaller ones are not so much visited, as they have no scent or honey, and the corolla is absent or rudimentary. They are called cleistogamic flowers, and secure pollination with little effort. The anthers have little pollen. They are at first like ordinary buds, the carpels occupying the middle.

The spring flowers are coloured, the others have no corolla in the
autumn and look like buds, but later appear to be capsules. These have more numerous seeds than those of the spring flowers. They hang down upon the ground, and when ripe the capsule bursts and the seeds are sown around the plant in the ground. Often if the soil is loose the capsule is buried before the seed is mature. The seeds are dispersed by ants, the elaiosomes possessing nutritive matter, or are jerked out by the wind. The capsule when ripe splits open.

The Sweet Violet is infested by the fungi *Peronospora violae*, *Phyllosticta violae*, *Ascochyta violae* (Violet leaf blotch), *Cercospora violae* (Violet leaf spot), *Alternaria violae* (Violet spot disease), and *Puccinia violae*. *Urocystis violae* grow upon it. *Argynnis adippe*, the High Brown Fritillary, lives on it.

Pliny gave the name *Viola*, Latin for Violet. Theophrastus called it *Iou*, because it was first presented to Jove by Ionic nymphs, or because when Io was changed into a cow the earth brought forth the Violet. The second Latin name refers to its sweet-scented character.

The Violet is called Appel-leaf, Bairnwort, Banwort, Blaver, Bessy Banwood, Fine-leaf, Vilip, Violet (Blue-, English-, March-, Sweet-Violet).

Shakespeare, in referring to the metempsychosis or transfer of souls in the form of flowers, in *Hamlet*, makes Laertes wish violets may spring from Ophelia's grave:

> "Lay her in the earth,  
> And from her fair and unpolluted flesh  
> May violets spring."

This may be compared with Persius, *Satires*:

> "E tumulo fortunataque favilla  
> Nascentur violae".

Tennyson also writes:

> "And from his ashes may be made  
> The violet of his native land."

To dream of the violet was said to mean advancement in life. It was used in garlands and spring bridal bouquets in ancient Greece.

In spite of its association with early death, it is the emblem of constancy.

> "Violet is for faithfulness,  
> Which in me shall abide,  
> Hoping likewise that from your heart  
> You will not let it hide."
The Violet was dedicated to Venus.

In Greece violets were worn in the chaplet because it was imagined they dispelled the fumes of wine and drove away headaches. Its sweet scent is employed in perfumery. The petals are used in syrup given to children. It had many fanciful qualities in medieval times. Thus, "stamped with water it casts out a broken bone".

The root is emetic, being employed as a substitute for ipecacuanha. The syrup is used by chemists as a test for acids or alkalies, being cultivated at Stratford-on-Avon for that purpose. The Violet is laxative. Sherbet is supposed to have violet syrup as one of its constituents. The Koran praises it, holding it, like the Prophet high over men, superior to all other flowers. When dried the flowers are used in bonbons, being candied. The seeds are diuretic, and powdered were used for gravel and stone.

The species is cultivated, and white and blue forms are equally sweet-scented, while both single and double forms are produced.

This plant was used as a beautifier to render the eye lustrous, enlarging the pupil. The Grecian women colour their eyelids blue with it, and make a preparation of it for the eyes.

The Violet is a humus-loving plant requiring a humus soil, which is obtained in woods and under hedge banks. It grows on a variety of subsoils formed by different geological formations, both arenaceous and oolitic.

Essential Specific Characters:—

42. Viola odorata, L.—Stem with stoles from axils of terminal rosettes, creeping, leaves cordate, crenate, downy, flowers blue or white, scented, spur straight, lance-shaped sepals obtuse, bracts above middle of peduncles.

Red Campion (Lychnis dioica, L.)

This plant has been found in Interglacial, late Glacial, Neolithic, and lacustrine deposits. To-day it is found in the Temperate and Arctic Zones in Arctic Europe to the Caucasus, Siberia up to Lake Baikal, and Greenland. It is found in every part of Great Britain, except Hunts, Stirling, Main Argyll, and Caithness.

In most of our English counties we look for the Red Campion in early spring, with its pink blooms, springing up from the moist soil of ditch or hedge bank. But there are in some districts wide areas where it is entirely absent, and these same districts also lack its usual associates elsewhere—Dog's Mercury, and Lords-and-Ladies or
Cuckoo Pint. Woodlands of this common but beautiful English wild flower, which helps with Hedge Garlic and Greater Stitchwort to beautify also the country lanes, are a lovely sight in spring.

The Red Campion is a tall, erect plant, with several stems with thickened joints, often bent, round, branched, the upper ones dividing. The radical leaves are blunt above, stalked, the stem-leaves linear lance-shaped, tapering. The whole plant is clothed with hairs. The stems often have a purple tinge. Numbers of plants grow together, and a bed of Red Campion in bloom is a thing to be remembered. The plant grows in tufts with many leafy shoots.

The flowers grow on dichotomous panicles, regularly dividing into two, and the plants are dioecious. The petals are divided into two nearly to the base, with narrow, spreading lobes. The calyx-teeth are triangular. The capsule is nearly rounded, with ten teeth, the latter bent back. The seeds are black, and have rows of points arranged lengthwise.

Red Campion is often 3 ft. high. The flowers are in bloom in June and July. The plant is perennial, and may be propagated by division.

The flowers are female or pistillate, and male or staminate, and though flowering by day (diurnal) they have much the same character as *Lychnis alba*, but are conspicuous and large, and adapted to visits by insects with a fairly long proboscis. Red Campion is dioecious, and the pistillate plant is more robust. A black or brown powder is produced by a fungus, *Ustilago antherorum*, which attacks the stamens in this and *L. alba*, and the spores are dispersed like pollen by insects.

The seeds are adapted to wind dispersal. The capsule has a wide
mouth, and the seeds are scattered far and wide by the wind or by passers-by.

The soil required is a humus soil, and it is therefore a humus-loving plant, ranging over many different formations.

This plant is attacked by the fungus *Ustilago violacea*.

A beetle, *Phylonomus plantaginis*, Lepidoptera, such as Tawny Sheers (*Dianthecia carpophaga*), The Lychnis *D. capsincola*, *Nemophila plantaginis*, Yellow Shell (*Camptogramma bilineata*), Rivulet (*Emmelesia affinitata*), Sandy Carpet (*E. decolorata*), Gelechia *viscariella*, *Lygris flavofasciata*, Netted Pug (*Eupithecia venosata*), feed on it.

The second name, *dioica*, refers to the dioecious habit.


As to the name Bachelor’s Buttons, Johnson says: “The similitude that these flowers have to the jagged cloath buttons anciently wore in this kingdom gave occasion to our Gentlewomen and other lovers of flowers in those times to call them Batchelor’s Buttons”. Another name Lousy Soldier’s Buttons refers to the dislike to gather them when covered with small insects (*Aphidæ*). The plant is called Dee (or Die), and a superstition exists amongst Cumberland children to the effect that if they pluck the flower, some misfortune will happen to their parents. It was supposed to exert a charm over the fortunes of lovers. It was called “Great Candlestick” because that was lighted up on St. John the Baptist’s Day.

When it is cultivated it sometimes becomes double. A white-flowered form exists in a wild state.

The flower is visited by the small Elephant Hawk Moth in the evening, being partly crepuscular.

**Essential Specific Characters:**

49. *Lychnis dioica*, L.—Dioecious, stem tall, erect, leaves lanceolate, flowers pink, calyx teeth triangular, peduncle downy, capsule globular, with 10 recurved teeth.
Lime or Linden (Tilia vulgaris, Hayne)

This tree has not been found fossil in Britain, but in the Pine and Oak Zones in S. Sweden. It is found in the North Temperate Zone in Europe and the Caucasus. The Common Lime, as is suggested by its absence from any deposits where fossil seeds and fruits have been discovered, as well as by its history, is not truly aboriginal, and its distribution is dependent upon planting. It is, however, well dispersed.

The Common Lime has been requisitioned for forming plantations for many centuries, but was doubtless introduced here. Where it is not found forming plantations it is planted in and around gardens and in parks to create a landscape effect, and may be found in most country districts, as well as in towns, where it thrives, but it is often superseded by other species of Lime.

The Lime has the tree habit. The trunk may exceptionally reach a height of 120 ft. The bole is thick. The branches are spreading, hanging down at the extremities. The twigs are hairless. The leaf buds are drooping at first; if horizontal, they would be more exposed to cold. The leaves are thin, membranous, light transparent green, twice as long as the leaf-stalks, rounded to heart-shaped, unequal at the base, hairless, except at the branching of the veins below where there are
No. 1. Lime (Tilia vulgaris, Hayne)

a. Part of flowering branch with leaf, inflorescence arising from large foliose bract, and pendulous flowers in bud and one open, with petals, anthers, and central pistil.
b. Portion of flowering branch with flower-stalk and flowers.

No. 2. Wild Strawberry (Fragaria vesca, L.)

a. Vertical section of flower (enlarged), showing sepals (inferior), petals alternating with them; young fruit on the gradually convex receptacle, and stamens.
b. Plant, with root, runner, tuft of leaves, and flower-stalk with flowers and achenes embedded in the fleshy receptacle.

No. 3. Holly (Ilex Aquifolium, L.)

a. Group of flowers in cyme, with parts in four; 4 sepals, 4 petals, 4 stamens, and central pistil, with subtending leaves showing spines at the end of the venus.
b. Berries, red when ripe.
c. Berry cut in section; a 4-celled stone or drupe with 4 stones.

No. 4. Wild Cherry (Prunus Cerasus, L.)

a. Vertical section of flower, showing sepals, petals, and perigynous stamens, and central pistil with long style.
b. Fasicle of flowers, showing fugacious notched petals, and turned-back sepals of the gamosepalous calyx.
c. A drupe, with a leaf, showing smooth under surface.

No. 5. Wood Sorrel (Oxalis Acetosella, L.)

a. Five-angled capsule, with 2 seeds in one cell exposed.
b. Plant showing root, scales, leaves, some "asleep"; and 2 flowers, with 5 petals, with veins or honey-guides, anthers, and stigma.

No. 6. White Beam (Pyrus Aria, Ehrh.)

a. Three fruits (pomes), showing the dotted brilliantly coloured pericarp, and persistent calyx-lobes.
b. Inflorescence (cymose), with flowers showing the 5 petals, and many stamens; also a leaf with coarsely toothed margin.
1. Lime (Tilia vulgaris, Hayne).
2. Wild Strawberry (Fragaria vesca, L.).
3. Holly (Ilex Aquifolium, L.).
4. Wild Cherry (Prunus Cerasus, L.).
5. Wood Sorrel (Oxalis acetosella, L.).
6. White Beam (Pyrus Aria, Elfr.).
woolly tufts, smooth above. The young leaves have stellate hairs. The stipules are large, crimson or ruby.

On the under surface, where the nerves are spreading, are triangular areas, enclosed by the walls of the nerves and a fringe of long hairs. Lindstrom regards these as domatia or abodes of mites, which lay their eggs in the fruit in special cavities. The mites remain in the domatia by day, coming out at night, and are thought to live on the spores of fungi which may be found on the leaves. Where the mites are abundant at any rate the leaves are healthy. These domatia are found also in the Oak, Elm, Alder, Holly. The mites do not leave the domatia in the day, but at night travel over the leaves.

The flowers are sweet-scented, pale whitish-green, in a naked cyme, which has a lance-shaped leaflike bract at the base of the drooping flower-stalk, which bears many flowers. There are 5 deciduous sepals, 5 petals. The stamens are numerous, free or united. The ovary is round, 5-celled, the cells 2-seeded. The fruit is 1-celled, leathery, woody, not ribbed, downy.

The tree is often 50 ft. high. It flowers in June, July, and August. It is a deciduous tree.

The flowers of this Lime are exceptionally sweet, and smell like
honey. The scent is strongest at a distance of 30 yd., as in the case of the Vine, and the flowers are much visited therefore by bees—though the flowers are not conspicuous—for the abundant honey which is held in the sepals at the base, and short-lipped insects can reach it. The flowers are drooping and thus protected from the rain, and the leaves above and the bract-like appendage also shelter them above. The stamens are numerous, and before the stigma is mature they shed their pollen, so that the flower cannot pollinate itself. It is proterandrous, the anthers ripening first. The stamens are taller than the sepals or petals, and curve outwards. Insects are bound to settle on the space between the anthers and stigmas, or on either of them. The stamens are bent out, away from the pistil, which occupies the axis, and self-pollination is precluded. The seed rarely ripens, it is said, in Britain, but it does so more than is generally supposed.

The visitors are Hymenoptera (Apidae, Sphegidae) and Diptera (Syrphidae, Muscidae, Tabanidae).

The Lime is adapted to wind dispersal like most trees; the stalk bearing the cluster of nuts, which hang down below a wide scale-like bract or leaflike organ, acts as a sort of aeroplane, and carries the seeds to a distance, the fruit not opening.

This tree is a sand-lover or rock-lover, requiring a sand or rock soil.

The Lime is infested by many fungi.

A common fungus is Polyporus sulphureus. Eriophyes tilicé forms nail-like outgrowths on the leaves. Cecidomyia tilicola forms galls in the flower-stalks. Fungi of the genera Nectria, Psilocybe, Hypholoma, Flammula, Pleurotus, Collybia, Gloeosporium, and Exosporium infest it also. The beetles Rhyynchites betuletii, Dorcus parallelepipedus, the Hymenopterous Eriocampa, the Lepidoptera Camberwell Beauty (Vanessa antiopa), Lime Hawk-moth (Smerinthus tilia), Pale Prominent (Notodonta palpina), Marvel du Jour (Miscelia aprilius), the Hemipterous Phytocoris tilia, the Homoptera Pterococcus tilia, Aspidiotus tilia, and the Diptera Cecidomyia tilia. Sciura tilicola are found on the Lime.

Tilia, Pliny, is the Latin for lime tree, and vulgaris denotes its universal occurrence. Lime is a variant of the old English lind, which is a Teutonic root. The Lime is called Lenten, Lime Tree, Lin, Linde, Line, Teili, Til, Tile or Tilet Tree, or Tillet or Tilet-tree, White Wood.

"'Now tell me thy name, good fellow,' said he, Under the leaves of lyne."
This tree was held in veneration, and superstitious people might formerly often be seen carrying sickly children to a forest for the purpose of dragging them through the holes so commonly to be found in this tree.

Garlands of flowers were tied with bark of the lime at banquets in the old days to prevent intoxication.

"Nay, nay, my boy, 'tis not for me
This studious pomp of Eastern luxury.
Give me no various garlands fine
With linden twine,
Nor seek where latest lingering flows
The solitary rose."

The inner bark or bast is used for matting in the garden, and, imported from Archangel, it is called Russian. The wood was used formerly in the days of wood engraving for wood blocks, and Holbein's work is said to have been done with lime blocks. The box is now very largely used in its place. Honey made by insects from this tree is said to be the best honey. The wood is used for turned bowls and dishes and pill-boxes. Baskets and cradles are made from the twigs. The bark was once used for writing tablets, and also rope. Formerly leather was cut on planks of the lime.

The Lime was formerly used largely in wood carving. Gibbons executed much good work in it, to be seen in churches and elsewhere, e.g. St. Paul's, Trinity College library, Cambridge, Chatsworth Hall.

Sugar is made from the sap.

Essential Specific Characters:—

65. *Tilia vulgaris*, Hayne.—Tall tree, leaves large, glabrous, with woolly tufts in axils of veins beneath, flowers yellow, in a cyme, with an oblong, leafy bract, fruit not ribbed, downy.

**Wood Sorrel** (*Oxalis Acetosella, L.*)

Seeds have been found in late Glacial beds at Edinburgh, and in Neolithic beds there and in Essex. The *North and Arctic Temperate Zones* describe its limit, the plant occurring in Arctic Europe, North Africa, N. and W. Asia to the Himalayas, and N. America. It is found in most parts of Great Britain, but not in Hunts, Cardigan, South Lines, Mid Lanes, Shetlands, elsewhere as far north as the Orkneys. It ascends to nearly 4000 ft. in the Highlands. It is found in Ireland and in the Channel Islands.
Woods, where there is little or no undergrowth to outgrow this tender little wild flower, are the places in which to look for Wood Sorrel. It is a shade-loving plant which may be found growing on the sloping banks of little tree-sheltered ravines removed from woods, but is most luxuriant and widespread in the latter.

This delicate, pretty, bulbous plant has no aerial stem. The leaves are ternate or divided into 3, and consist of 3 leaflets, hairy, stalked, three-nerved, the leaf-stalks not winged. The root is toothed and creeping.

The scape or flowering stem is longer than the leaves, with two bracts or leaflike organs at the top, and is single-flowered. The flowers are white with purple veins, and of two kinds, the smaller being cleistogamic, like the Violet. When flowering is over the scape or flowering stem bends down, and when the seed is ripe it becomes erect. When ripe the fruits may be opened at the angles, and the seeds are thrown to a distance. The capsule is divided into five chambers, with two black, smooth seeds in each attached to the central pillar.

Three inches is the greatest height of this lowly, graceful flower, which blooms in April and May. It is perennial, increasing by offsets.

Wood Sorrel is dimorphic, i.e. there are two or more forms, and the flowers are cleistogamic, like those of the Violet. Here the smaller ones are cleistogamic and bury the capsules in the ground, and the larger ones are normal and conspicuous. The anthers and stigma mature together. In the rain the flowers bend over. There are five fleshy nectaries or knobs at the base of the petals. The flowers open between 9 a.m. and 6 p.m. The dimorphic characteristics, with the variations between long- and short-styled forms, affords greater chance of cross-pollination.

Wood Sorrel disperses its seeds immediately around it. When the capsule is mature it is stretched, and this causes it to split open and eject the seeds, by a catapult motion, to some distance. Really the seeds eject themselves. The cells of the inner layer are small and swollen. The coat splits down one side, and the inner cells expand, turn the coat inside out, the inner and outer coat changing place.

This plant is a lover of humus, and requires a humus soil, being also to a certain extent a clay-lover, requiring a clayey soil.

The Wood Sorrel is infested by no fungi or insect pests.

Oxalis, Pliny, is derived from the Greek oxus, sharp, acid, and aceto-sella is from Latin acetum, sour wine, vinegar; Sorrel is derived from sour.
WOOD SORREL

Wood Sorrel is known by many names: Alleluia, Alolida, Bird's Bread-and-Cheese, Bread-and-Cheese, Bird's Clover, Sorrell, Cuckoo's, Gowk's, or Sour Clover, Cuckoo's Bread-and-cheese, Cuckoo-flower, Cuckoo-spice, Cuckoo's Victuals, Sour Grass, Green Sauce, God A'mighty's Bread and Cheese, Gowk Meat, Hallelujah, Hare's Meat, Hearts, Lady's Cakes, Lady's Clover, Lady's Meat, Laverocks, Lu-jula, Rabbit Meat, Sham-rock, Sheep Sorrel, Sleeping Beauty, Sleeping Clover, French or Wood Sorrel, Sour Clover, Sour Sals, Stabwort, Stob-wort, Stopwort, Stub-wort, Wood-sour, Wood-sower.

Wood Sorrel was called Stabwort because it was said to be good for wounds, punctures, stabs, &c., and Stub-wort, from growing at the roots of old trees. The name Alleluia is explained, "By reason when it springeth forth and flowereth Alleluia was wont to be sung in churches" (i.e. between Easter and Pentecost).

The name Hearts is from the shape of the leaves.

The flowers were formerly called fairy bells, and it was thought that the fairies were summoned to their moonlight revels by these bells. Wood Sorrel was called St. Cecilia's Flower, St. Cecilia's Day being celebrated 22nd November, on account of the trumpet-like form of the leaves. Another legend attributes the spotting of the leaves to their being blood-drops from the Cross.

The foliage is extremely sharp and acid, hence some of its names. It contains a binoxalate of potash. The juice is expressed and evaporates, and the crystals are produced from which we obtain salts of lemon. This is used for removing ink stains. It is poisonous and
must be used with caution. Wood Sorrel was used as a salad. It has been endowed with cooling, antiscorbutic (remedy for skin diseases), and diuretic properties. An infusion was given in cases of fever.

The leaves expand in wet weather and droop in dry weather, and are sensitive also to the touch. They change their position in relation to the light in four ways: the whole leaf may move, it may change its angle, the chlorophyll granules in the cells may rearrange themselves, as in Duckweed, or the grains may alter their form. The leaves close and droop in the sun and at night. The short stalks effect these two movements, absorption and transpiration enabling this sensitiveness to show itself in action.

Essential Specific Characters:

70. Oxalis Acetosella, L.—Stem a rhizome, rhizome toothed, leaves ternate, hairy, radical, leaflets obovate, peduncles 1-flowered, flower white with purple veins, 2 bracts in middle of scape.

Holly (Ilex Aquifolium, L.)

Interglacial beds in Sussex, Neolithic beds in Essex have yielded evidence of the antiquity of the Holly. It is found in the Northern Temperate Zone in Europe from South Norway to Turkey and the Caucasus and Western Asia. It is found in 105 vice-counties of Great Britain, but in some districts is mainly planted, and ranges from Caithness southward, ascending to 1000 ft. in the Highlands. It is also common to Ireland and the Channel Islands.

In some districts whole woods are filled with an undergrowth of Holly, while in other districts there is little or none. In most hilly tracts it occurs sporadically lining the hedgerows at intervals along the roadside, and in the fields, whilst in these last a few may form a small coppice by themselves, just as Hawthorns do when allowed to grow up from seed.

Holly is a tall tree or shrub, 10–40 feet high, with a single, upright, main stem, branched above, or with several stems growing out together from a common base. The young shoots are downy. The bark is smooth, ashen-grey or black. The foliage is dense, dark, shiny, smooth. The leaves are egg-shaped, acute, wavy, with prickly points below, losing them higher up the tree. The borders are cartilaginous. These spines are usually held to be a protection against browsing cattle, but are probably adaptations (as in the Cactus) to dry-soil conditions. The cuticle is thick, which is another feature of dry-soil types, and a protection against cold. The smoothness of the leaf and
its twisted form may serve to prevent the leaves being weighted with snow, a character common to many deciduous trees and shrubs. The tree is compact, and often makes dense bushes. There are black, minute, leaf-like organs, pointed, and functionless.

The flowers are in umbel-like cymes, many-flowered, on short stalks, which are in the axils. The flowers are white or cream colour. Though frequently the flowers are complete the plants may be some-

times more or less dioecious, and are variable in the structure of the flower. The sepals are egg-shaped, downy, 4-5-lobed, and do not fall. The corolla is wheel-shaped, with petals united below or distinct, inversely egg-shaped, hollow above. There are 4 stigmas which are stalkless, free or united. The 4 stamens are attached to the corolla with awl-like stalks and oblong anthers. The ovary is 4-6-celled. The drupe or berry is round, and contains a 4-5-celled stone or 4 stones. They are orange or scarlet when ripe. The seeds have a membranous outer coat.

From 10 to 30 ft. is the usual height of the tree. Flowers may be
found between May and August. The Holly is an evergreen tree, increased by suckers and seed.

The flowers are small and often polygamous. The stigmas are liable to be self-pollinated, being stalkless or nearly so, and the awl-shaped anther-stalks therefore hang above them, and self-pollination can easily ensue. Moreover, the male and female flowers are in other cases on different trees or generally so, and in the larger female flowers the sterile stamens are so large that the plant might be both male and female, examples of which type actually exist. The male flowers have a rudimentary pistil. There is little honey, which is exposed.

The Holly is dispersed by animals. The fruit is edible, and the seeds are dispersed by animals.

The soil required is a humus soil, the tree being a humus-lover, but it is also a rock plant, and will grow on very barren formations on dry soil.

The leaves are mined by larvæ of Phytomyza ilicis. The beetles Lucanus cervus, Sinodendron cylindricum, Triplax aenea, and Epurea augustula visit it. It is also infested by Aspidiotus britannicus, Pae disse ophthalmonicana, Chromatomyia ilicis. The Privet Hawk-moth feeds upon it, also the Azure Blue Butterfly, and the moth Steganopy tycha navana.

Ilex, Pliny, is Latin for Holm Oak; and aquifolium, Pliny, alludes to the sharp-pointed leaf. Holly is A.S. holegn.

Holly goes by the name of Aunt Mary’s Tree, Christmas, Crocodile, Free Holly, He Holly, Helver, Holieverd, Hollin, Holland, Holyn, Holly, She Holly, Holm, Hull, Hulver, Poison berry, Prick Hollin, Spark Holm. He and She Holly are names given to trees with or without prickles.

In connection with Holly there is a Holly Dance at Holly time or Christmas, when the Holly-bough is a decoration.

Formerly in Northumberland Holly leaves were used in divining. They were plucked late on a Friday by persons who keep silence from the time they go out till dawn next day, the leaves were collected in a three-cornered handkerchief, and nine were selected when brought home, tied with nine knots in the handkerchief, and placed under the pillow. Good dreams accompany the observance of this rite.

“Get ivye and hull, woman deck up thyne house.”

And

“Save hulver and thorne thereof flaile for to make”.

In the time of Pliny, Holly was planted near houses to ward off
lightning. The name so resembles holy that it was said to cause witches to be afraid of the tree. It was thought to possess virtues as a dream plant, and was used on Christmas Eve, New Year's Day, Midsummer, and Hallowe'en. An anxious lover would place three pails of water in her bedchamber and pin three leaves of Holly to her nightdress, near the heart, and then go to sleep. She thinks she will be roused from sleep by three yells, as though from three bears, and three hoarse laughs. When they have died away her future husband appears and changes the position of the pails.

Wreaths of Holly were sent for congratulation at a wedding in Rome. The ancients regarded it as a sign of the life which preserved nature, through winter, and it was brought into temples to comfort sylvan spirits.

A cure for chilblains is to thresh them with Holly. It was held that its flowers formed water and drove off lightning. According to an old tradition if a Holly stick is thrown at an animal, even without hitting it, it would return and lie down by it. It has been used in feasts of purification of savage people. In Germany it was the Christ thorn. It is universally grown as an ornamental shrub, and hedges are made of it and kept clipped like box. Bird-lime is prepared by boiling it. The bark is used in place of cinchona. In the Black Forest the natives use it to make tea. Paraguay tea or maté is derived from an Ilex (I. paraguayensis).

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Tunbridge ware is made from Holly. The wood is white and hard, and used for inlay work.

Holly is very long-lived, and is ubiquitous, preferring a dry soil, but is slow-growing, and never reaches a great size.

Evelyn had a hedge at Deptford 400 ft. long, 9 ft. high, and 15 ft. broad.

Essential Specific Characters:—

72. Ilex Aquifolium, L.—Tree, with ovate leaves, spinose below, evergreen, shining, glabrous, peduncles many-flowered, flowers white, umbelte corolla rotate, berry red, poisonous.

Wild Cherry (Prunus Cerasus, L.)

There is no trace of this in early Glacial beds. It is found in the Northern Temperate Zone in Europe, eastward to the Himalayas, in the Azores, and Canaries. In Great Britain it is found in Cornwall, Somerset, N. Devon, Wilts, Dorset, Isle of Wight, West Sussex, throughout the Thames province except West Kent, in Anglia every-
where except in East Norfolk, Hunts, and only in Hereford, Warwick, and Salop in the Severn district; in Wales in Brecon, Pembroke, Cardigan, Carnarvon, Denbigh, and Anglesea. Elsewhere it is found in Leicester, Chester, Mid, West, and N.W. Yorks, Westmorland, and Cumberland. It is wild or well-established south of Yorkshire. It is rare in Ireland and the Channel Islands. Watson regards this with some hesitation as indigenous. The Wild Cherry, however, is a feature in some woodlands, notably in the south, where it occurs with other sylvan trees, such as Lime, Holly, White Beam, Mountain Ash, Way-faring Tree, Elm, Oak, Beech, Aspen, and others.

This is an erect, branched tree, with shortly stalked, egg-shaped, lancelike leaves, which are smooth, dark bluish-green, spreading in two series in bud, scalloped, and toothed. The flowers are in shortly stalked umbels or clusters, the buds having rough outer margins, white, the petals blunt above, nearly erect, and the corolla is cup-shaped, the calyx-tube not narrowed from side to side.

The petals have a short claw, and have a slight notch at the end. The fruit is globose, black or red, acidic and staining.

The Wild Cherry Tree is distinguished by its lesser stature. The height is rarely more than 5–8 ft. The tree flowers in April and May. It is a deciduous tree, increased by grafting. It is evergreen in Ceylon, and in S. Europe retains its leaves some time.

Anthers and stigmas ripen together, and spread far apart away from the centre of the flower. The stigmas overtop the inner stamens, but are only on a level with the outer stamens. In some plants the anthers are ripe first. The flowers last a week. If insects touch the stigmas and anthers with different parts of the body when they seek for honey cross-pollination may result. Insects collecting or feeding on pollen or honey indiscriminately cross- or self-pollinate the plant. When the flowers are oblique pollen may fall from the taller stamens upon the stigma. The Wild Cherry is visited by the Honey Bee, *Bombus, Osmia rufa, Andrena, Rhingia, Eristalis,* and *Lepidoptera,* such as *Large White* (*Pieris brassicae*), *Small White* (*P. rapae*), *Green-veined White* (*P. napi*).

The fruit is an edible, bright-coloured, ovary wall or drupe, with a soft outer coat, luscious when ripe, and dispersed by birds, man, &c.

The Wild Cherry is more or less a sand plant requiring a sandy loam, but also a lime soil and humus to a slight degree.

The Garden Cherry is subjected to numerous ravages by fungi and insects, e.g. *Exoascus, Podosphaera, Gnomonia, Plowrightia, Sclerotinia, Puccinia, Entomosporium, Corynum, Fusicladium, Cladosporium, Cerio-
spora, Fusarium, Bacillus. It is attacked by the Aphis, *Myzus cerasi* and by the *Scolytus rugulosus*, Garden Chafer, Mottled Umber Moth, Cherry Aphis, Common Cockchafer, Weevil, Large Tortoise Shell, Winter Moth, Cherry and Pear Sawfly, also by the beetle *Magdalinus cerasi*, the Hymenoptera, *Priophorus ructi*, *Pamphilus flaviventris*, the Lepidoptera *Cidaria psittacata*, Clouded Silver Streak, *Semasia waterana*, *Argyresthia pruniana*; and the fly *Rhagiletes cerasi* feeds on it.

*Cerasus*, Pliny, is the Latin for cherry-tree, so named from the place whence it was brought to Italy.

Wild Cherry is called Agriot, Arbouses, Tulties. When seen in dreams it was a bad omen, and to dream of it meant inconstancy.

"A cherry year, a merry year."

A person on the lookout to make use of opportunity is said "to have a ready mouth for a ripe cherry". And

"A woman and a cherry are painted for their own harm."

Their awkwardness to eat caused the proverb:

"Eat pear with the king and cherries with the beggar."
And

"Those that eat cherries with great persons shall have their eyes squinted out with the stones."

For fever on St. John's Day it was recommended to lie naked under a cherry tree and shake the dew on one's back.

It was dangerous to climb a cherry tree on St. James's Day, as the chance of breaking one's neck is great. The tree was consecrated to the Virgin, who wished one day to refresh herself when she saw some cherries hanging on a tree, and asked Joseph to gather some for her. He hesitated, and, mocking her, said: "Let the father of thy child present them to you". No sooner had he said this than the bough inclined itself to her. Christ gave one to St. Peter, reminding him not to despise little things. The cuckoo must eat three meals of cherries before it ceases to sing.

This plant is the origin of the Morello Cherry and Kentish cherries. The fruit is small and acid when wild. In the fourteenth century ground-up cherry stones were supposed by the Doctrine of Signatures to cure stone.

The wood is close, and used for cabinet-work, and for making pipes and cigarette-holders, as well as walking-sticks. A spirit is distilled from the fruit called Kirschwasser (German for cherry-water). Noyau and Ratafia are flavoured with the kernels, which contain prussic acid.

From a variety grown in Dalmatia Maraschino is prepared.

Essential Specific Characters:

92. Prunus Cerasus, L.—Shrub or tree, erect, 8-10 ft., leaves shortly stalked, doubly crenate, not drooping, glabrous, flowers in sessile umbels, white, calyx-tube not constricted, petals with a claw, fruit juicy, acid, red, round.

Wild Strawberry (Fragaria vesca, L.)

The soft nature of the fruits of this wild plant, in spite of the harder seeds, has prevented them from being preserved as fossils. The present distribution is limited to Arctic Europe, N. and W. Asia, the Himalayas, and North America. The Wild Strawberry is general in Great Britain, but does not occur in S. Lines, Mid Lanes, Stirling, E. Sutherland, Hebrides, though elsewhere as far north as Shetland, and it ascends to nearly 2000 ft. in the Highlands. It is common also to Ireland and the Channel Islands.

The Wild Strawberry is a shade-loving plant, which is to be found
in shady lanes where broad banks are overhung by trees or herbage, where moisture is uniform but not too abundant. It is seen at its best, however, and in greatest profusion, in those natural (or may be artificial) glades in woods where, in addition to continual moisture, light and sunshine are regularly diffused.

The wild plant is a much smaller form of the garden type, but closely resembling it in habit. It is freely stoloniferous, and the radical leaves are trifoliate, with serrate margins, sessile. The stolons are a foot or more long.

The flowering stems or scapes are clothed with down which is made up of spreading hairs, and are borne in axils of the radical leaves. The hairs on the pedicels are closely appressed. The calyx is reflexed in fruit. The receptacle is large and convex, and here is the source of the so-called berry. It is pulpy or succulent, bearing the numerous achenes, which are hard, and usually regarded as the seeds.

The Wild Strawberry is rarely more than 8 in. in height. The flowers are in bloom in April and May. The Wild Strawberry is perennial, and besides the stolons which spread it, it is propagated by seeds.
There are three kinds of flowers: female producing much fruit, complete less fertile flowers, and male flowers. Hermaphrodite and female flowers may occur on the same umbel, and hermaphrodite and female flowers on different umbels, and similar combinations with male flowers.

As the stigmas mature before the anthers the plant is cross-pollinated as a rule. The honey is secreted and concealed by a narrow, fleshy ring at the base of the tube, and is protected by the stamens and outer carpels. The petals spread out horizontally, and insects alight on the central disk. If an insect should alight on the petals, it thrusts its head between the stamens and touches the stigmas. It would be self-pollinated if both were mature at once, but the stamens ripen later, and the anthers open and expand into a flat disk, narrowing the intervening space so that flies cannot reach the nectaries without touching the anthers, which open at their edge, and are covered with pollen along the latter only. Pollen falls on the stigmas if insects do not visit the flowers. The visitors are Empis, Eristalis, Syrphus, Melithreptus, Rhinia, Syritta, Anthomyia, Musca, Anthrenus, Meligethes, Dasytes, Malachius, Mordella, Granmoptera, Thrips, Prosopis, Halectus, Andrena, Nomada, Apis, Oxybelus.

The fruit is an edible, brightly coloured receptacle, with soft outer coat, luscious when ripe, and dispersed by snails, birds, and man.

The Wild Strawberry is primarily a sand-loving plant, growing on sand soil, but requires also a fair amount of humus soil, and may also be a rocky-soil-loving species.

The fungi which infest the Strawberry are Spherotheca humuli, Sphacrella fragariae, Septoria fragariae.

The plant is galled by Aphelechnus fragariae, one of the Eel-worms. The flowers are attacked by the Golden Chafer; the fruit by ground beetles, Calathus cisteloides, Harpalus ruficornis, and Pterostichus vulgaris and P. madidus; the leaves by the Clay-coloured Weevil, Red-legged Weevil, Black Vine Weevil, and Strawberry-leaf Weevil; the roots by the small or garden Swift Moth, and Oliorhynochus picipes, O. tenebriocosus, O. sulcatus. The moths Cream Spot Tiger, Arctia villica, Lampronia prelatella, Hesperia malvae, Marbled Carpet, Cidaria russata, Nepticula arenata feed on it.

Fragaria, Pliny, is from the Latin fraga, meaning strawberries, which is from the Sanskrit ghra, fragrant, and the second Latin name means small, i.e. compared with F. clatior.

The Wild Strawberry is called Freiser, Hedge Strawberry, Strawberry.
This useful plant was dedicated to the Blessed Virgin.

"The Strawberry grows underneath the nettle,
And wholesome berries thrive and ripen best
Neighbour'd by fruit of baser quality."

The runners were used in medicine, being called Strebery Cyses, and used in a preparation for wounds, and a "Drynk of Antioch". As early as the reign of Edward I the Wild Strawberry was cultivated in England, and may be the origin of the Hautboy type (\textit{hautbois}, high wood, of Bohemia).

\textbf{Essential Specific Characters:—}

97. \textit{Fragaria vesca}, L.—Stoloniferous, leaves green, leaflets ternate, sessile, hairy, peduncles erect with spreading hairs, flowers small, white, petals entire, calyx recurved in fruit, hairs on pedicels appressed, fruit fleshy with small achenes, on a receptacle.

\textbf{White Beam} (\textit{Pyrus Aria}, \textit{Ehrh.})

Fruits of White Beam have been found in Preglacial beds at Pakefield in Suffolk. It grows on Roman ruins at Silchester. To-day it is a typical member of the flora of the North Temperate Zone, found in Europe, North Africa, N. and W. Asia. In Great Britain it is local, and is absent from Cornwall but found in the Channel province; and it is absent from Essex in the Thames province, and E. Norfolk, Hunts, and Northants in Anglia; it is absent from Worcester and Warwick in the Severn province; and in Wales occurs only in Glamorgan, Radnor, Carmarthen, Montgomery, Carnarvon, Denbigh. It is absent in Flint, S. Lines, and in the Mersey district is absent entirely, and is not found in S.E. or N.E. York, nor in Northumberland, nor in the Isle of Man. Elsewhere in Scotland it is found in Edinburgh, Linlithgow, Stirling, West Perth, S. Aberdeen, Cantire, W. Sutherland. It is found in Yorks at a height of 1500 ft.

The White Beam is a woodland tree which is found very commonly on chalky and calcareous soils in the south of England and elsewhere, being planted in copses in some districts where it is doubtfully indigenous.

It is a tall, deciduous tree, with a main stem, with numerous ascending branches, which are closely ramified. The buds are erect, a protection against cold. The leaves are oval-elliptic, with deeply cut unequal serratures, below entire, whilst at the end the lobes are more marked. The leaves are downy underneath, a character of importance
here, and smooth above. The cottony down is a protection to the stomata, the undersides being often turned upwards.

The flowers are white, in lax corymbbs. The fruit is subglobose and yellow.

The tree grows to a height of 40 ft. The flowers are in bloom in May and June. The White Beam is a perennial deciduous tree, and can be increased by grafting.

The flowers are large and conspicuous, and arranged much on the

same plan as in the Rowan, where they are proterogynous. Though cross-pollination will normally take place, if insects are absent then the plant will pollinate itself. The honey is half-concealed and secreted at the base of the ovary.

The fruit, a pome, is edible, fleshy and scarlet when ripe, and is dispersed by birds.

This tree is a lime-loving plant, and addicted to a lime soil in its native habitats, but where it is planted it may grow on sand soil or even on clay.

A moth, *Lyonetia clerckella*, feeds upon it.

*Pyrus*, Pliny, is from the Latin for pear tree.

White Beam is called Hen-apple, Beam Tree, Chess-apple, Cum-
berland Hawthorn, Hoar Withy, Lot-tree, Mulberry, Sea Ouler, Pear Tree, Wild Cowbin, Quick Beam, White Rice, Serviceberry, Whips-
beam, Whipcrop, Whitebeam, Whiteleaf Tree.

The name White Rice is given to the White Beam because of the undersides of the leaves. It is called Whipbeam because the plough-
boy makes a horsewhip of it.

The wood is hard and close-grained, and has been used for making yokes. When mills were more numerous the wheels were made of White Beam wood. After there has been a frost the fruit mellows, and is eatable.

An alcoholic spirit is yielded by it after fermentation. The berries have been used for jam.

Essential Specific Characters:—

105. Pyrus Aria, Ehrh.—Tree, leaves ovate, deeply irregularly serrate, white, downy below, those of flower-shoot oval, lobes deepest near end of leaf, flowers white, corymbose, fruit red, subglobose.

Mountain Ash (Pyrus Aucuparia, Ehrh.)

In Flintshire fruits have been discovered in beds of Neolithic age, proving that this is an ancient species. The Northern Temperate Zone is its home, and it is found in Europe, Madeira, N. and W. Asia, eastwards to the Himalayas, and in N. America. In Great Britain it is found everywhere, except perhaps in Hunts and N. Lincoln. It ascends to 2600 ft. in the Highlands. It is found native in Ireland.

The Rowan Tree grows on hills and in woods, especially in the latter, where it is associated with other woodland shrubs and trees, such as Holly, Cherry, White Beam, Ivy, Elm, Oak, Beech, &c. Owing to the superstitions attaching to it and the efficacy of its sup-
poused virtues, it is probably in very many localities only planted. Rowan trees are familiar sights to the dweller in the town, where they are much planted. They are erect trees with a thick main stem and numerous branches, which arch overhead like those of hawthorn, &c. The pinnate leaves are downy below, and serrate, the leaflets oval-
oblung, 12–16, and when old glabrous below.

The flowers are white, in broad cymes, which are dense and com-

pound, and 6–12 in. across. Both the calyx and flower-stalk are villous. The fruits are bright scarlet when ripe in August, subglobose, and contrast strongly with the dark-green foliage, and are pomes, containing 5 cells with 1–2 seeds in each.

Ten to twenty-five feet is the average height of the Mountain Ash.
FLOWERS OF THE WOODS AND COPSES

May to June are the months when its flowers are at their best. It is a perennial, deciduous tree, propagated by seeds.

When the flower opens, the stamens are not ripe. The outer are at first erect, the inner bend inwards, so that the anthers are below the stigmas, which are mature, and project in the centre of the flower. The anthers opening inwards are covered with pollen. The inner ones are bent down, when it is cold, below the stigmas. Even after they open, the outer ones stand above the stigmas incurved toward them. When there are no insects to visit them self-pollination takes place. The small flowers are conspicuous because they are close, and honey is abundant and concealed at the base of the flower. The Rowan is visited by Apis, Andrena, Halictus, Helophillus, Eristalis, Rhingia, Echinozymia, Onesia, Scatophaga, Sepsis, Myopa, Dilopha, Euprica, Meligethes, Byturus, Attageenus, Agriotes, Dilophus, Corymbules, Limonius, Cetonia, Melolontha, Malachius, Aneapis, Microzom, Phyllolobius, Clythus, Adimonia.

The fruit is dispersed by animal agency, being a fleshy pome, scarlet when ripe, and readily eaten and dispersed by birds.

The Mountain Ash grows on rocky ground, being a rock-loving species and addicted to a rock soil, growing on soils derived from various formations, chiefly sand or older rocks.

One stage of Gymnosporangium juniperinum grows on this plant, the second on the juniper.

Leaves are galled by Eriophyes aeneparia. The following fungi, Tympanis conspersa var. mali, Sclerotinia frutigena, Gymnosporangium clavariiforme, Pleurotus atrorcrulus, Coryneum bayernekeii, also infest it.

The beetles Phyllobius maculicornis, Apion sorbi, Ptinella denticollis, Eparca florea, Byturus tomentosus, Phytodecta pallida, the Hymenoptera Crassus septentrionalis, Trichosminia scolleri, and the Lepidoptera Hedya ocellana, Nepticula oxyacanthella, Semioscips steinkelleriana, Gelechia leucatea, Argyresthia conjugella, A. sorbiella, Ornix scoticella feed upon it.

The second Latin name is from aenepis, a fowler. Rowan is from the Norse raun.

This plant is called Mountain Ash, Wild Ash, Caers, Care, Cockdrunks, Dogberry, Field Ash, Fowler’s Service, Witch Hazel, Hen-
MOUNTAIN ASH (Pyrus aucuparia, Ehrh.)
No. 1. Mountain Ash  
(Pyrus Anacarpa, Ehrh.)  
a. Inflorescence (cyme), with flowers expanded or half open, anthers in various stages, and part of the pinate stem-leaves.  
b. A cyme with scarlet fruits, the calyx-lobes persisting at the top of each, pomes not punctate in this case.

No. 2. Rosebay  
(Epilobium angustifolium, L.)  
Part of plant showing lanceolate stem-leaves below, and a spike with axillary flowers and bracts below, open below, and in bud above, in various stages, showing the inferior ovary, the 4 petals, alternating sepals, the stamens, and 4-fid stigma (long-styled form).

No. 3. Enchanter's Nightshade  
(Circaea lutetiana, L.)  
a. Vertical section of flower, showing inferior 2-celled ovary, 2 petals, 2 stamens (enlarged).  
b. Fruit, with recurved hooked bristles.  
c. Part of plant, showing ovate rounded leaves, and raceme with flowers in bud at the tip, open in the centre, and fruits below.

No. 4. Sainfoin  
(Sainfoinae europaea, L.)  
a. Floret, showing 5 incurved petals, gamosepalous calyx, and 5 stamens exserted.  
b. Fruit with hooked bristles.  
c. Part of plant, showing pinnate leaves, with sheathing petiole, and umbel of flowers with bracteoles forming involucres below the partial umbels.

No. 5. Angelica  
(Angelica sylvestris, L.)  
a. Flower, showing 5 petals, 5 stamens, and pistil.  
b. Section of mericarp.  
c. Schizocarp from lateral aspect, with persistent styles.  
d. Sheathing petiole and part of deltoid leaf.  
e. Umbel (terminal) with flowers and fruit, and umbel in fruit below in axil of leaf.

No. 6. Ivy  
(Hedera Helix, L.)  
a. Vertical section of flower, with ovary and ovoid seed in cell, 2 petals reflexed, and 3 of the 5 stamens, and the swollen disk and short stigma.  
b. Drupe with disk, and remains of style.  
c. Five-lobed climbing leaves and adhesive aerial rootlets.  
d. Terminal panicle of flowers in umbel, and basis on axillary umbels below.
1. Mountain Ash (*Pyrus occidentalis*, Ehrh.).

The Rowan was called Witchwood from a virtue it was supposed to possess against witchcraft. It is named Mountain Ash from a resemblance between its leaves and those of the Ash. It was called Cock-drunks because it was supposed to intoxicate fowls. The name Fowler's Service was given because the berries were used to bait blackbirds.

This tree is said in Iceland to spring up when the innocent are put to death. It was thought to be a powerful check on the works of darkness.

"The spells were vain, the hag returned
To the green in sorrowful mood,
Crying that witches have no power
Where there is a rowan tree wood."

People even carry a twig of Rowan in the pocket in Yorkshire as a sort of talisman. A tale runs as follows:

"A woman was lately in my shop, and pulling out her purse brought out also a piece of stick a few inches long. I asked her why she carried that in her pocket. 'Oh!' she replied, 'I must not lose that or I shall be done for.' 'Why so?' I enquired. 'Well,' she answered, 'I carry that to keep off the witches; while I have that about me they cannot hurt me.' On my adding that there were no witches nowadays, she instantly replied: 'Oh, yes, there are thirteen at this very time in the town, but so long as I have my rowan tree safe in my pocket they cannot hurt me.'"

If a dairymaid could not quickly make butter she stirred the churn with a rowan twig, and beat the cow with another to break the witch's spell. Herd boys also drive cattle with a mountain ash twig.

Rowans often grow near houses. In Norway and Sweden branches were put over the stable to drive away witches.

"Many rains, many rowans;
Many rowans, many yawns."

An ash leaf was invoked for good luck in Cornwall. The Iceland people think it the enemy of the juniper.

This plant was held to be the embodiment of lightning, from which it was supposed to have sprung. The scarlet berries have added to its mystic charm, red being sacred to Thor.
Essential Specific Characters:—

106. *Pyrus Angucuparia*, Ehrh.—Tree, leaflets pinnate, serrate, hairy below, green, 6-8 pairs, flowers white, in corymb, berries red, sub-globose.

**Rosebay** (*Epilobium angustifolium*, L.)

The charming Rosebay, known in our gardens as well as the fields, is found in the Temperate and Arctic parts of Europe at the present day (there are no earlier records), in N. and W. Asia, as far east as the Himalayas, and in America. In Great Britain it has not been found in Cornwall, but in the rest of the Peninsula, and the whole of the Channel and Thames provinces. In Anglia it is not found in West Suffolk and Cambridge nor in Hunts or Northants, but throughout the Severn province; in Wales only in Glamorgan, Brecon, Cardigan, Merioneth, Carnarvon, Denbigh, Anglesea, and Flint. It is not found in S. Lines or Notts in the Trent province, but throughout the Mersey and Humber provinces except in S.E. Yorks, and throughout the Tyne and Lakes provinces. In Scotland it is found throughout the W. Lowlands, except in Wigtown and Renfrew; in the S. Lowlands, except in Peebles, Selkirk, Haddington; the whole of E. Highlands, West Highlands, except Mid Ebudes; and in the North Highlands everywhere except in E. Sutherland. It is found in the Highlands at 2700 ft., and in N. and E. Ireland.

The Rosebay is a woodland plant, delighting in a rocky upland clearing, but growing as frequently on the loose rubble of a quarry side or wherever natural scars and crags are exposed, in the neighbourhood of woods. One of our handsomest wild flowers, held also in admiration in the garden, Rosebay is tall, erect, much branched, with numerous long, narrow, lance-shaped, veined, scattered leaves, alternate, with a white midrib and whitish under side, the margin minutely and finely toothed. The stems are downy. The bracts or leaf-like organs are like the leaves connected with the flower. The second Latin name explains the shape of the leaves.

The first Latin name refers to the inferior position of the ovary below the perianth, the flowers apparently resting on a lobe or pod (later). The flowers are purple, unequal or irregular, in a spike. The calyx is spreading and free, the stigma is bent.

The plant is 3-4 ft. high. It flowers in July and August. It is perennial, increasing by division, and often cultivated.

Sprengel, as long ago as 1790, showed that the flowers, which open soon after sunrise, are proterandrous, i.e. the anthers ripen first, though
in some the stigma is ripe first, and self-pollination would occur if insects did not visit them.

The flowers are large and purple, in a tall, conspicuous spike, and are much visited by insects. Honey is secreted by the green, fleshy upper surface of the ovary, and is easily reached by insects, but protected from the rain, as it then bends over. The expanded, flattened lower ends of the filaments or anther-stalks form a hollow cone, which encloses the base of the style and the honey surrounding it, protecting the latter; and where the style issues at the apex of the cone hairs prevent the entrance of rain, while insects can gain access through the anther-stalks.

In young flowers pollen covers the stamens above, and they project, but the style is short and bent over, with the stigmas folded together; but in older flowers the empty stamens are bent down and turn outward, and the style is longer and projects forward, with 4 stigmas outspread and recurved taking the place of the stamens. The insects can alight, suck, and collect pollen easily. Cross-pollination is secured, and self-pollination is impossible. The flowers are visited by Apis, Bombus, Sphccodes, Nomada, Cerceris, Crabro, Ammophila, Tenthredo, Empis, Syrphus, Ino statices.

The seeds are provided with a tuft of hairs, which aid them in their dispersal by the wind after the pods or long narrow capsules have split open to release them. The pods split from above downwards
between the valves and along the centre, the seeds being attached to the axis. They are very small, oblong, brown, with a tuft of long, white, silky hairs at the upper end, which serve as a parachute.

Rosebay is a rock-loving plant, growing on barren stony hillsides, or it may be a sand-loving plant, growing on a sand soil, such as the sandy beds of the Lias or Keuper Marl.

The fungus which infests the Rosebay is called *Melampsora pustulata*.

The Rosebay is galled by *Hormomyia fasciata*, *Laverna decorella*. The beetles *Cercus bipustulatus*, *Haltica lythri*, *H. cleracea*, *H. pusilla*; the Hymenopterous insect *Tenthredo colon*; the Lepidopterous *Amphipyra tragopogonis*, Small Phoenix Moth, *Cidaria silaceata*, *Laverna substriatata*; the Homoptera *Cidariula dahlinii*, *Aphalara ascalonia*; and the Heteropterous insect *Dicyphus Epilobii* feed on the Rosebay in one way or another.

*Epilobium*, Gesner, is from the Greek *epi*, on, *lobos*, a pod, because the flower apparently grows upon a lobe, and the second Latin name refers to the narrow leaves.

This plant is known by the name of Rosebay, Bay-willow, Blood Vine, Blooming Sally, Cat’s Eyes, Persian Willow, Tame Withy, Blooming, French, and Rosebay Willow, Bay Willow Herb.

Rosebay was called Tame Withy because it was frequently grown in gardens, and because of its willow-like leaves.

This handsome plant is called Rosebay because the leaves are like laurel and the flowers purple like a rose. It was named Blood Vine because the whole plant has a red appearance. In Ireland, “Sally” in the name Blooming Sally is a corruption for the Latin *Salix*.

The Rosebay finds a place in the garden, the established plant differing from the wild one. It used to be employed to adulterate tea, and was boiled also as a vegetable, the young shoots being eaten as asparagus. They are fermented to make beer in Kamtschatka, and made especially intoxicating with a toadstool, *Agaricus muscarius*, the Fly Agaric. The down has been mixed with cotton and fur to make stockings and other clothing.

**Essential Specific Characters:**

118. *Epilobium angustifolium*, L.—Stem tall, erect, terete, leaves scattered, lanceolate, acute, alternate, flowers rose-pink, in a raceme, irregular, stamens and style bending ultimately.
Enchanter's Nightshade (Circaea Lutetiana, L.)

This woodland wild flower is found in the North Temperate Zone in Europe, N. Africa, Siberia, Western Asia as far east as the Himalayas, and in temperate America, and there are no earlier records. In Great Britain it is general in the Peninsula, Channel, Thames, Anglia, and Severn provinces; and in S. Wales generally except in Radnor and Carmarthen; in N. Wales generally except in Montgomery and Merioneth; in the Trent province everywhere except in S. Lines, throughout the Mersey, Humber, Tyne, and Lakes provinces. It is common in the West Lowlands and in E. Lowlands, except in Peebles, Selkirk, and Linlithgow; in the E. High-lands, except in Stirling, Banff, and Elgin; in the West Highlands, except in Mid Ebudes; and in the N. Highlands, except in E. Sutherland. In Yorkshire it ascends to 1200 ft.

Enchanter's Nightshade is a familiar denizen of woods and copses, preferring the dark depths of shade beneath the outspreading branches of woodland trees, or else the comparative light diffused in the rides which intersect a wood, where it grows amid the wet herbage which grows rank and rife, untouched by browsing animals or the scythe. Occasionally it turns up in the garden or on waste ground.

This plant has a characteristic habit, the central stem being nearly or suberect, with wide-spreading nearly patent branches, i.e. almost at right angles. It is purple in colour and downy. The leaves are egg-shaped at the base to heart-shaped, on long, nearly round or sub-rotund leaf-stalks, glandular, pale green underneath, and alternate.
The small flowers are white in terminal loose racemes, with a hairy calyx, and petals equalling them in length, blunt, with a median point and spreading. The stigma is bright red. The ovary is inferior or below the perianth. The fruit or capsule is pear-shaped, persistent, with hooked bristles, borne on flower-stalks turned back when ripe.

The Enchanter's Nightshade is about 1 foot in height usually. Flowers are in bloom from June to August. The plant is perennial, and reproduces by division.

The flowers are small and contain honey. There are only two stamens. The Enchanter's Nightshade is pollinated very much in the same way as Veronica Chamædrys. A single style projects, with the stamens spreading away from the centre of the corolla, which is erect. Together they form with the stamens a platform by which insects may reach the abundant honey secreted by the fleshy ring surrounding the style. The latter stands lower than the stamens, slightly forward, and forms a resting-place. When an insect settles it touches the stigmatic knobs at the end with its abdomen. It stretches across the stamens, and grasps the anthers, which are at first distant but are drawn down, so that the insect's fore feet are dusted by the pollen from them. If the insect alights on one of the stamens as it bends down, it grasps the base of the stamen and style at their base with its fore feet, and if the style touches the ventral surface with the stigma it touches the side opposite that which the anther touches at the same time. Thus the plant is cross-pollinated if the insect has come from another flower.

The flowers wither rapidly, unless self-pollination follows in the absence of insects, as it may do when the stamens bend over and touch the stigma. The plant is visited by Baccha elongata, Ascia podagríca, Melanostomí melína, Anthomvía, and other Muscídae and Syrphídae, as well as by Musca doméstíca.

The single-seeded fruits catch in the coats of animals or passers-by, and are thus dispersed.

Enchanter's Nightshade is a humus-loving plant requiring an ordinary humus soil, such as that to be found in a wood, or under a hedgebank, or in a shrubbery.

The two fungi Melampsóra circæae and Puccínia circæae attack it. The beetles Graptídera olerácea, Psyllíodes chaícoméra, the Hymenoptérous insect Tenthredíno colon, the Lepidópterá, Elephant Hawk Moth, Chaetocampa elfenor, Asychína ternínelína, Anybiá langiélla, and the Hemípteróus insect Metatropíís ruñescens feed upon Enchanter's Nightshade in some shape or form.
Circe. Dioscorides, is from Circe, the enchantress, who from her knowledge of herbs would procure love, and Lutetiana from Paris, Lutetia being the old name for it.

The plant is called Mandrake, Bindweed, Enchanter’s Nightshade.

Of the name Enchanter’s Nightshade, Gerarde says: “The error of some who have taken Mandragoras for Circe, in which error they have still persisted unto this daie, attributing unto Circe the virtues of Mandragora . . .”.

Essential Specific Characters:—

120. Circa Lutetiana, L.—Stem erect, branched, downy, leaves ovate, acute, dentate, flowers white, in a raceme, calyx 2-cleft, hairy, stamens pink, fruit with hooked bristles.

Sanicle (Sanicula europæa, L.)

Wood Sanicle is widely dispersed, its recent distribution being Europe and N. Africa. It is found in all the counties of Great Britain except Peebles, the Orkney and Shetland Islands. In the North of England it has been found to ascend to altitudes of considerably over 1000 ft.

Sanicle is a clay-loving plant, fond of the shade of woods, and growing under trees in the moist depths of a wood, or the more open shelter of copses on the side of a hill. In such places it is accompanied by Wood Anemone, Goldielocks, Wood-sorrel, Primrose, Wood Forget-me-not, Bluebell, and many other umbrageous species.

There is scarcely anything, but its umbels of flowers and seed, to suggest the umbelliferous affinity of this plant. It is an erect, not very tall, plant, with leaves divided into lobes to the middle, 3- or 5-lobed, with numerous fine-pointed teeth. Most of the leaves arise from the base of the stem, in the manner of celery, but are more widely spreading. The leaves are dark green and glossy, with a dark-brown or reddish tinge.

The flowers are pink or white, and are arranged not strictly in an umbel but a panicle, the female florets being unstalked, the outer male stalked. The umbels are irregular with few rays. The fruit is surrounded by turned-back hooked bristles, the styles being persistent.

The plant is about 1 foot in height. Flowers can be found in June and July. Sanicle is a perennial plant capable of division by the roots.

The plant is andromonocious, i.e. the flower is hermaphrodite, and there are also male flowers. There are 1-3 proterandrous herma-
phrodite florets in the centre of each umbel, which are surrounded by 10–20 male florets which develop later. Male flowers were found in the centre of the umbels by Schulze. The complete flowers are proterogynous, the stigma ripening first. The older flowers in the centre are complete. The long stigmas touch the anthers of the surrounding florets. Both resemble *Astrantia major*. Where the umbels are simple, the florets form so closely packed a surface that the petals remain rolled up in the middle of the flower and hairs protect the honey from the rain. They make the flower less easily reached by insects and less conspicuous. Flies and beetles are the chief visitors.

The fruits are hooked, and assisted in their dispersal by catching in the wool or hair of passing animals. 

Sanicle is a clay-loving plant addicted to a clay soil, growing in woods and shady places or hollows where clay is formed on granitic, volcanic, and later Liassic and other rock soils.

A fungus *Puccinia Saniculae* commonly attacks it. No insects are known to feed upon it.

*Sanicula*, Brunfels, is from the Latin *sanus*, healthy, because of the healing properties formerly attributed to the plant. The second Latin name is merely Latin for European, referring to its range.
This plant is called Wood March, Sanicle, Wood Sanicle, Self-Heal Sanicle.

Sanicle used to be regarded as a powerful vulnerary, and is very acrimonious like all Umbelliferae, but it is not employed as a drug to-day.

Essential Specific Characters:—

123. *Sanicula europaea*, L.—Stem erect, smooth, shiny, radical leaves petiolate, palmate, glossy, lobed, trifid, serrate, flowers pinkish-white, in a panicle, fruit ovate, with hooked bristles.

Angelica (Angelica sylvestris, L.)

At West Wittering in Sussex this plant has been found in beds of Interglacial age, when the rigour of the Glacial period was much modified by a milder interlude. It is found to-day in the North Temperate and Arctic Zones in Arctic Europe, Siberia, up to Dahuria, and West Asia. In Great Britain it is widespread and common, existing at the high altitude of 2700 ft. in the Highlands.

Angelica is almost entirely a plant of low-lying ground, that is, where there is continual moisture and shade, growing in woods at a low elevation, or on moist mountain heights, where the conditions are sufficiently humid. It may also be found on the borders of streams and in marshes, but always where there is more or less shelter from the sun.

The plant is erect in habit. The stem is stout, tall, rather downy above, near the umbels, but otherwise hairless, green or purplish, hollow, furrowed. The leaves are triangular in outline, much divided, that is ternately. The leaflets are large, bipinnate, equally toothed, stalked, obliquely oblong to egg-shaped, lance-shaped, equal, or cut, and not running down the stem. They may be rather heart-shaped at the base. The lateral leaflets are somewhat unequal below. The sheaths are large. The flowerheads are pinkish-white, in large, terminal compound umbels, with 30-40 rays. There are no, or few (1-2), bracts which fall. But there are a few awl-like, persistent, small bracteoles. The calyx-lobes are small or wanting. The petals are slightly hooded. The florets are nearly regular. The fruit is egg-shaped, flattened along the back, the carpels ridged, winged. The slender styles are bent over.

Angelica is often as much as 5-6 ft. high. The flowering season is from June to August. The plant is a deciduous, herbaceous perennial, reproduced by division. It ought to be cultivated in our gardens.
The flowers are numerous, white or purplish, and more or less conspicuous. The pollen is abundant. There is also honey. The flowers are complete, and the anthers mature first. On some the anthers are rudimentary. The styles are turned back, and the plant is sweet-scented and attracts many insects to it, so that it has more chance of being cross- than self-pollinated. The insects that visit it are Syrissa pipiens, Helophilus, Eristalis, Pippizella, Tachina, Echinoxy, Mesembrina, Scatophaga, Lucilia, Sarcophaga, Anthrenus, Trichius, Telephorus, Coccinella, Meligethes, Athalia, Tenthredo, Ichneumons, Crabro, Philanthus, Odynerus, Vespa, Andrena, Argynnis, and a Neuropterus insect Panorpa.

The fruit, being flattened and margined, is blown away with ease by the wind. The fruits are semi-detached on ripening, and they may also be knocked off by passing animals.

This plant is a humus-loving plant requiring a soil in which there is a fair amount of humus.

The fungi Plasmodora nivca and Protonyxus macospora infest it. A beetle Livus turbatus, the Lepidoptera, Swallow Tail Butterfly (Papilio machaon), Triple Spot Pug (Eupithecia trisignata), Depressaria anglicella feed on it, and also Depressaria ciliella and Ecophora flavimaculata.

Angelica, Brunfels, is Latin for angelic, the reference being to supposed properties of a magical kind, and the second Latin name refers to its woodland habitat.

Angelica is called Ait-skeiters, Ground Ash, Ground Elder, Hem-

The first name is for oat-shooters. Children shoot oats through the hollow stems as peas are shot through a pea-shooter. Parkinson says: "In Sussex they call the wilde kinde (of Angelica) Kex, and the weavers winde their yarne on the dead stalks". It is called Trumpet Keck because the hollow stems of this plant are made by boys into trumpets.

"Trumpet-kecks are passed unheeded by
Whose hollow stalks inspired such eager joy."

This plant was considered especially noisome to witches. It was called Herb of the Holy Ghost from the angel-like properties therein being considered good "against poisons, pestilent agues, or the pestilence". Angelica was used as a cure for bites of dogs and hydrophobia, as well as an antidote for poisons. A yellow dye of a good colour is derived from it. The stems are candied with sugar and used as sweetmeats or put in cakes. The root and the fruit have been utilized as a tonic, and are aromatic and stimulant.

**Essential Specific Characters:—**

130. *Angelica sylvestris*, L.—Stem tall, ribbed, hollow, purple, downy, leaves bipinnate, leaflets ovate, serrate, flowers in large umbels, whitish-pink, carpels 5-ribbed.

**Ivy (Hedera Helix, L.)**

This is an ancient plant found in Interglacial and Neolithic beds. The present distribution is Europe, N. Africa, W. Asia as far east as the Himalayas, in the North Temperate Zone. Ivy is found in every part of Great Britain, and ascends to 1500 ft. in Yorkshire.

There are two forms of Ivy which favour different habitats. The trailing "Ground Ivy" is fond of growing upon banks, under hedges, or in woods and thickets, where it covers the ground like a carpet and occasionally finds an upright support, and may be seen to merge into the other type. This is essentially a climbing plant, and is found by the roadside encircling in parasitic fashion the trunk of an ash or elm, or in the open fields or in woods. It is especially common in gardens, and is very often found on walls and houses.

One irresistibly connects Ivy with a climbing habit, and such is its most marked feature. It may attain the dimensions of a tree, with thick cracked bark, and be provided on the inner side with fibres.
which turn away from the light, of a rootlike character or holdfasts, which assist it to climb. The young branches are green or purple.

At the base the stem is thick, and may branch above in equal forks, and then twine around the trunk or climb up the wall, with numerous further branchings or ramifications. The leaves are undivided or 3-lobed, when the plant is merely Ground Ivy, or 5-lobed. This dimorphism may be due to the demand for light and air, the oval leaves growing round the stem in woods being an advantage, whilst the divided leaves growing on the surface are arranged to fit into each other and to cover as much space as possible. The flowering branches also grow erect. In the climbing plant the leaf is oval, heart-shaped, thick, entire in the flowering branches, with white or red veins.

The flowers are in simple, erect, panicled, raceme-like umbels, more or less rounded, with stellate hairs. The bracts are small and hollow. The flower-stalks are fairly long. The flowers are yellowish-green. The calyx-teeth are triangular, the calyx superior with 5 teeth. The 5 petals do not unite above, and are triangular to egg-shaped. There are 5 stamens. The disc is swollen. The ovary is 5-celled. The styles are short, united at the base, with terminal stigmas.

The berry is more or less round, black or yellow, 5-celled, 5-seeded, crowned with the calyx. The seeds are egg-shaped, 5 in a berry.

The plant may be as much as 40 ft. high. The flowers are the latest to bloom, i.e. in October and November. Ivy is an evergreen, woody creeper, or climber, and may be increased by layers.
IVY (Hedera Helix, L.)
The flowers are polygamous, and the anthers are mature first, though some plants are homogamous, the stigma and anthers ripening together. The petals are fugacious or drop, and the flower is yellowish-green. Beetles visit it as well as flies and wasps. The stamens equal the corolla, and are turned back. The anthers are divided into two nearly halfway below, and incumbent or lying down. The style is short, the stigma simple, terminal. There is abundant honey. The flowers are sterile to their own pollen.

The fruit is edible, and the seeds are dispersed by animals. It remains dormant during the winter, not ripening till the spring.

Ivy is usually a woodland climber, and is a humus-lover, requiring humus soil.

Ivy is a food plant for the beetles Ochena hederæ, Grammoptera ruficornis, Anobium striatum, Lepturas testaceus, Pogonocherus dentatus, the Lepidoptera Holly Blue (Polyommatus argiolus), Old Lady (Mania maura), Gothic (Vania typica), Swallow-tailed Moth (Urop teryx sambeata), Tortrix forsteriana, the Homoptera Thaumotettix splendidula, Zygina tilia, the Heteroptera Schirus bicolor, Derephysia foliaceus, Ploiaria vagabunda.

Hedera, Pliny, is Latin for Ivy, and Helix, Pliny, was another Latin name for it.

Ivy is called Benewith-tree, Bentwood, Bindwood, Eevy, Ground Ivy, Hyven, Ivin, Ivory, Ivy, Barren, Black, Creeping, Small Ivy, Wood-bind. It was called Bindwood possibly because of the hold it takes. The small-leaved form growing on banks, &c., does not flower, hence the name Barren Ivy.

This plant was said to reveal witches. “To pipe in an ivy leaf” is to engage in a futile pursuit. “An owl in an ivy bush” denotes union of wisdom with conviviality. An ivy bush was a common tavern sign, giving rise to the saying, “Good wine needs no bush”. It was sacred to Bacchus. In language it is the emblem of confiding love and fidelity.

According to Cornish tradition the beautiful Iseult, unable to endure the loss of the brave Tristan, died of a broken heart, and was buried in the same church, but by order of the king the two graves were placed at a distance from each other. Soon, however, there burst forth from the tomb of Tristan a branch of ivy and another from the grave of Iseult, these shoots gradually growing upwards, until at last the lovers, represented by the clinging ivy, were again united beneath the vaulted roof of heaven.

It is largely used in Christmas decorations. It is useful for orna-
mental work in gardens and for covering buildings, lending a picturesque appearance. The berries furnish food for birds at a time when there is little else for them to feed upon. Cattle are fond of its foliage. It was said to be a remedy for warts.

Essential Specific Characters:—

134. Hedera Helix, L.—Stem climbing, with rooting fibres, leaves cordate, shiny, lobed, on flowering branches, ovate-lanceolate, flowers green, in an umbel or raceme, fruit a berry, black.

Wayfaring Tree (Viburnum Lantana, L.)

This small tree is represented in early deposits in Interglacial beds at West Wittering in Sussex. Its recent distribution is limited to the North Temperate Zone from Belgium southwards, and North Africa. In Great Britain it is absent from North Devon in the Peninsula province, but occurs in the Channel, Thames, Anglia, and Severn provinces, except in Stafford and Salop; and only in Glamorgan, Carmarthen, and Pembroke in Wales. It is found also in N. Lincs, Leicester, Notts, N.E. and S.W. Yorks. It is naturalized elsewhere.

The Wayfaring Tree is a woodland species especially common on chalk or limestone tracts, where it is associated with Alder Buckthorn, White Beam, Wild Cherry, and other trees and shrubs. It grows in hedges also by the roadside, preferring a habitat well characterized by open light conditions and access to the sun.

The pliability of the twigs of this shrub-like plant is implied in both Latin names, which are derived from words meaning to tie. The stems are numerous, with white mealy branches. The leaves are leathery, entire, heart-shaped, oblong, toothed, wrinkled below when young, stellately hairy, and downy beneath. The leaf-stalks, shoots, and young leaves are densely covered with down. This may help to preserve the plant from the attacks of insects.

The flowers are creamy-white, in perfect terminal cymes, which are flat, with strong rays. There are 2 small bracts or leaf-like organs. The corolla is funnel-shaped. The flat, egg-shaped drupe or berry-like fruit is black or purple ultimately, at first scarlet. The seeds have a ventral groove.

The tree is usually about 8–10 ft. in height. The flowers, which in our experience are very soon picked, are to be found in May and June. The Wayfaring Tree is a deciduous shrub, which can be multiplied by layers, and is worth cultivating.

In this genus the flower secretes honey, which is concealed or open
No. 1. Wayfaring Tree
(Viburnum Lantana, L.)

*a*, Vertical section of a flower, showing sepals, 3 petals of the rotate corolla, 3 out of 5 stamens, 1 ovule in the ovary. *b*, Three drupes. *c*, Flowering stem, with oblong stem-leaves, and a corymb with flowers in different stages.

No. 2. Honeysuckle
(Lonicera Periclymenum, L.)

*a*, Flower in vertical section, showing gamosepalous calyx, funnel-shaped corolla, long epipetalous stamens, and long stigma. *b*, Head of cyme, with ripe scarlet fruits (berries). *c*, Flowering stem, with opposite sessile leaves, and inflorescence, with flowers in different stages.

No. 3. Woodruff
(Asperula odorata, L.)

*a*, Vertical section of flower, showing bell-shaped corolla, epipetalous stamens, 2 styles, and 2-celled ovary. *b*, Section of fruit, showing hooked pericarp, and ovules with dicotylydous embryos. *c*, Part of plant, showing angular stem, leaves in whorls, and terminal and axillary cymes, with 4-fld corolla.

No. 4. Primrose
(Primula vulgaris, Huds.)

*a*, Vertical section of long-styled flower, with epipetalous stamens half-way down the calyx. *b*, Vertical section of short-styled form, with stamens at the same level as style in long-styled form. *c*, Radical leaf, showing decurrent lamina. *d*, Flower, showing broad notched corolla-lobes and orange-honey guides in the throat, on a long peduncle.

No. 5. Wood Loosestrife
(Lysimachia nemorum, L.)

*a*, Vertical section of flower, showing lobes of 5-partite calyx, 3 lobes of rotate corolla, 3 stamens, and rounded ovary, with filiform stigma. *b*, Plant, showing opposite pairs of leaves, axillary flowers on long stalk, with narrow calyx lobes, and twisted flower-stalk, with rounded capsule and persistent style; 5-valved.

No. 6. Small Periwinkle
(Vinca minor, L.)

*a*, Vertical section of solitary flower, showing segments of 5-partite calyx, tube of salver-shaped corolla, epipetalous stamens with short indent filaments and bearded anthers, with the cup-shaped style and club-shaped sticky stigma. *b*, Two follicles opening along the sutures showing the seeds. (Fruit is rarely formed.) *c*, Flowering stem, with opposite, paired, short-stalked, elliptic ovate leaves, and axillary buds, also an axillary flower, showing white throat of corolla and 5 broad blue segments.
I. Wayfaring Tree (*Fibunum Lantana, L.*).  
2. Honeysuckle (*Lonicera Periclymenum, L.*).  
3. Woodruff (*Asperula odorata, L.*).  
4. Primrose (*Primula vulgaris, Huds.*).  
5. Wood Loosestrife (*Lysimachia nemorum, L.*).  
6. Small Periwinkle (*Vinca minor, L.*).
to all insects. The flowers are gathered into a head, and the outer
flowers have a slightly more enlarged corolla, which in the Guelder
Rose is developed at the expense of both stamens and pistil, and
though not providing pollen nor seeds is useful to man. The stigma
matures first. The flowers are complete in the Wayfaring Tree.

The fruit is edible, and the seeds are dispersed by animals.

This is a lime-loving plant, addicted to a lime soil on chalk or
oolite, and is also found in hedgerows along macadamized roads.

A gall-fly, Eriophyes
tetanothrix, infests it,
and Aphis viburni lives
on it. Two beetles,
Galeruca viburni, Eus-
phalera primula, and
the moths Peronea
rufiana, Lithocolletis
lantanella, Coleophora
paripennella feed on it.

Viburnum, Varro,
is the Latin name for
the plant. Lantana,
Dodonaeus, may be from
the Latin verb lento, I
make flexible.

This shrub is called
Cottoner, Cotton-tree,
Coventree, Lithewort,
Mealy-tree, Twist-wood,
Wayfaring Tree, Whipp-
crop, Whitewood. It was
called Twist-wood be-
cause ploughboys twisted
it into handles for whips, called "twists". Gerarde invented the name
Wayfaring Tree. The name Cotton-tree is from its soft foliage. It
is called Mealy Tree because its leaves are white, mealy, soft, and
tomentose, or clothed with cotton, and downy. It was dedicated to
the festival on Whitsuntide. The twigs are used for making bird-lime.

Essential Specific Characters:—

138. Viburnum Lantana, L.—Shrub, with mealy, flexible, branched
stems, leaves hoary below, asperous, ovate-serrate, flowers white, in a
cyme, perfect, berries scarlet, then black.
Honeysuckle (Lonicera Periclymenum, L.)

This aromatic, sweet-flowered climber is found in Europe, in recent beds, not earlier, and N. Africa, its distribution being confined to the North Temperate Zone of to-day. It is found in every part of Great Britain, ascending to 1500 feet in Durham.

Honeysuckle is a well-known, woodland, climbing plant, which loves the darkest depths of the forest, wood, or copse, seeking support from a neighbouring sapling or older tree, or clambering up the over-hanging branches of hawthorn, blackthorn, or other forms of under-growth. By the roadside, too, it nestles amidst briers and thorns, casting around a rich fragrant odour for the passer-by, and attracting the long-tongued moths at night.

The climbing habit of this plant is one of its principal features. It twines round and round the stems of thick or thin, strong or supple trees and other plants, often forming an arbour when climbing and scrambling irregularly in the hedgerow. The leaves are not united at the base, and are deciduous or fall in autumn; when old, shiny and dark green, rather light when young, and hairy. The leaves are egg-shaped, oblong, stalkless above, and shortly stalked below. They are bluish-white beneath.

The flowers are cream-colour, gaping, in terminal whords on long flower-stalks, and are reddish in colour outside. The calyx-teeth do not fall, the corolla is glandular and smoothly downy. The berries are red when ripe.

Honeysuckle may be as much as 20 ft. in length. Its flowers are in bloom from May to July. It is a deciduous shrub, and can be multiplied by cuttings.

The stigma and the anthers are mature together. It is like L. Caprifolium in flower but the tube is shorter, in this it is 22–25 mm. In L. Caprifolium the tube is 30 mm. long, 1–2 mm. wide, a large part being occupied by the style, but it is often half-full of honey. Honey is accessible (being at the surface or in a cup at the bottom of the tube), when collected, to many bees, e.g. Bombus hortorum, but bees are only accidental visitors. The pollination is crepuscular, i.e. effected principally by nocturnal moths.

The flowers, at first erect, open first at 7 p.m. and give off a strong scent. Soon after they turn down and become horizontal. At first the stamens project in front, and the stigma is turned down beyond the anthers. Later, after insect visits, the pollen is exhausted, the stamens
turn down and the stigma rises in their place. Thus an insect would on the first night become covered with pollen, and on the second touch the stigma. Meantime the tube becomes arched and the under and upper lip roll up, and the flower turns yellow, a feature noticeable in Forget-me-not, &c. The white flowers with pollen are visited first, later the yellow. Still later the flower becomes darker orange, rolls up and loses its scent. There is abundant pollen, but humble bees cannot obtain the honey.

Honeysuckle is pollinated by Hawk-moths, Convolvulus Hawk-

moth (*Sphinx convolvuli*), Privet Hawk-moth (*S. ligustri*), *S. pinastri*, Elephant Hawk-moth (*Deilephila elpenor*), Small Elephant Hawk-moth (*D. porcellus*), Lime Hawk-moth (*Smerinthus tilia*), Shark (*Dianthecia capsicina*), Lychnis (*Cucullia umbratica*), Silver Y (*Plusia gamma*), Puss Moth (*Dasychira pudibunda*). When no insects visit the flower it may be self-pollinated.

The fruit is edible and the seeds are dispersed by animals, chiefly birds, e.g. the Blackbird and Thrush.

Honeysuckle is strictly sylvan in habitat, and is found where humus abounds on various soils, being prevalent on clay soils or a sandy loam, and is practically a clay-loving plant.
Upon the leaves one finds *Aecidium periclymeni* and *Microsphaera lonicera*, and it is galled by *Siphocoryne xylostei*.


*Lonicera*, Linnaeus, is from a botanist, Lonicer, and *Periclymenum*, Dioscorides, was the Greek name of honeysuckle or a similar shrub. Honeysuckle is from the A.S. *hanigsige*, which was, however, applied to the privet.


Widbin is Scotch for Woodbine.

"The royn-tree in (and) the widd-bin
Hand the witches on cum in."

Chervell is a contraction of *chevre feuille*, an old French name for it, and Goat-tree is a translation of it, so also is Goat leaves.

In one version of the story of Tristan and Ysonde we have: "From his grave there grew an eglantine which twined about the statue, a marvel for all men to see, and though three times they cut it down, it grew again and ever wound its arms about the image of fair Ysonde."

Consumptive patients were passed three times "through a circular wreath of woodbine, cut during the increase of the March moon, and let down over the body from head to foot."

Honeysuckle is grown in the garden, and utilized as a climber and for its sweet scent.

**Essential Specific Characters:**

139. *Lonicera Periclymenum*, L.—Stem climbing, twining, woody, leaves ovate, all distinct, upper sessile, flowers cream and red, ringent, in terminal head, berries crimson, juicy.
**Woodruff (Asperula odorata, L.)**

This charming flower spreads its sweet odour of new-mown hay over the countries of the North Temperate Zone, in Europe, North Africa, Siberia, and Western Asia. It is not known earlier than the present day so far. In Great Britain Woodruff occurs generally, but not in Hunts, Mid Lanes, Isle of Man, Stirling, Mid Perth, N. Perth, the Hebrides, or the Orkneys. In Scotland it is found at a height of 1200 ft.

Woodruff is entirely a woodland species, luxuriating in the shade under thickly-clustered trees or peeping from between them in the open pathways or rides. With it we may find Sweet Violet, Wood Sorrel, Strawberry, Honeysuckle, Primrose, Wood Loosestrife, Lungwort, Wood Forget-me-not, and many other plants of the woods.
Like other Rubiaceae, this choice flower has its leaves (these are sensitive to light, green in the shade, turning yellow in the strong light in the open) arranged in verticels or whorls, the upper whorls containing 6–9, the lower 2–6 leaves, which are lance-shaped, abrupt, with a point, with rough margins, the prickles directed forward. The rough character is indicated in the first Latin name, the scent in the second. The stems are more or less simple, square, erect, furrowed, and smooth.

The flowers are fairly large and sweet-scented, in terminal corymbs, devoid of leaves, depressed, and conspicuous. The fruits are borne on flower-stalks, are small, roughly hairy, with hooked hairs which catch in the wool of animals and are spine-like in character.

Woodruff is usually not more than 1 foot high. The flowers begin to scent the woods in May continuing right up to June. It is a perennial herbaceous plant propagated by division.

The flowers resemble those of *A. cynanchica* (Squinancy Wort), in the floral arrangement and the length of the tube. Woodruff is visited by the hive bee, as well as by beetles, flies, and moths. Being conspicuous and sweet-smelling its sylvan habitat is thus counteracted by other advantages.

The fruits are roughly hairy, and dispersed by animals, or fall around the parent plant.

This is a woodland plant, and a humus-loving plant growing in humus soil, of which there is a thick covering in the form of mould in most woods.

The plant is infested by *Peronospora calotheca*, *Pseudopeziza repanda*, *Puccinia galii*.

The moths Speckled Footman (*Eurydice cribrium*), Flame (*Cidaria rubidata*) feed upon it.

*Asperula*, *Dodonæus*, is from the Latin *asper*, rough, and the second name (Latin) refers to its smell. The latter part of the name Woodruff is supposed to represent a root meaning fragrant. The plant is called Sweet Grass, Scented or Sweet Hair-hoof, Hay Plant, Mug-wet, Petty Mugwet, Rock-wood, Star Grass, Woodrip, Woodrowe, Woodruff. The name Star Grass is applied on account of the whorled leaves.

It was used for decorating churches on St. Barnabas's Day. It was said to have formed the Virgin's bed. The name was written and spelt as a couplet—

woodde
rowffe.
Woodruff was used in Chaucer's day, but had no real curative properties. It was also employed to flavour wine and as a perfume for clothes. It was used for the liver and bile, epilepsy and palsy. It is very acidic.

**Essential Specific Characters:**—

143. *Asperula odorata*, L.—Stem erect, upper leaves 6–9, in whorl, lower whorls of 2–6 leaves, lanceolate, margins ciliate, flowers white, in terminal panicle, stalked, fruit with rough bristles.

**Primrose** (Primula vulgaris, Huds.)

A general favourite, common and widespread, its universal popularity bids fair to cause its entire disappearance from some districts, thanks to hawkers. It may be an ancient plant, but only its present distribution is known, which is throughout the Northern Temperate Zone, in Europe, except the north-east, and N. Africa. In Great Britain it is found in all parts except Peebles, and it grows at a height of 1600 ft. in Yorkshire.

The Primrose—now much less widespread, as noted, than formerly, thanks also to the vandalism of the collector, the thoughtlessness of the householder—is or was a common plant which formerly adorned the glades in the woods, the meadows surrounding them, and the leafy lanes and banks of many secluded districts, especially in the south and west districts of England, where the climate is mild and moist. But in some of these spots it is now extinct.

Everyone knows the Primrose. It has no stem, except the flowering stalk or scape. The leaves are all radical leaves. The Primrose has the rosette habit. The rootstock is stout. The leaves are more or less without a stalk (as are the umbels), inversely egg-shaped, spoon-shaped, or oblong, tapering downwards, softly hairy below, wrinkled, scalloped. The young leaves are rough, netted.

The flowers are pale yellow, rarely pale lilac or purplish, drying green, in an umbel which is stalkless, so that the flower-stalks look like scapes as long as the leaves. The bracts are linear. The flowers are spreading or more or less erect. The radical flower-stalks are softly hairy, and bear one flower only. The limb of the corolla is flat, with a ring of scale-like folds at the mouth, which is narrow. The corolla lobes are rounded, notched. The calyx is softly hairy, slightly inflated, tubular, 5-angled, the teeth awl-like to lance-shaped, acute, long-pointed. The capsule is as long, or half as long, as the calyx, egg-shaped, the long, straight teeth of the fruiting calyx meeting above on prostrate
flower-stalks. The capsule is 5-valved, with 10 teeth, and many-seeded.

The Primrose is about 6 in. high in flower. It blooms early in March up to May. It is perennial, and propagated by division of the roots. It is much scarcer than formerly.

The pollination of the Primrose is familiar from the researches of Knight and Darwin. The flowers secrete honey at the base of the ovary. All the species are dimorphic. In some the stigma extends to the top of the tube, and these are termed long-styled forms, when the stamens lie half-way down the tube. There are other flowers in which the stamens are inserted near the top of the tube, and where the style is half as long as the tube. The flower is thus heterostylic. The pin-eyed and thrum-eyed forms of children are the corresponding long- and short-styled forms.

The possession of such differences is of importance to the plant in ensuring cross-pollination. For an insect that visits a long-styled form would thus dust its proboscis with pollen from the stamens half-way down, at a point which, when it visited the short-styled form, would correspond with the position of the stigma in that form, and so lead to crossing of the two types; and in visiting a short-styled form its proboscis would be dusted farther from the mouth of the flower, and this
part, when the insect next visited a long-styled form, would scarcely fail to come in contact with the stigma at the same level.

The stigma in the long-styled form is round and rough, and the pollen also is small, \(\frac{1}{7000}\) in. in diameter, whilst in the short-styled form the stigma is smoother and depressed, and the pollen larger, \(\frac{10-11}{7000}\) in. The flowers produce more fertile seed if the pollen of one form is placed on the stigma of the other form than if a flower is pollinated by pollen of the same form, even if from a different plant. The styles of the same form may slightly vary in length, but as a rule the styles are all of the same length. The two forms are not found on the same plant, but there are about equal proportions of each; and long-styled flowers are pollinated with pollen from a short-styled flower, and vice versa. In such a case pollination is termed legitimate, and better and more abundant seed is formed than by self-pollination (which may occur in the absence of insects) in the short-styled form, or illegitimate crossing of 2 short-styled or 2 long-styled forms.

The capsule consists of 5 carpels and opens by 10 valves, the outer cells contracting, and when dry they are the more resisting; and the seeds, which are numerous, are shaken out when the valves open by the wind.

The Primrose is a humus-loving plant, growing in humus soil, but is also clay-loving, and needs a clay soil as well.

The leaves are attacked by *Peronospora candida* and *Puccinia primula*.


*Primula*, Matthiolus, is from the Latin *primus*, first, referring to the early flowering, and Primrose from the earlier name Primerole. The second name denotes its common occurrence, i.e. formerly.


A legend relates how Bertha enticed a child by means of primroses to the door of an enchanted castle, and the “key-flower” touching it
opened the door. The child entered a room covered with primroses where gold and jewels were deposited, and when they had been taken the primroses had to be put back or else the favoured person would be followed by a "black dog".

The Primrose is described as a flower which "maidens as a true-love in their bosoms place". The Primrose was used in the bridal bouquet. It was the famous "key-flower" which revealed hidden recesses in mountains where treasure was concealed. It is necessary to give a full handful of primroses and violets as a gift, or the chickens and ducklings will be affected, according to ancient superstition.

The Primrose has been used as an emetic. In Chaucer's time it was one of the components of the all-powerful "save". With Water-Violet and the Avens it was supposed to be a remedy in liver complaints, for "shaking of hede and of handes", and for a person "who cannot speak well".

It has long been cultivated as a garden flower, and many varieties have been derived from it differing in colour and form.

Essential Specific Characters:

199. Primula vulgaris, Huds.—Flowering stem a scape, leaves ovate, oblong, dentate, wrinkled, flowers yellow, calyx tubular, with subulate teeth, capsule ovate, calyx exceeding it by a half, corolla limb flat.

Wood Loosestrife (Lysimachia nemorum, L.)

This little woodland flower is local but widespread, and known throughout the Northern Temperate Zone in Europe, but not in Prussia, Greece, and Turkey. No early records are extant. The Wood Loosestrife grows in every part of Great Britain except Hunts, S. Linces, and the Shetlands. In the Highlands it ascends to 2,500 ft.

Watson regards it as a frequent but not quite common plant, and possibly occurring everywhere except in Huntingdon, being local in Bedford and Cambridge. Thus it is not common in the more low-lying damp districts of the central plain. Generally it occurs in woods, loving a shady habitat, and under hedges in wooded districts.

The stems of the Wood Loosestrife are usually lying on the ground, numerous, furrowed each side, reddish, rooting at intervals. The leaves are opposite, stalked, egg-shaped, acute, glossy, yellowish-green, with marked veins. The flowers are yellow, small, on flower-stalks in the axils, longer than the leaves, 1-flowered and slender. The calyx is deeply divided into 5 or 6 segments, which are narrow and awl-like, sub-triangular, and do not fall. The corolla, which is wheel-shaped,
WOOD LOOSESTRIFE

has no limb, and is divided into 5 or 6 egg-shaped segments, with small yellow glands in the mouth, between the anther-stalks, which are distinct, not united, and smooth. The capsule is 5-valved, globular, and contains numerous round, flat seeds.

The plant is rarely more than 3 in. in height. The flowers are in bloom from May till July. Wood Loosestrife is a perennial, which can be propagated by division, and is worth cultivating.

In this the stamens and style are included, as in Yellow Loosestrife. The yellow monopetalous or tubular corolla has no limb, but glands between the anther-stalks at the base, where it is brighter yellow. The stamens are erect and thicker in the middle, the anthers are oblong and rather prostrate, rising up at the end, the whole flower is less campanulate or bell-shaped, and more like that of a pimpernel. The style is club-shaped and threadlike, and the stigmas simple. Growing in woods it is little visited by insects, as there is no honey, and if so it is easily accessible, while self-pollination can readily occur without insects.

The capsule splits open by 5 valves, and the seeds are numerous, and dispersed by the shaking of the capsule by the wind.

This is a clay-loving plant, and addicted to a clayey soil, but it also requires some amount of humus.

The first botanical name is the Greek for loosestrife, and the second Latin name refers to its habitat in groves or woods.

The only English name is Yellow Pimpernel.
Essential Specific Characters:—

203. Lysimachia nemorum, L.—Stem prostrate, spreading, leaves ovate-acute, opposite, flowers yellow, small, axillary, on 1-flowered peduncles, filaments free, glabrous.

Small Periwinkle (Vinca minor, L.)

The blue flowers of this choice plant adorn the countryside in the North Temperate Zone in Europe, South of Denmark generally, but not in Greece, and W. Asia. In Great Britain it is found in the Peninsula, Channel, Thames, and Anglia provinces, except in Hunts; Northants, in the Severn province; in S. Wales, only in Glamorgan, Pembroke, Carmarthen, Anglesea; in the Trent province, in S. Lines or Derby; throughout the Mersey, Humber, and Tyne provinces; in Cumberland and the Isle of Man; in the W. Lowlands, not in Wigtown; in the E. Lowlands, only in Berwick, Edinburgh, Linlithgow; in the E. Highlands, in Perth, Forfar, S. Aberdeen, Banff, Elgin, and E. Sutherland.

It is often only naturalized. Watson regards it as a denizen, and says he has not seen it in a certainly native state, though quasi-wild in many counties.

The Small Periwinkle, suspected as it is of running wild from gardens, &c., is found in all parts of the country in woodlands, especially small plantations of no considerable antiquity, where it grows amongst herbage and trees in tangled profusion, but certainly it usually suggests that originally it was planted.

The trailing habit of this pretty wild flower causes it to be overlooked. The stems are lying down, rooting, simple, smooth. The leaves are opposite, stalked, like Privet, oval, acute, with a smooth margin.

The flowers are a beautiful blue colour, at length falling, borne on erect flower-stalks, with a white eye, inclined to be double. The smooth calyx is only about a third as long as the corolla and does not fall. The corolla is cup-like with the tube spreading above, below cylindrical.

The plant is 4 ft. in length when luxuriant. It is in flower between March and September. It is an evergreen trailer, propagated by seed.

Sprengel supposed it was pollinated by Thrips transferring pollen from the anthers to the stigma by creeping in and out, but it was observed by Darwin that an insect inserting a long thin proboscis
would become smeared with a sticky substance to which pollen would adhere, and this would be transferred in the next flower to the stigmatic disk. The flowers are conspicuous. There is abundant honey, which attracts numerous insects when it is fine. The tube of the corolla is 11 mm. long, but enlarged so that insects can insert their heads as far as the anther-hairs. The two yellow nectaries at the base of the ovary are 8 mm. below, and protected from rain by the hairs at the entrance.

The stamens are bent, attached half-way up the tube. The anthers project above the stigma, which is conical, enlarged above with a flat plate at the top, sticky along the rim, hairy above. The pollen falls above the latter. Insects sipping the honey carry off the pollen to fresh stigmas.

The Lesser Periwinkle is visited by Bombus, Anthophora, Osmia, Bombylus discolor, Thysanoptera, Thrips.

The fruit is a follicle, which is rare. It is adapted for dispersal of the seeds by the wind, the seeds being compressed, winged, and provided with hairs.

This plant is a humus-loving plant, growing in a humus soil, in or near woods.

Two moths, Daphnia nerii (Oleander Hawk-moth), Clouded Bordered Brindle (Triphana janthina), feed upon it.
Vinca is the Pervinca of Pliny, and Periwinkle comes from this, the second Latin name denoting that it is smaller than the other Periwinkle.

The plant is called Blue Buttons, Dicky Dilver, Ground Ivy, Periwinkle, Sen Green. It was supposed to inspire love, and called Death's flower, being scattered over the graves of children in Italy and Tuscany. It was said to signify early recollections or pleasures of memory. Rousseau was struck with their appearance in a hedge when going to Charmattes, and thirty years afterwards, in company with Mme De Staël he saw the flower, and it reminded him of the occasion again. It is much cultivated in gardens and shrubberies.

**Essential Specific Characters:**

208. *Vinca minor*, L.—Stem procumbent, wiry, with erect leafy shoots, leaves lanceolate, margins smooth, flowers blue, solitary.

**Lungwort** (*Pulmonaria officinalis*, L.)

Not being native in this country, Lungwort is not found in any early deposits. It is a member of the Northern Temperate Flora of Europe. It is not an indigenous plant, and is regarded by Watson as an introduction in the thirty odd counties in which it occurs in S. Scotland and England.

Everywhere it is rare and merely naturalized, having escaped from cultivation in the garden, and it is usually found in copses and similar woodland habitats close to houses, by the owners of which, in the first instance, it has been dispersed by planting with other plants, such as Periwinkle, Spurge Laurel, and some others equally under suspicion.

The name Lungwort, translated from the first Latin name, refers to a character of the leaves, which have a spotted appearance. It is an erect, hairy, slender-stemmed plant with alternate leaves, the radical-leaves being egg-shaped or heart-shaped, rough, the stem-leaves stalkless and egg-shaped. The leaves are spotted with pale-green patches about a quarter of an inch across.

The flowers are pale purple or pink, and of two forms, long- and short-styled, the short-styled form having larger flowers. The flower-stalks are simple and the flowers in terminal forked cymes. The calyx is as long as the straight tube of the corolla. The corolla, first pink (like others), turns blue later, hence the flowers present a variegated appearance.

The stem is 1 foot high. The Lungwort flowers in May and June.
No. 1. Lungwort
(Pulmonaria officinalis, L.)

a, Vertical section of short-styled flower, with fimbriate ovary and epipetalous stamens near the throat, and 3 of the segments of the corolla, small ovary. b, Long-styled form with long style, and stamens half-way down the corolla. c, Flowering stem, with alternate hairy sessile leaves, and terminal cyme, with gamosepalous calyx and versicolorous corollas, and flowers in different stages, open and closed.

No. 2. Wood Forget-me-not
(Myosotis sylvatica, Hoffm.)

a, Vertical section of flower, with long tube of funnel-shaped flower, short style and ovaries below, epipetalous included anthers. b, Flowering stem with sessile oblong ligulate hairy leaves, dichotomous inflorescence with scorpionoid cymes, and flowers in various stages, with flat corolla-limb and white throat.

No. 3. Foxglove
(Digitalis purpurea, L.)

Inflorescence a terminal raceme, with flowers (bell-shaped), in axis of bracts, drooping, the inside with honey-guides or spots with white ring and dark centres, also showing the 5-partite calyx, and ripened ovary or capsule exposed, with long style and bifid stigma, after corolla has fallen, when the ovules are mature, exceeding the calyx-teeth.

No. 4. Marjoram
(Origanum vulgare, L.)

a, Flower, enlarged, showing more or less bell-shaped gamosepalous calyx, and the 2-lipped labiate corolla, with exerted stamens and style. b, Flowering stem, showing square stem, decussate paired leaves opposite, alternate pairs at right angles, and corymbose cyme, with bracts and flowers in various stages.

No. 5. Wood Betony
(Stachys officinalis, L.)

a, Vertical section of labiate flower, with cylindrical tube, lateral lobes, and lower lip cut in half, also 2 long and 2 short epipetalous stamens in the throat. b, Persistent bell-shaped calyx enclosing nutlets, with long persistent style and bifid stigma. c, Flowering stem, with square stem, with reflexed hairs, opposite, shortly stalked, notched leaves, and flowers in terminal raceme, in 3 whors, showing form of corolla, and flowers in various stages, the lower ones open before the upper.

No. 6. Yellow Archangel
(Lamium Galeobdolon, Crantz)

a, Front view in vertical section of flower, showing helmet-like upper lip, and spotted lateral and lower lip, and fringe of hairs and 4 epipetalous stamens. b, Persistent bell-shaped calyx with 5 teeth, enclosing nutlets, and long style and bifid stigma. c, Flowering stem, with bracts, and flowers in whors, showing hairy galeate upper lip, and lower lip serving as a landing-place for insect visitors, with the spots serving as honey-guides.

KEY TO PLATE XXII
1. Lungwort (*Pulmonaria officinalis*, L.).
2. Wood Forget-me-not (*M. sylvatica*, Hoffm.).
5. Wood Betony (*Stachys officinalis*, Trev.).
The Lungwort is perennial, increased by division of the root, and is worthy of inclusion in our garden borders.

The plant is dimorphic. The flowers are rich in honey, which is secreted by the white base of the ovary in the lower part of the corolla-tube, protected by hairs inside the corolla, and much visited by insects. A ring of hairs in the wider part of the tube shelters the honey from rain and flies. The anthers stand at the mouth of the tube (10–12 mm. long) in the short-styled form, and the long stigma stands half-way up the tube, on a style 5–6 mm. long. In the long-styled forms the style is 10 mm. long, and the anther-stalks are very short, 5 mm. from the base of the flower.

The corolla has an enlarged mouth, so that a proboscis of a bee 8 mm. long can reach the honey. The longer elements are touched by insects with the head or the base of the proboscis, and the shorter ones with the maxilla, which forms a sheath to the proboscis, and the plant is legitimately cross-pollinated. The flowers are very conspicuous in spring, and, being well supplied with honey at such a season, are much visited. The oldest and terminal flowers are sterile. The long-styled plant legitimately pollinated produces three times as much seed as those described by Hildebrand. The Lungwort is visited by Anthophora, Halictus, Bombus, Osmia, Diptera, Andrena, Bombylia, Rhingia, Rhodocera, Coleoptera, Omalium florae.

Hildebrand pollinated a flower of either form with its pollen or
pollen from another similar flower, and found it was then sterile. When he pollinated it with pollen from a flower of the other type it was fertile. Darwin found that when it is self-pollinated a few seeds are produced. It is usually thus sterile to its own pollen, probably owing to abundance of insect visitors. When pollen from another similar flower of the same form reaches its stigma it is also sterile. The nutlets are dispersed around the parent plant when ripe.

This plant is a humus- and clay-loving plant requiring both humus and clay. A moth, Anescychia pusiella, feeds upon it.

_Pulmonaria_, Gesner, is from the Latin _pulmo_, lung, in allusion to its reputed curative properties, and the second Latin name refers to the same usage.

_Lungwort_ is called Adam-and-Eve, Bedlam Cowslip, Beggar's Basket, Bottle-of-all Sorts, Bugloss Cowslip, Children of Israel, Spotted Comfrey, Cowslip, Jerusalem Cowslip, Virgin Mary, Cowslip of Bedlem or Jerusalem, Crayfery, Gooseberry Fool, Honeysuckle, Virgin Mary's Honeysuckle, Joseph and Mary, Lady's Milksile, Our Lady's Milkwort, Lady's Pincushion. Lungwort, Mary's Tears, Sage of Bethlehem, Sage of Jerusalem, Soldiers-and-Sailors, Spotted Mary, Spotted Virgin, Virgin Mary's Milk-drops.

The names Adam-and-Eve, Soldiers-and-Sailors are bestowed because of the versicolorous flowers. As to the name Virgin Mary's Milk-drops there was a tradition that the spots were caused by drops of the Blessed Virgin Mary's milk. An old woman was weeding in a garden when plants of this species were proposed to be turned out, whereupon she said, "Do 'ee know, sir, what they white spots be?" "No, I do not." "Why, they be the Virgin Mary's Milk, so don't 'ee turn 'em out for it would be very unlucky." It was also said that from weeping, one eye which was blue became red, in allusion to the colour of the flowers. Bottle-of-all Sorts and Joseph and Mary refer also to the two colours. Cowslip Bugloss alludes to the resemblance to those flowers. Lady's Milk Sile (or soil or stain) refers to the spotted leaves, as also does Lady's Pincushion.

The plant was called Lungwort because the spotting of the leaves, by the Doctrine of Signatures, suggested that the plant was good for lung disease. The plant has long been grown in gardens in a more or less sandy soil.

**Essential Specific Characters:**

215. _Pulmonaria officinalis_, L.—Stem erect, leaves rough, spotted.

1 This happens more usually in the case of the short-styled form, when half the seed produced by legitimate pollination is formed.
lower petiolate, lanceolate-ovate, upper sessile, oblong, flower pink and blue or pale purple.

Wood Forget-me-not (Myosotis sylvatica, Hoffm.)

Though no species of this genus have yet been found in England in ancient deposits, they are known from Gothland, Sweden. In Arctic Europe, the Canaries, Siberia, Dahuria, and West Asia, or the North Temperate and Arctic Zones, this plant is found generally. In Great Britain it is found in N. Wilts, N. Hants, E. Sussex in the Channel province; not in Kent in the Thames province, or Middlesex, Oxford, Bucks. In Anglia it is found only in Suffolk and Norfolk, in the Severn province in East Gloucs, Monmouth, Worcester, Warwick, Stafford, Salop. In Wales it grows only in Carnarvon and Anglesea, in the Trent province it is general, but not in Lines, and not in Mid Lancs in the Mersey province; but it occurs throughout the Humber and Tyne provinces, in Cumberland, in the Lake province, in Dum-fries, Kirkcudbright, W. Lowlands, Berwick, Edinburgh, in E. Low-lands, Stirling, Forfar, Kincardine, in E. Highlands, and in N. Ebudes. It is found in Yorks at 1200 ft. This species is absent from Ireland.

The Wood Forget-me-not is very local in its distribution, and is perhaps most uniformly dispersed in central England, where it is abundant and widespread in woods and copses, so much so as in places to give quite as characteristic an appearance as the Bluebell in spring.

This is one of the tallest of Forget-me-nots, growing usually in dense clumps, with a tall, erect stem, branched above, with oblong, lance-shaped leaves on long leaf-stalks, with spreading hairs.

The large flowers are a beautiful pale blue like enamel. They are borne on large loose one-sided cymes on long flower-stalks, twice as long as the calyx, which is 5-fid, divided more than half its length, spreading, with unequal segments, which are acute, and is rounded below and closed in fruit. The corolla limb is flat and longer than the tube, which is straight. The nuts are brown, keeled, and attached by the narrow end.

The flower is 2 ft. high. It is in bloom in June and July. The Wood Forget-me-not is perennial, increasing by division, and equal to garden forms.

The anthers attached to the corolla just above the stigma project above the corolla when the flower opens, are inclined upwards, and open longitudinally, being covered with pollen inside like a figure-of-eight, .005 m. by .003 m. The flower is homogamous, i.e.
anthers and stigmas mature together. The flowers are conspicuous, and many insects are attracted to them in fine weather. A fly sucking honey settles for but 2-3 sec. The concealed honey is contained at the base of the ovary in the bottom of the tube, 2-3 mm. long. An insect inserts its proboscis between the stigma and anthers, which can be done from any side, so that a bee or other insect touching the anthers in one will touch the stigma in the next; and as the proboscis is withdrawn and again inserted a fly also self-pollinates it. When

![Wood Forget-me-not (Myosotis sylvatica, Hoffm.)](Photo. H. Irving)


The flowers are odorous in the evening.

The seeds are hooked, and catch in the wool of animals.

The plant is a humus-lover, growing in humus soil. The second Latin name refers to its woodland habitat.

The only other name for Wood Forget-me-not is Cat's Eyes.

**Essential Specific Characters:**

217. *Myosotis sylvatica*, Hoffm.—Stem tall, erect, branched above, with spreading hairs, leaves oblong, lanceolate, stalks of lower leaves dilated, flowers bright blue, limb longer than tube, flat, calyx round below, hairs on calyx hooked.
Foxglove (Digitalis purpurea, L.)

The Foxglove is distributed throughout West Europe in the N. Temperate Zone. It is unknown in early deposits. In Great Britain it is absent in Cambridge, Hunts, Northants, E. Glouces, S. Lincs, Mid Lanes, E. Sutherland, Shetlands, ascending to 2000 ft. in the Highlands. It occurs in Ireland and the Channel Islands.

The Foxglove is a plant that frequents upland wooded tracts, stony hillsides with scattered clumps of trees. In such places it is common. Elsewhere it is a casual, a few seeds cast adventitiously on sandy ground propagating and spreading in an astonishingly short period of time. It does not frequent as a rule low-lying ground.

The stem is tall and handsome, simple, leafy, downy, with spreading hairs, rounded. The lower leaves are stalked, between egg-shaped and lance-shaped, scalloped, toothed, deeply veined, with a marked midrib, downy both sides. The upper stem-leaves are stalkless.

The flowers are borne upon a long raceme with flowers all turned one side, on 1-flowered flower-stalks, thickened and suberect. The sepals are between egg-shaped and lance-shaped, with nerves, the posterior one small. The corolla is bell-shaped, monopetalous or tubular, purple, with spots within the mouth, gaping behind, and the upper lip is somewhat cloven, the lower one has rounded segments. The erect capsule is 2-valved, the seeds numerous, small, round, and black or reddish-brown, and flattened lengthwise.

The stately stem reaches a height of 4 ft. The Foxglove is in flower from June to September. The plant is biennial, reproduced by seeds. It is largely cultivated.

The flower is a big clapper-like bell hanging downwards, protecting the honey in a ring at the base of the ovary. It is visited only by humble bees. The anthers mature before the stigma. If insects do not visit it, it pollinates itself. An annular or ring-like ridge at the base of the ovary, which is quite smooth and hairy above, secretes the honey, serving to give a foothold, or to exclude flies, &c. The anthers and stigma near the upper wall of the corolla point downwards. The lower stamens mature before the upper and before the stigma, and the longer first become vertical, then the shorter ones. The 4 anthers open before the lobes of the stigma separate. The pistil lies between the anthers. Insects touch the latter on entering, and may remove all the pollen before the stigma is ripe. If insects do not visit them the anthers are covered with pollen till the lobes of the stigma have spread
out. When the corolla drops the stigma is smeared with pollen. Even in dull weather the flowers are pollinated. The Hymenoptera, Bombus, Andrena, Halictus, Coleoptera, Meligethes, Antherophagus, Dasytes visit it. The flower is self-fertile. The flower lasts six days.

The capsule opens when ripe, the fruit splitting along the partition, and the seeds fall out automatically or by contraction of their inner layer of cells.

The Foxglove is a sand-loving plant, growing on sand soil, or a rock-lover, growing on a variety of rock soil, such as granite or slate.

Two beetles, Antherophagus nigricornis, Apteropoda graminis, three moths, Melittis artemis, Small Angle-shades (Euplexia luepifara), Sword-grass (Calocampa exolata), and a Heteropterous insect, Dicyphus pallidicornis, are found on it.

Digitalis, Gesner, is from the Latin in allusion to the finger-like shape of the corolla, and the second Latin name refers to its colour.

Foxglove is called Dead Man's Bell, Blob, Bloody Finger, Bloody Man's Fingers, Bluidy Bells, Cottagers, Cowflop, Cowslip, Cowslop, Dead Men's Bellows, Flap or Pop Dock, Flop or Flous Docken, Dog-fingers, Dog's-lugs, Dragon's Mouth, Fairies' Petticoats, Fairy Bell, Fairy Cap, Fairy Fingers, Fairy Glove, Lady's Purple, Flap-dock, Floppy Dock, Flop-a-dock, Folk's Glove, Fox-docken, Fox-fingers, Foxglove, Foxter-leaves, Foxtree, Green Pops or Poppies, Goose Flops, King's Elwand, Lady Glove, Lady's Thimble, Lion's Mouth, Lusmore, Scotch Wild Mercury, Pop-glove, Poppers, Poppy, Pops, Rabbit Flower, Snapdragon, Snaps, Snoxuns, Thimble, Fairy Thimble, Witches' Thimble. It is called Pops (and Pop Dock) because children inflate the corolla, and then make it bang like a paper bag.

As to the name Snoxuns the forest folk have a saying, "A went a-buz'n away like a dumbley dory in a snoxun", which they apply to a dull preacher. Snock means a sharp blow, and it may be applied for the same reason as the last. Foxgloves are called Cottagers "because they belong to the poor people".

"In Suffolk and Essex", a writer says, "they are called Blobs, because the children pull off a flower, and with the fingers of one hand closing up the mouth and giving the other end a slap, it bursts with a noise like the word blob."

Gerarde says: "Some do call them finger flowers because they are like unto the fingers of a glove, the ends cut off". In regard to the name Flap Dock, a writer says: "I knew an old countryman once who compared a prosy preacher to a drumble drane (humble bee) upon a flapper dock." Flowster docken means a dock with showy flower.
FOXGLOVE (*Digitalis purpurea*, L.)
flowster being to flourish, flutter in showy colours. Foxglove is folk (fairies) glove.

The plant was called Witches' Bells because witches were supposed to wear the flowers on their fingers. So, too, fairies' petticoats were formed of the corolla, and glove and caps also. Fairies used it as a thimble to mend their clothes. The plant was used as a cure for hydrophobia.

This plant is poisonous, acting strongly upon the heart, and is used in medicine, the leaves being used as a sedative and diuretic. The pulse can be regulated by a careful administration of this drug. Taken in excess it causes vomiting, purging, delirium, sweating, convulsion, and death. It is emetic and purgative, and has been used for epilepsy, and as an ointment for scrofula, tumours, and ulcers.

Essential Specific Characters:—

233. Digitalis purpurea, L.—Stem tall, erect, leaves ovate, veined, downy below, lower petioled, flowers purple, spotted, drooping, in terminal raceme, campanulate.

Marjoram (Origanum vulgare, L.)

As a woodland species of Northern and Arctic regions one would almost expect to find evidence that this plant is an ancient one, but so far it has not been forthcoming. It is found throughout Arctic Europe, N. Africa, Siberia, Dahuria, W. Asia, as far east as the Himalayas, and it has been introduced into North America.

In Great Britain it is found in the Peninsula, Channel, Thames, Anglia, and Severn provinces, and occurs in S. Wales generally, except in Radnor, N. Wales; in the Trent province except in S. Lines; Westmorland; W. Lowlands, but not in Dumfries; in E. Highlands, not in Stirling, N. Aberdeen, Easterness; in W. Highlands, only in S. Ebudes; N. Highlands, Caithness. It is rare in Scotland. In Yorkshire it grows at 1300 ft. It is local in Ireland.

Marjoram is one of those sweet-smelling plants which lend such charm to the woodlands when all the flowers are in bloom. It is found in upland districts in woods, copses, and plantations, as well as along the hedgerows, where the soil is dry, or perhaps the surface covered with a small rubble of stones. Marjoram is an erect plant with a slender, tetragonal stem, purple, downy, branched, with opposite ascending branches more slender too. The leaves are opposite, egg-shaped, stalked and toothed, downy beneath.

The flowers are in dense, corymbose cymes, with egg-shaped
purple bracts or leaflike organs larger than the calyx, purple, the heads egg-shaped.

The plant is 1–2 ft. high. It is flowering in June up to October in some places. The plant is a deciduous, herbaceous perennial, increased by division. It is worthy of more attention than is given it.

Marjoram has large proterandrous hermaphrodite flowers, i.e. with male and female organs on the same flower, and smaller female flowers. It is like Wild Thyme in the position and secretion of the honey, and is more conspicuous though less sweet-scented. The flowers have lost the power of self-pollination, as the plant is much visited by insects. The tube is 7 mm. long in the large complete flowers, and 4–5 mm. in the small female flowers. A great variety of insects visit it, Bombus, Halietus, Empis, Ascia, Eristalis, Helophilus, Sicus, Myopa, Ocyptera, Prosena, Satyrus janira. The small female flowers are in bloom a week before the larger ones.

The nutlets are free and fall around the plant automatically, the plant dispersing them unaided.

Marjoram is a lime-lover, and grows especially on lime soil, being found on the chalk, limestone formations, and oolites.
A fungus, *Puccinia menthae*, attacks the leaves.


*Origanum*, Theophrastus, is from the Greek *oros*, hill, and *ganos*, joy, and the second Latin name indicates its general occurrence, which is a mistake, as it is rather local.

This plant is named Argans, Marjoram, English Marjoram, Origan, Organ, Organy, Pot Marjoram. The dried leaves have been used for tea and in fomentations. Marjoram yields an essential oil, which is acrid, caustic, and highly aromatic. Marjoram has been used for toothache. The plant has also been used by farriers. A purple dye for wool has been obtained from it, and linen has been dyed reddish-brown with it. It has a pungent taste, like Thyme. It was put in beer to make it intoxicating. The tea has been used in cases of stomach weakness and breast troubles.

**Essential Specific Characters:**—

249. *Origanum vulgare*, L.—Stem erect, branched, leaves serrate, ovate, purple, bracts exceeding the purple flowers in a crowded panicled cyme.

**Wood Betony (Stachys officinalis, Trev.)**

Wood Betony is found throughout the Temperate Northern Zone in Europe, N. Africa, and W. Siberia, but has not been met with in early deposits. In Great Britain it grows in the Peninsula, Channel, Thames, Anglia, and Severn provinces; in S. Wales generally except in Radnor; in N. Wales generally except in Montgomery, Merioneth; throughout the Trent province, Mersey, Humber, Tyne, and Lakes provinces except the Isle of Man; in the West Lowlands except Peebles, Selkirk, Haddington; and in Mid and E. Perth; in E. Highlands, in the N. Ebudes, in the W. Highlands. It ranges thus from Skye and Ross southwards, but it is rare in Scotland and Ireland. In Northumberland it is found at 1200 ft.

The name Wood Betony indicates the chief habitat of this species. It certainly loves the shade and is at home in woods, but it is frequent by the roadside, and is also found on heaths and commons with Grassy Stitchwort, Tormentil, Furze, &c.

The stem is erect, simple, square, with blunt angles, rough, with rigid bristles, turned back, and bent. The radical leaves are on long
leaf-stalks, oblong, heart-shaped, scalloped, blunt, sparsely hairy, the stem-leaves opposite, narrower, saw-like, turned back, with a turned-back margin.

The flowers are in terminal spikes, oblong, purple, stalkless, in whorls, and the bracts or leaflike organs are as long as the calyx, which is shaggy within, with long teeth. The corolla has a projecting tube, incurved below. The nutlets (4) are three-sided and smooth. Wood Betony is 2 ft. high. The flowers bloom in July and August. The plant is perennial and propagated by division.

The flowers are proterandrous, that is, the anthers ripen first, or they may be homogamous, the stigmas ripening at the same time. The pistil is short at first but lengthens when the anthers have opened. The tube of the corolla is 7 mm. long, smooth inside where the honey is secreted, lined above with erect hairs. The corolla, where included in the calyx, is narrow, directed obliquely upwards, but horizontal beyond the calyx, and is constantly 2 mm. wide, the under lip is divided into three half-way, acting as an alighting place, and the tip is narrowed. The tube is short, so that the entrance is not wide at the mouth, and the tube is curved like a bee's proboscis. The anthers bearing white beads on their surface open when the flower expands, the stigmas are between them and just behind the short anthers. The divisions of the style are widely spreading, and covered with warts. The style lengthens the wider the anthers spread, and overtops the shorter ones in the process, becoming smeared with pollen, but at length exceeds them, and is first touched by visitors with pollen from another flower, which is prepotent over its own pollen, though it can effectively pollinate itself.

The flowers are visited by Volucella bombylans, Eristalis horticola, Zygaena lonicera.
The blunt-shaped nutlets fall free around the parent plant when ripe.

Wood Betony is a humus-loving plant requiring a humus soil, and grows only on heaths or in woods where this is to be obtained.

*Peronospora lamii* and *Puccinia betonica* attack Wood Betony.

Two moths, *Coleophora wockelsi*, *Idaea strigellaris*, feed on it.

*Stachys*, Dioscorides, is Greek for spike or ear, and the second name (Latin) refers to its use in medicine.

This plant is called Betayne, Betony, Wood Betony, Bidney, Bishopswort, Wild Hop, Vetoyn.

According to superstition it averted witchcraft. It was reputed to have great medicinal properties, and there was an old saw which recommended a person to "sell his coat and buy betony". It was used to cure consumption and lung disease. It has the power of causing intoxication, and when freshly dried the leaves cause sneezing.

The roots are bitter and nauseous, cause vomiting and purging.

Dye of a fine dark yellow colour for wool has been obtained from Betony. The leaves have a bitter taste.

**Essential Specific Characters:**

256. *Stachys officinalis*, Trev.—Stem erect, leaves radical, ovate-cordate, below crenate, petiolate, upper lanceolate-acute, subsessile, flowers purple, in a terminal dense spike, calyx subglabrous. The nuts are blunt.

**Yellow Archangel** (*Lamium Galeobdolon, Crantz*)

As with the other Dead Nettles there is no trace of this plant in ancient deposits. It is found in the North Temperate Zone in Europe and West Siberia. In Great Britain it is found in the Peninsula, Channel, Thames, Anglia, Severn provinces, and in S. Wales generally except Radnor and Cardigan. In N. Wales it is found generally except in Montgomery and Anglesea; throughout the Trent province except in S. Lines; in the Mersey and Humber provinces, and in Cumberland. In Scotland it grows in Ayr and Westeriness. It is local in the E. of Ireland.

Yellow Archangel is common in damp woods under hedges, especially those that overshadow ditches either by the roadside or in open fields. But it is most abundant under the trees in shady woods, copses, or plantations.

The stem is simple (or there may be several), erect, slender, square, smooth, with long lance-shaped leaves, coarsely toothed, veined, with
or without long leaf-stalks, opposite, the leaves stiffly hairy, the upper egg-shaped, stalkless, the lower heart-shaped.

The flowers grow in whorls of from 6 to 12, and are yellow, blotched with red or pink. The calyx is acute and rigid. The corolla has a long, entire helmet, with the lower lip divided into 3 subequal lobes, and entire. The tube is short and swollen at the base below. The lower lip is spotted with red.

The plant is 1 foot high. It flowers in May and June, and is quickly over. It is worth cultivating, and is perennial, propagated by division.

The anthers and stigma mature simultaneously. The tube of the flower is 8 mm. long, and is expanded above for 2 mm., allowing the entrance of a bee’s head. Where the honey is secreted at the base of the ovary it is smooth, but lined with hairs above. The stigma is branched, the lobes wart-like, and they diverge soon after the flower opens, but being mature they do not enlarge, but are more prominent afterwards. The tip of the lower division lies above the lower surface of the anthers. If the bee’s back only presses lightly against the anthers, the stigma is not covered with pollen; but if it is a large bee, and presses the anthers firmly, the stigma gets covered with pollen from another flower. Afterwards the end of the lower lobe projects below the anthers, and is first touched by the bee. Pollen falls on the lower lobe of the stigma if bees do not visit it. The plant is visited by Bombus and honey-bees.

The nutlets are free, and when ripe fall to the ground below the parent stem, hence Yellow Archangel grows in wide patches in the woods or hedgerows.

This is a clay-loving plant growing on clay soil.

Yellow Archangel is liable to be galled by Cecidonyia galeobdolontis. Two beetles, Meligethes symphyti, M. erythrops, are found on it.
Wood Sage (Teucrium Scorodonia, L.)

This is a recent species, in the absence of ancient records, found in the North Temperate Zone to-day, in Europe generally except in Russia, and in N. Africa. In Great Britain it grows everywhere except in Middlesex, and in the Shetlands, ranging as far north as the Orkneys. It is found in Northumberland at a height of 1500 ft. It grows in Ireland and the Channel Islands.

Wood Sage is a common woodland plant growing on slopes in woods, copses, always in natural woodland, where the ground is stony. It is found in the same districts growing more in the open under hedges. It is also found on heaths and commons at lower elevations.

The stem is erect, square, herbaceous, often consisting of more than one, purplish, hairy. The leaves are heart-shaped, stalked, oblong, scalloped, distant, paired, veined, and wrinkled. The whole plant has a stiff or rigid habit. The leaves are mealy and glandular below.

The flowers are borne in one-sided racemes, and are yellowish, straw-coloured, turned to one side, one terminal longer than the other racemes. The calyx is swollen below (the lip may be absent), egg-shaped, erect, entire, 5-lobed. The lower lip has 4 teeth. The bracts or leaflike organs are egg-shaped, and end in a long point. The tube of the corolla is projecting, gaping, the upper lip deeply divided. The lip is divided into 3 nearly to the base. The nutlets (4) are blackish, shining, in the base of the calyx.

Wood Sage is about 18 in. high at most. The flowers bloom in July. The plant is perennial, propagated by cuttings.

The flowers are proterandrous, the anthers maturing first. When the flower expands the stigma is not touched by an insect visiting the flower, as it lies behind the stamens, which are projecting, and lie close to the upper wall of the tube, afterwards bending slightly upwards, and the stigma takes their place. The lobes of the style are already spreading. The anthers open inferiorly by a longitudinal slit and
shower the pollen on the bee’s head. The stamens afterwards bend back, so that bees do not touch the anthers, and the 2 stigmas move forward into the former place and become more spreading. If insects do not visit the flower it is seldom self-pollinated, but insect visits are frequent, though the flowers are not large, but strong- or sweet-scented. In bending backwards the anthers may touch the stigmas. The honey lies in the tissue at the base of the ovary, and fills the tube, which is 9-10 mm. long, to a height of 4 mm. Wood Sage is visited by *Bombus*, *Anthophora*, *Saropoda*, and *Eristalis*.

When the lower flowers have reached the female condition those above are still male. Thus a bee first visiting male flowers carries the pollen away to a second plant.

The nutlets, as in other Labiates, are free, and when ripe fall out to the ground.

Wood Sage is a rock plant growing on rock soil, or a sand-lover and addicted to a sand soil. It is common on granitic, schistose, and slate rocks.

The leaves are attacked by a fungus *Puccinia annularis*.

Beetles have a predilection for Wood Sage, e.g. *Apion rubens*, *Meligethes bidens*, *M. obscurs*, *Byrrhus pilula*, *Longitarsus pulex*, *L. distin-
No. 2. Wood Spurge  
(*Euphorbia amygdaloides*, L.)  
*a*, Flower with bracts removed, showing crescentic glands, stamens, and pistil (drooping).  
b, Capsule with 2-lobed.  
c, Inflorescence, with stem-leaves at base, and made up of flowerheads with many male and 1 female flowers, subtended by connate bracts, in 3 many-rayed umbels, with the cuspidate glands within each involucre of 2 sepals.

No. 3. Dog's Mercury  
(*Mercurialis perennis*, L.)  
*a*, Male flower, with 9 stamens, with 3 sepals.  
b, Female flower, with central pistil, with 2 hairy ovaries, and long bent-back styles.  
c, Didymous, hairy capsules.  
d, Raceme, with male flowers in the axis of bracts on long stalks.  
e, Flowering stem with lance-shaped leaves, shortly-stalked opposite, cussate, and female flowers in short spikes, showing ovaries and stigmas.

No. 5. Oak  
(*Quercus Robur*, L.)  
*a*, Staminate flower, with 8 stamens and deeply divided calyx.  
b, Pistillate flower, with imbricate bracts enclosing pistil, 3 styles above.  
c, Twig with lobed leaves, with no auricle at the base, stipules, and male flowers in catkins, female flowers in a spike.  
d, Acorn, or fruit, one developed with cupule, one undeveloped on long flower-stalk (pedunculate type).

No. 6. Beech  
(*Fagus sylvatica*, L.)  
*a*, Pistillate flower with ovary, and 3 styles above.  
b, Fruit (beech-mast) 3-angled.  
c, Four-lobed involucre or cupule of female flower.  
d, Twig with long-stalked hairy leaves, scale-like stipule, and staminate fascel-like flowers, with many stamens and overlapping bracts below, pendulous capitule.
4. Wych Elm (*Ulmus glabra*, Huds.).  
Wood Spurge (Euphorbia amygdaloides, L.)

Southern plant as it is, this Spurge is found in Preglacial beds in Norfolk and Suffolk. It ranges to-day in the North Temperate Zone from Holland southwards, and in West Asia. In Great Britain it is found in the Peninsula, Channel, Thames, and Anglia provinces, except in Hunts; throughout the Severn province; in S. Wales, except in Glamorgan, Carmarthen, Pembroke; in N. Wales, in Montgomery, Carnarvon; in the Trent province, except in Lincs; in West Yorks, Durham, Cheviotland from Northumberland southward, and is local generally. It is found in Bandon and Donegal in Ireland, and in the Channel Islands.

The Wood Spurge is a southern chalk and limestone species, which is most plentiful on such soils, but is fairly widespread in England. It is abundant in some woods and copses, and is also a common wayside flower in the south of England, growing in clusters in the hedgerows.

It has an erect habit, with a more or less simple stem, with milky acrid juice, with numerous leaves, which are lance-shaped to egg-shaped or almond-shaped (hence the second Latin name), the lower stalked, the upper stalkless. The stem forms a branched umbel above with 5-10 rays, with a rounded united ring of bracts, nearly round, the flower-stalks slender, with glands tapering to a sudden point. The capsules are smooth, with small warts or tubercles, with smooth seeds.

The stem is 1-2 ft. high. The flowers may be found in March and...
June, and the plant is a deciduous undershrub, perennial, propagated by division.

The flowerheads are bisexual, i.e. there are stamens and pistil on

\[ \text{Wood Spurge (Euphorbia amygdaloides, L.)} \]

the same flowerhead. The honey is exposed, and is sought by flies, beetles, Hymenoptera, and the former especially cause cross-pollination. The cup-like whorl has 4-5 round glands. There are 10-15

\[ ^1 \text{Several male flowers, with single anthers, surround one female flower.} \]
stamens, jointed, and equal to a stalk bearing a flower reduced to a single stamen. In the centre is a single female flower, with a 3-celled ovary and 3 styles and 2 stigmas. The stigma ripens first. The anthers close in wet weather.

The capsule has rounded valves, and contains smooth, nearly round seeds, slightly acute, which are expelled from the capsule by an explosive motion, the carpels opening ventrally and letting the seeds fall out. The capsule opens by partitions and loculi as well.

Wood Spurge is a lime-loving plant, found on lime soil, on the chalk, limestone, or oolites.

It is attacked by a fungus, Endophyllum Euphorbia.

A beetle, Aphthona venustula, a Hymenopterous insect, Prosopis masoni, and a moth, Sericoris euphorbiana, are found on the Wood Spurge.

Euphorbia, Dioscorides, is from Euphorbus, physician to Juba, King of Mauretania, and the second Latin name refers to the almond-shaped leaves.

This plant is called Deer's Milk, Devil's Milk, Mare's Tail, and Wood Spurge. It is known as Devil's Milk because it was supposed to be associated with the Evil One.

The juice is acrid, causing ulceration wherever applied. It has been applied externally to warts or corns, and to hollow teeth, to remove the pain and destroy the nerve, or in earache behind the ears, causing blistering.

Essential Specific Characters:—

274. Euphorbia amygdaloides, L.—Stem erect, leafy, glabrous, purple below, leaves obovate, entire, alternate, flowers in umbels, with rounded connate bracts.

Dog's Mercury (Mercurialis perennis, L.)

This common hedgerow plant is found in Interglacial beds in Sussex, and Neolithic beds in Essex and Edinburgh. To-day it is found in the N. Temperate Zone in Europe and N. Africa. In Great Britain it is absent in Hunts, Cardigan, S. Lines, Mid Lanes, Isle of Man, E. Sutherland, Hebrides, Shetlands, but elsewhere general northwards to the Orkneys, up to 1700 ft. in the Highlands. It is native in Ireland and the Channel Islands.

What exactly are the requirements of this plant are somewhat puzzling, for it is absent in the same district from large areas which possess the same characteristics of shade which it requires; but it is
apparently not fond of some sandy districts, but rather of a humus subsoil, which it obtains in the dry woods and hedge-banks, which are its natural habitat. In some districts such surface may be leached out, causing it to disappear.

The root-stock is creeping, and from it the stems issue more or less in an erect manner, being simple, with many leaves, but leafless below, rounded, with wings. The leaves vary and may be rough, smooth, or hairy, oval, acute, stalked, with saw-like teeth, in pairs, with white glands on the margin. At the base of the leaf-stalks are 2 small acute stipules or leaflike organs. They form a cup to catch rain, and a rounded ridge in it with a row of hairs occurs and absorbs moisture.

The flowers are in loose spikes in the axils of the upper leaves, greenish, with no corolla. The female flowers are hidden among the leaves, more or less stalkless, the male on long flower-stalks very slender, with acute sepals. Male flowers may occur on the female rarely. The capsule is rounded, double, with 2 cavities with white cuticle, and there are 2 carpels.

Dog's Mercury is about 1 ft. in height. It flowers in April and May, and is perennial, as the second name implies, and reproduced by root-division.

The plant is dioecious, the stamens and carpels being on different plants, the males in axillary spikes, and the females clustered in a short raceme of 3 flowers. The styles are long and bent back, stigmatic in front. There is no corolla, and 2 carpels. The flowers are pollinated by the wind. The pollen is dust-like. The stigmas are said to be ripe at least two days before the anthers are ripe. On some female plants there may be a few male flowers capable of pollination.

When ripe the seeds fall out of the capsule around the parent plant. Dog's Mercury is more or less a humus plant, requiring a humus soil.

The fungus Canoma mercurialis attacks it.

Several beetles are found on Dog's Mercury, Hermeophaga mercurialis, Apion germari, A. pallipes, Trophiphornus mercurialis, Meligethes kunzei, and a moth, Phlogophora meticulosa.

Mercurialis, Pliny, was so called after the god Mercury, who is said to have discovered its virtues, and the second Latin name indicates its perennial character.

This plant is called Adder's-meat, Boggard-flower, Bristol-weed, Cheadle, Dog's Mercury, Dog's Cole, Kentish Balsam, Maiden Mercury, Wild Mercury, Leaf Mercury, Sapwort, Snake's Bit, Snake Weed, Town-weed. Dog's Mercury is so called to distinguish it not
from the so-called English Mercury, or Goosefoot, but from the French Mercury (*H. annua*), formerly used in medicine. It is called Kentish Balsam, “from the similarity of the leaf to that of the Garden Balsam”, and Town-weed from the growth of the plant in towns and town gardens, though this name may refer to *H. annua*.

The plant is poisonous, and not eaten by animals. When dry it turns blue, and steeped in water yields a deep blue dye, which is not permanent. It is acrid. The plant has been eaten as a spinach. It is laxative in effect.

The male and female plants are not usually found in the same district, and therefore Dog's Mercury does not always produce perfect seed, being largely increased by the root-stock.

**Essential Specific Characters:**


**Wych Elm** (*Ulmus glabra*, Huds. (*montana*, Stokes))

This is an ancient tree, remains being found in the Preglacial beds at Happisburgh, Suffolk, and in Interglacial beds at Grays, Essex. It now occurs in Europe and in Siberia, and is generally distributed in the N. Temperate Zone.
In Great Britain it does not grow in S. Hants, E. Kent, Hunts, Glamorgan, Pembroke, Flint, N. Lines, Isle of Man, Kirkcudbright, Roxburgh, Orkneys and Shetlands, but elsewhere as far north as Sutherland, and is indigenous and naturalized in many places. It is native in Ireland and the Channel Islands. It is found in Yorks at 1300 ft.

The Wych Elm grows commonly in hedgerows and by the sides of highways, where it is doubtless planted, but it is also found in woods where it may well be native. It is frequently utilized in parks and other places to form avenues or rows of timber trees.

The general habit of the Wych Elm is drooping, with a twisted bole or base of the trunk. It is a large tree. The bole may be 50 ft. in girth. The bark is corky or not, with thick ribs and deep furrows, horizontal or somewhat spiral. The branches are spreading. The twigs are downy. Suckers are sent up by the roots, especially when cut. The leaves are large, rough above, downy below, egg-shaped to oblong, bluntly pointed, with double or treble teeth, the base unequal or heart-shaped. The stipules soon fall.

The flowers are apetalous, 5–7 in a cyme, with a bell-shaped perianth fringed with hairs, with blunt lobes, 4–5-cleft, and persistent. There are 4–6 or 5 stamens, with purple anthers inserted on the perianth tube, opposite the lobes. There are 2 styles. The fruit, a samara oblong or rounded, has the seed in the centre, and is notched above.

The Wych Elm is 80–120 ft. in height, and flowers before the leaves expand. It is a deciduous tree, propagating itself from seed, and from suckers sent up by the roots.

The flowers are bisexual, the male and female organs being on the same flower as a rule, with 5 anther-stalks, and purple anthers opening outwards, the styles (2) awl-shaped, stigmatic on the inner face. At the base are leaves in the lowest 10–12 axils, flowers above, in dichasial cymes, bearing 2 branches successively reduced to one flower.

As with other trees, the flowers of the Wych Elm, which appear before the leaves, are wind-pollinated. The stigmas mature first, before the anthers. The flowers are not in catkins, but in groups. The perianth has 4–6 lobes, and the stamens are the same number. Before the anthers open the anther-stalks lengthen and stand high above the feathery stigma, so that the pollen can be readily blown away. The stigmas are long-lived. As a rule the pollen is blown upward, some settling eventually on stigmas in flowers higher on the tree.
The fruit is a samara, and winged, and the wind carries the seed some distance from the parent tree.

The Wych Elm grows on a sand soil or clay soil, or in sandy loam, and is widespread.

Many fungi attack the Elm, such as Taphrina, Mycospharella, Psilocybe, Hypholoma, Flammula, Pholiota, Plenrotus, Collybia, Fomes, Hydnellum, Pleospora.

Several insects cause galls or infest it, such as (amongst many others) Schizoneura ulmi, Pemphigus pallidus (Leopard Moth), Zeuzera aeaudi, Orchestes ulmi, Scolytus destructor, S. multistriatus, Hylesinus vittatus (Winter Moth), Cheimatobia brumata, Tetraneura ulmi, Typhlocyba ulmi, Pseudococcus aceris, Lecanium capreæ.

Ulmus, Pliny, is from the Latin for Elm. Wych is from A.S. wea, with the sense of bending, from the pendulous branches, and the second Latin name, meaning smooth, is misapplied, the leaves being asperous.

This tree is called Chewbark, Elm, Broad-leaved, Scotch, Witch or Wych Elm, Halse, Witch Hazel, Helm, Mountain Elm, Orme Tree, Witch, Witch Wood, Wych Wood. The name Chewbark is explained thus: “The inner bark of the Elm for a certain pleasant clamminess is chewed by children, and hence the tree is called Chewbark”. 
The name Wych Elm was applied because its wood was used to make the chests called Wyches, Hueches, or Whyches, French huche, A.S. hwæce. It was also called Witch Hazel, because the leaves are like the leaves of the Hazel. Gerarde says: "Old men affirme that when long boughes (bows) were in great use, there were very many made of the wood of this tree, for which purpose it is mentioned in the statutes of England by the name of Witch Hasell."

The Edda derives man’s descent from the Ash and Elm. It was a prophetic tree being a tree of dreams.

“Full in the midst a spreading elm displayed
His aged arms and cast a mighty shade;
Each trembling leaf with some light vision teems,
And leaves impregnated with airy dreams.”

A man who makes unreasonable requests, and equally expects them to be gratified, is said to “ask an elm tree for pears”.

The bark is astringent, contains tannin, and being mucilaginous it acts as a demulcent. The leaves have been used as fodder for cattle. As timber it was used for ships, but steel has now replaced the old wooden ships to a great extent. It is also used for coffins and other purposes.

**Essential Specific Characters:**

278. *Ulmus glabra*, Hud.s.—Tree, branches drooping, leaves large, ovate, doubly serrate, unequal at the base, seed below middle, flowers 5-7-fid.

**Oak (Quercus Robur, L.)**

The Oak is an ancient tree found in Preglacial beds in Norfolk and Suffolk, and also Interglacial and Neolithic beds. To-day it is found in the Arctic and N. Temperate Zones from the Atlas, Taurus, and Syria, up to the Arctic Circle. In Great Britain it is found everywhere except in Selkirk, Hebrides, and Shetlands, from Sutherland to the south coast, up to 1350 ft. in the Highlands. It is a native of Ireland and the Channel Islands.

The Oak is one of those trees which characterize a certain type of woodland, having a special ground association of its own. It is also largely planted up and down the country in hedgerows by the roadside as well as in the open fields. But it is native in many places where remnants of the old forests remain, especially in hilly districts, the strongholds in days gone by of the Druids, to whom it was sacred, many ancient trees bearing names connected with this ancient religious cult.
OAK

The tree is perhaps best known by its stout and lofty bole or base of the trunk. The stem is erect, branched, the branches ascending or spreading, never drooping.

Reaching a height of 150 ft., and having an enormous girth, up to 70 ft. in circumference, the Oak is one of the largest British trees. The Newland Oak, for instance, has a girth of 60 ft., the Cowthorpe Oak, Yorkshire, being 70 ft. The thick trunk, which is usually short, gives rise to several thick long arms, the lower often horizontal, the upper ascending and spreading, forming an elbow or angle, and thus giving it a twisted appearance. This arrangement makes the crown a semicircular one, and in this variety in the summer appearance the foliage is in dense masses, broken by the elbows of the branches, and at no distance from the ground. In the winter stage the irregular branching is well seen.

The resting buds have numerous pairs of scales or stipules of undeveloped leaves. The lateral buds are in clusters at the tip of the twigs. The lower buds are inactive for long periods. This causes the zigzag arrangement of branches. The leaves are lobed, spirally arranged, 4 in the tufts at the ends of branches. The leaves are stalked and have temporary stipules. The stalk is short, the blade is hairless, not tapered at the base. The leaves fall in November.

The Oak is a monoecious plant, and both male and female catkins are borne on the same shoot. The male on the dwarf shoots are pendent, and both male and female occur on terminal parts of the previous year's twigs. There is one stalkless female flower in the axils of the bract scales. The male catkin has many catkin scales. The male flowers have 5–7 united sepals, 5–12 stamens. The female inflorescence has fewer flowers (1–5), and has a distinct stalk with lateral flowers. The fruit, an acorn, is developed from a 1-seeded ovary, 5 of the ovules not developing. The cupule or cup has close overlapping scales. The acorns are distant. The three carpels are united with a three-chambered ovary and 2 ovules in each chamber. Five of the 6 ovules do not mature.

The tree may be 60 ft. high. It flowers in April and May. It is a deciduous tree, propagated by seed. Like other Cupuliferae the flower is pollinated by the wind. Each spike contains one female flower, which forms the acorn cup at the base, or a cluster of flowers. The male flowers hang in drooping catkins, with 10 projecting stamens.

The fruit or acorn when ripe drops, owing to its great weight, to the ground, and is later released from the cupule, or it may be carried by birds or animals to a distance as food, whilst being semi-detached
at the end of a thin branch it is also blown to a distance by the wind.

The Oak is more or less confined to the hillier stony tracts of the country where it is native, and is partly a rock plant, partly a sand-loving plant, always growing, however, in a soil rich in humus, and most often on clay or loam.

The Dryad Fungus, *Polyporus dryadensis*, forms large brackets,

![Oak (Quercus Robur, L.)](Photo H. Irving)

sometimes a foot or more across, on the bark, and *Fistulina hepatica*, the "beefsteak fungus", is also common on it.

*Neuroterus lenticularis* forms the "spangle gall", *Teras terminalis* the "oak apple", and some 50 other galls are formed upon it. The fungi attacking bark or leaves are numerous, belonging to the genera *Diaporthe*, *Sphaerulina*, *Rosellinia*, *Dichena*, *Sclerotinia*, *Bulgaria*, *Ureda*, *Lenzites*, *Hypholoma*, *Pholiota*, *Collybia*, *Dadalea*, *Fomes*, *Polyporus*, *Fistulina*, *Hydnum*, *Corticium*, *Stereum*, *Tremella*, &c.

Many insects find a livelihood upon the Oak, such as *Lucanus cervus*, *Pseudococcus aecis*, *Prionus corarius*, *Atelabus curculionides*, *Polydrusus micans*, *Orchestes quercus*, *Scolytus destructor*, *Dryococetes villosus*, *Trypodendron domesticum*, *Nyleborus*, *Neuroterus*, *Spathegaster*, *Aphilothis*, *Andricus*, *Dryophanta*, *Biorhiza*, *Teras*, *Cynips*,
Aspidiotus, Asterolecanium, Cossus, Orgyia, Pygea, Tortrix, Calipterus, Lachnus, Phylloxera, Diplosis, Lecanium.

Quercus, Pliny, is Latin for oak. Robur, Pliny, was a name for a certain kind of oak. Oak is from the A.S. āc.


The name Pipes is given to the acorn-cup with stalk attached resembling a pipe, which children carry in their mouths to pretend they are smoking. The male catkins are called “The Trail” in the New Forest. Cups and Ladles, &c., is a name for the husks of the acorn, from their resemblance to these utensils.

On the 29th May children distinguish the reddish-coloured leaves as Girl’s Oak, and the green leaves as Boy’s Oak. Girls wear the former and boys the latter.

In Hants, a writer says: “The woodmen here talk of two kinds of Oak, which they call the Black and White Oak, but the only intelligible difference I could extract from their accounts is that the twigs of one float whilst those of the other sink when thrown into water! Some of the more observant, however, amongst them distinguish more clearly our two species; the Q. sessiliflora they call White Oak and Maiden Oak, as I have repeatedly ascertained.” Durmast (Dunmast) Oak is so called from the acorns being sometimes of a red or dun colour. Oak Atchern is oak-berry. The pretty galls that grow upon the leaves so abundantly are called oak-berries, and the larger ones on the buds are, as is commonly the case, called oak-galls.

Death was announced formerly in some parts to the nearest oak, a tree around which many superstitions have gathered. Holes in oaks were doors through which spirits of the trees passed, and the pathways of elves, children being cured by contact with them, and passed through them. Dryads had their lives linked to a tree, which it was fatal to injure. It was considered unlucky to fell an Oak. Hence Oaks were used for marking boundaries of property.

The early Greek and Latin authors believed in the tree descent of man, and the Oak and Ash were supposed to have given rise to man. The whole superstructure of Druidism was based on tree worship, in which the Oak figured largely. Some even derive church or kirk
from *Quercus*. Dodona was noted for its oak grove. The Oak was held to be of lightning origin, and sacred to Thor.

The Jew was said to be only able to settle where two oaks grew in the form of a cross. In many parts fairyland gathers around the Oak, and fairy dances were said to take place round its roots. Some were called Devil's Oaks. If seen in dreams it was a sign of long life, while to dream of an acorn foretold sickness. A man who abandons a good enterprise for a bad one was said "to cut down an oak and plant a thistle." Several proverbs relate to the Oak, e.g.: "The willow will buy a horse before the oak will pay for a saddle."  "The smallest axe may fell the largest oak."  "Little strokes fell great oaks."

At Roman weddings oak boughs were symbols of fecundity. In order to commemorate the restoration of Charles II, oak leaves and gilded oak-apples were worn.

The Oak was said to have formed (like many other trees) the wood of which the Cross of Calvary was made, and a legend says when the Jews were in search of wood every tree split itself except the Oak. Oak trees planted at crossways were supposed to cure ague, and to cure gout if taken hold of with the repeating of a formula. Oak leaves formed the civic crown, which was the highest honour, and accorded to Julius Caesar.

Acorns were formerly dried, roasted, and used for making bread. The bark is one of the most important of tanning materials. Oak sawdust was used to dye fustian, and to make colours of drab and brown. The oak-apples are used in dyeing and for ink. Oak bark after it has been used for tanning is used for dressing the soil. Formerly acorns were in great request for feeding swine, oak forests being described as of so many hogs.

**Essential Specific Characters:**

282. *Quercus Robur*, L.—Tree, with stout horizontal or ascending branches, leaves obovate, sinuate, lobed, male flowers in loose pendent catkins, female solitary, below, fruit an acorn.

**Beech** (*Fagus sylvatica*, L.)

Though doubts have been expressed as to the antiquity of the Beech as a British tree there can be no reason for suspicion as to its being native here, for it is found in Preglacial beds at Happisburgh, Norfolk, and in Neolithic deposits. It is found in the N. Temperate Zone over an area covered by a triangle formed by Norway, Asia Minor, and Spain. In Great Britain it is found in the Peninsula,
Channel, Thames, and Anglia provinces, except in Hunts; in the Severn province; in S. Wales, not in Brecon, Radnor, Cardigan; in N. Wales, not in Montgomery or Merioneth; in the Trent province, Mersey province, except in Mid Lanes; in the Humber and Tyne provinces and the Isle of Man, and up to 1200 ft. in Derby; but it is planted in Scotland and Ireland.

Since this tree is found in Preglacial deposits, as remarked, there can be no question as to its being native even though Caesar did not mention it, a clear case of the uselessness of negative evidence alone.
It is a woodland plant, forming a distinct type of formation, which is characteristic in general of chalk and limestone districts, and elsewhere it is planted in hedgerows and as avenues. The root is enveloped in a fungoid mycelium or mycorhiza.

The Beech has a characteristic habit, unlike the Oak or Elm, the bole being erect with two main branches, and the tree lofty; or else it branches at a lower level, and the branches are spreading and wavy, ultimately spreading.

The Beech is a lofty tree, which under exceptional circumstances may attain a height of nearly 120 ft., and a girth of nearly 30 ft. The bark is smooth and grey. The branches extend horizontally. The buds are acute. The stipules soon fall, and are membranous. The leaves are deciduous or evergreen, shortly stalked, with a long narrow point, oblong to egg-shaped, smooth or downy when young, the later leaves fringed at the border with hairs, and in bud they are plaited parallel to the nerves.

The Beech is monoecious. The male flowers are in long stalked heads, and drooping; the flower-stalk is 1–2 in. long. There are no bracts, or but small ones. The calyx is 4–7-lobed. There are 8–40 stamens, with slender projecting anther-stalks and oblong anthers. The female flowers are on shorter stalks, 2–4, in an involucre of overlapping bracts, 4-partite. The limb of the calyx has 4–5 teeth. The ovary is 3-angled, 3-celled. There are 3 linear styles. The fruit is 3-angled, smooth, 2 growing together, 1–3-seeded. The capsule has bristly segments, and is 4-cleft.

The Beech is 40–60 ft. high as a rule. The flowers bloom in April and May. It is a deciduous tree, propagated by seed.

It only flowers occasionally, saving up material in the interim. The flowers of the Beech are admirably adapted to pollination by the wind. The stamens are long, projecting, and are numerous, so that the pollen can readily be blown away by the wind. They are also slender and readily shaken, so that when a puff of wind comes a cloud of pollen is blown upwards to settle, some of it at least, upon the linear styles of flowers above. The Beech is an example, unusual in the group, of a tree in which the flowers appear after the leaves.

The fruit is a dry, edible nut enclosed in a cupule, with a hard pericarp, dispersed by rodents, squirrels, birds, &c.

The Beech is a lime-loving plant, growing on a lime soil, especially on limestone, oolite, and the chalk, where it is indigenous.

*Polytoreus squamosus, Fomes fomentarius*, are common fungal pests. The leaves are galled by *Hormomyia fagi* and *H. piligera*. Cow
wheat is parasitic on its roots. Other fungi infesting beech are *Nectria*, *Sphaerulina*, *Rosellinia*, *Dickiana*, *Bulgaria*, *Armillaria*, *Lenzites*, *Pannus*, *Psilocybe*, *Hypholoma*, *Pholiota*, *Collybia*, *Fomes*, *Polyergus*, *Fistulina*, *Hydnus*, and it is galled by *Monochetus*, *Hornomyia*, *Cecidomyia*.

The insect pests are, amongst many others: *Lucanus cervus*, *Sinodendron cylindricum*, *Dorcas parallelipipedus*, *Melolontha vulgaris*, *Agrilus viridis*, *Orchestes fagi*, *Khopalomesites lardy*, *Cryphalus fagi*, *Cryptococcus fagi*, *Phyllaphis fagi*, &c., *Staurophytes fagi*, *Limacodes testudo*, *Nola strigula*, *Aglaia tan*, *Dicycla oo*, &c.

*Fagus*. Pliny, is the Latin for beech, and is cognate with the word beech. The second Latin name indicates its woodland habitat.

This tree is called Beech, Buck, Buck's-mast, Hay Beech, Mast. Buck-mast was so called because “deere delight to feed thereon”. “In Hants,” a writer says, “the fruit of the beech tree is called Mast or Beech Mast, and when hogs are turned out into the woods in autumn to feed on it they are said to be turned out to mast.” The tree was superstitiously regarded as proof against lightning.

The wood is used by turners, joiners, millwrights. The thin bark has been used for basket-work and band-boxes, and for straw for paliasses. Pigs and deer are fond of the mast, which served as an article of food in ancient times. The wood is durable under water, but liable to be affected by extremes of temperature, and to be attacked by beetles. An oil is contained in the mast, which is expressed as a sort of olive oil, and also sugar and starch.

Beech wood is used abroad for charcoal, and for sabots and planks, after soaking in water and smoking.

**Essential Specific Characters:**

283. *Fagus sylvatica*, L.—Tree, tall, smooth bark, leaves ovate, ciliate at the margin, glabrous, serrate, silky in bud, male flowers in crowded catkins, pendent, females 1–3, fruit triquetrous.

**Aspen (Populus tremula, L.)**

Traces of the Aspen have been discovered in Calcareous Tufa of Neolithic age in Flints. It is found in the Arctic and N. Temperate Zones in Arctic Europe, N. Africa, and N. Asia. In Great Britain it is not found in S. Hants, E. Kent, Monmouth, Cardigan, Lincs, Mid Lancs, Haddington, Linlithgow, Caithness, but elsewhere as far north as the Orkneys, and is probably indigenous, but often planted. In Yorks it is found at 1600 ft. It is a native of Ireland and the Channel Islands.
One seldom finds any Poplars in a really native state in any situation except in woods, for owing to their quick growth they are much planted in hedgerows and plantations. But the Aspen, which grows in damp, moist woods or by water, may well be native in such stations, and it is seldom found in any other habitat, as are the others which are also found in woods.

The Aspen is an erect, rather distantly branched tree, with a rather short stem and slender branches. The bark is grey. The suckers are downy, as also are the buds, which are not clammy. The leaves are sub-entire, nearly round, broadly toothed, smooth both sides. The leaf-stalks are flattened. Those at the top are on long stalks, and are rounded with wavy margin. The radical shoots have short stalks and nearly triangular leaves.

The blade of the leaf is inserted on the vertically flattened leaf-stalk, hence their tremulous character. Rain falls and runs down the petioles or stalks, where 2 cups catch and hold it, the cells being thin-walled secrete a resin, swelling when moistened, and the cells absorb the moisture, being protected in dry weather by the resinous deposit.

The catkins are cylindrical, with hairy male catkin scales with narrow lobes. The 2 stigmas are divided into two nearly halfway, seared.

The tree is 40–80 ft. high. It is in flower in March till April. The plant is a deciduous tree, propagated by seeds.

Unlike the Willow, with the floral mechanism of which it agrees in most respects, the Aspen is pollinated by the wind, and has no honey. The stamens are more numerous than in Salix, 4–30, the anther-stalks free, the stigmas are slender and 2–4-fid.

The seeds are clothed in cottony appendages to aid in their dispersal by the wind.

The Aspen is a humus-loving plant, growing in a humus or peaty soil.

Several fungi attack the Aspen, especially Melampsora tremula, and the petioles are galled by Diplosis tremula. It is attacked also by Exoascus, Tympanis, Lentinus, Hyholoma, Pholiota, Pleurotus, Collybia, Fomes, Polyporus.

It is galled by Saperda populnea and Eriophyes postulatum. Numerous other insects attack it, such as Saperda carcharias, Melasoma populi, Cladius viminalis (Poplar Hawk Moth), Smerinthus populi, Dicranura vinula (Puss Moth), Pemphigus bursarius, P. spirothece, Ortho-stylus bilineatus, Phytocoris populi, Pediopsis nassatus, Idiocerus tremula, I. fulgidus, I. populi, &c.
**KEY TO PLATE XXIV**

No. 1. Aspen
*(Populus fremontii, L.)*

*a,* Pistillate flower, with ovary, and 4-fid stigma enclosed, and laminate florey scale.

*b,* Staminate flower, with long-stalked stamens, and subtending ciliate scale.

*c,* Female catkins, with scales at the base, and buds.

*d,* Foliage leaf, with ciliate leaf-stalk and crenate border. Across this lies a male catkin with tuft of scales below, and some unexpanded buds.

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No. 2. Twistedblade
*(Listera ovata, Br.)*

*a,* Flower enlarged, showing small upper lip, and lateral lobes, of labiate corolla, and the long-forked lower lip; also some sepals; and within the corolla the anther and 2 pollinia.

*b,* Raceme of flowers, in various stages, and below scape and ovate paired leaves nearly opposite.

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No. 3. Bee Orchid
*(Ophrys apifera, L.)*

*a,* Flower enlarged, showing the spreading perianth, and bee-like markings of the 3-lobed lower lip, and pink ovate sepals, the column and arched anther, pollinia, and tibercules, at the base of the lateral lobes.

*b,* One of the pollinia.

*c,* Spike, with oblong leaf, and flowers in various stages, enclosed in large leafy bracts.

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No. 4. Snowdrop
*(Galanthus nivalis, L.)*

*a,* Ovoid bulb, with roots below, and sheath.

*b,* Scape, with 2-fid leaves, and drooping flower enclosed in membraneous spathe, with large white outer perianth segments, and petals with green notched honey-grooves.

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No. 5. Lily-of-the-Valley
*(Convallaria majalis, L.)*

*a,* Vertical section of bell-shaped flower, showing 3 (out of 6) segments of perianth, the lobes bent back, and included epipetalous stamens with ovary and simple style, showing 3 seeds in a cell.

*b,* Arrow-shaped anther, on short filament, enlarged.

*c,* Berry, globose.

*d,* Scape with ovate leaf, sheathing leaf-stalk, and sheaths below, with raceme of flowers in axis of scaly bracts showing flowers drooping.

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No. 6. Garlic
*(Allium ursinum, L.)*

*a,* Vertical section of bell-shaped flower, showing 3 (out of 6) free perianth segments, 3 (out of 6) hypogynous stamens, 3 angled ovary and ovule in cell, with thread-like style and simple stigma above.

*b,* Capsule, 3-lobed, with persistent style.

*c,* Radical leaf, grooved above, not fleshy, ovate.

*d,* Scape, with bracts below, the umbel of flowers, and fruits, in various stages, on long pedicels.

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No. 7. Bluebell
*(Scilla non-surfata, Hoffm. and Link)*

*a,* Vertical section of bell-shaped corolla, showing reflexed lobes, epipetalous stamens, and rounded ovary, with long style, and simple stigma.

*b,* Section of capsule, trilocular, 3-valved, with 2 or more ovules in each loculus.

*c,* Concave linear lance-shaped leaves.

*d,* Scape, with raceme of 6 drooping flowers with 2 purple bracts below, on short curved pedicels.
1. Aspen (Populus tremula, L.).
2. Tway-blade (Listera ovata, Br.).
3. Bee Orchis (Ophrys apifera, Huds.).
4. Snowdrop (Galanthus nivalis, L.).
5. Lily-of-the-Valley (Convallaria majalis, L.).
7. Bluebell (Scilla non-scripta, Hoffm. and Link.).
Populus, Pliny, is Latin for poplar, and the Latin adjective *tremula* denotes tremulous or shaking.

It is called Aps, Apse, Quaking or Mountain Ash, Asp, Aspen, Auld-wives'-tongues, Ebble, Eps, Esp, Espin, Haspen, Pipple, Poplar, Quaking Esp, Rattling Asp, Snapsen.

"Ah trimml't like an esp-leaf", is a Cumberland saying.
FLOWERS OF THE WOODS AND COPSES

The Rattling Asp is so called from the rattling sound made by its tremulous leaves. On account of its bitter bark it was called Bitterweed.

"Oak, Ash, and Elm-tree,
The laird can hang for a' the three;
But fir, saigh, and bitter-weed,
The laird may flyte but make naething be'et."

Aps or Apse is the same as aspe by transposition of letters.
Gerarde says it was called Auld-wives'-tongues because "this tree is the matter whereof women's tongues were made, as the poets and some others report, which seldom cease wagging". If it was laid on a witch's grave the people of Russia thought she would not ride abroad. It was a symbol of fear because of its tremulous leaves.

The Aspen was a token of scandal, because its leaves, they said, were made from women's tongues. When Joseph and Mary were fleeing from Herod all the trees except the Aspen did homage, hence it was cursed. It is reputed also to have formed the wood of the Saviour's Cross. The sisters of Phaëthon, bewailing his death on the shores of Eridanus, were changed into poplars.

On Midsummer Eve they fell the highest poplar in Sicily and drag it through the village, beating a drum.

Being ornamental and of quick growth it is much planted. Beavers are fond of the bark. The wood is smooth, soft, but durable.

Essential Specific Characters:—
287. Populus tremula, L.—Tree, with suckers, leaves suborbicular, serrate, glabrous, young leaves downy, stigma erect, petiole compressed, long.

Tway-blade (Listera ovata, Br.)

This delicate orchid has preserved no record for us of its antiquity. It is, however, an Arctic plant found in the N. Temperate and Arctic regions, in Arctic Europe, and Siberia. In Great Britain it grows in every county except the Isle of Man, Peebles, Shetlands, and so ranges northwards to Sutherland elsewhere. It grows at 1900 ft. in N. England, and in Ireland and the Channel Islands.

The Tway-blade is a common clay-loving plant, growing in open fields and meadows, in moist hollows, both in upland and lowland districts. It is also exceedingly abundant in damp woods, growing side by side with Man Orchis, Red Campion, and other shade plants in the depths of woods, copses, and plantations. Tway-blade has a tall, graceful, slender stem, with fibrous root, the stem being clammy,
with a pair of leaves, egg-shaped (hence the second Latin name), near the base, acute, with five marked veins, opposite.

The flowers are green, small, loosely arranged on a very long narrow raceme or spike. The inner petals are narrower, with a lip, divided into two nearly to the base. The column has a crest or appendage, on which the anther is placed. The anthers are yellow, the sepals deep-green, and the petals yellow. When touched the rostellum, one of the stigmas, emits a sticky fluid.

The Tway-blade is about 1 ft. high. The flowers bloom in May and June. This orchid is perennial, propagated by division of the root.

The pollen is friable, and if not aggregated into a pollen mass would not adhere. It lies above the rostellum, and when the latter is touched it exudes a clammy fluid which rises to the level of the pollen. All the visitors are Ichneumons except Grammoptera levis. They attach the pollinia or pollen masses to the head, and apply them to fresh stigmas. Alighting on the lower part of the labellum or lip, they creep up, licking the honey in the groove, and raising the head they touch the rostellum, from the side of which fluid exudes. This fluid which rises to the apex of the pollinia cements them to the head of the insect which collects pollinia in each fresh flower. When touched the rostellum bends down to protect the stigma, and while the groove of the labellum is receiving fresh honey it rises, leaving the stigma free for application of new pollinia. The pollinia are erect at first on the insect's head, and then bent down, and they spread apart and so touch the stigma.

The seeds are light, and easily dispersed by the wind.

Tway-blade is a clay-loving plant, common on clay soil in ash-woods and in humus soil.

The leaves of Tway-blade are liable to be attacked by a fungus, Capoma orchidis.
Listera, R. Brown, is the name by which Dr. Martin Lister (d. 1711) is honoured, and the second Latin name refers to the shape of the leaves.

This orchid is called Bifoil, Double-leaf, Dufoil, Herb Bifoil, Tway-blade, Twifoil.

From its interesting mode of pollination it is worth cultivating, and requires sandy, clayey, or peaty loam.

**Essential Specific Characters:**

289. *Listera ovata*, Br.—Stem erect, pubescent, leaves in opposite pairs, ovate, flowers in a lax spike, green, sticky, column crested.

**Bee Orchis** (*Ophrys apifera*, Huds.)

As a more or less southern type we find no record of its occurrence earlier than the present day. It ranges in the N. Temperate Zone in Europe from Belgium southwards, and in N. Africa. In Great Britain it is found in the Peninsula province, except in E. Cornwall; in the Channel province, Thames, and Anglia province, not in Hunts; in the Severn province; in S. Wales only in Glamorgan and Pembroke; in N. Wales, not in Montgomery, Merioneth; in the Trent province and Mersey provinces, not in Mid Lanes; in the Humber province in Durham and Cumberland; and in Lanark. From Durham and Lanark it is general elsewhere to the south coast. In the N. of England it grows at 1000 ft. In South and Mid Ireland it is found on limestone and sandhills.

The Bee Orchis is one of those characteristic plants which depend on a certain type of geological formation for their distribution, more than others. Thus it is found almost exclusively on hills composed of chalk or limestone, or in woods and copses on the same formations. It is rarely found on sandy soil or pure peat or loam. The stem is leafy, with sheathing leaves, egg-shaped, lanceolate, oblong, silvery below, and with linear veins. The bracts or leaf-like organs are large, green, sheathing, equalling the flowers.

As the second Latin (and English) name implies the flower has the form of a bee. Three to six flowers are arranged in a spike, and they are purple, with a 5-lobed swollen lip, the two lower lobes marked, smaller, hairy at the base, the intermediate ones turned back, oval, and hollow.

The Bee Orchid is about 1 ft. high. Flowers may be found in June and July. The plant is perennial, and propagated by division of the root.
The rostellum contains two pouches, and has a sticky disk, being placed much as in *Orchis*. The pollen-stalks are long, thin, and flexible, and the pollen-masses are at a variable distance apart. The pollen-grains vary in shape. The anther cells open directly or soon after the flower opens. The pollinia are pear-shaped, and after they are set free, if not removed by insects, hang by the caudicles above the stigma, and are very readily brought into contact with the stigmatic surface.

It is probable that the apparent mimicry, so-called, of the flower, by which it may induce bees to visit it, is for securing occasional cross-
pollination. But in their absence self-pollination occurs regularly. The pollen-mass, moreover, does not usually fail to reach the stigma in the same flower.

The seeds are extremely small and light, and are dispersed by the wind.

The Bee Orchid is distinctly a lime-loving plant, and addicted to limestone, oolite, or the chalk, and a lime soil.

_Öpía_, Pliny, is the Greek for eyebrow, alluding to the yellow markings on the lip, which are honey-guides leading to the nectary. The second Latin name refers to the resemblance of the petals in form to the outline of a bee.

This Orchid is called Bee-flower, Bee Orchis, Dumble Dor, Honey-flower, Humble-bee. Many of these refer to the mimetic character of the flower.

The root tubers have been employed to furnish jalep.

**Essential Specific Characters:**

293. _Öpía apífera_, Huds.—Stem slender, leaves oblong; flowers purple, in shape resembling a bee, sepals pink within, intermediate lobes of lip reflexed.

**Snowdrop** (Galanthus nivalis, L.)

It would be both interesting, and surprising, if the Snowdrop occurred in Glacial times in Britain, but we have no record, and it is found to-day in Europe south of Holland, and W. Asia. It has been recorded from as many as sixty-four of the vice-counties of Great Britain, but there is no evidence that it is native except perhaps in Hereford and Denbigh, and elsewhere it is naturalized both in England and Scotland, but not in Ireland. It is said to be native in Edinburgh.

The Snowdrop, so familiar in our gardens and plantations, is found in a semi-natural state in meadows and copses, in many cases, as in the case of Crocus, Tulip, Daffodil, Narcissus, &c., having only migrated from a garden or orchard. The Snowdrop and Crocus have a similar habit. The leaves are smooth, hollowed out above, lanceolate, with the tips curved inwards, nearly as long as the flowering stems. The Snowdrop is a bulbous plant, with the leaves arranged in a rosette, but erect.

The flowers are pure white, hence the first Greek and second Latin and English names. They are usually drooping. The spathe enclosing the flower is membranous. The inner segments are greenish. The sepals are inversely egg-shaped and hollowed out.
This harbinger of spring, as it has been called, is about 6 in. in height. The Snowdrop is in flower between January and March. It is perennial and propagated by offsets.

The flowers are sweet-scented and contain a moderate supply of honey, which is secreted in the green grooves on the inner sides of the flower, and the honey is sheltered from rain by the pendulous position of the latter and the perianth leaves. The flowers are open from 10 a.m. till 4 p.m., when they close. There are 6 anthers which mature at the same time as the stigma. They are close to the style and open by 2 terminal slits, pollen falling out when they are touched. The anther processes form a cone and end in rigid points, being touched by a bee and shaken so that pollen drops down when the insect is seeking honey. The insect touches the stigma with pollen from a previous flower before it touches the anthers, as the stigma is longer than the latter. If the flower is not visited by insects it is self-pollinated. The pistil is white, or only green, at first, above the middle.

The honey bee clings to the perianth dusting itself with pollen on the head. It sweeps the pollen with its brushes and fore- and mid-legs into baskets on its hind-legs. It is visited by hive bees. When insects are absent the anther-stalks become loose, the anthers diverge, and pollen falls on the stigma.
The capsule contains few seeds, which fall when ripe around the parent plant, but it also multiplies largely by bulbs.

The Snowdrop is a sand-loving or clay-loving plant growing in sand or clay with some little humus.

The Snowdrop mildew (*Sclerotinia galanthina*) attacks it.

*Galanthus*, Linnaeus, is from Greek *gala*, milk, *anthos*, flower, from the milk-white flower, and the second Latin name (from *nivis*, snow) refers to the period of flowering, in winter, when snow is on the ground.

This plant is called Candlemas Bells, Fair Maids, Fair Maids of February, French Snowdrop, Purification Flower, Snowdrop, Snowflower, White Ladies. Ouida calls it White Ladies in *Strathmore*. The Snowdrop is called Fair Maids of February on account of its flowering in February.

Legend has accumulated around so familiar a flower. Formerly young women dressed in white and walked in procession on the Feast of Purification, saying:

"The snowdrop in purest white array,
First rears her head on Candlemas Day."

It was dedicated to the Virgin Mary—the monks thought it bloomed at this period in memory of the Virgin when she took the child Jesus to the Temple and presented her offering, and because her image was removed from the altar on the Feast of Purification and snowdrops were strewed in its place. It is considered unlucky to bring the first snowdrop of the year into a house, for "it looks for all the world like a corpse in its shroud."

There is a beautiful legend that "An angel was sent to console Eve mourning over the barren earth. No flower grew in Eden, and driving snow kept falling and making a pall for Earth's funeral after the fall. As the angel spoke, he caught a flake of falling snow, breathed on it, and bade it take a form, and bud and blow. Ere it reached the ground it had turned into a beautiful flower which Eve prized more than all the other fair plants of Paradise. The angel said:

'This is an earnest, Eve, to thee,
That Sun and Summer soon shall be'.

The angel departed, and a ring of snowdrops formed a lovely posy where he stood."

**Essential Specific Characters:**

298. *Galanthus nivalis*, L.—Leaves linear, keeled, flowers white, single, drooping, inner segments green, sepals exceeding the petals.
Lily-of-the-Valley (Convallaria majalis, L.)

Confined to woods more or less, Lily-of-the-Valley is found in the N. Temperate Zone in Europe, but not in Greece and Northern Asia. In Great Britain it grows in the Peninsula province only in Somerset; in the Channel province, not in the Isle of Wight or N. Hants; in the Channel, Thames, and Anglia provinces, not in E. Suffolk or Hunts; in the Severn province, not in W. Glouces; in S. Wales in Brecon, in N. Wales in Carnarvon, Denbigh, Flint; in the Trent province, not in S. Lines; in the Mersey province, only in Chester; in the Humber and Tyne provinces, except in Cheviotland; in the Lakes province, except in the Isle of Man; in Scotland in W. Mid and E. Perth, Forfar, Easternness. From Caithness it ranges elsewhere to Kent and Devon, but is not common. In Cumberland it is found up to 1000 ft. It is naturalized in Scotland and Ireland.

The Lily-of-the-Valley is familiar enough in the gardens, where it luxuriates in the shady corners, but few know it in its natural habitat, which is entirely woodland. It grows in the dark parts of woods and copses, under trees covering quite a large area and forming extensive beds.

The leaves are all radical leaves and the aerial stem merely a
FLOWERS OF THE WOODS AND COPSES

flowering stem. The leaves are egg-shaped in pairs, stalked, erect, smooth, lance-shaped, veined, one of them exceeding the other, bright green. The leaf-stalks are round, long, the outer one dotted with red, tubular, drooping, enclosing the inner solid one.

The scape or flowering stem is lateral, as long as the leaves, naked, smooth, erect, semi-cylindrical. The bracts or leaflike organs are membranous below each flower. The flowers are in drooping racemes, white, bell-shaped. The segments of the corolla are turned back. The fruit is a red berry.

This plant is 6 in. in height. It flowers in May and June. Lily-of-the-Valley is perennial and propagated by the underground stems.

The flowers are honeyless, but contain much pollen and the tissue a sweet sap. The flowers are visited by numerous insects. The flowers are homogamous, anthers and stigma being ripe together, or the anthers first, and in the absence of insects self-pollination occurs.

When the flower expands, the stigma, longer than the anthers, is already covered with long papillae or wart-like knobs before the anthers are mature; but if the anthers are ripe and rubbed over it, little pollen adheres. When they have opened the stigma is sticky and pollen adheres to it. The flowers are pendulous, and bees cling on, and thrust the head and fore leg into the bell, touching the stigma first with pollen from another flower. It sweeps the pollen with the brushes of its fore legs into its baskets, and dusts its head with pollen, which is carried to the next flower. The stigma is 3-lobed, and the anthers stand close to it.

The fruit is a rounded berry, which is red when ripe and falls to the ground, but may rarely be dispersed by birds. The plant generally grows in wide patches, indicating that it is mainly dispersed by its own agency.

The Lily-of-the-Valley is a lime-loving plant flourishing best on a lime soil, but requiring humus. The leaves are attacked by *Cecidium convallariae*.

A beetle, *Crioceris lili*ii, and a fly, *Parallelooma albipes*, are found on the Lily-of-the-Valley.

*Convallaria*, Linnaeus, is from *convallis*, a valley, its usual habitat, and *majalis* indicates the flowering period, May.

This pretty flower is called Conval-Lily, Great Park, May and Wood Lily, Lily-among-thorns, Lily-conval, Lily-of-the-Valley, Liricon fancy, May Blossoms, May Lily, Mugwet, Valleys.

They say at St. Leonards it sprang from the blood of St. Leonard, who, encountering a mighty worm or “fire-drake” in the forest, fought
Garlic (Allium ursinum, L.)

The distribution of this beautiful but strong-smelling liliaceous plant is quite modern, being the N. Temperate Zone in Europe, except Greece and N. Asia. In Great Britain it is found in the Peninsula, Channel, Thames, Anglia, and Severn provinces; in S. Wales, except in Cardigan; in N. Wales, except in Montgomery; in the Trent province, except in S. Lines; in the Mersey, Humber, Tyne, and Lakes provinces; and in the West and E. Lowlands, except in Elgin; in the W. Highlands, except in Mid Ebudes; in the N. Highlands; and in the Hebrides only in the Northern Isles. It is general elsewhere from Skye and Ross to the English Channel, and in Yorks rises to 1200 ft. It is native in Ireland.

Garlic is a decidedly local though widespread plant, Watson having only met with it once in North Britain, and not in Surrey, where it is common. It grows in damp hollows in woods and copses, and also in shady lanes under hedges, and in hedgerows in fields where there is plenty of cover.

Garlic grows from a bulb. This tends to bury itself deeper and deeper in the soil. Garlic has much the habit of Lily-of-the-Valley, with radical leaves, solid, flat, lance-shaped, stalked, few, broad, and
smooth and bright green. They are reversed, and the stomata lie on
the upper surface below. The bulbs are slender and acute.

The flowers are white, borne in terminal clustered umbels on a
naked triangular stem, with an egg-shaped, 2-valved spathe. The
flowering stem is solitary. The 6 stamens in 2 sets of 3 are all simple,
shorter than the segments, the anther-stalks free and slender. The peri-
anth segments are 6 in number. The capsule is 3-lobed and 3-valved.

Garlic is 1 ft. high. Flowers are found in April and May. The
plant is perennial, and increased by offsets.

The flowers contain honey at the base of the ovary in 3 notches
between the carpels, and are therefore visited by insects. The style
is about half its length when the flower expands, and without papilke,
and the anthers are not perfect.

The flowers are imperfectly proterandrous, i.e. the anthers mature
first. The 3 inner anthers open first in succession, by which time the
style is 4 1/2-5 mm., or three-quarters of its length. The 3 outer anthers next open. When the style is 6 mm. long the stigma ripens, and becomes covered with little wart-like knobs.

The anthers open inwards, turning upwards. The style is often bent so that the stigma touches the anthers covered with pollen, causing self-pollination occasionally. A bee touches the anthers with one side and the stigma with the other side of the head, which cross-pollinates the flowers when fully advanced. The visitors are flies, bees, and humble bees.

The fruit splits open, and sets the seeds free when ripe to fall around the flowering stems.

Garlic is a clay-loving plant, growing on clay soil, or a lime-loving plant, and addicted to a lime soil, as limestone, oolite, chalk.

One stage of a Fungus, Puccinia sessilis, grows on Garlic. Caoma alliorum also attacks it, and Peronospora schleideni and Melampsora salicis (willow-rod canker).

A beetle, Meligethes rufipes, and a Hymenopterous insect, Andrena angustior, are found on it.

Allium, Plautus, is Latin for garlic, and ursinum, pertaining to a bear, refers to the smell. Garlic is from A.S. gar, spear, leac, leek.

The plant is called Bear's-foot, Bear’s Garlic, Buckrams, Devil's Posy, Garlick, Wild Garlick, Onions, Hog's Garlick, Wild Leek, Ramps, Rams, Ramsden, Ramsey, Ram's Horns, Ramsons, Rommy or Roms, Rosems, Stink Plant. This plant was called Bear’s Garlick, according to Tabernamontanus, because bears delight in it.

The Chinese employ it against the Evil Eye. It was called Devil's Posy from a supposed connection with the Evil One. To dream of Garlic denoted discovery of hidden treasure, but the approach of domestic trouble. Aubrey says:

"Eat leeks in Lide [March] and ramsines in May,
And all the year after physicians may play".

It is regarded as the symbol of plenty by the Bolognese, who bury it on Midsummer Night as a charm against poverty. They used to believe in Cuba that "thirteen cloves of garlic at the end of a cord, worn round the neck for thirteen days, are considered a safeguard against jaundice". On the thirteenth day at midnight the wearer proceeded through the street, took off his garlic neckband, turned round, and flung it behind him without turning to see what became of it.

It has long been (and is still) used as a pot-herb, and for garnishing.
Essential Specific Characters:

301. *Allium ursinum*, L.—Scape triangular at the base, leaves radical, flat, lanceolate, sheathed at the base, petiolate, flowers white, in a flat-topped umbel.

**Bluebell** (*Scilla non-scripta*, Hoffm. and Link.)

The Bluebell is apparently quite a recent plant found to-day in the N. Temperate Zone in West Europe, south of Belgium to Italy. It is common to every part of Great Britain from Caithness southwards to the south coast, growing at 1500 ft. in the Lake District, Ireland, and the Channel Islands.

Spring is especially associated with bluebells in the woods. It is a typical woodland species, carpeting the whole of the ground beneath the trees. It persists in the hedgerows, and sometimes the open fields or glades between two woods in wooded districts.

The Bluebell has no true stem, but the leaves are radical leaves twice as long as the leaf-stalk, broad, keeled, hollow above, smooth and shining, sheathing at the base, and ascending, but at length falling backwards with their own weight.

The flowers are deep-blue, borne on solitary flowering stems. The bracts or leaflike organs are lance-shaped, nearly erect, two below each flower. The corolla is nearly cylindrical. The raceme of flowers is drooping. The corolla is campanulate or bell-shaped. The stamens are united to the perianth halfway up. The scape exceeds the leaves. The sepals are turned back.

The Bluebell is 1 ft. high. The flowers are in bloom between March and June. It is perennial, and propagated by offsets. It is common in gardens and shrubberies.

The flowers are sweet-smelling, conspicuous, drooping, bell-shaped, in a raceme, with flowers turned to one side. There is no nectary, but the honey is free or half-concealed by the glands in the partitions of the ovary. The lip of the bell is curved backwards. There are 6 stamens, the three longer as long as the corolla, and affixed to the corolla below, free above, and awl-shaped, the anther-stalks being flattened. The anthers are erect, yellow. The style is threadlike and the stigma is small, the style blue at the end, and the stigma finely hairy. There are some marks on the petals like Ai. Ai, which may serve as pathfinders. Insects visiting the flower, which is abundantly fertile, touch the stigma first.

The fruit is a capsule, splitting open, and releasing the seeds when
ripe for dispersal around the parent plant, the stems being jerked by passers-by or vibrating in the wind, jerking out the seeds.

The Bluebell is a humus-loving plant, growing in a humus soil, usually sand soil, or clay soil with humus mixed.

It is attacked by a Fungus, *Uromyces scillarum*.

*Scilla*, Dioscorides, is Greek and Latin for sea onion or squill, or from *scyll*o, I injure, because the tuber is a violent poison; and the second name (Latin) means, not written, because of some supposed characters like Ai on the petals.

It is called Bell-bottle, Hare Bell, Wood Bells, Bloody Man's

Bluebell (Seilla non-scripta, Hoffm. and Link.)


Ring o’ Bells is an expressive name, referring to the resemblance of the spike to a symphonia or ring of bells, which is a number of tuned bells hung on a stick and struck with a hammer.

It is an ornamental plant grown in gardens and shrubberies, and often white or pink.

Essential Specific Characters:—

Section VI

FLOWERS OF THE ROADSIDES AND HEDGES
FLOWERS OF THE ROADSIDES AND HEDGES

In making any botanical survey of a country or district one has to consider that certain associations are natural, while others are artificial. If it were possible altogether to say how much of a given region were really aboriginal, probably that portion would require to be put down as an infinitesimal fragment. It is, moreover, clear that the artificial influence of man is an overlapping or obscuring mantle whose ample folds disguise all the small corners despised by man, from position or barrenness (from his point of view), or because they have been retained under the same conditions from time immemorial, where the last resort of truly native plants can still be seen.

These islets in a sea of otherwise purely artificial fields, meadows, woodlands, &c. (and we must chiefly exclude water from the artificial tracts), are really to the far-seeing botanist the most interesting part of his quest or study. For he knows quite well that the enclosed fields, with their modern ditches, hedges, trees, and turf, are no more natural than the hovels provided in the fields for the shelter of cattle, that so largely cause this alteration of the land surface.

None the less, since the entire crust has repeatedly undergone radical changes in surface vegetation, configuration, and so forth, it is necessary also to consider the composition of the essentially artificial tracts.

The artificial meadow and cornfields and bushlands have been already considered, and since roads and hedges are an important part of all regions and are best studied in a linear fashion, wherever they enclose or intersect the equally artificial fields or districts, we need make no apology here for making a special section devoted to the flowers of the roadsides and hedges which belong—as an appendix we may perhaps best consider them—to the previous section or mesophytes.

We have in the roads first the macadam, with a gritty border, fringed by Silverweed, a zone of grass of varying width which varies with the geological formation, where grasses, sedges, rushes, and
various dominant Compositae and Rosaceae grow, with occasionally a bushland of Sloe, Briars, Brambles, Sallows, &c. Then there is a boundary ditch, on the sides of which or in which is an aquatic or semi-aquatic flora, which includes such hydrophilous plants as Watercress, Water Ranunculus, Marshwort, &c.

Finally we have the hedge with a bank on which dry-soil forms grow, and various planted trees, with bushes and shrubs dispersed at intervals. In fields the hedges and ditches are a repetition of the last.

Of these wayside flowers we have included about forty-four, deeming it wiser to give rather fuller attention to this section from its easy accessibility, and the variety of wild flowers that may be found along the highways and byways of Great Britain.

In the south of England, or where chalk abounds, the hedges are bordered with Traveller’s Joy, and here and there Barberry crops up, though it is largely an introduction. Along the ditch side, Watercress, Garlic Mustard, and Great Stitchwort are familiar friends, the latter having delightful pearl-like blooms, the two former being used as salads.

Perforate St. John’s Wort grows on the sward or by the ditch side, its yellow blooms making the roadside bright along with the pink-flowered Herb Robert, which crouches amid the undergrowth in the
hedge bottom, its fragrant foliage scenting the whole roadway from side to side. Spindle-tree serves the gipsy many a good turn, as he cuts from the hedge skewers he can hawk for sale. Side by side with the latter grows the Sloe, which adorns the whole countryside in white festal array, its flowers being in bloom in the hedgerows before the leaves.

Rambling over the hawthorn hedges Tufted Vetch makes handsome bright-hued tufts along every country lane, and in wet hollows or in the shallow ditch bottom. The Yellow Vetchling lends another (yellow tint) to the assemblage of wayside flowers. The Bramble forms a fine nesting-place for White-throat and Blackcap, lining many a hedgerow with pink or white blossoms arranged in handsome panicles.

Along the gritty border of the macadam the silvery foliage of the Silverweed forms a fine fringe enriched by pale golden blooms. Close by the Barren Strawberry opens its numerous white blossoms which mature no ruddy fruit. In the hedge and in arching clumps by the way the Dog Rose gladdens the heart of many a weary traveller on a hot June or July day with its rose-tinted or waxen-white petals, while earlier, too, the Crab Apple in flower is a delightful picture in the hedgerow or copse. Everywhere the road is tinted with budding May in early summer, making the air heavy with its almost narcotic scent. The Bryony curls in graceful disorder over the layered hedge. With spotted stem and fetid stench Hemlock warns the wayside beast not to touch it. Under the hedgerow the Hedge-parsley with rigid stem lines the roadway as some sentinel. Cornel red-stemmed, and gay with white bloom, and Elder vary the monotony of the Whitethorn hedge. Underneath in the shade a faint smell of musk betrays the little Moschatel. Teasel with its pitcher-like leaf-bases is fond of this habitat by the hedge side.

The diminutive blooms of Nipplewort peep out from the hedge where the Ash affords ample shelter for the passer-by. Great Hedge Bindweed with its handsome, white, trumpet-like blooms encompasses the hedgerow far and wide. The sward is scattered up and down with Red Bartsia sponging on the grass roots.

Ground Ivy carpets the hedgebanks, and White or Blue Bugle is rampant in the moist hollows. Spurge Laurel grows in the hedge. The Nettles endeavour to drive all else out of the ditches. The tall Elm throws a wide shade across the road where Black Bryony clammers up the hedge, and in autumn the scarlet berries lend rich colour to the hedge side, as do those of the Cuckoo Pint in earlier months.
Traveller’s Joy (Clematis Vitalba, L.)

This plant is found in Interglacial beds at Stoke Newington as well as in Pakeolthic deposits. It ranges in Europe, south of Holland, N. Africa, W. Asia, or in the Warm Temperate Zone. In Great Britain it occurs in most districts, being absent from Brecon, Radnor, Montgomery, Merioneth in Wales, and South Lincoln, S.E. Yorks, Cheviotland in England. In the northern counties away from the chalk or oolite it is probably not native, being a southern type. In Scotland it is found only in Lanark, Haddington, Edinburgh, Fife, Perth, Westerness, Main Argyle, and Dumbarton. It is not native in Scotland or Ireland.

The Traveller’s Joy, as its name suggests, is a plant of the waysides and hedgerows, along which it was doubtless planted in the past. It is par excellence a lover of the chalky soils of the Downs, where it is seen at its best, forming rambling masses which cover the upright shrubs that grow in similar habitats, the Wayfaring Tree, the White Beam, or it may be the Hazel. In the summer its tangled bowers afford a fine arbour amongst which the birds may nest, and in the winter a shelter from the cold winds and rain. It is adapted to a dry soil and may be regarded as a xerophile. It is essentially a climbing plant, on which account it is much used in gardens, and elsewhere, to form arbours, being called Great Wild Climber.

Its generic name in Latin refers to the tendrils which assist it in its rambling career over hedge and bush. These are highly developed, and very strong and elastic, and are really the leaf-stalks.

Traveller’s Joy is best recognized when in fruit, by the long feathery awns or persistent styles which it possesses, assisting in its dispersal. The Clematis habit is marked, the stem is woody, the leaves, which are compound, are arranged on either side of a common leaf-stalk, and there are no stipules or leaflike organs. The flowers are characterized by numerous greenish or sulphur-coloured stamens and styles, 4 white sepals in place of petals. The flowers are sweet and small, but numerous, clustered, hence the name White Vine.

The Wild Clematis is often 20 ft. or more high. Flowers last from July to August or September. The plant is perennial, being a deciduous climbing shrub.

No honey is secreted. In an allied species, C. recta, there is no honey, but insects visit it for pollen. It is proterandrous, that is, the anthers ripen first, and if the stamens had shed all their pollen before
No. 1. Traveller's Joy
(*Clematis Vitalba, L.)*

a, Achenes, with feathery awns.  b, Part of plant, showing foliage and flowers, with 4 or 5 petaloid sepals, and numerous stamens, from different aspects.

No. 2. Barberry
(*Berberis vulgaris, L.)*

a, Vertical section of flower, showing one of 6 petals, anther, honey-glands below, and section of pistil, with ovules, with broad stigma above.  b, Raceme, with 6 berries.  c, Part of stem, with 3 types of leaves, foliage, in the axils of the spines, or reduced leaves, also 2 racemes with flowers, showing petaloid sepals, and 2 ranks of petals, with 6 stamens and pistil.

No. 3. Winter-Cress
(*Barbara vulgaris, Ait.)*

a, Androecium and gynoecium (enlarged), showing 4 long and 2 short stamens, honey-glands at the base between, and central pistil.  Siliqua, with valves opening from above downwards, and seeds on the replum.  b, Part of plant, showing stem-leaves, and racemes with fruit below and flowers in various stages, above showing 4 petals in opposite pairs.

No. 4. Hedge Mustard
(*Sisymbrium officinale, Scop.)*

a, Androecium and gynoecium as in No. 3.  b, Petal (enlarged).  c, Pod, showing pungent style, and hairs.  d, Part of plant, with runcinate stem-leaves, raceme, with fruits below, flowers above.

No. 5. Sauce Aliso
(*Sisymbrium Altissimum, Scop.)*

a, Androecium and gynoecium as in No. 3.  b, Upper part of plant with deltoid stem-leaf, raceme with pods below and flowers above.

No. 6. Greater Stitchwort
(*Stellaria Holostea, L.)*

a, Androecium and gynoecium, showing in 2 rows to stamens and pistil in the centre, with honey-glands at base of stamens.  b, Petal (notched) enlarged.  c, Capsule with recurved teeth, and 3 (out of 5) sepals.  d, Part of plant, with lanceolate stem-leaves, and dichotomous cyme with flowers in various stages, with 5 notched petals.

No. 7. Greater Stitchwort
(*Stellaria Holostea, L.)*

a, Androecium and gynoecium, showing in 2 rows to stamens and pistil in the centre, with honey-glands at base of stamens.  b, Petal (notched) enlarged.  c, Capsule with recurved teeth, and 3 (out of 5) sepals.  d, Part of plant, with lanceolate stem-leaves, and dichotomous cyme with flowers in various stages, with 5 notched petals.
the pistil was mature insects would cease to visit the flowers before the stigma became mature. Cross-pollination is performed by Bees (Apidae, Sphegidae), Diptera (Syrphidae, Muscidae).

The achenes (1-seeded) are dispersed by the wind. Long hairs are developed at the end of the fruit like a long feathery awn to aid in wind dispersal.

Growing on a lime soil, derived from chalk or limestone, it is a
lime-loving plant, but will grow when transplanted on a more rocky soil derived from granite or sand soil.


The name *Clematis* was derived from *clema*, a sort of vine, and *Vitalba*, by Dodonæus, from *vitis*, vine, *alba*, white. Originally the name was Viorna, adorning the ways. Gerarde in 1597 gave the name Traveller's Joy.¹ The common English names are Bedwine, Beggar-brushes, Bethwine, Bindwith, Climber, Crocodile, Grev-beards, Hag-rope, Honesty, Honey-stick, Lady's Bower, Love-bind, Old Man's Beard, Old Man's Woozard, Robin Hood's Fetter, Smoke-wood, &c. Boys smoke pieces of the stem, hence the last name, and the name Tom-bacca. Used for binding like withies it was called Bindwith, &c. The name Hag-rope means hedge-rope. It was called Devil's Thread in allusion to its supposed association with the Evil One. In pre-scientific days Pliny the naturalist tells us it was used for cleansing leprous sores, because of its caustic nature. It was used for blistering, and the young shoots were pickled for vinegar. Baskets are made from the plant in some districts. It is much used in gardens for forming arbours, and as a climbing plant in gardens.

**Essential Specific Characters:**

1. *Clematis Vitalba*, L.—Sepals valvate in the bud, carpels awned, achenes with feathery persistent styles, leaves opposite, stem climbing and woody, with tendrils.

**Barberry** (*Berberis vulgaris*, L.)

Our knowledge of this plant begins with recent times. It is an occupant of the Warm Temperate Zone, occurring in Europe, temperate Asia, N. Africa, and has been introduced into the United States. It is absent from S. Somerset, S. Hants, Hunts, occurring only in Glamorgan in S. Wales, Denbigh, Carnarvon, and Flint in N. Wales, S. Lanes in the Trent province; but it does not occur in Mid Lanes or the Isle of Man, though present throughout the W. Lowlands, except Wigtown, and Haddington in the E. Lowlands; in Elgin and Easterness only in the E. Highlands. Elsewhere it is found in Westernness, Clyde Isles, and Cantire in the W. Highlands, from Caithness southwards. It is naturalized in Scotland. It occurs in Ireland.

¹ On account possibly of its prevalence along the highways and in hedges.
Although widely dispersed throughout the whole of the British Isles, the Barberry as a shrub, and one indeed which yields delicious fruits for tarts, is probably in half of these introduced, and wherever it is found in the hedgerow this must usually be the case, for our hedges are quite modern.

The Barberry occurs in copses and woods, and may in such localities be native. As a host-plant for the smut attacking wheat its distribution has been affected by an Act of Parliament restricting its occurrence.

This is an erect, smooth-stemmed fruit tree or shrub, which tends to grow out in an arching manner after a certain distance, giving the boughs an overhanging nature above. The stem is yellow and angled. It bears numerous pointed spines or modified leaves, which are divided into three, or seven, with axillary buds bearing leaves. The leaves are inversely egg-shaped, toothed, alternate or in clusters.

The clusters or racemes of yellow flowers hang down in a drooping manner. In fruit it may be recognized by their long scarlet character.

It is 8–10 ft. high, flowers from April to May, and is perennial.

The flowers are horizontal or inclined obliquely downwards. They are thus not fully protected from the weather. The 3 inner sepals and 6 petals are curled inwards at the tips, and protect the 6 stamens and 12 honey-glands from the rain. The 3 inner sepals are conspicuous, the yellow petals quite embrace the stamens, while the latter are undisturbed. The honey-glands are at the base of the petals, thick and oval bodies of orange colour, which are close to the inner side and base of the petal.

The anther-stalks touch below, and before being touched bend back and touch the portions of the petals below the honey-glands and
adjacent halves of the latter. The honey collects in the angles between the stamens and ovary just where the proboscis is thrust in, and the stamens when touched, being sensitive, spring forward towards the pistil and dust the side of the bee's head with pollen.

The stigma is covered with wart-like knobs along its edge surrounding the base of the ovary, and owing to the openness of the flower one side of the insect's head opposite that touched by the stamen brushes it when it goes on to the next flower, and cross-pollination thus follows. In the same flower the bee plunges its head first to one side and then to the other, and self-pollination follows. Diptera, Syrphidae, Muscidae, Hymenoptera (Apidae, Vespidae), Coleoptera (Dermestidae, Coccinellidae) visit it. The irritable stamens secure dusting of the insect, and cross-pollination, by driving the bee, which is startled by their recoil, away to another flower, an observation noted by Linnaeus.

The fruit is dispersed by the agency of animals. It is edible, juicy, and the seeds are dispersed by animals. Being red it is attractive to birds. As the seeds have a hard testa and endosperm they are uninjured by digestion.

Barberry is partly a humus-loving plant, requiring a humus soil, but is also a sand-lover, subsisting on a sand soil, and grows best in a mixture of the two or peaty loam.

*Puccinia graminis*, an orange cluster-cups, grows on the leaves and shoots of the Barberry. The second stage of the fungus forms the well-known rust of wheat and other cereals, *Eccidium berberidis*. *Microsphaera berberidis* is parasitic on Barberry also.


*Berberis*, a name given by Brunfels, is mediaeval Latin of uncertain origin.

Barberry is called Barbaryn, Barberry, Barboranne, Berber, Guild, Jaundice Berry, Maiden Barberry, Pepper-ridge, Piperidge, Piprage, Woodsour, Woodsore, Woodsewer Tree, Piperidge Rihts.

In allusion to the name Jaundice Berry, Ellis, in *Modern Husbandmen*, 1750, p. 157, says: "The wood of this tree is said to be such an antidote against the Yellow Jaundice that, if a person constantly feeds himself with a spoon made of it, it will prevent and cure this disease while it is in its infancy."
The name Guild refers to the yellow bark; the name Jaundice Berry, again, refers to the so-called remedy, by "Doctrine of Signatures", that the yellow bark was a cure for jaundice, and it was taken in ale for this purpose, being purgative.

The scarlet berries were eaten for stomatich disorders, and they contain malic acid, which in France is manufactured from them. They make also a jelly, which is very delicious.

There is tannin in the bark, and in Poland it was used for tanning leather. Morocco leather, linen, and cloth are dyed from a dye made from Barberry. It is used as an ornamental shrub in gardens.

The berries are too acid for birds as a rule, but though bitter are not unpleasant. They are put in sweetmeats. It is astringent as a medicine, and has been used in bilious complaints.

Essential Specific Characters:—

15. Berberis vulgaris. L.—Shrub, woody, spinose, leaves 3-fid spines, racemes pendulous, single or fascicled, yellow, sepals 6, deciduous, imbricate, petals 6 with 2 glands at base, fruit a berry, 2-seeded.

Winter Cress (Barbarea vulgaris, Ait.)

In deposits containing remains of recent plants as seeds no trace has as yet been found of this plant. It is widespread, occurring in the Arctic and Temperate Zone, in Arctic Europe, Asia, the Himalayas up to 17,000 ft., South Africa, Australia, and North America. It is found in every county in Great Britain, except S. Lines, Stirling, North Perth, Westernness, Main Argyle, and is absent from counties west of the Caledonian Canal, except Caithness. It is found in Ireland.

The Winter Cress is fond of waysides, where it grows in clumps on the banks of the ditches. Probably its use as a salad may be to some extent responsible for this. Elsewhere it can be found along the banks of streams, ponds, rivers, and lakes, growing in more or less damp or moist conditions, but it is frequently to be found also on rubbish heaps and in waste places with other plants used in garnishing.

It has an erect habit, having a single, rarely branched, usually smooth, rarely downy, angular, main stem, with radical leaves, with a large terminal and smaller paired lobes, and with rounded lobes, and the upper leaves are inversely egg-shaped, sometimes arranged on either side of a common stalk and toothed. This gives it a strict or rigid habit. It grows in a clump, a number of plants in association in flower being a pretty picture, as the flowers are numerous. The under-side of the leaves is frequently purple, owing to the presence
of anthocyan or red colouring matter, as in many moisture-loving plants.

It may be recognized by the above characters, and the small yellow flowers (\(\frac{1}{2}\) in. in diameter), which grow in loose racemes, with pods, either closely united throughout or slightly spreading. The pods have an awl-shaped point and are square, and are broader than the flower-stalks. It grows to a height of 2 ft. The flowering stage lasts from May to August. The plant appears to be biennial, not perennial, as usually stated.

On each side of the two shorter stamens (there are six stamens altogether), at the base of the sepals, there is a small fleshy, green honey-gland, and between each longer pair a larger gland, external to their base, and also where the short stamens are abortive or functionless. In fine weather a drop of liquid (colourless) may be seen on each of the stamens. The anthers are situated irrespective of the position of the honey-glands. The longer stamens make a revolution of 90 degrees towards the short stamens, and exceed the stigma, from the time when the anthers open after the flower expands till the anther is completely covered on one side with pollen. The two short anthers on a level with the stigma are still turned towards it after opening, and the anthers are placed as in Water Cress, while the glands are as many as in \(N.\) sylvestre.

Winter Cress is dispersed by its own agency. When the pods are dry they become tense and burst, and the light seeds are scattered to some distance.
This plant grows on sandy loam or clay.

Dodonæus gave the name *Barbarea*, and it was formerly called Herb St. Barbara, hence the first Latin name, the second alluding to its common occurrence. The English names are St. Barbara's Herb, Cassabully, French or Winter Cress, Winter Rocket, Wound Rocket, Yellow Rocket. It was called Wound Rocket, as Turner says, because it was held to stanch wounds. St. Barbara's Day falls on 4th December. Winter Cress was used in winter as a salad, according to Lyte, whence the names, and others in French, Dutch, and Latin. It was formerly said to have formed the Crown of Thorns, but this seems unlikely.

In Sweden it is eaten and boiled. It is or was formerly used as a salad, though inferior to ordinary Water Cress, and without any distinctive flavour.

**Essential Specific Characters:**

26. *Darbarea vulgaris* Ait.—Stem (flowering) angular, erect, radical leaves dark-green, shining, lyrate, terminal leaflet orbicular, upper leaves obovate, dentate, flowers yellow, numerous, style distinct, pods appressed, with subulate point, short.

**Hedge Mustard** (*Sisymbrium officinale*, Scop.)

As yet no traces of this plant have been found in seed-bearing deposits. It is found throughout the Warm Temperate region in Europe and W. Asia. It has been introduced into the United States. Though common in most parts of Great Britain, Hedge Mustard does not occur in Brecon, Radnor, Montgomery, Merioneth, Peebles, Selkirk, Mull, and the Shetlands. It is found in Ireland and the Channel Islands.

The Hedge Mustard, as the name suggests, is found by the sides of our roads and hedges, and may be said to be most common near villages and houses, and may possibly owe its distribution largely to former herbal usage. It is also a regular member of the flora of waste ground, where it ousts many more tender plants, being a vigorous plant which occupies much space.

Like some other plants, Hedge Mustard has two different habits, before and after flowering. Before flowering it has a main stem, hairy, and often purple, as in Winter Cress, with numerous leaves, with segments divided nearly to the midrib and with the lobes turned back, prostrate on the ground, and few above. In this form it is similar to many plants with cyclic foliar arrangement and erect stem. When the flowers have opened from a series of dividing branches, and have com-
menced to produce fruit, the aspect is rather like that of a candelabra, and by this time the basal rosette of leaves has usually disappeared. The plant is frequently covered with dust, more so than most wayside plants.

It may be distinguished by its small yellow terminal racemes of flowers borne on leafless branches. The pods are closely united to the stem throughout their length, long, acute above, with sharp style, and borne on short flower-stalks, being usually downy. The leaves have a terminal pointed lobe, and lateral ones with the points turned back. The Hedge Mustard is often 2 ft. high. It flowers from May to July. It is annual, and reproduced by seed.

The flowers are similar to those of Alliaria. On each side of the 2 shorter stamens are honey-glands, and each of the 4 honey drops lies between the stamens and the pistil. The anthers and stigma ripen together, and the former face the latter.

The longer anthers are at first taller than the stigma, and project when the flower opens and bend inwards; the shorter ones, at first within the flower, being ultimately on the same level, but not quite so long as the stigma, curve outwards slightly. They all six grow, and the longer ones exceed the stigma. Cross-pollination is arranged for, but may not occur. In the absence of insects pollen from the four long stamens falls on the stigma. The flowers are inconspicuous and visits are infrequent, but honey is sought by Pieris napi, P. rapae, which thrust the proboscis between the stigma and anthers. Pollen is sought by Andrena dorsata. The insects visiting it are Hymenoptera (Apidæ, Andrena dorsata), Lepidoptera, as above.

Hedge Mustard is dispersed by its own agency. The pods open and allow the seeds to fall out around the plant, or disperse them to some distance.
SAUCE ALONE

It is a sand-loving plant, and requires a dry sand soil or sandy loam, derived from older sandy rocks, grits, and sandstones.

It is galled by Cecidomyia sisybiirii. A beetle, Ccuthorhynchus assimiliis, visits it, also the beetles Phyllotreta nemorum, P. ochripes, Poophagus nasturtii, P. sisybiirii.

Theophrastus gave the name Sisymbrium, which was the Greek name of a water-mint, and officinale means medicinal.

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Theophrastus gave the name Sisymbrium, which was the Greek name of a water-mint, and officinale means medicinal.

The plant is called Bank Cress, Hedge Mustard, Hedgevweed, Lucifer Matches, Crambling Rocket, Sauce Alone.

Hedge Mustard was eaten as a relish with salt fish, hence the last name, and was used in sauce. It was held to be diuretic, expectorant, and was regarded as a remedy for asthma, hoarseness, and chronic coughs. This plant has a somewhat saline taste. The seeds are pungent, but not so strong as mustard.

Essential Specific Characters:

31. Sisymbrium officinale. Scop.—Stem erect, branched, divaricate, leaves at base runcinate, points recurved, terminal lobe hastate, upper linear or absent, flowers small, yellow, pods appressed on short pedicels, downy, subulate.

Sauce Alone (Sisymbrium Alliaria. Scop.)

There are no deposits from which this is known in a fossil state in the British Isles. It is a plant which is found in the Temperate Zone in Europe, North Africa, Temperate West Asia, as far as the Himalayas. In Great Britain it is found everywhere except in Cardigan, Flint, S. Lines, Stirling, Mid Perth, Main Argyle, Cantire, S. Ebudes, Mid and N. Ebudes, Sutherland, Caithness, and the Northern Isles. From the Grampians it ranges southwards, up to a height of 1000 ft. in England, but it is less common in Scotland and Ireland.

Garlic Mustard grows with Hedge Mustard along the wayside and beneath the hedge, or it may line the ditch which flanks the highway. Once used as a garnishing it may to some extent owe its frequency around a village, or its occurrence on highways, to this cause. A rather moist habitat suits it best, though it will grow on a high bank where there is shade enough to maintain a fair supply of moisture continuously. It manages to win its way to the front in spring to the exclusion of all else, but may be seen with the Greater Stitchwort, Red Campion, Lords-and-Ladies, &c.

Jack-by-the-hedge is a tall, handsome plant, with an erect habit, and numerous heart-shaped, toothed leaves alternately arranged, the
leaves being coarsely veined, and moved by heliotropic tendency to turn towards the sun, on each aspect towards the greatest source of light. The plant smells strongly of garlic, especially when the leaves are bruised, quite as much as Ramsons.

All the leaves are borne on long footstalks, and the broad, deep teeth give their leaves a notched appearance.

The flowers are white and small, the petals are stalked and inversely egg-shaped. The pods are linear, slightly curved upward, longer than the stalks, rounded, bilocular, and 2-valved.

The plant is 2–3 ft. high, and flowers from May to June. It is perennial, and deciduous and herbaceous.

It has 4 honeyglands as in the Cuckoo-flower, and the honey forms into four drops in the middle of the flower, forming inwards, from the base of the short stamens. The drops lie between the long and short stamens, and at length fill the lower part of the space between the stamens and pistil, adhering firmly to it. There are none where the abortive or functionless stamens should be. The sepals in bud protect the parts, and being white, attract insects, and when the flowers open, they fall. The anthers open

1 Causing, it may be, the sepals to drop early. This does not happen where the nectar is formed between the stamens and sepals, or outwards.
inwards, and the inner ones closely surround the stigma, and self-pollinate it, but honey and pollen seekers cross-pollinate it. The visitors are Hymenoptera (Apidae), Diptera (Syrphidae, Muscidae), Coleoptera (Nitidulidae, Curculionidae).

Jack-by-the-hedge is dispersed by its own agency. The dry pods curl and burst open, and the seeds are dispersed to some distance.

The plant is a sand plant and a humus-loving plant, and flourishes best upon a sand soil, in which there is a fair proportion of humus soil.

It thrives on sandstone formations, Keuper, and Liassic formations. There are no fungal pests. A Hemipterous insect, Siphonophora alliiaria, feeds on it.

Alliaria was an old genus proposed by Fuchs, derived from Allium, garlic, alluding to its smell.

This species is called Beggarman’s Oatmeal, Cardiacke, Caspere, Eileber, English Treacle, Garlick-wort, Hedge-garlick, Jack-by-the-hedge, Leek-cress, Garlick Mustard, Penny Hedge, Poor Man’s Mustard, Poor Man’s Treacle, Sauce Alone, Swarms.

Once it was used as a vegetable and boiled with meat, hence the name Sauce Alone. It was fried in Wales with bacon and herrings. The garlic smell is most noticeable when the plant is rubbed between the fingers. It was employed as a sudorific, and for cancers and gangrene. The seeds were used to promote sneezing. It was reputed to be antiseptic.

**Essential Specific Characters:**

32. *Sisymbrium Alliaria*, Scop.—Stem tall, erect, leafy, leaves cordate, radical leaves reniform, dentate, sinuate, veined, strong-smelling, flowers white, small, pods longer than pedicels, seeds striate.

**Greater Stitchwort** (Stellaria Holostea, L.)

This plant has been found in Interglacial beds in Great Britain. It is distributed throughout the Temperate Zone in Europe and Western Asia. The Greater Stitchwort is found in every English, Scotch, and Welsh county except Mid Lancs, Stirling, N. Perth, N. Ebudes, the Hebrides, and Shetlands. It is found at a height of nearly 2000 ft. in the Highlands.

The pretty starlike flowerets of the Greater Stitchwort are a welcome sign in early spring of the return of the flowers, and this reminder we meet with in every hedgerow or brake, where this charming wild flower grows. It is perhaps commoner in narrow
straggling plantations where there is a good deal of light than in dense woodlands where this is not the case.

Perhaps to compete better with other deciduous herbaceous plants the Stitchworts have adopted the grass habit. The stem is more or less erect or ascending, prostrate at the base, and at the nodes is brittle, and hairy above, angular, the angles rough, slender. The stem is more stout upwards, and below is supported by surrounding herbage as a rule. The leaves are stalkless, rigid, united below, lance-shaped, with a long narrow point, fringed with hairs, narrow just above the base to an acute point. The margin is rough, toothed.

The flowers are large, few, white, satiny, on slender ultimate stalks, in a panicled cyme, leafy. The bracts are leafy. The petals are half-divided to the base, and twice as long as the obscurely 3-veined or nerveless sepals. The flowers are rarely double, and the petals may be irregularly lobed. The capsule is round, as long as the calyx.

Some petals may be wanting occasionally. Greater Stitchwort is known also as Satin flower.

The flowers bloom from April to June. The plant is perennial, increasing by division. The height is 1–2 ft.

The mode of pollination in the Greater Stitchwort is similar to that of the Grassy Stitchwort. The flowers are much more conspicuous, however, and larger, though it is true that they grow less in the open, but they are visited by a variety of insects. The flowers are bisexual. The honey-glands are yellow. They lie on the external side of the outer stamens between the petals. There is a honey-pit above, and the glands yield abundant honey, which explains the frequency of insect visits. In the ordinary course the pollination takes place in three stages. The outer ring of stamens open, standing close to the centre of the flower, and turn the anthers upwards, while the inner stamens are not yet mature. The stigmas are bent inwards. In the second stage the inner stamens open, and by this time the outer have bent back and shrivelled. The stigmas are now erect, but the papillar surfaces are turned towards each other. In the third stage the stigmas are widespread, and in this state the flower may be self-pollinated. But with insect visits, owing to the proterandrous conditions, the flower is usually cross-pollinated.

The insects that visit it are Diptera (Empidae, Syrphidae, Muscidae), Hymenoptera (Apidae, Tenthredinidae), Coleoptera, ödémere, Lepidoptera (Picris napae), Thysanoptera (Thrips).

Greater Stitchwort is dispersed by its own agency. The 6-valved capsules open when ripe, allowing dispersal by the wind.
GREATER STITCHWORT

It is a humus-loving plant requiring a peaty loam or humus soil, usually growing in or near woods, or sheltered tracts where vegetable matter collects.

The microfungi *Puccinia arenariae* and *Ustilago violacea* are parasitic on it.

The leaves are galled by *Brachycolus stellariic*. *Melampsorella Caryophyllaceearum* (Witches' Broom of Silver Fir) also attacks Great Stitchwort. The beetle *Cassida obsolete*, the moths Marsh Pug

*Enptlhecia pygmeata*, *Gelechia tricolorella*, *G. maculca*, *Coleophora solitariella* visit it, and the Hemipteron *Siphonophora pisi*.

*Holosteum*, Dioscorides, is from the Greek *holos*, all; *osteon*, bone; and is used by antiphrasis to express the very opposite. *Stellaria* is from the Latin for star.

The plant is called Adder's-meat, Adder's Spit, Agworm-flower, Allbone, Bachelor's Buttons, Easter Bell, Billy White's Buttons, Bird's-eye, Bird's-tongue, Brandy-snaps, Break-bones, Cuckoo-flower, Cuckoo-meat, Cuckoo's Victuals, Dead Man's Bones, Devil's Corn, Devil's Eyes, Easter Flower, Scurvy, Snake and Star Grass, Headache, Lady's Lint, Lady's White Petticoat, May Flower, May-grass, Milk-

Such is a fair example of the multiplicity of local names for common flowers, which are not without some interest in every case.

This plant was called Stitchwort because it used to be drunk in wine with powdered acorns for pain in the side or the "stitch". It appears to have been called Thunder-flower because the unripe capsule contains air, and when pressed goes off with a bang, and children are fond of doing this. It was called Allbone on account of the jointed stems, or as explained above. The name Lady's Lint may be from the fine threads in the stalks. It is called Devil's Eye, being held in special favour by fairies, and peasants hesitated to pluck it in case they were "pixy-led".

The Yellow Underwing hovers over it in daylight in the sunlight.

Essential Specific Characters:—

55. *Stellaria Holostea*, L.—Stem erect, slender, rigid, rough, leaves sessile, long-keeled, acuminate, grooved, fringed, flowers white, petals twice as long as sepals, bifid, capsule globose.

Perforate St. John's Wort (Hypericum perforatum, L.)

This common plant has been found in Preglacial beds in Suffolk, Interglacial beds in Sussex, and in Neolithic beds in Edinburgh. At the present time it is at home in the North Temperate Zone in Arctic Europe, North Africa, Siberia, West Asia as far as the Himalayas. In the United States, America, it is an introduction. It is generally distributed in Great Britain, but it is absent in the counties of Cardigan, South Lines, Stirling, S. Perth, Elgin, Westernness, Mid and N. Ebudes, West Sutherland, and the Northern Isles. In Yorkshire it grows at a height of 1000 ft.

The Perforate St. John's Wort is as familiar a plant along the roadside as Herb Robert, the Yellow Vetchling, or Tufted Vetch, or Hedge Parsley, Cleavers, and Wood Basil, which commonly grow with it. It is generally found near hedges or banks, and the highway is quite gay with clumps of its yellow bloom from July to September.

Many rounded or slightly angular stems arise from the same root in this as in other species, giving it a clustered appearance. They are
No. 1. Perforate St. John's Wort
(Hypericum perforatum, L.)
a. Petal (enlarged), with smooth claw. b. Carpel, with part of beak, attaching it to the axis.
No. 2. Herb Robert
(Geranium Robertianum, L.)
a. Petal (enlarged), with smooth claw. b. Carpels, with part of beak, attaching it to the axis.
No. 3. Spindle Wood
(Euonymus europaeus, L.)
a. Flower, with 4 sepals and petals alternating, 4 stamens attached to disk, and ovary confluent with disk. b. Capsule, 4-lobed, with orange aril.
No. 4. Tufted Vetch
(Vicia Cracca, L.)
a. Beaked legume, opening by sutures, with seeds, and small gamosepalous calyx, with unequal teeth. b. Seed.
No. 5. Meadow Vetchling
(Lathyrus pratensis, L.)
a. Beaked legume, with seeds, and gamosepalous calyx, with unequal teeth. b. Upper part of plant, with lanceolate paired leaflets, and tendrils.
No. 6. Blackthorn
(Prunus spinosa, L.)
a. Section of flower, with 2 sepals, 2 petals (out of 5), perigynous stamens, and pistil, with long style, and stigma. b. Spine, with leaves, and drupe.

Upper part of plant, showing linear stem-leaves and cyme, with flowers, with 5 linear sepals, 5 petals, stamens united below in 3 bundles, and 3-celled ovary.

Part of plant, showing 5 foliulate leaves, flowers with 5 petals, angular calyx, fruit with carpels dehiscing.

Upper part of plant, with opposite ovate leaves, and axillary cymes, with flowers in various stages.

Part of plant, with pinnate leaf, and branched tendrils, with flowers (papilionaceous) showing vexillum, ala, and carina from various aspects, and pods below.

Flowering branches, with flowers single or in-fascicles, showing 5 sepals and petals alternating, and 15 or more stamens.
erect, tall, branched above, the branches being opposite, and like the stem 2-edged.

The leaves are small, stalkless, oblong, with scattered semi-transparent dots, perforated. The under side is covered with black dots. The dots contain oil, and may protect the plant from cattle. The
sepals are erect, acute, and entire, the petals oblong; the flowers yellow, the margins of the sepals entire, without glands, whilst there are black dots on the petals.

The petals are notched. The three styles equal the capsule, and the stigmas are simple. The anthers are crowned with black glands.

The plant is 18 in. in height in many cases. The flowering season is from July to September. It is perennial, and can be increased by division.

The flowers are conspicuous and yet have no honey, and are adapted for self-pollination. They contain plenty of pollen. There are three groups of stamens united below, of different lengths, with anthers directed upwards which open in quick centrifugal succession outwards, and are immersed in pollen, the shortest opening first, the longest last. There are 3 styles, which radiate outwards. The stigmas developed at the same time are terminal, and on a level with the longest anthers between the groups of stamens. The stamens (in bundles) touch or are interwoven at the margin, and the stigmas may touch the pollen-covered anthers. Insects settle on one of the 5 outspread petals, and reach the anthers between two groups of stamens, and bring about either cross-pollination if they touch the stigma first, or self-pollination if they touch the anthers first. The petals and stamens later become erect, and self-pollination follows in the absence of insect visitors.

The visitors are Hymenoptera (Apidae, Tenthredinidae), Diptera (Bombilidae, Empidae, Syrphidae), Lepidoptera (Large Skipper, Hesperia sylvanua, Meadow Brown, Satyrus Jana), Coleoptera (Chrysomelidae).

The seeds of this plant are dispersed by its own mechanism. The capsule is erect, opening at the top, splitting along divisions, and the seeds are dispersed by breaking up of the valves, and to some extent by the wind. The seeds are oblong or elliptic, netted, and dark brown.

It is a humus-loving plant, and requires a humus soil.

The fungus Melampsora hypericorum infests it. The beetles Chrysomela jucata, Cryptocephalus 10-punctatus, the moths Purple Cloud (Cloanthia perspicillaris), Black-veined Moth (Scoria dealbata), Treble-bar (Anaitis plagiata), Nepticula septembrella, Satyr Pug (Empetecia Satyrata), Grapholite Hypericana, Gracilaria acnoguttella, Ringed Carpet (Boarmia cinetaria), the Homopteron Aphis papaverii, and the gall-fly Cecidomyia serotina feed on it.

Hypericum, Dioscorides, is from the Greek hyper, over, ereike, heath, and perforatum (Latin) refers to the perforate leaves.

Perforate St. John Wort is called Amber, Balm of Warrior's
Wound, Cammock, Herb John, St. John's Wort, Penny John, Rosin Rose, Touch and Heal.

Leaves boiled in wine were supposed to cure and heal up wounds. Perhaps also the perforations were thought to resemble wounds, when by Doctrine of Signatures the plant would in the older days therefore cure wounds. In the Netherlands the people gathered it before dawn, and it was reputed to take away the ill effects of lightning. It was believed that it revealed a witch, and on St. John's Eve, when they were active, it was worn as a charm. For similar reasons they call it Devil Chaser in Italy, and doorways and windows were decorated on that day. The name Devil's Flight sums up the idea that it drives away evil spirits. If one trod on it at night in the Isle of Man a fairy horse would appear and carry one about all night. On Midsummer Eve it was employed as a love charm.

It is placed under the beams in the roof in Denmark for divination by lovers, one for each, and if they grow together it is considered a good omen. On St. John the Baptist's Day it was hung up over the doors of houses, according to Stowe (Survey of London), to drive away witches. The red pods are connected with John's beheadal as drops of blood. It was dedicated to St. John. The plant was also called Peterwort. In the Middle Ages they called it Fuga Daemonum. It formed one of the ingredients of "Save" of Chaucer's day, and was used by knights for their wounds. It was used for wounds in the same way as balsam. Red and yellow dyes are given by the plant. Steeped in turpentine a red varnish is produced. An essential oil is secreted in the perforations of the plant. Spirits and oils are tinged purple by the flowers. It is bitter and astringent, and acts as a diuretic, having been used for ulcerated kidneys.

Essential Specific Characters:—

61. Hypericum perforatum, L.—Stem erect, 2-angled, leaves oblong, with pellucid dots, flowers yellow, sepals acute, erect, not fringed, styles equaling the capsule, petals oblong.

Herb Robert (Geranium robertianum, L.)

None of the seed-bearing beds have produced seeds of Herb Robert as yet. The North Temperate and Arctic Zones form the limit of its range in Arctic Europe, North Africa, Siberia, Western Asia, as far as N.W. India. It is found in every part of Great Britain, as well as Ireland and the Channel Isles, and in Yorkshire it is found at the height of 2000 ft.
A hedgerow plant, Herb Robert is one of the unfailling signs of spring with its characteristic scent, which is perceptible in the middle of a lane. It grows where one also finds Red Campion, Winter Cress, Garlic Mustard, Hedge Parsley, Cow Parsnip, Cleavers, Nipplewort, and many another hedgerow flower. It is also a common woodland species, forming big clumps where there is open space, and is always a shade-lover. But another habitat is waste ground, where it is commonly accompanied by Hedge Mustard, Nipplewort, and wayside thistles.

It is a straggling, spreading plant, with many diverging branches, slender, shining, but stiffly hairy, and vinous red, with swollen nodes. The leaves are opposite, 3-5-parted, with lobes divided into three parts at the back and nearly to the midrib, the segments having a small terminal red spine. There are paired stipules or leaflike organs at the nodes. The flowers are streaked red and white, or white. The flower-stalks are 2-flowered, the sepals closely united, the petals entire and as long as the calyx, which has long awns, and is slightly glandular. The capsules are transversely wrinkled.

The plant grows to a height of 2 ft. The flowers are in evidence for six months from April onwards. Herb Robert is a perennial.

The honey is not protected by a fringe of hairs from the rain in this plant, as in the Meadow Crane’s Bill, and the flowers are not so expanded or large as in the latter, but are partly drooping in wet weather, and the corolla is tubular, the petals smooth. The 5 stigmas are adjacent when the plant is in flower, and the 5 outer stamens are quite near them in the centre, and thus protect the honey. The anthers project above them and become covered with pollen. The 5 inner stamens remain bent outwards, and are not in an insect’s way. The
stigmas expand and separate before the outer stamens wither, and the papillar surface is exposed, though previously hidden. The 5 inner stamens become erect as the outer wither, and surround the style, which elongates, the 5 stigmas standing just above the circle of pollen-covered anthers. At the base of each outer stamen a hollow occurs at the base of each sepal, in which the honey lies, and this is only reached by insects with a tongue 7 mm. long, or those which can thrust the head into the narrow portion of the flower.

A fly, *Rhingia rostrata*, with proboscis 11–12 mm., can easily get at the honey. It settles first on one petal, then on another, and in older flowers the proboscis first touches the stigmas, then the ripe anthers, but in younger flowers only the mature anthers.

The flower is visited by Diptera, Syrphidae, Rhingia, Coleoptera, *Dasytes*, and Lepidoptera, such as *Pieris napi*, the Green-veined White.

Herb Robert is dispersed by its own agency. The fruit is made up of several carpels, which split up into 1-seeded parts, and the calyx expands and closes up a second time when the seeds are ripe and the carpels split, the seeds being scattered by an explosive movement.¹

*Emphytus carpini, Amasis obscura* (Hymenoptera) live on it.

The plant was called *Robertianum*, Fuchs, from Robert Duke of Normandy, or from St. Robert.


Tea was made from it with Ground Ivy and Five-finger Grass. The plant was much used for red rash. Because of the disagreeable smell it was called Fox Geranium. Where it is called Death-come-quickly it is not plucked. Once it was a remedy for gout. The origin of the Geranium is explained thus. The prophet Mohammed one day washed his shirt, threw it upon a mallow plant to dry, but when it

¹When the petals fall the axis lengthens. The 5 seeds at the base of the column enclosed in capsules, rod-like above, form part of the axis at first, but separate. When ripe the carpels become erect, the outer layers of the extremities become tense, and the rods are jerked out and the seeds scattered.
was afterwards taken away the sacred contact with the mallow had changed it into a Geranium.

It was called Herba Robertus in the fourteenth century, and Sadroc. It was used as a vulnerary, on the Doctrine of Signatures, because the whole plant is blood-red in colour. It is astringent, and was used for ulcers, scrofula, &c. It has an unpleasant smell when rubbed, and for this reason was considered as a remedy for the unmentionable insects.

Essential Specific Characters:

68. *Geranium robertianum*, L.—Stem branched, spreading, leaves ternate or quinate, leaflets pinnatifid, flower red or pink, small, sepals hairy, capsule wrinkled, hairy.

**Spindle Wood** (*Euonymus europaeus*, L.)

No trace of this small tree has been found in Glacial or other beds. It is distributed throughout Europe as far east as the Caucasus, and in North Africa, and West Siberia. In Great Britain it is absent from Radnor, N. Lincs, S. and Mid Lanes, Isle of Man, as far as Kirkcudbright, and elsewhere it is found only in Roxburgh, Berwick, Edinburgh. It is thus rare in Scotland, and in Ireland quite local.

The Spindle Tree is principally a woodland species, but it occurs here and there as a hedgerow plant along the roadside. It grows along with other shrubs in the plantation mixed with Field Maple, Holly, and Hawthorn, or scattered about in the midst of oak plantations. It is a bushy shrub or small tree with quadrangular or square stem, the bark green, grey in older stems, smooth, strongly smelling, with long, acute, opposite leaves slightly toothed, on short leafstalks.

The flowers are greenish-white, umbellate, or in an umbel, the four acute petals oblong, 4-cleft, and with 4 anthers, as many as ten flowers on one cyme, which is often dichotomous. The flower-stalks are long, the capsules are 4-lobed, deep, and, when the fruit is ripe, of a beautiful rose or orange-crimson colour, like a capsicum, and the seeds, which are not truncate, are enclosed in an orange arillus or covering of a fleshy nature.

The Spindle Tree is from 5 to 20 ft. high. The flowers are in bloom in May and June. The capsules are 4–5-celled, and are ripe about September, when they are red and especially attractive and conspicuous. The plant is a deciduous shrub increased by seed. The
SPINDLEWOOD (Euonymus europaeus, L.)
seeds are enclosed in an orange arillus. The embryo is surrounded by albumen.

The styles are surrounded by a fleshy disk containing honey in a thin layer, accessible to short-lipped insects. It is triceious. There are staminate flowers with rudimentary pistils, and pistillate flowers with rudimentary stamens, and hermaphrodite flowers which are male as a rule in function, and rarely produce seeds.

The flowers have no attraction except to flies, which cross the flowers in every direction with outspread labellae, touching anthers and stigmas in different places. Four anthers stand out some distance from the stigma on rigid anther-stalks and open outwards, when the stigma is not ripe, and the lobes are not outspread. They separate on the second day, and after pollination has ensued. Only by a separation of the sexual organs is it possible for cross-pollination of the plant to take place, while self-pollination cannot happen.

The Spindle Tree is visited by Diptera (Syrphidae, Muscidae, Bibionidae), Hymenoptera (Formicidae). It is dispersed by the agency of animals. The fruit is edible, and the seeds are dispersed by animals. The two cotyledons are green.

Spindle Tree is partly a humus-loving plant requiring a humus soil, and partly a sand plant, and living on sand soil.

Caoma enonymi forms yellow pustules on the leaves and young branches. Death's Head Hawk Moth, Copper Underwing (Amphi-pyra pyramidia), Scorched Carpet (Ligdia adustata), Theristis candella, and Acerbasis angustella, Hyponomeuta cognatella, H. plembellus, H. enonymellus, Abraxas adustata, and the Homoptera, Aphis enonymi, Siphonophora pisi, attack it.

Enonymus, Theophrastus, is from two Greek words, denoting together “having a good name”, therefore lucky, prosperous.

The English names are: Ananbeam, Butcher's Prick-tree, Cat-rash or Cat Rush, Cat-tree, Cat-wood, Death Alder, Dogrise, Dogtooth Berry, Dogtree, Dogwood, Foul-rush, Gadrise, Gaiter-tree, Gatten-tree, Gatteridge, Louse Berry, Pincushions, Prickwood, Skewer-wood, Skiver, Skiver-timber, Spoke Wood, Witch Wood. Prick timber, &c., refers to its use as skewers, &c., and so does Skewer-wood. It was called Cat Rush, &c., “perhaps from having a green bark like a rush”. In Bucks it is unlucky to bring it into the house. The name Dogwood was supposed to be given because a preparation of the leaves was given to dogs to drive away vermin, and the name Louse Berry was given because the berries when sprinkled on the hair destroy lice.

The wood is very hard, hence its employment in making skewers.
A good drawing charcoal is also derived from it. It yields a good yellow dye, and, with alum added, a green dye. In Germany they bore the young shoots to make pipe-stems of them.

**Essential Specific Characters:**

73. *Euphorbia europaea*, L.—Shrub, branches quadrangular, leaves lanceolate, opposite, serrate, flowers white or green, in umbels, peduncles axillary, capsule with an arillus, scarlet, obtusely angular, or lobed.

**Tufted Vetch** (*Vicia Cracca*, L.)

Tufted Vetch appears to-day (not earlier than the present epoch) in the Northern Temperate and Arctic Zones, in Arctic Europe, N. Africa, N. and W. Asia, India, and Greenland. It is ubiquitous in Great Britain, ranging as far north as the Shetlands, and in the Highlands it is found at altitudes of 2,400 ft. It is a native of Ireland and the Channel Islands.

The common Vetch or Tare is a familiar feature of our hedgerows and lanes in the early summer, seeking the support of some stronger upright plant. It is associated with Bryony, Red Campion, Welled Thistle, various brambles, and other hedgerow bushes, scrambling over them profusely in wild disorder.

The Tufted Vetch has the climbing habit. The plant is downy or silky. The rootstock is creeping. The stem is angled, spreading. The leaves are stalkless, pinnate, with leaflets each side of a common stalk. The leaflets are linear, oblong or lance-shaped, acute, or with a blunt point, in 10 pairs, silky. The stipules are half arrow-shaped, entire or nearly so. The tendrils are branched.

The flowers are 10–30, in dense racemes arranged one side of the stalk, blue or purple. The flower-stalk is longer than the leaves. The ultimate stalks are short. The flowers are drooping. The tube of the calyx is short, swollen below, the teeth shorter than the tube, the upper pair very small, the others awl-like. The standard is wavy at the side, the limb short. The style is equally downy all round at the top, the hairs longer below the stalked stigma.

The pods are not bearded, linear or oblong, smooth, obliquely blunt, beaked, many-seeded. The seeds are nearly round, black. The hilum is linear and extends half-way round the seed.

The plant is 3–6 ft. high. The flowers are in bloom during June, July, and August. The plant is perennial.

The flowers are numerous, brilliant in colour, and conspicuous. The anthers ripen before the stigma. The short style is 1½ mm. long.
and below the stigma clothed with long upwardly-directed hairs, which are longer and closer on the outer than on the inner side, and form a brush. The anthers lie close to the brush and pollen falls from them on the latter at an early stage, when the stigma is at a lower level than the hairs, included in the pouch formed by the flat top of the keel, when the latter is depressed projecting from the narrow slit at its extremity. The alae serve as levers for insects to depress the keel, and they are united in two places with the edge of the keel. In the middle of the upper border there is a deep fold in each ala fitting into a corresponding hollow in the keel, which lies in front of the pollen cavity. The wing bulges in and forms a depression behind this fold which fits into a second cavity in the keel, and the two fit very closely, the cells interlocking, in a similar manner to the above structures.

The return of the wings and keel to their former position after an insect visit is ensured by their elasticity, by aid of processes on the alae that clasp the staminal column, and others on the carina that serve the same purpose, and by the broad base of the standard, which curves laterally to clasp the claws of the alae and the carina, the calyx holding the standard in position. The flower is visited again and
again by insects which gradually remove the pollen, and the stigma becomes sticky receiving pollen from other flowers. In spite of the close fitting of the parts, the honey in the flowers is easily reached by bees, as the flowers are small.

The visitors are Apidæ, Vespidæ, Diptera (Empidæ), Lepidoptera, Small White (Pieris rape).

The woody fibres of the pods are directed at half a right angle to the axis of the pod, and when ripe the valves curl up corkscrew-wise, when dry, shooting the seeds out in all directions.

Tufted Vetch is addicted to a more or less sandy humus soil, or sandy loam, growing on a great variety of rock soils from the early Cambrian to Pleistocene or Glacial beds.

The “rust”, Uromyces fabæ, attacks this plant, also U. pisí and Ascochyta pisí, and it is galled by a beetle, Apion gyllenhalli, and visited by Apion cracce and Crepidodera rusípes, the moth New Black Neck (Toxocampa cracce), and the Heteropterous insect Strongylocoris leucocephalus.

Vicia, Varro, is from a Latin root meaning to bind, from the tendrils. Vetch is the same as Fitch. Cracca, Dodonæus, is said to be from a Greek root meaning croak.

Tufted Vetch is called Blue Tar-fitch, Cat-peas, Cow Vetch, Wild Fetches, Huggaback Pea, Tar Grass, Wild Tare, Thetch Grass, Tine, Tine Grass, Tare, Tine Weed.

There is a proverb:

“A thetch will go through
The bottom of an old shoe.”

**Essential Specific Characters:**

89. *Vicia Cracca*, L.—Stem climbing, tall, with branched tendrils, leaflets in 10 pairs, narrow, acute, downy, stipules semi-sagittate, entire; flower-stalks long, lateral, flowers numerous, purple, 10–30 in raceme.

**Meadow Vetchling** (*Lathyrus pratensis*, L.)

The recent distribution, which is all we have knowledge of so far of Meadow Vetchling, shows that it is confined to the Northern Temperate and Arctic Zones in Arctic Europe, N. and W. Asia as far as the Himalayas, and it has been introduced into North America. In Great Britain it is common everywhere as far north as Shetland, and ascends in the Highlands to a height of over 1500 ft. It is a native of Ireland and the Channel Islands.
The common yellow Meadow Vetchling is, like the violet Tufted Vetch, a common associate of the hedgerow alliance, but whilst the latter is especially fond of growing in the hedge itself, the former may be found usually with small stunted bushes which grow between the road and ditch. It is fonder of moist ground, and may be found with rushes on the sides of ponds and marshes.

The stem, while not essentially that of a climber, is slender and needs supporting, and is provided with simple, 2-leaved tendrils. It is
angular, slightly downy, and branched. The leaflets are in pairs, lance-shaped, 3-nerved, finely hairy beneath. The stipules or leaflike organs, as wide as the leaves, are broadly lance-shaped and arrow-shaped, the petals round. The flowers are yellow with darker veins, borne on many-flowered flower-stalks, in racemes, drooping, turned all one way, the flower-stalks as long as the calyx, which has awl-shaped teeth. The pod is stalkless, with a long tapered point, containing numerous seeds, and flattened at the sides. The seeds have a small hilum.

The plant grows to a height of 3 ft. It is in flower in June, July, August. It is perennial, and propagated by means of the roots.

When the keel is depressed the tip of the style emerges, and the brush of hairs sweeps the pollen out of the apex of the keel, coming in contact with the bee’s abdomen, and recoils again when the bee goes away. The vertical style is incurved, and expands below the oval stigma into an elliptic lamina or plate, and is covered with oblique hairs, and lies in the apex of the keel. Its hairy surface is turned to the bottom, facing the free edges of the tip of the keel. There is a pouch between the sides with a fold between to which entrance can be had only at the tip. Its anthers lie in the pouch, ripen when it is in bud, and pollen falls on the stigma. When the keel is depressed the latter emerges and pollen is swept out. Pollen in the pouches is also forced up. The wings and keel are closely locked, and it requires a good deal of pressure from an insect to exert the style and stigma. In spite of pollen being pushed up close to the stigma, insects probably cross-pollinate the flower, rubbing off its own pollen and applying fresh.

The visitors are all bees, _Eucera, Bombus, Diphysis_, and _Megachile_.

The pod, which contains many seeds, contracts when dry, and the seeds are thus expelled to a distance by a catapult arrangement.

Meadow Vetchling is a humus-loving plant, which grows on humus soil, or even sand where the ground is moist and damp.

The larvae of _Cecidomyia lathyri_ cause the terminal expanded leaves to meet and enclose the young leaves, on which they feed. The fungi _Uromyces pisii_ and _U. fabae_ both grow upon it. The beetles _Bruchus loti, Phyllobius uniformis, Apion subalatum_, the Thysanopterous _Thripis phalerata_, the Lepidoptera Wood White ( _Lepaphasia sinapis_), _Botys fuscaii_, _Cemiosoma vailesella_ feed upon it.

_Lathyrus_, Theophrastus, is Greek for a kind of pulse, and the specific name refers to the meadow habitat.

Meadow Vetchling is also called Angleberries, Craw-peas, Fitch,
Blackthorn (Prunus spinosa, L.)

Preglacial, Interglacial, and Neolithic beds have yielded evidence of the early occurrence of this plant in Britain. In its present distribution it is confined to Europe, but the Bullace is found in Africa and the Himalayas, both in the Warm Temperate Zone. In Great Britain it is found south of Sutherland throughout the country, up to a height of 1,300 ft. in Yorkshire. It is met with in Ireland and the Channel Islands.

The Sloe is so common a wayside plant as scarcely to need description. It is found not only by the highway, with Spindle, Maple, Crab, Hawthorn, Cornel, and Elder, but also in the hedgerows, in fields, and in woods, forming dense brakes in the latter, or in the open, where the Blackthorn blossoms make the otherwise dark growth of branches quite white in early spring.

As the Latin specific name indicates this plant is peculiarly spinous, which separates it from *P. instititia*, where there are few spines. The plant is a bushy tree with numerous interlacing branches, rigid.

The Sloe has the shrub habit. It is small, rigid, much-branched, the branches spreading, zigzag, spinous (hence *spinosa*), the spines being arrested branches. The wood is hard and tough. The bark is black. The leaves appear after the flowers. They are egg-shaped, or oblong to lance-shaped, stalked, and vary considerably in form, in the acuteness of the leaf, and in the length of the stalk. They are downy below when young, later hairless, and are toothed.

The flowers are white, \( \frac{1}{2} - \frac{3}{4} \) in. across, shortly-stalked, the stalks solitary or in pairs, hairless. The petals are inversely egg-shaped to oblong, and vary in breadth. The fruit is a drupe, the flesh adhering to the stone, round. When the carpel becomes the fruit the layers are three, the skin or epicarp, the flesh or mesocarp, and the inner stony endocarp, the three forming the pericarp, the seed being the kernel within the stone. There are two ovules, one often being undeveloped.
The plant is often 15 ft. high, and grows in clumps, several being associated together forming bush-land. It is one of the earliest wild flowers in March and April. The Sloe is a deciduous shrub, propagated by seeds.

The flowers are conspicuous, and contain abundant honey, and owing to their appearance before the leaves and the early flowering are much visited by insects. The stigma matures before the anthers. In the first stage the style is considerably above the stamens. The

antlers have not yet opened, and are bent down towards the centre. The stigma is already receptive, and projects. It is therefore first touched by an insect visitor, the petals becoming more or less horizontal. The stamens become erect, and bend outwards. The outer antlers open first. The style lengthens and overtops the short stamens, which stand near the centre. As the stigma is at this stage still receptive, self-pollination may thus occur by the agency of insect visitors. In their absence self-pollination may occur as the flowers turn to the sun, from the inflection of the stamens toward the centre above the stigma, causing pollen to fall on the latter.

The flower is visited by Hymenoptera (Apidae), Diptera (Empidce,
Syrphidæ, Muscidae, Bibionidae), Coleoptera (Nitidulidae), Lepidoptera (Vanessa).

The fruit is edible, and the seed is dispersed by animals.

The Sloe is at home on sand soil, and is a sand plant, but is also a lime plant, loving limestone, and a humus-loving plant requiring humus soil. A fungus, Puccinia pruni, causes early fall of the leaf.

Eriophyes similis is a gall that attacks it. Many larger fungi grow on it: Stereum, Podosphera, Eutypella, Polystigma, Plowrightia, Polyporus, Hypomis, Entomosporium, Corynum, Cladosporium. It is also galled by Cecidomyia pruni and Biorhiza terminalis; and the beetles Otiörhynchus picipes, Monochetus sulcatus, Magdalinus pruni, Rhynchites auratus, the Hymenopterous insects Andrena bucephala, Eriocampa adumbrata, Lepidoptera Black Hairstreak (Thecla pruni), Scarlet Tiger (Callimorpha dominula), Yellow-Tail Moth (Liparis auriflava), Grey Dagger (Acronycta psi), White-letter Hairstreak (Thecla W. album), Brown Hairstreak (T. betulae), Short-cloaked Moth (Nolita cucullatella). &c., and the Homopterous Capsus capillaris, the Homoptera Psylla pruni, Trichopsylla Walkeri feed on it.

Prunus, Pliny, is Latin for plum-tree, and the second Latin name refers to the spinose character.

The names it goes by are: Blackberry, Blackthorn, Blackthorn-May, Buckthorn, Bullens, Bullies, Bullins, Bullister, Cat's-sloes, Egg-peg Bushes, Hedge Picks, Hedge Speaks, Heg Peg Bushes, Hep, Winter Keeksies, May Blackthorn, Quick Scrog, Skig Slaathorn, Slacen-bush, Slan, Slaumbush, Slea, Sloey, Slon, Stone Bloom, Sloobush, Slines, Snag, Snagbush, Winter Picks.

Quick or Quicks are young black or white thorn for planting in a hedge. The name Sloe for the fruit is extended to the plant itself,
and sloes are recommended for fences. Blackthorn distinguishes it from Whitethorn or May.

Blackthorn Chats are the young shoots when they have been cut down.

The "Lay of Runzifal" makes a Blackthorn shoot out of the bodies of slain heathens, a white flower by the heads of fallen Christians. It was held antagonistic to witchcraft. In Surrey it is always cold when the Blackthorn comes in flower.

"When the Sloe tree is as white as a sheet, Grow your barley whether it be dry or not."

It is the origin of the Bullace and the Plum. In a wild state it has spines. The fruit is very astringent. A conserve is made from it, and port wine has been made from it as well as sloe gin. It has been used for marking ink. Lye or tea used to be made from the leaves. It has been substituted for cinchona bark for ague and fever. As a wood it is used for the teeth of rakes.

**Essential Specific Characters:**

91. *Prunus spinosa*, L.—Shrubby, stems woody, branched, twigs zigzag, spinose, black, leaves elliptical, narrow, downy below, after the flowers; flowers white, 1–2, peduncle glabrous, fruit globose.

**Bramble** (Rubus fruticosus (= rusticanus, Merc.))

This plant is known in Preglacial, Interglacial, Neolithic, and Roman beds (at Silchester, for instance). It is a member of the North Temperate Zone, found in Central and South Europe. Out of 112 vice-counties it is found in 74 in Great Britain, but it is not so common in Scotland.

The Common Bramble is not only a prevalent hedgerow plant, but it is often one of the chief mainstays of common undergrowth, and forms wide patches on heaths and moors, being indiscriminately common to both highland and lowland districts. It forms some part also of the undergrowth in woods and plantations, but is not a shade-lover like certain other brambles, of which altogether some hundred species are now known, ranking as sub-species.

Brambles are plants which have a peculiar habit like Roses in general, unlike any other plants in this respect. The stems are numerous, ascending at first, or erect, growing out from a single root, and rooting again when they have arched over and commenced to descend afresh. They thus present a regular entanglement, which it is
No. 1. Bramble
(Rubus cususcanus, Merc.)
Upper part of flowering panicle, with recurved prickles, compound 3-foliate stem-leaf, flowers with 5 petals with narrow claw, numerous stamens, and pistil in centre, also fruit, an etatio with many drupes.

No. 2. Barren Strawberry
(Potentilla sterilis, Garcke)
A. Fruit, with bracteoles and sepals, showing many achenes. B. Plant with woody rootstock, 3-foliate leaves, stipules, flower-stalks, with 5 petals and 5 sepals alternating, and many stamens, with bracts below the flower-stalk.

No. 3. Dog Rose
(Rosa canina, L.)
A. Fruit (lap), with sepals fallen, and stigma at the top. B. Flowering branch, with recurved prickles on stem, and pinnate leaves, with flower in bud, and pinnate sepals, flower expanded, with 5 petals, many stamens (perigynous), and sessile stigma.

No. 4. Crab Apple
(Pyrus Malus, L.)
A. Fruit (pome) cut transversely, showing fleshy mesocarp and cartilaginous endocarp (cores), with 5 carpels. B. Flowering branch, with leaves and stipules, flowers in umbel, 5 petals with narrow claw, with alternate sepals, many stamens, and central styles.

No. 5. Hawthorn
(Crataegus Ozycantha, L.)
A. Vertical section of flower, showing sepals and 1 (of 5) petals, with many stamens, and stigma, single style in centre of disk, and carpel enclosed in calyx-tube. B. Fruit (haw) stone, with recurved sepals and persistent style. C. Part of flowering branch or dwarf shoot, with spine and lobed leaf, also inflorescence, a corymbose cyme, and flowers with cup-shaped corolla of 5 petals, stamens, and style.

No. 6. Bryony
(Bryonia dioica, Jacq.)
A. Part of stem, with tendril and cyne of female flowers, with teeth of calyx, and petals, with ovary below. B. Cluster of ripe berries. C. Stem with a tendril, and pinnate leaf, and larger male flowers with stamens.
FLOWERS OF THE ROADSIDES AND HEDGES

PLATE XXVII

1. Bramble (Rubus fruticosus, Mere.)

2. Barren Strawberry (Potentilla sterilis, Gareke)

3. Crab Apple (Pyrus Malus, L.)

4. Hawthorn (Crataegus oxyacantha, L.)

5. Dog Rose (Rosa canina, L.)

6. Bryony (Bryonia dioica, Jacq.)
difficult to penetrate, like numerous croquet hoops (but larger) set here and there, crossing each other in all directions. Those who have tried to find a grasshopper warbler's nest know what I mean.

This Blackberry has the shrub habit. The stem is prickly, arching, prostrate. It may be hairless, bluish-green, or have prickles, bristles, and gland-tipped hairs. There are no suckers, the stem is round or angular. The barren stems are more or less erect, or arch and root from a point near the extremity, giving rise to fresh plants. The

down is closely appressed. The prickles are equal, and are bent downwards, with an enlarged, flattened base. The leaves are ternate or quinate, with 3 or 5 leaflets. They are hairless, with fine hard felt below, with the margins bent downwards. The leaflets are leathery, convex, rough, stalked, overlapping or not, inversely egg-shaped, rhomboid, coarsely irregularly toothed, dark-green above, paler below (hence discolor). The terminal leaflet is inversely egg-shaped, blunt-pointed.

The flowers are pink or white, in terminal racemes, with corymbose-like or long lateral branches. The panicle is long, narrow. The petals are pink. The calyx is finely woolly-felted. The anther-stalks and styles are purple, the stamens longer than the styles. The
FLOWERS OF THE ROADSIDES AND HEDGES

Anthers are green. The drupes or stone fruits are black or reddish-purple, small, numerous, acid. The flower has a concave receptacular tube which surrounds the base of the pistil. The pistil is made up of numerous carpels on a conical receptacle. The cluster of drupes is an ecterio.

The plant is frequently 10 ft. high. It is in flower from July to September. It is perennial, propagated by layers, the branches arching over and rooting again; the branch contracts and the tip is drawn into the earth, whilst the original branch dies very frequently, and the new plant takes its place.

The flowers are large and conspicuous, expanding widely. The petals when outspread are nearly flat, being large, and many flowers form a panicle. The anthers and stigma ripen together. The stamens are numerous, but in spite of this the honey exposed on the disk is accessible to short-lipped insects, as they spread out. The outer anthers are the first to open, and they turn their anthers upwards. The stigma ripens together with these outer stamens. In spite of this homogamous condition the flowers are cross-pollinated, as the stamens are spreading. Insects in visiting the flower may touch either the anthers at the border or the stigma in the centre. The inner stamens when they open are erect, and may touch the outer stigmas and cause self-pollination.


The fruit is a drupe or drupelet, on a convex receptacle, which is eaten and dispersed by birds, &c., and so dispersed by animal agency.

Blackberries grow on a variety of soils, but in general are most addicted to a sandy or stony subsoil, which is derived from the older rocks of granitic or arenaceous origin.

The fungi which infest the Blackberry and Raspberry are: Sphaerulina intermixta, Phragmidium rubi-idei, Coniothyrium tumefaciens, Gliosporium venetum, Cercospora rubi.

They are galled by Lasioptera rubi, Diasphorus rubi, and other fungi infesting them are Phragmidium violaceum and Uredo nulleri.

The beetles Dasites niger, Anthonomus rubi, Batophila rubi, Meli-
gethes rufipes, Byturus tomentosus, Dascillus cervinus, Dryophilus anobioides. Hymenoptera of the genera Mutilla, Trypoxylon, Spilomena, Pemphredon, Passalurus, Psen, Crabro, Odynerus, Prosopis, Halictus, Andrena, Ceratina, Callisoxys, Bombus, and Eumphrys, the Lepidoptera Green Hairstreak (Thecla rubi), Fox Moth (Lasioampa rubi), Peach Blossom (Thyatira batis), Nepticula fulvella, and many others, the Homoptera Lecaniiim caprece, Pcdiopsis tibialis, Typhlocyba tenej-rima, the Heteroptera Paloincncs prasina, Lopus goihiats, L. sitlcatitis, Dicyplnts cousirictus, and Lasioptera rubi visit it for food in one form or another.

Rubus, Pliny, was the Latin name for Bramble, and the specific Latin name, rusticaiius, denotes its wild nature.

The Bramble is called Brimmlle, Broomles, Brumble, Brumbleberries, Brumbleberry Bush, Brummel, Brummelkites, Brymble, Bullbeef, Bumbleberries, Bumblekites, Bumly Kites, Bummell, Cock-bramble, Cock-brumble, Country Lawyers, Ewe Bramble, Gaitberry, Gaiter-tree, Garten Berries, Hawk's Bill Bramble, Lady's Garters, Land Briars, Lawyers, Mooches, Mulberry, Mulberry Bramble, Scaldberry, Thet-thorne, Thovethorn, Thilf.

In regard to the name Blackberry a writer says: "The fine weather which is generally experienced at the latter end of September and the beginning of October, when the blackberries ripen, is called in Hants Blackberry summer." "Blake-berries that on breres grownen" (William of Palerne).

As to Garten Berries, to gartane is to bind with a garter, and the name may mean the berries of the binding shrub, Blackberry twigs naturally binding other shrubs together, and being, indeed, sometimes expressly used for that purpose. This suggestion is borne out by the Roxburghshire name, Lady's Garters. They are called Lawyers because "When once they gets a holt an ye, ye doant easy get shut of 'em". The name Scaldberry was given because of their property of giving scalds or sore heads to children, and to scare children from eating them they were thus called. The name Brumble Kites is from the "rumbling and bumbling caused in the bellies of children who eat its fruit too greedily ".

But bumble is a contraction of bramble and brumble. In the Forest of Dean to "mooche blackberries", or simply to "mooch", means to pick them. The devil was supposed to put his cloven foot on them on Michaelmas Day,¹ after which it was unlucky to eat them.

¹The leaves then show a serpentine marking due to a larva which lines them. Hence perhaps the reason.
It is said that a farmer's wife, near Arundel, used to make a quantity of blackberry jam, and not having the usual amount brought she asked a woman to let her children gather some more, to which the reply was, "Ma'am, don't you know this is the 11th October?" "Yes," she said. "Bless me, ma'am, and you ask me to let my children go out blackberrying? Why, I thought everyone knew that the devil went round on the 10th October and spat on all the blackberries, and that if any person were to eat on the 11th he or someone belonging to him would either die or fall into great trouble before the year was out," was the further reply. The devil is said to throw his cloak over blackberries and make them unwholesome, and in Ireland to stamp on them.

The fruit was said to drive away serpents. To dream of passing through places covered with brambles foretells misfortune, and if you are pricked secret enemies will injure you in your friends' eyes, and if blood is drawn you lose money, while if you are unhurt you will triumph. An early harvest is predicted if brambles bloom early. Its mode of growth made it a type for lowliness, and an emblem of remorse from the fierceness with which a passer-by is grasped. The Blackberry is one of the plants thought to have made up the crown of thorns.

Bramble leaves are used for scalds in Cornwall, 9 leaves being dipped in spring water, and this charm repeated three times:

"There came three angels out of the East,
One brought fire, and two brought frost;
Out fire and in frost
In the Name of the Father, Son, and Holy Ghost".

In the same country warts were cured by the first blackberries of the season.

It was said to arise thus: "The cormorant was once a wool merchant. He entered into partnership with the bramble and bat, and freighted a large ship with wool. She was wrecked, and the firm became bankrupt. Since that disaster the bat skulks about all midnight to avoid his creditors, the cormorant is for ever diving into the deep to discover its foundered vessel, while the bramble seizes hold of every passing sheep to make up his loss by stealing the wool."

The fruit is largely utilized for making jams, tarts, pies, and even wine, and is quite a regular autumn industry in the country districts. The stems are also used in thatching for binding the roof together, and making straw articles and mats.
Essential Specific Characters:—

95. *Rubus fruticosus* (= *rusticanus*, Merc.).—Stem prostrate, arched, angular, prickly, with stellate hairs, leaves quinate, downy, white below, flowers pink, calyx downy, in terminal panicle, fruit a drupe, small, tart.

**Barren Strawberry** (*Potentilla sterilis*, Garcke)

The present distribution in the North Temperate Zone of Europe and N. Africa is all we know of this plant. In England and Wales it is generally distributed, but it does not occur in South Lines, Mid

Lanes, Roxburgh, Mid and N. Ebudes, E. Sutherland, Caithness, Orkney, Shetland. It is found at a height of 2100 ft. in Wales. It is common to Ireland and the Channel Islands.

The Barren Strawberry is more fond of the open than the Wild Strawberry. It is a common roadside flower growing amongst the sward at the side of the macadam. It is also to be found in woods, where it forms wide patches. Banks are again a favourite habitat of this pretty wild flower. By the wayside its white flowers contrast with the yellow blooms of the Silverweed, which, however, flowers later as a general rule.

This little gem of a flower is, as its former second Latin name, *fragariastrum*, implies, like the strawberry in habit, that is to say,
dwarf, trailing, or prostrate, rising at the tip, with numerous brownish thick stems, which bear many inversely egg-shaped leaflets, in threes, coarsely-toothed, and softly downy on the sides. From the Wild Strawberry this plant differs in having no erect flower-stalks, and it has generally smaller flowers, with distant (not overlapping) petals, which are not notched as in the latter.

The calyx is as long as the corolla, and the achenes are hairy on the scar, and wrinkled transversely. The receptacle is not, as in the Wild Strawberry, fleshy.

The Barren Strawberry is not more than 6 in. in height. It is in flower in March up to May. It is perennial, and reproduced by achenes, which are numerous.

It is an early-flowering plant, with many flowers, which are white but inconspicuous. It is consequently not much visited by insects, and is probably in the majority of cases self-pollinated. The honey is secreted as a thin layer, and not in drops as in Fragaria, with which otherwise it largely agrees. The anthers and stigma are ripe at the same time.

The fruit consists of a group of achenes, which are dispersed when dry by falling away from the disk, and partly by the wind.

Barren Strawberry is a sand-loving plant, and addicted to a sand soil, flourishing also on barren stony ground, derived from granite or older harder siliceous rock soils.

Two fungi are liable to be found on the Barren Strawberry, Septoria fragariae and Phragmidium fragariastri.

A beetle, Galeruca tenella, frequents it, and a moth, Nepticula arcuata.

Potentilla, Brunfels, is from the Latin potens, powerful, in allusion to its powerful astringent nature, and the second Latin name refers to its barren nature.

This plant is called Barren Strawberry, Strawberry Plant. It was assigned to St. Hilary.

Essential Specific Characters:—

98. Potentilla sterilis, Garcke.—Stem prostrate, leaves obovate, ternate, serrate, silky, flowers white, petals as long as sepals, notched, short.

Dog Rose (Rosa canina, L.)

The forms found in early deposits do not approach R. canina, but a species with nearly round fruits. The present distribution is Europe, N. Africa, Siberia, or part of the North Temperate Zone. The
Common Dog Rose is found in every part of Great Britain, N. to the Orkneys, and ascends to 1350 ft. in Yorkshire. It is native in Ireland and the Channel Islands.

The Dog Rose is one of those flowers that help to call up memories of pleasant rambles along the highway, and is one of the greatest ornaments of our wayside hedges, in fields removed from the roads, and in isolated bushes, as well as on commons and heaths.

It forms a certain proportion of the undergrowth in brakes and thickets or woods.

A prickly climbing shrub, the Dog Rose is a tall, arching bush, with a green or purple stem, armed with strong, equal, curved-back prickles, which serve as a protection and for climbing, smooth, shiny, with simply or doubly coarsely-toothed, rigid leaflets, the leaves being arranged each side of a stalk, egg-shaped, coarsely-toothed, the upper surface shining, the lower mostly smooth or hairy.

The Dog Rose has the shrub habit. It is a large bush, with long, spreading, arching branches. The prickles are scattered, uniform, stout, broad, equal-hooked, the base thickened. The leaves are pinnate. The leaflets are hairless, simply-toothed, the secondary nerves not glandular, acute, flat, or keeled.

The leaf-buds consist of scales with 3 projections at the tip, which are the leaf bases, and the stipules and upper part of the leaf are the 3 projecting points. The outer scale is the shortest.

Everyone welcomes the appearance of the first Dog Rose in flower in summer. The flower varies from white to pink. In this it is a whitish-pink. The sepals are unequal, owing perhaps to the arrangement of the leaves in the bud. The edges of two are covered, two are not, and in the fifth, one side is and the other not covered, and the uncovered edges are bearded.

The sepals are naked, bent back, pinnate, falling, 5, free, on the rim of an egg-shaped receptacular tube. The disk is flat, the mouth conspicuous. The flower-stalks are usually naked. The styles are distinctly hairy, free, or nearly free. The fruit is egg-shaped to pitcher-shaped, roundish, the numerous achenes being included in the scarlet hip or receptacular tube which serves in the place of a pericarp.

There are numerous 1-seeded carpels, which are clothed in long hairs, sunk in the receptacle, which is globular, open at the apex.

The Dog Rose attains a height of 8–10 ft. It begins to flower in June and continues in July. It is a perennial, deciduous shrub.

The flowers are conspicuous, wide open, and scented, and there is abundant pollen, but no honey. The flowers are homogamous, the
anthers and stigma ripening together. The stigma serves as an alighting place for insects which bear pollen from other flowers. When they do not visit the flower, and in wet weather, the flowers are self-pollinated.

There is a fleshy ring surrounding the styles on the upper margin of the calyx tube, within the point where the stamens are inserted, so that the stigmas only are visible. The numerous stamens with yellow anthers add to the attractiveness of the flower. The stamens first bend outwards, while the petals are erect, the ring and stigmas serving as the only alighting place for insects, and pollen is deposited on the stigma, so that the flower is cross-pollinated. The oblique position of the flowers turned to the sun makes self-pollination possible in wet weather, and when insects do not visit the flower.

The Dog Rose is visited by *Helcophilus, Syrilla, Meligethes, Anthrenus, Anthocomus, Cetonia, Phyllopertha, Mordella, Rhagium, Strangalia, Luperus.*
The fruit is edible, and the seeds are dispersed by animals and birds, &c., and do not fall.

The Dog Rose is more or less a humus-loving plant, growing in humus soil, but is also largely a sand plant, requiring a sandy loam.

The fungi which affect roses are *Peronospora rosea*, *Sphaculina intermixta*, *Sclerotinia fructigena*, *Phragmidium subeorticatum*, *Coniothyrium fuckelii*, *Asteroma rosea*. The large mossy galls common on this plant, and popularly known as the Robin's Pincushions, are formed by *Rhodites rosea*.


*Rosa*, Pliny, is Latin for rose, and the second Latin name is an adjective from *cainis*, dog. The rose was so named because the root was supposed to cure the bite of a dog.


The hips of Roses were called Ticklers because boys put them down one another's backs, Daily Bread because the young shoots are eaten by children, Bull-beef because of the same reason.

"I had rather be a canker in a hedge than a rose in his grace."

*Much Ado About Nothing.*

"To put down Richard, that sweet lovely rose,
And plant this thorn, this canker, Bolingbroke."

*King Henry IV*. (Part 1).

"The canker blooms have full as deep a dye
As the perfumed tincture of the rose."
FLOWERS OF THE ROADSIDES AND HEDGES

The name Canker refers to the fruit, and the galls caused by Rhodites rose. Some people used to think a scratch from a rose was venomous. The name Dog Rose is from its lack of scent and beauty, as compared with the garden rose, though as a wild flower it is noted for both.

Michaelmas Day is called Hipping Day in Yorkshire, because hips were collected just then for confectionery. The name Itching Berries, like Ticklers, refers to the practice boys had of putting berries down one another's backs at school.

In a Scottish ballad the lines occur:

"Out of her breast there sprang a rose,
And out of his a briar;
They grew till they grew into the church top,
And there they tied in a true lover's knot".

A rose sprang up after the battle of Towton, where the rivals of the roses fell:

"There still wild roses growing,
Frail tokens of the fray,
And the hedgerow green bears virtues
Of Towton field that day".

The prickles are said to point downwards, because when the Devil was turned out of Paradise he tried to regain his place by a ladder made of its prickles; but when only allowed to grow as a bush, he placed its prickles in an eccentric position from spite. It is under the special protection of elves and dwarfs in Scandinavia, &c. It was thought to possess mystic virtues in love matters. It was of bad omen when seen in dreams withered, but meant success in love when dreamt of blooming; and to dream of being pinched by them shows that the person has an ardent desire for something. Troths and roses have thorns about them. "A bed of roses", "As sweet as a rose", "A rose by any other name would smell as sweet", are proverbs or well-known quotations.

The Rose was worn by the Romans in garlands; and in Greece, if a lover died before his wedding a rose-bush was planted at the head of his grave. It was used in bridal bouquets and in funeral rites, and was thought by Anacreon to possess special virtue for the dead. The Rose was dedicated to Venus as the flower of love.

Roses and blood are connected in popular fancy, the former being used for haemorrhage in Germany. From Chaucer's "Romaunt of the Rose" it appears to have been connected with Whitsuntide. Churches
were decked with it on St. Barnabas' Day. The clergy used to wear garlands of roses, and churches were adorned with it on Corpus Christi Day. Roses were said to fade on 20th July, St. Mary Magdalene's Day. The Rose was said to have formed the Crown of Thorns. If roses bloom in autumn it indicates an epidemic in the year. In Italy it is unlucky for a rose to drop its leaves.

"Robin Redbreasts", as the plants were also called, were once used for whooping-cough, and the leaves as a poultice in Greece. When the birds complained of the nightingale's nightly wailings, the latter replied that the rose was the cause of its grief. The first rosaries were roses that replaced the brands on a maiden accused of wrong and doomed to death at Bethlehem.

The colour of the rose is due to Mohammed's blood, so the Turks tell us. There is a Roumanian legend as follows: "It is early morning, and a young princess comes down into her garden to bathe in the silver waves of the sea. The transparent whiteness of her complexion is seen through the slight veil which covers it, and shines through the blue waves like the morning star in the azure sky. She springs into the sea, and mingles in the silvery rays of the sun which sparkle on the dimples of the laughing waves. The sun stands still to gaze upon her; he covers her with kisses and forgets his duty. Once, twice, thrice, has the night advanced to take her sceptre and reign over the world; twice has she found the sun upon her way. Since that day the lord of the universe has changed the princess into a rose, and this is why the rose always hangs her head and blushes when the sun gazes on her."

"Under the rose" owes its significance to the habit of wearing roses in garlands.

The hips are made into a conserve used in medicine, and as a dessert in Gerarde's day, who says they "maketh the most pleasante meates and banqueting dishes, and tarts, and such like". The petals were used in Chaucer's time for wounds and ointments. The rose has long been used in perfumes. It has been cultivated, and much improved in the process in colour, scent, and form.

**Essential Specific Characters:**

104. *Rosa canina*, L.—Stem erect, branches arching, prickles equal, hooked, leaflets flat, leaves pinnate, serrate, flowers white, large, petals notched, peduncles smooth, sepals reflexed, not persistent, styles hairy, fruit scarlet, many-seeded.
Crab Apple (Pyrus Malus, L.)

Not a trace of this plant has been found where fruits of Mountain Ash have been found. It is a northern temperate plant, occurring generally throughout Europe, Western Asia, as far east as the Himalayas. In Great Britain it is absent from Monmouth, Cardigan, Denbigh, Haddington, the E. Highlands, except South Perth, and is not found in Main Argyle, Dumbarton, Mid and N. Ebudes, nor N. Highlands or the Northern Isles, except in E. Ross. It is often an escape from cultivation. It is native in Ireland and the Channel Islands.

The Wild Crab is a plant of the woods and copses, but is also found frequently in hedgerows or in parks, where it sometimes grows to a good height. It is associated with plants such as Field Maple, Hawthorn, Wild Cherry, Buckthorn, Cornel, and other small-timbered trees and shrubs. Often it is just a reversion to type of the garden apple.

The apple has a leaning habit, much as in poplars, but is more erect and symmetrical, a main stem dividing into numerous, finally small, drooping, and spreading branches. The Crab is a small tree, 20–25 ft. high. The branches spread out equally, forming a wide crown. The stock is short, giving rise to numerous branches, which repeatedly divide. Two varieties are known, the var. *acerba* (or *sylvestris*) having a glabrous fruit-stalk, the var. *mitis* having a downy fruit-stalk. The Crab Apple is in flower for 5–6 days in April and May, and as a deciduous tree is perennial, and propagated by seeds.

The resting buds have a few scales, and the lateral buds are closely appressed. The buds produce three types of shoots: (a) long shoots, with distant leaves; (b) non-flowering dwarf shoots of slow growth, with annular markings and leaves close together; (c) flowering dwarf shoots or spurs, arising from the stouter branches and producing flowers.

The leaves are spiral in arrangement, simple, with short minute stipules. The leaf-stalk is slender and long. The blade is sharp-tipped, with marginal teeth. The surface is glossy above. The trunk is irregularly ridged with grey-brown furrowed bark, scaling with ease. The flowers are white, tinged with pink, and have 5 united sepals, hairy above. The petals have rounded limbs and narrow claws. The numerous stamens enclose the disk, which secretes honey. The anthers are cream colour. The style is divided into 5 branches. The fruit is an apple, with the persistent calyx above. The ovary is 5-chambered,
CRAB APPLE

and the thick fleshy coat consists of peel, a thick juicy layer, with a thin, tough, parchment-like layer, the "core", and encloses 2 brown seeds in each chamber.

The flowers are conspicuous and numerous. The honey is half-concealed, and secreted at the base of the flower. The flowers are much visited by insects. The flowers are sweet-scented, most strongly at night, so that the plant is visited by moths. The stigma ripens before the anthers, being receptive when the flower opens. The

flowers last from 5 to 6 days. The 5 stigmas stand above the stamens, so that an insect visiting the flower touches the stigma first. The anthers open on the second day, the outer rows of stamens ripening first. In some flowers the stigmas and stamens are more or less touching. The flowers are directed towards the light obliquely, so that some pollen must fall on the stigmas, and self-pollination occurs in the absence of insect visitors and in wet weather. Self-pollinated flowers do not produce good fruit.

The plant is visited by Bombus terrestris, B. agrorum, B. lapidarius, B. hortorum, Apis mellifica, Anthophora pilipes, Andrena albicans, Halictus sex-notatus, Osmia rufa, Bombus major, Empis.
livida, Rhingia rostrata, Syrphus pyrastri, Onesia floralis, Dilophus vulgaris.

The fruit is an edible, brightly-coloured pome or receptacle, with a softer pericarp, luscious when ripe, and is dispersed by birds and men.

The Apple is more or less a clay-loving plant, growing on clay, or a sand plant, growing on sand. A gravelly stony subsoil also suits it.

A number of fungi attack the cultivated Apple, which equally infest the Crab, of the genera Podosphaera, Eutypella, Glomerella, Nectria, Sphaerella, Fusicladium, Tympanis, Sclerotinia, Pholiota, Polyporus, Hydnium, Hypochnus, Phyllosticta, Sphaeropsis, Entomosporium, Bacillus, Valsa, and Armillaria mellea. White cotton-wool-like tufts are formed, and the branches are much distorted by Schizoneura lanigera and S. fodiens, which cause galls; and Scolytus pruni, Mytilaspis pomorum (a scale insect), and Lecaniiium capree cause ravages.

The bark is also attacked by American Blight, the Fruit-tree Bark Beetle; the blossom and fruit by the Codlin Moth, Earwig, Golden Chafer, Apple-blossom Weevil, Apple Sawfly, Apple Suckers, Wasps; the leaves by Apple Aphids, Plum Aphid, Cockchafer, Garden Chafer, Green Leaf and Oblong Weevils, Dot Moth, Figure-of-eight Moth, Lackey Moth, Large Tortoise-shell Butterfly, Lappet Moth, Mottled Umber Moth, Small Ermine Moth, Common Vapourer, Winter Moth; the shoots by the Pith Moth; the wood by the Shot-borer Beetles, Goat Moth, and Wood Leopard, as well as many other insects.

Malus, Varro, is the Latin for Apple Tree, and has the same root as in the Celtic and Scandinavian languages.


As to the name Bittersgall, it was often remarked of a soft, silly person, “He was born where th' bittersgall da grow, and one o' im fell'd on his head, and made a zaate (soft) place there”. In Lincolnshire to gather crabs is called crabbing. An acid liquor-like vinegar is called crabvargis. It was a custom 70-80 years ago to pelt the parson at Mobberley, Cheshire, with crab apples on Wakes' Sunday, the Sunday next before St. Luke's Day. The name Nurse Garden may be given because of its frequent occurrence in nursery gardens.

On Twelfth Day, in Devonshire, they go “wassailing” into the orchard after supper, with a large milk-can full of cider with roasted
CRAB APPLE

apples pressed in it. Each person takes a clone, or cup, full of the liquor, and standing under the trees says:

"Health to thee, good apple tree,
Well to bear pocket fulls, hat fulls, peck fulls, bushel bag fulls".

St. Dunstan is said to have bought up a quantity of barley for brewing beer. The devil, knowing his anxiety to get a good sale for it, offered to blight the apple trees so that there would be no cider. St. Dunstan agreed, and sold himself to him on condition they were blighted on May 17, 18, 19.

An apple left after the bulk are picked was held to belong to the fairies. Squeezed between finger and thumb the direction of an apple pip, so shot, indicated a lover's abode.

"Pippin, Pippin, paradise,
Tell me where my true love lies,
East, West, North, and South,
Pilling Brig or Cocker Mouth."

There was a custom of throwing apple peel over the head to secure marriage or the single blessed state, according as it remained whole or broken. An apple is thrown in the street in Sicily, and if a girl picks it up she will not be married, but if it is not touched the young person when married will soon be a widow.

An apple is eaten before a looking-glass on Hallowe'en in Scotland, when the face of the desired one will be seen. On Christmas Eve in Austria apples are used for divining. One is cut in two in the dark, without touching it at first, then the left half is placed in the bosom, and the right is laid behind the door. The desired one may be looked for at midnight near the right half.

A maiden having slept with one under her pillow on St. Andrew's or Christmas night stands with it in her hand on the next church festival, and the first man she sees will be her husband.

An apple was said to foretell long life, but to dream of one after the blooming is to foretell death. Dissimilarity between two persons is expressed by the proverb:

"As like as an apple is to a lobster".

Wild forms are often cultivated apples run wild. The fruit of the Crab is acid and tart, and the juice is called verjuice, and used for bruises and sprains. In Ireland people put it in cider to make it rough. All garden orchard forms are derived from it. Pippins are
named because they were raised from seeds. The Newton Pippin, grafted on stocks found in other parts, assumes the character of the stock in a short time. It lives to a great age, and is very prolific.

The wood is used for turning by the wheelwright and the cabinet-maker.

**Essential Specific Characters:**

107. *Pyrus Malus*, L.—Tree, branched, leaves ovate, serrate, shiny, or downy below, flowers white or pink, in sessile umbels, fruit yellow, globose, tapered below, styles united below.

**Hawthorn** (*Crataegus Oxyacantha*, L.)

Widespread and common, it is not unnatural to find this plant is represented in Preglacial, Interglacial, and Neolithic deposits. It is confined to the Northern Temperate Zone in Europe, N. Africa, N. and W. Asia, eastward to the Himalayas. In N. America it is an introduction. It is found in every part of Great Britain, except the Orkneys, and in Yorkshire it is found at the height of 1800 ft. It is native in Ireland, but is often only planted, and Watson says, "few botanists regard it as being more wild in North Britain than a casual straggler probably brought from the hedgerows by birds".

The Hawthorn is essentially a hedgerow plant to-day, being the main plant used in forming hedges all over the country. Where hedges are not cut and layered it grows to a good height and spreads extensively. When grown singly too, as in parks in the open, it is a graceful tree or shrub.

The first Latin name is a transliteration of the Greek name of the plant, and the second one is a reminder, if one has not made this discovery personally, of the sharpness of the long-pointed thorns or modified branches, the English name summarizing this and the character of the fruits as implied in "haw", which really means hedge.

The May or Hawthorn is recognized by its abundance of white blossom in May or June, and the scarlet berries or "haws" in winter, which begin to mature in August and September. The typical thorns or spines also serve to distinguish it, hedges being mainly composed of Hawthorn or thorn bushes in many districts. In this state it is closely branched, and the trunks are generally dwarf, being "layered" periodically. It is, when a tree, often 30 ft. high, growing in the open. The branches are dense or loose, with slender twigs which droop or
turn up at the end. In the summer appearance it is a mass of leaves and bloom, generally with a spherical crown and very compact. The branches may be very erect and numerous in the centre (as seen in the winter appearance), turning out at their extremities.

The tree is generally sub-erect, leaning, with large branches, spreading and drooping, with fine twigs. A bud and a long spine are produced on the long shoots below, only a bud above. The stipules on the short lateral spurs and at the bottom of the long shoots are small and awl-shaped. They soon turn brown and fall, the ground being covered with them in spring. The stipules on the upper part are coarsely toothed, sickle-shaped, &c., small and leaflike, or are large, heart-shaped, net-veined.

The buds have spiral scales. Spines are below the buds, and these latter are of five kinds: (1) long shoots with leaves separated by internodes, (2) foliage-bearing dwarf shoots, (3) buds like (2) ending in a flower-head, (4) long thorns, (5) short thorns. The leaves are simple, arranged in spirals, petiolate. On long shoots there are large green stipules, persistent and toothed; on the dwarf shoots the stipules...
are small or ephemeral. The leaf-blade is lobed and toothed, the leaf glossy and glabrous. The bole has a smooth bark at first, which becomes divided into longitudinal furrows, often twisted and grey in colour. The trunk may divide.

The flowers are white or pink, the inflorescence a corymbose cyme, being cylindrical with a flat top. Each flower has 5 united sepals, 5 distinct white petals, 20 stamens, pink anthers becoming brown, and they are attached to the margin of a basin. The style (1 in this form) is central with a broad stigma. The scent is due to trimethylamin. The fruit is a haw or stone fruit, with 1 seed. The calyx is persistent at the top of the fruit.

The tree is often 15 ft. high. The flowering period is May and June. A deciduous tree, it is perennial and increased by seeds.

The honey is half-concealed, and is secreted by a ring at the base of the flower. The stigmas ripen first. The flowers are strongly-scented, and the smell is attractive to dung- and flesh-flies. The stamens are not ripe when the flower opens. The outer are erect, the inner bent inwards, the anthers below the stigmas. The stigmas are, however, ripe and project in the centre, and the anthers ripen a few days after, opening inwards. The inner anthers when it is cold are bent down below the stigma after opening, the outer overtop the stigmas and are bent inward. But when it is fine the stamens bend outwards and then the honey disk is visible. If insects visit the flower they touch stamens and stigmas with opposite sides of the head and cross-pollination follows, but in their absence and in wet weather self-pollination is most probable.

Sweet sap is exuded by the young shoots which insects seek. The visitors are numerous: *Anthophora, Bombus, Andrena, Odynerus, Tachydromia, Empis, Microphorus, Pipiza, Rhingia, Eristalis, Helophilus, Xylota, Echinomyia, Sarcophaga, Oncsia, Graphomyia, Mesembrina, Cyrtoneura, Bibio, Dilophus, Attageus, Anthrenus, Meligethes, Anthraxia, Malachius, Telephorus, Asclera, Anaspis, Mordella, Clytus, Grammoptera, Clythra, Halictus, Nomada, Eucera, and Apis.*

The fruit is edible, and dispersed by birds, &c. It is therefore spread largely by animal agency.

Hawthorn is normally a sand plant living on a sand soil, but it is usually enriched by some humus which is accumulated under its own shade.

The first stages of *Gymnosporangium confusum* and *G. clavariiforme* grow on this plant. The second stage grows on Juniper in each case. The leaves are galled by *Eriophyes cratagi, E. goniothorax; or*
Cecidomyia cratagi. The fungi Polystigma rubrum, Tympanis conspersa, Phleospora oxyacantha infest it.

The insects Leopard Moth (Zeuzera ocelli), Penthina pruniana, Priobium castaneum, Otiorhynchus picipes, Trichiosoma tibialis, Pulcinaria vitis, Mytilaspis pomorum, Lecanium capreae, Aphis cratagi, Psylla cratagi feed on the Hawthorn.

Crategus, Theophrastus, is the Greek name of the plant. Oxyacanthus, Dioscorides, is from oxys, sharp, acanthos, thorn, and Hawthorn means hedge-thorn.


The planted thorns are called Quicks to distinguish them from rails and dead fences. Quickset means a hedge set with quicks, and so does Quickwood. Albespyne is from alba spina, meaning white thorn. “And there the Jewes maden him a crowne of the branches of albespyne, that is white thorn.” The name Bread-and-Cheese is given because the young shoots are eaten in spring by children. The name Glastonbury Thorn refers to the variety supposed to have sprung up at Glastonbury from the staff of Joseph of Arimathea which produces its blossoms on Christmas Day. It is called May because it usually flowers (in England) during that month.

Lonely thorns in fields that do not grow larger are said to be bewitched, and they must not be approached at night. A fiery wheel comes from the bush which will destroy you if it comes near you. It was said to be sprung from lightning. It is widely revered and associated with marriage rites. The bride was decked with May blossom in Greece. Torches lighting the bridal couple to the nuptial chamber were made of it. It is supposed to have formed the Crown of Thorns.

In Ireland it is unlucky to cut it down, as the fairies there protect it. To gather leaves of the tree is considered unsafe. But to burn it
FLOWERS OF THE ROADSIDES AND HEDGES

is a remedy against mildew in wheat. It is called Fairy Thorn in Brittany and Ireland. To dream of it is a good omen. When many blossoms are seen a severe winter will follow.

"When the hawthorn bloom too early shows,
We shall have still many snows."

The Scots have a proverb:

"Mony haws,
Mony snaws."

A person is said to "sit on thorns" who is continually uneasy.

May Day is a survival of the old Flora, and the Grecian bride's wreath was of May, and is still worn at the Greek nuptials, the altar being decorated with it. People went "maying" soon after midnight.

"Tis as much impossible,
Unless we sweep them from the doors with cannons,
To scatter 'em, as 'tis to make 'em sleep
On May Day morning."

If White-thorn blossoms are brought into the house in Essex it is a sign of death. Many rhymes have been made up to serve as formulae to cure pricks from thorns. The leaves were put in ale to cure a speechless man.

It is grown for hedges, and is a useful source of firewood. It is also an ornamental shrub in parks and gardens, and there are several varieties.

Essential Specific Characters:—

108. Crataegus Oxyacantha, L.—Tree, branched, spinose, leaves obovate, serrate, lobed, stipules leafy, flowers white, corymbose, calyx glabrous, styles 1-3, fruit red, enclosing the so-called stone.

Bryony (Bryonia dioica, Jacq.)

South of Denmark in Europe, in N. Africa, and W. Asia, that is to say, the North Temperate Zone, is the limit of the Bryony to-day, its earlier history not being known. In Great Britain it is local, but widely dispersed in the Peninsula province; it is absent in Cornwall, but occurs throughout the Channel, Thames, Anglia, and Severn provinces. In Wales it is found only in Glamorgan, Brecon, Denbigh, and Flint. It is common in the whole of the Trent province, but in the Mersey province is absent from Mid Lancs, but occurs through-
out the Humber and Tyne provinces, in Cumberland, and Ayr in Scotland. It is thus rare in the north, and absent from Ireland.

The common Bryony is a typical hedgerow species climbing over Hawthorn and other plants. It is associated with Brambles of different kinds, Greater Stitchwort, Violet Tufted Vetch, Sloe, Dog Rose, Cow Parsnip, Elder, Teasel, Great Hedge Bindweed, and other plants. A climbing plant, Bryony is remarkable for its long, coiled tendrils and its large mandrake-like roots. The English and Greek names

Bryony (Bryonia dioica, Jacq.)

refer to its quick growth, a feature that one may readily observe for oneself in spring, although it should not be restricted to this plant.

The stems are long, furrowed, dividing into one or more branches, long lobes divided to the base, heart-shaped, with 5-lobed leaves, with the teeth bordered with dots, rough, and pale-green.

The plants are dioecious (with flowers on different plants), the male ones in corymbose cymes, the female, which have an ovary below, being in umbels, and the calyx is only half as long as the corolla. The flowers are large with green veins. When ripe the fruit is rounded and red. The Bryony is found 8–10 ft. long. It flowers in May up to September. It is perennial, reproduced by division.

In this flower the male flowers are a palish-yellow, and half an
inch across, and in small clusters, the female being half the size or much smaller, and it is a dioecious plant.

Both male and female flowers contain honey, which is concealed. The lower part of the calyx is adherent to the corolla or hemispherical cup-shaped disk, which secretes the honey. In the male flowers 5 stamens arise on the edge of the expanded cup and incline towards the centre, and cover over the cup. Four of the anthers unite to form 2 pairs, and the fifth is free on both sides. The honey-cup has 3 narrow lateral entrances, each placed between 2 stamens fringed with long hairs, with a central entrance also above in the middle of the upper end of the stamens. The anthers form narrow ridges on the broad stamens, and the long narrow slits by which they open are bent, so that the greater part of each faces one of the lateral openings, while the upper one faces upwards. A honey-seeker, alighting in the centre, may thrust its proboscis amongst the stamens, or reach the honey by the lateral entrances, and in the former case would be dusted on the lower surface, in the latter on the upper surface.

The pollen is sticky. The stamens touch the head or the ventral surface of the insect before the stigma does. In female flowers the pistil rises up in the centre and splits into 3 branches, club-shaped with papilla. The visitors are Andrena, Halictus, Ccelioxys, Apis, Gorytes, Ammophila, Enemenes, Odymerus, Dasites, Pieris. Andrena florea visits White Bryony only.

The berry contains numerous flat but swollen seeds, which are dispersed by birds.

This is a humus-loving plant, living in a humus soil.

The beetle Lygria hirta, the Hymenoptera Andrena florea, A. denticulata, A. dorsata, the moths Phytoehroca rugosana, Catoptria fukana, a fly Gongylomena wiedermans, feed upon it.

Bryonia, Dioscorides, is the Greek name of the plant, and the second Latin name alludes to its dioecious nature.

Bryony is called Bryon, Red or White Bryony, Cowbind, Cow’s Lick, Cucurd, Elphamy, Fellon-berry, Grapewort, Hedge Grape, Wild Hep, Poison Berry, Snake Berry, Tetter Berry, White, Wild, Wood Vine. It was called Tetter Berry, and it was believed the berries “are good against all fretting and running cankers, gangraenens and tetters, and therefore the berries are usually called of the country people Tetter Berries”, according to old Parkinson.

1 It has been suggested that the small flowers, which are inconspicuous but highly attractive, have a peculiar odour perceived by them, or pass an attraction not visible to man, that they emit ultra-violet rays. They act energetically on photographic plates.
Shelley used the name Cowbind—

"And in the warm hedge grew lush eglantine,
Green cowbind and the moonlight-coloured May ".

The name Cow's Lick is due to small quantities of it having been given to horses in their corn to make their coats glossy, and for horned cattle. Coles says of the name Mandrake, "The root sometimes groweth to the highnesse of a childe of a yeere old, so that it hath been by some cut into the form of a man and called a mandrake, being set again into the earth".

Lupton describes how men made the counterfeit mandrake. Gerarde also exposes this common fraud. Coles also says they "make thereof an ugly image by which they represent the person on whom they intend to exercise their witchcraft". It was called Devil's Cherry. It was trained to grow into shapes and used as charms. In Chaucer's day it was used to cure leprosy. Its juice was used in Dwale. The root sold for Mandragora is poisonous and acrid. It is powerfully cathartic. The red berries used for dyeing are poisonous.

**Essential Specific Characters:**

121. *Bryonia dioica*, Jacq.—Stem climbing, angled, tendrils simple, leaves palmate, 5-lobed, rough, plants dioecious, white with evergreen veins, staminate, in a corymb, pistillate in umbels, berries scarlet, globose.

### Hemlock (Conium maculatum, L.)

Hemlock, in spite of its poisonous nature, is widely distributed, being found (to-day) throughout the North Temperate Zone, in Europe, N. Africa, Siberia, and it has been introduced in N. America. It is general in Great Britain, but is not found in Cardigan, S.E. Yorks, Main Argyle, Mid and N. Ebudes, W. Ross, E. Ross, Shetlands. In Yorks it ascends to nearly 1000 ft.

It is a moisture-loving plant, usually growing by the sides of streams and rivers, or away from such spots along the roadside, occasionally outside outhouses, and very rarely on the borders of cornfields. Its present distribution may be partly artificial owing to its poisonous properties, its ill effects leading in some instances to extermination. Cattle generally avoid it. As is well known poisonous plants have usually some warning signals which enable animals to avoid them, and in this case the fetid smell is accompanied by a purple spotting of the stem (at once a suspicious novelty), which is further covered with a blue powder.
FLOWERS OF THE ROADSIDES AND HEDGES

The Hemlock is very tall, graceful, erect, bearing numerous branches. The stem is smooth, bluish-white, shiny, hollow, and finely furrowed. The leaves at the base are large, triangular, shining, very much divided, the oblong leaflets having sharp coarse teeth. When crushed, the leaves smell like mice.

The umbels of the flowerhead are terminal, those of the partial involucres or whorls of leaflike organs on one side only lance-shaped. The flowers are small, numerous (several hundreds in one umbel), and so conspicuous. They are white, and the first ones to open are male flowers. There are no calyx teeth.

The petals have a turned-in point serving to protect the honey, and are blunt, heart-shaped, and unequal. The umbels are axillary. The flowers are sweet-scented.

The Hemlock grows to a height of 5–10 ft. The flowers open in June and July. It is perennial, and reproduced by seeds. In winter the roots contract, and the plant is drawn down into the earth.

The flowers mature slowly and gradually, and at first are entirely male, and later entirely female. When the flower opens, the anthers open, and are covered with pollen one by one before the styles appear. Each anther is at a distance of two-fifths the circumference from the preceding one. The anthers elongate and stand above the stigma. In the middle of the male period the older anthers wither and turn outwards, while the rest are opening and take their place, and are covered with pollen. The styles are still short and bent in with the stigmas unripe. After all the anthers have fallen off, the styles become erect, and stigmatic knobs form at the end of the styles.

The flowers are visited by Sargus, Calliphora, Lucilia, Scatophaga, Meligethes, Trichius, Nematus, Ichneumonids, Pompilus, Andrena.

The fruits are flattened or winged to aid in their dispersal by the
No. 1. Hemlock
(Comum maculatum, L.)
[a] Floret, with bracts, 5 petals, 5 stamens, and pistil with 2 styles.
[b] Schizocarp from lateral aspect, showing ribs.
[c] Section of mericarp, showing ribs, and compressed sides, with constricted commissure.
[d] Flowering branch, with compound deltoid pinnate leaf and sheathing petiole, spined stem, axillary and terminal compound, many, rasped umbel, with numerous small bracts and bracteoles.

No. 2. Comparison
(Heracleum Sphondylium, L.)
[a] Floret (enlarged), with 5 petals, 5 stamens, pistil with 2 styles.
[b] Schizocarp with furrows, and vittae between, also 2 styles.
[c] Transverse section of mericarp, with ribs and 2 flat membranous wings.
[d] Flowering branch, with compound pinnate leaf, and broad inflated sheath of petiole, infolded umbels, and one compound umbel with several rays, bractless.

No. 3. Hedge Parsley
(Caulis Anthriscus, Huds.)
[a] Floret, as in No. 1, and 2.
[b] Schizocarp, with spines, and 2 styles.
[c] Flowering stem with pinnate leaf, and sheathing petiole, also 2 compound umbels, one axillary, one terminal.

No. 4. Dogwood
(Cornus sanguinea, L.)
[a] Vertical section of flower, with 3 (out of 4) epigynous stamens, petals, 2-celled ovary, styles (one in each cell), and single style.
[b] Berries, from part of a cyme.
[c] Flowering stem with broad leaves, and terminal dichotomous cyme, showing flowers with 4 petals and 4 stamens.

No. 5. Moschatel
(Adoxa moschatellina, L.)
[a] Lateral flower with parts in fives.
[b] Head of fruits showing 4-celled drupes, with persistent calyx-limbs.
[c] Pistil, with petals and stamens removed, showing divided styles.
[d] Plant with scaly huds and soholes, radical ternate leaf, involucre of ternate bracts, and flowers in cluster.

No. 6. Elder
(Sambucus nigra, L.)
[a] Floret with 5 petals, 5 stamens.
[b] Pistil with petals and stamens removed, showing calyx segments.
[c] Fruits (drupes).
[d] Flowering stem with pinnate leaf, and large umbellate 5-rayed cyme.
2. Cow-parsnip (Heracleum Sphondylium, L.).  
3. Hedge Parsley (Cnicus anthri nis, Huds.).  
4. Dogwood (Cornus sanguinea, L.).  
6. Elder (Sambucus nigra, L.).
wind, and are when ripe but slightly attached, so that a gust of wind blows them away, or they are dispersed by a jerk from passing animals.

Hemlock is a sand-loving plant, growing in sand soil, or the alluvium with some humus of a stream or river.

It is attacked by two microscopic fungi, *Pucciniabullata* and *Plasmoporainvea*.

The moths the Sword-grass (*Calocalynchexolita*), *Depressariatalstramericiana* feed on Hemlock.

*Conium*, Theophrastus, is from the Greek for hemlock. The second Latin name indicates the spotted stem. It is called Bad Man’s Oatmeal, Herb Bennet, Bunk, Cambuck, Caxes, Heck-how, Hemlock, Humlock, Humly, Heck, Kex, Kelk, Kous, Keish, Kewse, St. Bennet’s Herb, Wode Whistle. Cambuck is a name for the dry stalks.

“Some horses were of the brume cow frainit,
And some of the green bay tree,
But mine was made of a hemlock schaw,
And a stout stallion was he.”

Shakespeare speaks of the root of the Hemlock, “digged i’ the dark”, in connection with witches and witchcraft. In the *Masque of Queens* Ben Jonson speaks of it as a baleful draught.

* It is poisonous, and was lately included in the British Pharmacopoeia. Sheep are said to eat it, but cattle refuse it; when in the dry seasons they are driven to taste it they exhibit symptoms of madness. According to an old botanical writer, Ray, who did much to establish botany as a science in this country, the thrush feeds on the seeds.

Its action is like that of an opiate and narcotic, used for deadening pain and assisting suppuration. It was regarded as beneficial in cases of scrofula and cancer. A bitter, acrid juice is derived from the stem, and it is harsh to the taste.

It has the effect of causing giddiness, nausea, headache in some, though it has the opposite effect on others, just as tobacco has. Or, as Lucretius says:

“*Pinguescere sape Cieuta
Barbigeros pecudes homin que est acre venenum*” —

“what is one man’s meat is another man’s poison”, in other words.

Essential Specific Characters:—

124. *Coniummaculatum*, L.—Stem tall, erect, branched, spotted, smooth, hollow, leaves large, smooth, pinnate, flowers white, in unilateral partial involucre, with bracts below, carpels ribbed.
Cow-parsnip (Heracleum Sphondylium, L.)

With its characteristic and conspicuous seeds it is not surprising that the Cow Parsnip has been found in Interglacial beds at Pakefield, Suffolk, and in Late Glacial beds at Twickenham, Middlesex; limited to the North Temperate Zone, it is found in Europe, North Africa, and N. Asia. Hogweed (another name for this plant) is very common, and found in every part of Great Britain, in the Highlands ascending to 2700 ft.

Hogweed is one of those common wayside plants that help to enable one to picture the flora of a roadside ditch, for there is probably not a road in the kingdom where there are boundary hedges where this very ubiquitous species does not grow. It is fond of securing for itself the ample shelter and space of a shelving ditch where it receives moisture and good light, and where rich loam affords a suitable subsoil for it. So tall and handsome a plant cannot escape notice by the wayside. The stem is tall, hollow, furrowed, and hairy.

The second Greek name, meaning vertebra, refers to its jointed character. The leaves are large, triangular, with lobes on either side of a common stalk, very much divided, usually into 5 segments, oblong, with acute teeth. They are broadly sheathed at the base, and in the bud the sheaths form a conical cap over the young plant.

Not the least conspicuous part of this wild flower is the wide umbel of the flower. The umbel contains general and partial involucres or whorls of leaflike organs with many rays. It is generally flat, and the flowers are large, white, or pink, with notched petals, with bent-in points, and the outer florets are in a ray. The fruit is nearly round, with a short style, and with a notch.

Hogweed is sometimes 10 ft. high, but more usually 4 to 6. It blooms in May and June. It is a deciduous, herbaceous plant, propagated by division.

The flowers are often polygamous, and the outer ones are rayed, the whole umbel large and conspicuous. In some cases there are only hermaphrodite flowers, elsewhere the partial umbels have male flowers only at the ray, the other umbels being male throughout, or perhaps female. The plant has a strong, but not altogether pleasant smell. The petals are bent inwards. The styles are short. It is visited by numerous insects, so that cross-pollination is the usual thing. The visitors are numerous, Diptera, Coleoptera, Hymenoptera, and Hemipterous insects, as many as 118 having been observed.
The fruits split apart when ripe, and they are winged, and thus aided in dispersal by the wind, and, being semi-detached when ripe, they are easily blown away.

Hogweed grows in different types of soil, being a sand-loving plant, growing in a sandy soil, or a humus-loving plant, and growing in humus in woods, and in sandy loam.

Two microscopic fungi infest Hogweed, *Puccinia pimpinelle* and *Protoomyces macrosorus*. 
The plant is galled besides by Cecidomyia corrugans and C. heraclei. It is a food-plant or resort for the beetles Agapanthina lineato-collis, Bruchus pecclinicornis, Phaedon tumidulus, the Lepidoptera Dasypolia templi, Eupithecia tripunctaria, Eucalis aurora, Depressaria depressella, D. heracleana, and the fly Acidia heraclei.

**Herculeum**, Pliny, is from the hero Hercules (Greek form, Heracles). *Sphondylum*, Dioscorides, is from sphondylos, a vertebra, because of the jointed stem.

This plant is known by such names as Bear’s Breech, Bear-skeiters, Beggar-weed, Billers, Broad Kelk, Bunnel, Bunnets, Bunnun, Bunwand, Caddell, Cadweed, Camlicks, Clog-weed, Cow-cakes, Cow-keeks, Cow-keep, Cow-mumble, Cow-parsnip, Cushia, Dryland Scout, Ellrot, Ha-ho Keck, Hogweed, Kedlock, Kex, Kejlus, Kelkkecksy, Kesh, Dry Kesh, Kewsies, Limper-scrimp, Limper-scrump, Madnep, Meadow Parsnep, Old Rot, Pig’s Bubbles, Pig’s Cole, Pig’s Parsnep, Pigweed, Piskies, Rabbit Meat, Sweet Biller, Swine Weed.

In connection with the name Cow Parsnip there is a story: “An old woman in the parish (St. Fergus) gives her cows a cacak full of this plant in the season for supper, and she says that the milk-pail next morning bears testimony to its virtues”. Other names blended with “Cow” have reference to its use as fodder for them, &c. In regard to Hogweed, Coles says “hogs feed upon it with a great deal of greediness”.

In Kamchatka the dry stalks are collected and stored, and yield a sugar-like substance, like liquorice, which is eaten. A spirit is also prepared from the stalks fermented with bilberries in Prussia. In Poland and Lithuania ale is made from the leaves and seeds. Forty pounds of the stalk yield 1 lb. of sugar. The young shoots are eaten as asparagus.

**Essential Specific Characters:**

131. Heracleum Sphondylum, L.—Stem tall, stout, furrowed, hairy, leaves large, pinnate, rough, leaflets pinnatifid, flowers white, large, at first pink, in a flat umbel, outer irregular, fruit glabrous.

**Hedge Parsley** (Caucalis Anthriscus, Huds.)

Found along every hedgerow, this common member of the Umbelliferae is known from its present distribution (entirely) to be limited to the North Temperate Zone, where it is found in Europe, North Africa, West Asia, as far east as N.W. India. It is found in every
part of Great Britain, from Moray and Islay, southward, to the English Channel. In Yorks it is found at a height of 1350 ft.

Hedge Parsley, as implied by the name, is a plant of the wayside hedge, where it is so common as to form a regular border beneath the hawthorn itself. It is also as common in fields, where it plays the same part, lining each hedgerow or ditch for long distances together. It is only ousted by such hardy plants as Hogweed, &c., or a struggling Briar or a Hawthorn bush.

The name Hedge Parsley is often prefixed, in speaking of it, by the word upright, and it is indeed a tall, erect, rigid plant, quite unlike Knotted Hedge Parsley, which is trailing, often hiding under the grass.

The stems are branched, hard, and woody, not hollow, finely furrowed, and covered with turned-back hairs, and have a roughish feel. The stem is purplish toward the base, and the hairs give it a grey appearance. The leaves are much divided, are bipinnate, with lobes each side of a common stalk divided again, distant, spreading, with broad coarsely-toothed leaflets, the terminal one linear-lance-shaped. The nodes are distant.

At first purple or red, the flowers become white ultimately, like those of many other Umbellifers, and are contained in moderate umbels, with nearly equal petals, the general involucre containing numerous leaves. The fruit is short and prickly, but the prickles are straight.

When not hidden under the hedge and dwarfed, this plant may reach a height of 4 ft. It is in bloom during July and August. It is annual, dispersed by seeds.

The flowers are polygamous, white, and the outer rayed, and very small. The petals are turned inwards at the point. The styles are short and erect. Occasionally it is andromonoecious, i.e. with hermaphrodite and male flowers on the same plant, and complete flowers with anthers ripening first in the centre.

The 5 anthers are hair-like, the filaments project, and the anthers are double, longer than the 2 stigmas, ultimately turned backwards. The plant is more likely to be cross-pollinated than self-pollinated.

The visitors are few, as Diptera, Gymnosoma; Hymenoptera, Ten-thredo, Ceropales, Odynerus, Prospis; Lepidoptera, Pieris rapae.

The fruits are curved inwards, adapted for dispersal by catching in the fur of passing animals.

This is a sand-loving plant, growing in a sand soil in which there is some amount of humus soil, or in a sandy loam with a little clay mixed with the sand.
A beetle *Lixus pariplecticus*, a Hymenopterous insect *Trichichampus morio*, and the Lepidoptera *Agrotis festiva*, *Depressaria Applana*, *D. purpurea*, *Exapate congelatella*, feed on it.

*Caucalis*, Hippocrates, is the Greek name of an umbelliferous plant like this one; and *Anthriscus* of another one. It is called Hemlock or Rough Chervil, Rough Cicely, Hedge Parsley, Hogweed, Lady's Needlework, Mother Dere. The first name was given because the stem is spotted like the Hemlock.
Essential Specific Characters:—

133. Caucalis Anthriscus, Huds.—Stem tall, slender, rigid, purplish, rough, leaves hairy, bipinnate, flowers purplish then white, in umbel, with general involucre of many leaves, fruit hooked with incurved bristles.

Dogwood or Cornel (Cornus sanguinea, L.)

A familiar tree or shrub along our waysides, Cornel occurs in Preglacial, Interglacial, and Neolithic deposits. It is distributed today throughout Europe, Siberia, and Western Asia, in the Temperate Zone. It is found throughout the Peninsula, Channel, Thames, Anglia and Severn provinces in this country. In Wales it is found in Glamorgan, Brecon, Pembrokeshire, Montgomery, Carnarvon, Denbigh, Flint, Anglesea, and in the Trent, Mersey, Humber, Tyne, and Lakes provinces, except in the Isle of Man. It is a native in N. and W. Ireland.

Cornel or Dogwood is a common hedgerow shrub, taking the place of Hawthorn in some places, and is associated with Spindle Tree, Field Maple, Sloe, Crab, Brambles, Dog Rose, Elder, Ash, Spurge, Laurel, Elm and other hedgerow shrubs and trees. It is also found in woods, plantations, and copses, being frequently planted there, and in gardens. No shrub is more characteristic of the hedgerow than Cornel, with its red stems and deeply-veined egg-shaped leaves.

The wood is very hard. The plant is bushy, with erect branches, with acute egg-shaped, opposite leaves, cuspidate, tapered gradually to a sharp point, nearly heart-shaped below, and stalked.

The flowers are yellowish or creamy-white, and are arranged in flattened naked cymes, without any leaf-like organs. There is no involucre. The 4 calyx-teeth are minute, the petals in bud valvate. The fruit is purple.

Cornel reaches a height of 8 ft. It is flowering usually in June and July. It is a deciduous shrub, which can be multiplied by means of layers.

A fleshy ring at the base of the style secretes the honey, which lies exposed on a flat surface, and is more easily reached by short-lipped insects, e.g. Diptera, than by bees. The anthers and stigma develop together and open inwards, and are level with the centre or stigma at a little distance. An insect that alights on the flowers, and bends its head down to the fleshy disk, usually touches the stigma with one side of the head or body and one or two anthers with the other. In passing from flower to flower it cross-pollinates them,
especially as in its movement it touches the anthers and the stigma with the legs or abdomen only. Small insects can self-pollinate it also by crawling over the flower. Self-pollination and cross-pollination may occur without insects, through the stigma accidentally touching the anthers of another flower. The visitors belong to Thaïs, Meligethes, Byturus, Dolopius, Athous, Otiorhynchus, Strangalia, Grammoptera, Telephorus, Diptera, Empis, Hymenoptera, Pompilus. The pollen is large, rounded, and 63–75 mm. across.

**Dogwood or Cornel** (*Cornus sanguinea, L.*)

The black fruit is edible, and the seeds are dispersed by animals and birds.

It is a humus-loving plant, growing usually in a humus soil, which it obtains in the mould in woods and hedges.

The fungi *Nectria ditissima, Phyllosticta cornicola* infest it, and it is galled by *Hormomyia corni*, a fly. It is a food plant for *Selenia lunaria, Personia umbra, Gelechia humeralis, Antispila Pfeifferella*, a Homopterous insect *Typhlocyba rose*, and the above gall-fly.

*Coriis*, Pliny, is from the Latin *cornus*, name of a tree of this kind, and the second Latin name, meaning bloody, refers to the red colour of the stem.

It is called Bloody Twig, Catterridge Tree, Cat Tree, Cornel Timber, Dog's Berry-tree, Dog-tree, Dog Wood, Female Cornel-tree, Gadrise, Gaiter-tree, Gaiter-berries, Gaten-tree, Gatten-tree, Gatter Bush, Gatteridge, Houndberry Tree, Houndsberry Tree, Hound's
Tree, Prick Timber, Prick Tree, Prick Wood, Skewer Wood, Skiver Wood, Widbin. Prick Timber, Prickwood, Skewer Wood, are names given because it is used for skewers. The name Bloody Twig is in allusion to the colour of its twigs. Of the name Dogwood, Prior says "not so named from the animal, but from skewers being made of it ".

In E. Russia the sap absorbed in a handkerchief fulfils every wish. Homer says it was given to swine. The wood was used for spearshafts and bows. The wood is hard and tough. Cogwheels, skewers, and ramrods were once made of it. The charcoal from it is the best for gunpowder. The fruit contains oil, used abroad for soap. Growing in the shade and drip of trees, it is a valuable shrub for plantations.

**Essential Specific Characters:**

135. *Cornus sanguinea*, L.—Tree or shrub, with red bark, branches straight, leaves ovate, flowers white, in terminal cyme, fruit a globular black drupe.

**Moschatel** (*Adoxa Moschatellina*, L.)

Quite a modern flower, so far as is known, Moschatel is found in the North Temperate Zone in Europe, N. Asia, Himalayas, and in east and west North America. In Great Britain it is found in the Peninsula, Channel, Thames, and Anglia provinces except in Hunts, and the Severn province. It is found in Glamorgan, Brecon, Carmarthen, Pembroke, Montgomery, Carnarvon, Denbigh, Flint, and Anglesea in Wales. It is absent from S. Lines in the Trent province, occurring in the Mersey, Humber, Tyne, and Lake provinces except in the Isle of Man. In Scotland it occurs in the Lowlands in the E. Lowlands generally, in Peebles, Selkirk, Linlithgow, in the E. Highlands except in Fife, N. Perth; W. Highlands except Mid and N. Ebudes; and in E. and W. Ross and W. Sutherland. It ascends to 3300 ft. in the Highlands.

Moschatel is a clay-loving plant, loving the shade of a clay bank overhung by the bough of a hedgerow bush, or the shelter of a woodland slope where it is protected from the cold blasts of the east wind. Whilst it is a wayside plant its habitat is not so often found there as in fields and woodland districts.

The root is tuberous, consisting of white shiny soboles on subterranean stems. The radical leaves are in threes, with 3 lobes, long-stalked. The stem is stalked, erect, with a single flower-stalk which bears the flowers.

The flowers are terminal, five in a head, the terminal one having 4 petals and 8 stamens, the lateral ones 5 petals and 10 stamens. The
flowers are a delicate cream-colour, with wheel-shaped corolla. The fruit is succulent, green at first then red. The flower-stalk is turned back in fruit.

The plant is rarely more than 6 in. high. It flowers in April and May, and is perennial.

The layer of honey is flat and exposed, so long-tongued insects are discouraged; the flowers are greenish-yellow like the rest of the plant. The visitors are chiefly Diptera and Hymenoptera, attracted by the musky smell. A fleshy ring at the base of the stamens contains the

honey. The stamens, which mature at the same time, stand at the same level as the stigma and split into two, and the pollen-covered surfaces are turned upwards in the terminal and outwards in the 4 lateral flowers, those turned outwards turning inwards afterward. Insects crawling over the flower touch both anthers and stigma with their feet and tongues, and may cross-pollinate the plant as in the Guelder Rose and Elder. The visitors are Diptera, Borborus; Hymenoptera, Eulophus; Ichneumons, Pezomachus; Coleoptera, Apion.

The fruits are succulent drupes, green or red, and may be eaten by birds, but are often deposited around the parent plant by an automatic geotropic movement of the flower-stalk after flowering, whereby the fruit is hidden beneath the leaves.

Moschatel is a clay-loving plant, loving a clay soil and some humus in the shade of the woods or hedgerows.
**Puccinia albescens**, remarkable for the cluster-cup stage being white not yellow, and *P. adoxa* are found upon Moschatel.

*Adoxa*, Linnæus, is from the Greek, *a*, privative, *doxa*, esteem, from its inconspicuous character, and the second Latin name refers to its musk-like perfume. It is called Moschatel, Musk Wood Crowfoot, the last because its leaves resemble those of a Crowfoot.

**Essential Specific Characters:**—

136. *Adoxa Moschatellina*, L.—Rhizome fleshy with white soboles, leaves radical, on long petioles, trinerved, stem-leaves sessile, flowers buff or pink, 4 below, parts in fives, in a whorl, and 1 above, parts in fours, fruit deflexed on fruit-stalk, scarlet.

**Elder** (Sambucus nigra, L.)

Commonly associated with human dwellings and activities, Elder occurs in deposits of Interglacial, late Glacial, Neolithic, and Roman age. In the North Temperate Zone it is distributed to-day in Europe and North Africa. In Great Britain, universal as it is, it is not found in Cardigan or the Northern Isles. From Fife and Forfar, however, it extends to the English Channel. In Yorks it grows at 1350 ft. In Scotland, according to Watson, it is only a denizen.

The Elder is so common a tree by the side of our roads and in hedgerows that it is difficult to consider it as introduced, in spite of its undoubted association with houses and human dwellings generally. It was planted here and there formerly on account of a much prevalent superstition regarding its value as a herb, &c. It is doubtless also much planted now in woods and plantations, and its distribution by birds renders it a very common species in a variety of habitats.

The Elder has the tree or shrub habit. The trunk is as much as 20–30 ft. high sometimes, and the girth 2 ft. at most, but usually it is about 10 ft. high and 6 in. to 1 ft. in girth. The bark is rough and corky, light brownish-grey. The buds are scaly.\(^1\) The branchlets are angular, and the young shoots are light green with darker corky warts.\(^2\) The leaves are pinnate, compound, in opposite pairs. The leaflets are in 2–3 or 4 pairs, egg-shaped, lance-shaped, or oblong, rarely rounded, toothed, with a terminal one. The stipules are small or absent.

The flowers are creamy-white in flat-topped, erect, terminal cymes on radiating flower-stalks, with 5 main branches. The corolla is white, wheel-shaped, with rounded lobes. The anther-stalks are slender.

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\(^1\) With lenticles, or oval areas, with wide air-spaces in place of stomata.

\(^2\) The scales which protect the buds are leaf-stalks, the first very small.
FLOWERS OF THE ROADSIDES AND HEDGES

The berries are small, black (hence *nigra*), with a purple interior, rarely green or white, round. The seeds are flattened at the margin.

The Elder is often as much as 15 ft. high. It flowers in June. It is a deciduous tree, propagated by cuttings.

The flowers contain no honey, but are strong-scented, and the pollen is abundant. They are very conspicuous, forming inflorescences sometimes a foot across. The stigma and anthers mature at the same time. The stamens are widely spreading, and the anthers open outwards. Insects, chiefly flies and beetles, crawling over the flower touch both anthers and stigma, and so may cause cross- or self-pollination. The anthers also may shed pollen upon the stigma, and the flower is probably more usually self-pollinated than cross-pollinated.

The visitors are *Sargus*, *Eristalis arbustorum*, *E. nemorum*, *E. tenax*, *E. horticola*, *Volucella pellucens*; Coleoptera, *Cetonia aurata*, *Trichius fasciatus*.

The fruit is edible, and the seeds are dispersed by animals, black-birds and thrushes being very fond of them. Elder grows on clayey and sandy soils.


*Sambucus*, Pliny, was the Latin name of the tree, and the second Latin name refers to the colour of the fruit. The English name is supposed to come from a root meaning hollow.


Because of the tradition that Judas hanged himself upon it it was called Judas Tree. Like Bothery-tree, the toy pop-guns made from the branches are called bothery-guns. Of Bourtree, Prior says: “It seems to have received its name from its being hollow within, and thence easily bored by thrusting out the pulp”.

The Elder is said to have been the tree the cross was made of. It
Flowers

Fruit

ELDER (Sambucus nigra, L.)

Photos, Stanley Creek
is thought to be never struck by lightning. Witches like to lurk under it. It must not be tampered with after dark. It was used as a witch-scarer. The green juice of its bark was used to anoint the eyes, which could then discern witches. In Styria it was introduced into different rites. On January 6, the devil goes about in great force. People should make a magic circle, and stand in it themselves.

It was believed to drive away evil spirits in Germany, and after sunset wreaths of Elder are hung up on Good Friday as charms against lightning. Branches were used in May festivals. Sir John Maundeville said it stood on Mount Sion. Lest its evil smell should contaminate fruit trees it is not planted near them. In Belgium, for the toothache, they put an elder-twig in the mouth, and then, sticking it in a well, say:

"Depart thou evil spirit."

On the Continent it is used as a punishment. It was thought to be a cure for warts. In Chaucer's day it was called Hyldor or Hyllantre.

The leaves yield a volatile oil, used in poultices. The berries make good wine. In the time of Chaucer a strong infusion was used to destroy caterpillars. The middle bark was once used for dropsy. The flowers are diaphoretic and expectorant. The plant is used to flavour vinegar. It is a common ornamental shrub, cultivated in the garden, and showing variation, &c.

**Essential Specific Characters:**

137. *Sambucus nigra*, L.—Tree, with woody stem and furrowed grey bark, young bark purple, pithy, leaves pinnate, leaflets ovate, serrate, flowers creamy-white, in cyme with 5 branches, fruit black, luscious.

**Cleavers** (*Galium Aparine, L.*)

This common well-known hedge plant can boast of some antiquity, for it is found in Neolithic beds at Casewick. It is found in the North Temperate and Arctic Zones, moreover, at the present time, in Arctic Europe, N. Asia, W. Asia to India, and Temperate N. and S. America. It is found in every part of Great Britain, ascending to 1200 ft. in Yorkshire.

Cleavers is one of the commonest hedgerow plants, growing freely along the wayside, where it runs rampant to the exclusion of all else. It is also common in the hedgerows and fields, growing side by side with Hedge Parsley. It grows too in cornfields, and in stack-yards, as well as on waste ground.

Tall and clustered, numerous branches spread out from a single
root, seeking support from the surrounding herbage. The stems are angular, four-sided, and rough, both the margins of the leaves and angles of the stems being rough. The leaves are 6–8 in a whorl, lance-shaped, coarsely hairy, and the midrib or central vein is also rough below, and the prickles are more or less general and turned back. The joints are finely hairy. The plant is a hook-climber.

The flowers, which very quickly fall, are minute and white. The cymes are axillary, and contain up to nine flowers, borne on spreading flower-stalks. The flower-stalks are turned back in fruit. The rounded fruits are very rough and roughly hairy, purple in tint, and very clinging, a character implied by the second Greek name and the English one.

The stem may reach a length of 3 ft. or more. It is in flower from May to August. The plant is annual and propagated by seeds.

Here, as in other Galia, the flowers are white, but they are small, and, though they have honey, which is unconcealed, they are less likely to be visited by insects than any of the others. Usually the flowers are hidden away in a tangle of herbage, and the flower must rely on self-pollination for the perfection of its large and numerous fruits. The anthers and stigma are close together, when pollinated probably pollen is carried by the insects’ feet.

The fruits are hooked and catch in the coats of animals and are thus dispersed, being distributed by the agency of animals.

A sand soil suits Cleavers or Goose-grass best, and it is mainly a sand-loving plant, but it will grow also on clay and is a clay-loving plant, or more frequently on sandy loam.

Three little fungi, Puccinia Galii, Pcronospora calotheca, Pseudopeziza repanda, grow on it. It is also galled by Eriophyes galii. The Humming-bird Hawk Moth, Macroglossa stellatarum, feeds upon it.

No. 1. Cleavers
(Galium aparine, L.)
a. Flower, with 4 petals, 4 stamens, and pistil with 2 styles. b. Two prickly fruits (didymous), showing 2 styles and capitate stigmas. c. Flowering stem, with leaves in whorls (6-8), and flowers in cyme in the axils.

No. 2. Teasel
(Dipsacus sylvestris, Huds.)
a. Corolla-tube, showing 4 stamens inserted on it. b. Fruit (achene), with cup-shaped calyx-limb. c. Floret with calyx-limb below, showing anthers exserted from the tubular corolla, with 4 lobes. d. Bract. e. Flowerhead, with long outer involucral spiny-floral bracts, and florets forming a capitulum, with bracts between, issuing from the superior calyx-limb.

No. 3. Hoary Ragwort
(Senecio crassifolius, L.)
a. Tubular disk floret (complete). b. Ligulate or ray floret (staminiate). c. Flowering stem, with pinnate leaves, hoary below, and a corymb with 6 flowerheads and bracts, showing the general involucral ray and disk florets.

No. 4. Nipplewort
(Lapsana communis, L.)
a. Ligulate floret (all the florets are ligulate and complete). b. Involucre, enclosing achene. c. Achene or fruit, without ribs, wings, or pappus. d. Flowering stem with leaf, and corymb with several florets.

No. 5. Ash
(Prunus avium, L.)
a. Pinnate leaf, with terminal lobe. b. Twig with terminal bud, with black external scales, and inflorescence. c. Part of cyme with 2 samaras. d. Samara, with one cell of the schizocarp detached. e. Hermaphrodite flower, with stamens and pistil. f. Male flowers.

No. 6. Great Bindweed
(Calystegia sepium, Br.)
a. Two-selved capsule. b. Part of plant, showing hastate leaf, calyx, and 2 bracts, with large funnel-shaped flower, and central stamens and styles.
1. Cleavers (Galium aparine, L.)
2. Teasel (Dipsacus sylvestris, Huds.)
3. Hoary Ragwort (Senecio cernuusfolius, L.)
4. Nipplewort (Euphrasia communis, L.)
5. Ash (Fraxinus excelsior, L.)
6. Great Bindweed (Calystegia sepium, Br.)
It is called Stick-a-back because of its hooked fruits. Children placed stems upon each other’s backs with the fruits hanging on them. Goose Grass was conferred as a name because it was used as food for young geese. The fruits are called Beggar’s Lice. In regard to the name Blind Tongue, Wilkinson writes: “Children with the leaves practise Phlebotomy upon the tongue of those playmates who are simple enough to endure it.” The name Catch-rogue was given because it generally grows in hedges, and adheres to the clothes of those who attempt to break through. Cleavers, Clever, Grip-grass refer to its cleaving or clinging habit. Goosebill was given because the leaves have coarsely-toothed margins, like a goose’s bill. Harif is from the French heriffe, standing up like bristles.

*Galium* is from the Greek *gala*, meaning milk, and is applied to the genus because another species is used in curdling milk. The second name is the Greek word for the plant, probably from *apairo*, lay hold of.

The fruits are given to poultry, and both cattle and horses eat it. In Sweden the fruits are used for coffee. Dioscorides tells us that the stems were used as a sieve, and the same use is applied to them in Sweden to-day. An ointment for scalds and burns has been made from it. Being astringent, it has also been used for colds and swellings. A kind of beer is made from it in some districts. It is a blood-purifier, and young shoots are used in spring to make a broth. The juice was used for scorbutic complaints. A red dye is prepared from the roots. The juice has also been used for earache and for bites from poisonous snakes and spiders. Gravel was said to be cured by the use of a strong dose of it.
Essential Specific Characters:—

142. Galium Aparine, L.—Stem straggly, matted, rough, leaves 6–8 in a whorl, rough with reflexed bristles, flowers white, small, in axillary cymes, 3–9, fruit covered with hooked bristles.

Teasel (Dipsacus sylvestris, Huds.)

This handsome plant is found to-day and not earlier in the North Temperate Zone in Europe and West Asia. In Great Britain it occurs in the Peninsula, Channel, Thames, Anglia, and Severn provinces, and in Glamorgan, Pembroke, Cardigan, Montgomery, Carnarvon, Denbigh, Flint, and Anglesea, throughout the Severn provinces and Mersey except Mid Lancs, in the Humber and Tyne provinces, and in Westmorland, Dumfries, Wigtown, Ayr, Renfrew, Lanark, Dumbarton, and Clyde Isles. In England and Ireland it is rare, and local in Scotland.

The Common Teasel is a conspicuous plant, growing in clumps by the side of the road upon the rising banks of some ditch just under the hedge, because it prefers the moist side of some stream along the banks of which it forms a long line as if for protection with its bristling heads of bloom. It is usually exterminated by farmers, hence this linear arrangement. The Teasel is erect in habit. The plant is hairless, and the stem is stout, rigid, with prickly ribs, leafy, branched. The leaves are opposite, simple, inversely egg-shaped to lance-shaped, stalkless. The radical leaves of the first year are spreading. The stem-leaves are oblong to lance-shaped, entire, scalloped, with a prickly midrib, united below.¹

The flowerheads are large, conical, oblong. The florets are pale lilac. Each floret has a separate bract and an involucre. The ascending slender involucre overtops the flowerhead with upwardly curved bracts. The calyx limb is not persistent. The corolla tube is unequally 4-lobed with 4 stamens. The scales of the receptacle are straight and exceed the florets. The floral bracts are long, rigid, awl-like, fringed with hairs. The partial involucre or involucel is downy. The fruit is 4-sided with 8 depressions.

Forming a head of numerous florets the flowerhead is conspicuous. The anthers ripen first. The corolla tube is narrow, 9–11 mm. long. One of the branches of the style is wanting or nearly so, for the

¹ Water collects in the axils, and insects drowned in it are absorbed, and thus small flies do not reach the flowers and rob them of honey. The water serves as a reservoir, and is of use to the plant in dry seasons.
Teasel (Dipsacus sylvestris, Huds.)

Teasel is not wide enough for an insect to insert its head if there were two stigmas. The inner surface of the stigma is covered with papillae. The floral bracts overtop the anthers and stigmas, and insects do not touch the last with the ventral surface in creeping over the flower, but with the head when inserting the proboscis. Hence it is of advantage that the second stigma is rudimentary, as if both were present the inner surfaces, which alone are receptive, might not be rubbed by the bee in its effort to penetrate the tube. Honey is secreted in the upper part of the ovary, and the corolla tube by its length helps to contain

and conceal it. The divisions get into each other's way, an instance in which nature can afford to improve the present arrangement.

The Teasel is visited by Bombus rupestris, B. lapidarius, B. agrorum.

The fruits are provided with a parachute arrangement which aids in wind-dispersal, in the form of persistent bracts or leaf-like organs.

The Teasel is a sand-loving plant growing on a sand soil, but requires also some proportion of humus.

Only moths feed on it, as the Burnished Brass Plusia chrysitis, Square-spot Rustic Agrotis xanthographa, Eupœcilia roseana, Anti-thena Gentianana.

Dipsacus, Dioscorides, is from the Greek dipsao, I thirst, because of the water collected in the base of the leaves. Teasel is from
204 FLOWERS OF THE ROADSIDES AND HEDGES

A. S. *tesau*, from its use in teasing wool. The second name denotes a woodland habitat.

It is called Adam's Flannel, Barber's Brushes, Brushes, Sweep's Brushes, Card Teazel, Card Thistle, Churchbrooms, Gipsy's Combs, Pricky Back, Tazzel, Teasel, Venus Bath or Basin. The last name is explained thus by Lyte: "It is termed Labrum Veneris and Laver Lavacrum of the forme of the leaves, made up in fashion of a bason, which is never without water." The name Carde Thistle is explained by Gerarde thus: "In some of our Northern Counties large quantities of the Teazel are planted that there heads may be used in Carding wool". This may refer to the Fuller's Teazel.

It was named Church Brooms from the resemblance of the flower-heads in shape to the long "turb's head brooms used for sweeping high places".

"Tezils or Fuller's thistle, being gathered and hanged up in house, where the air may come freely to it, upon the alteration of cold and windy weather will grow smoother and against rain will close up its prickles."

In the old days it was held to have healing virtues, the water caught up in the connate leaf-base being said to be good for bad eyesight, and called *virga pastoris* in Chaucer's day. It formed part of the remedy "Save" also.

**Essential Specific Characters:**

147. *Dipsacus sylvestris*, Huds.—Stem tall, stout, erect, prickly, leaves prickly along the midrib, lanceolate, connate, opposite, flowers lilac, scales of receptacle straight, longer than flowers, involucres curved upwards.

**Hoary Ragwort** (*Senecio erucifolius*, L.)

This species is found in the North Temperate Zone to-day to the South of Gothland, and in N. and W. Asia. In Great Britain it is found in the Peninsula, Channel, Thames, Anglia, and Severn provinces; in Wales it is found in Glamorgan, Pembroke, Carnarvon, Denbigh, Flint, Anglesea, and in the Trent, Mersey, Humber, Tyne provinces, and in Cumberland, Lanark, Ayr, and Berwick. The Hoary Ragwort occurs in E. Ireland and the Channel Islands. It is common in S. Britain, but very rare in Scotland.

Hoary Ragwort is a familiar wild flower of the roadside, where it is accompanied by such plants as Knapweed, Nipplewort, Wild Basil, and the many other plants of the wayside, which grow there
in a state of protection, and are not so liable to be browsed as in
fields, where they likewise grow.

This is a taller plant than Groundsel, and the stem is rigid, simple
or branched, purple, and woolly. The stem is both angular and fur-
rowed. The leaves are alternate, much divided, with linear segments,
half-clasping, with stiff hairs below, or white, the lower leaves stalked,
turned back.

The flowers are rayed, in corymbose heads. The leaf-like organs
are membranous at the mar-
gin with hairy tips, the outer
half as long as the inner.
The fruit is silky with hairs
that do not fall out. The
hoary character by which it
is partly distinguished is most
marked when the plants are
young, and in wooded and
hilly stations, a feature which
in moist soil is lost, as also
when it is cultivated.

This plant is about 2 ft.
in height as a general rule.
The flowers are in bloom in
July and August. The plants
are propagated by division,
being perennial.

The ray florets are large
and give the plant a con-
spicuous appearance. Other-
wise the arrangements are
as in Senecio vulgaris,
though the heads are much
larger, and the plant is more likely to be visited by insects.

The fruits are provided with pappus, and adapted for wind
dispersal.

This Composite is mainly a sand-preferring species addicted to
a sandy soil, but may also be found on clay soil.

The fungi Bremia lactucae and Colesporium senecionis are found
upon the leaves. The Lepidoptera, the Feathered Ranunculus (Ep-
unda lichenea), Cinnabar (Euchelia jacobae), Argyrocephia rugosana,
Caloscutia nigromaculana, and a fly, Spilographa zoe, feed on it.
Senecio is a Latin name for the Groundsel, a congener, from its resemblance to a bald head (senec, an old man). The second Latin name means hoary-leaved.

**Essential Specific Characters:**

166. *Senecio cruciifolius*, L.—Stem tall, erect, hoary, purple, leaves pinnatifid, segments linear, downy beneath, margin revolute, flower-heads yellow, ray florets large, in dense corymb, ribs of fruit silky.

**Nipplewort** (*Lapsana communis*, L.)

Every hedgerow has its complement of Nipplewort, growing in rows, and it is evident that it is truly native, for it is found in Pleistocene beds in Suffolk, Interglacial beds in Sussex, and Neolithic beds at Edinburgh. It is found only in the North Temperate and Arctic Zones, at the present day, in Arctic Europe, North Africa, N. and W. Asia eastwards to the Himalayas, and in North America it is an introduction. Nipplewort is generally common throughout Great Britain as far north as the Orkneys, and it ascends in Northumberland to a height of 1,300 ft. It is native in Ireland and the Channel Isles.

It is a plant of waste ground, growing in a clump under walls and outbuildings or in other sheltered corners. But it is also a very common weed along roadside hedges, where it forms quite an avenue for long distances. It is similarly common in fields and meadows, but almost always sheltered by the hedge.

Nipplewort has an erect, rigid, branched, or closely-clustered stem, with stiff hairs below, nearly smooth, and finely furrowed. The leaves are opposite, lance-shaped, egg-shaped, stalked, with one or two pairs of leaflets, the terminal segment large, egg-shaped, and the lower leaves have a terminal large leaflet and paired lobes below.

The small yellow flowers are barely longer than the involucre or whorl of leaf-like organs, which is angular, and are borne on slender flower-stalks in terminal panicles, and the bracts or leaf-like organs are awl-shaped. The achenes are incurved without pappus or hair, contained within the involucre.

Nipplewort is usually at least 18 in. in height. The flowers bloom in June and July and continue later. The plant is annual, and propagated by seed.

There are 8–17 flowers in the capitulum or head, and the disk is 8–10 mm. wide. The tube is 1½–2½ mm., and the limb 4–6 mm. long. The heads are solitary and small and not conspicuous, so that insect visits are few. In their absence the plant is effectually self-pollinated.
The cylinder protrudes 2–3 mm. and the style 1½–2 mm. beyond it, the outer surface being covered at intervals with acute hairs. The lobes of the stigma are only ½ mm. long, and are covered with papillae or wart-like knobs on the inner surface, being widely spreading. The flowers open between 6 and 7 and 10 and 11 o'clock, but in rainy weather are closed. Nipplewort is visited by the Flies *Eristalis arbuslorum*, *E. nemorum*, and *E. sepulcralis*.

The achenes are ribbed, and in this way aided in dispersal by the wind, and the seed is also flattened lengthwise.

A sandy loam is the usual requirement of Nipplewort, and it is generally found in situations where a sand soil is mixed with some amount of humus.

A little "cluster-cup" fungus, *Puccinia lapsana*, infests the leaves.

This plant is a food-plant for the Tiger Moth. *Lapsana*, a name bestowed by Dioscorides, is from the Greek *lapsana*, meaning charlock, and the second Latin name indicates how common it is.

Ballagan, Bolgan-leaves, Swine's Cress, Dock Cress, Nipplewort, Succory Dock are its different names. The second name may be swelling leaves, as it was thought to remove swellings (Bolgan is Scotch for this). The name Nipplewort was given because it was supposed to heal the ulcers of nipples of women's breasts. It serves as a Floral index. This plant was thought to relax the body. Nipplewort used to be eaten as a salad.

**Essential Specific Characters:**

177. *Lapsana communis*, L.—Stem slender, tall, branched, leaves petiolate, dentate, radical, lyrate, stem-leaves ovate, flowerheads small, yellow, in a panicule, numerous, peduncles short, bracts in two rows, outer smaller, no pappus.
Ash (Fraxinus excelsior, L.)

The Ash is an ancient tree, having been met with in Interglacial beds in Herts and Neolithic beds in Essex. Its range to-day is the North Temperate Zone of Europe except Greece and N. Africa. In Great Britain it is not found in N. Aberdeen, W. Sutherland, the Orkneys, or Shetlands, but elsewhere universally, and it is very largely planted. It ascends to 1350 ft. in Yorks.

The common Ash is now so generally distributed, owing to enclosure and the better maintenance of highways and planting of trees in hedgerows, that it is difficult to distinguish where the Ash is indigenous or not, except where it forms natural woodland—as it does—which shelters a ground flora distinct from either that of the Oak, Hazel, or Beech. As a rule, it is seen most often in the hedgerow to-day, and is a frequent wayside tree.

It is a tall, erect tree, with a leaden-hued bark, which in the main stem is cracked, the young branches being smooth. The branches at first droop down gracefully and then curve upward again, giving it a characteristic habit.

The opposite pinnate compound leaves with prominent leaf-cushions, the black resting buds, and the thick, scarred twigs, with the inconspicuous tufts of flowers, and, finally, the winged seeds or “keys”, serve to distinguish the Ash from any other British tree.

The usual height is about 50 ft., but it may reach 100 ft. The trunk is never very thick, rarely exceeding 1 yd. in diameter. In woods it is straight, cylindrical, and unbranched for some distance. In the open the boughs spread out in a radial manner at a distance of 10 ft. from the ground. There is usually a second series of boughs apart from one or two central ones which form a second tier of ascending branches.

The buds are black, the terminal one large, the blackness being due to hairs which clothe the four scales enclosing the leaves. The twigs are coarse and nodular. The dwarf shoots are rough and leafless, and the leaf cushions are separated by short internodes. The leaves are opposite and in 4 rows, petiolate, without stipules. Each leaf possesses 4–6 pairs of sessile opposite leaflets and a terminal leaflet, which are acute and toothed. The bole has a smooth bark at first, but

1 The buds are pointed and flattened at the end of the twigs, which are also flattened.

2 The leaf-stalk is furrowed above, and opposite the leaflets are openings to direct the raindrops from the leaflets. Moisture is absorbed by special hairs. The bud-scales are petioles or stalks, with undeveloped leaflets at the apex. The outer ones are thick, furry inside, the second pair furry outside, and on this they are more so.
this becomes rough and furrowed at length. It is ashen grey, hence the name. Rounded props occur at the base.

The flowers are branched and tufted, arising from lateral buds, and are bi- or uni-sexual, and degenerate, without sepals or petals. The bi-sexual flowers stand in the axils of bracts, and consist of 2 stamens, with purple anthers, and a pistil above, with 2 large stigmas on a short style. The female flower resembles these, but the male consists of only 2 stamens. The fruit is a strap-like winged ovary ("keys"), tipped by the style, and contains 1 seed. The flowers appear in April and May.

The Ash is a deciduous tree, propagated by seeds.

The stigma ripens first, two to four days before the anthers, and the latter open on the inner side. The flowers are small, but, being closely placed, are conspicuous. Honey is secreted at the base of the corolla-tube. The tree is wind-pollinated. The flowers are in bloom early, before the leaves. In this way the pollen can be readily borne away without being impeded by the foliage. The flowers vary in the sexual characters considerably. Some are hermaphrodite or complete. In some there are only rudimentary stamens, in others only a rudimentary pistil, and all stages occur between these conditions and combinations.
of them. The same tree, or even the same branch, varies in this regard from year to year. The tree is thus unstable in its sexual development.

The fruit is winged at the extremity, and when it falls the wind carries it to some distance.

The Ash is largely a clay-loving or limestone-loving plant, and addicted to a cold clay soil. It is abundant, for instance, on liassic and boulder-clay rock soils.

As a tree, many fungi attack it, e.g. Phytophthora omnivora, Rosellinia ligniaria, Ash canker. It is galled by Phyllocopites fraxini, Diplosis betularia, Cecidomyia acrophila, C. pavida, and Diplosis fraxinella and D. invocata. Other insects live in it, as Erichesos fraxini, Lucanus cervus, Sinodendron cylindricum, Rhagium inquisitor, Hytelsinus crenatus, H. fraxini, H. oleipera, Vespa crabo, Chienaspir salicis, Apterococcus fraxini, Zeuzera aesculit, Prays Curtisellus, Bibio marcii, Psyllopsis fraxinicolia, P. fraxini, Pseudococcus aceris.

As a food plant, two beetles, Lytha vesicatoria, Anobium pertinax; Hymenoptera, Tenthredo bipustulata, Allantus tricinctus; Homoptera, Alurodes dubia; several Heteroptera, Calocoris fulcomaculatus, Lygus cernitvus, Orithylytus tenellus, Malaccoris chlorizans, Loxops cocineus, Psalthus variabilis, P. lepidus; Lepidoptera, Calocampa fraxini, Metrocampia margaritaria, feed upon it.

Fraxinus, Vergil, is the Latin for Ash Tree, and the second Latin name refers to the unsurpassed qualities of the wood. Ash is the modern form of the Old English æsc.


As to the name Ash-keys, Turner says: "They are called in Englishe ashe Keyes because they hang in bunches after the manner of keyes."

"Break me a bit o' the Esh for his 'ead, lad, out o' the fence."

In Lincoln, if a man took a newly-cut Esh plant not thicker than his thumb, he might lawfully beat his wife with it.

Much superstition has centred around this common tree. Ruptures and holes in Ash trees were used by the people to pass children through, especially before sunrise, a supposed beneficial proceeding. It was
thought to be the Yggdrasil, or Tree of Life, and man, according to the
Edda, was derived from it (and the Elm). Hesiod says Jove made
the third race of men from Ash. Æschylus speaks of the fruit of the
Ash as the race of men. It was a lightning plant.

"Avoid the Ash,
It counts the flash."

Ash rods were used for the cure of diseased sheep, &c. If a cow
appears to have been overlooked an Ash twig is twisted round its horns.
It was potent against sorcery, the evil eye being so cured in Scotland,
and to escape contact with a serpent it would creep into the fire.

"But that which gave more wonder than the rest,
Within an Ash a serpent built her nest,
And laid her eggs, when once to come beneath
The very shadow of an Ash was death."

Gerard, even in his day, relates the fable as to the antipathy of
serpents for the Ash. The sap was considered a remedy for serpent
bites in Germany. Charms were connected with the leaves.

"If you find an even ash or a four-leafed clover,
Rest assured you'll see your true love ere the day is over."

To strew Ash branches in a field on Ash Wednesday was equal to
three days' rain and three days' sun. They were burned to expel
serpents. There is a proverb in the Midlands: "If there are no kegs
or seeds in the Ash trees there will be no king within the twelve
months".

"Burn ashwood green,
'Tis a fire for a queen;
Burn ashwood dear,
'T will make a man swear."

In Yorkshire they say: "May your footfall be by the root of an
ash". Faggots of Ash were used in the Christmas fire. If the first
parings of a child be buried under the roots of an Ash it will be a "top
singer". In Leicestershire it was used as a cure for warts.

The wood is tough and elastic, and is used where a light-weight
but powerful wood is required, for spears and handles, implements,
wheels, &c.

The Ash is planted in copses, and the saplings are used for making
packing-cases, hop-poles, walking-sticks, fences, hoops; baskets. The
lower part is used for veneering. The leaves have been eaten as
fodder. Sugar is derived from the sap. The leaves have been used to adulterate tea. The Ash is laxative and bitter. The keys have been pickled and used in salads.

**Essential Specific Characters:**

207. *Fraxinus excelsior*, L.—Tree, with ashen bark, leaves smooth, pinnate, with a terminal leaflet, plants dioecious, no calyx or corolla, stamens in clusters in axils.

**Great Bindweed** (*Calystegia sepium*, Br.)

Though a northern plant there is no evidence that this species is ancient, its present range being the Northern and Southern Temperate Zones in Europe, Siberia, N. Africa, temperate N. and S. America, Australia, and New Zealand. In Great Britain it does not grow in Cardigan, Roxburgh, Linlithgow, E. Highlands, the Northern Isles, but elsewhere it is general. It is found in Ireland.

Great Bindweed is a typical inland species growing in almost every hedge, and is common by the roadside, where it clammers over hawthorn and other hedgerow plants. Unlike the Small Bindweed, it is not associated in general with cultivated ground, though it may occur in the hedges enclosing cornfields.

The rambling, climbing habit of Great Bindweed, which needs the support of a hedge or similar aid to enable it to lead an aerial existence, is one of its most striking features. It has a long white creeping root, difficult to eradicate in gardens, hence the English names. The stems are numerous, twining, twisted, striate or finely furrowed, branched, the branches being alternate. The leaves are arrow-shaped or angular below, acute, alternate, stalked, smooth. The growing part revolves from right to left against the sun, revolving in two hours.

The flowers are white, bell-shaped, and large. The flower-stalks are 1-flowered, square-stalked, and the flowers are axillary. The bracts or leaflike organs enclose the calyx, and are cordate, veined, and purple. The flowers open for one day, and are not scented, but are open in the moonlight. The corolla is plaited in the bud. The calyx, which is 5-fid, is tubular. The limb of the corolla is scarcely divided, and the seeds are angular, but rarely produced.

The plant grows to a length of 6–10 ft. It flowers in July up till September. It is perennial, increasing freely by division of the roots.

The flowers are very large and conspicuous, but have no scent and no path-finders, so that they are little visited by insects. They
do not close up when it is raining, though they contain honey. They close between 8 and 10 p.m., but are open when it is a moonlight night. The floral mechanism is as in _C. arvensis_. The honey is in a yellow ring at the base of the ovary. The style is twisted, as in some plants where the flowers are pollinated by crepuscular insects. It is visited by the Convolvulus Hawk Moth (_Sphinx convolvuli_), which has been found on the flowers in the evening. The ovary does not bend over after flowering, being protected by the large leaf-like organs or bracts.

_Halieta_, _Megachile_, _Empis_, _Rhingia_, creep into the base of the flower by day, and insert their probosces between slits between the filaments or anther stalks. _Rhingia rostrata_ applies its labella to the anthers, stigma, and corolla wall. _Meligethes_, _Thrips_, _Podura_, visit it by day. Wherever the Convolvulus Hawk Moth (_Sphinx convolvuli_) is common so is _C. sepium_. If the former is absent the latter may not produce seed at all.

The capsule splits open when ripe, the seeds being scattered around the parent plant.

Great Bindweed is a sand-loving plant growing mainly on sand soil, or sandy soil or sandy loam with a little humus.

Three fungi, _Cystopus tragopogonis_, _Puccinia convolvuli_, and _Thecaphora hyalina_, infest it, and the latter destroys the seeds.

A beetle _Longitarsus exoletus_, and several moths, the Convolvulus Hawk Moth (_Sphinx convolvuli_), Small Scallop (_Acidalia emarginata_), the Double-striped Pug (_Eupithecia pumilata_), _Pterophorus pentadactylus_, _Emmelesia trabealis_, Spotted Sulphur (_Agrophila sulphuralis_), the Four-spotted (_Accontia luctuosa_), Small Mottled Willow (_Caradrina_...
exigua), Mottled Rustic (C. morpheus), Ebulea sambucalis, Bdellia somnulentella, feed on it.

_Calystegia_ is from the Greek _kalos_, beautiful, and _stego_, cover, alluding to its habit of covering hedges, or the large bracts. &c. _Sepium_ is Latin for, of hedges.

The names by which Great Bindweed is known are numerous, e.g. Bearbind, Bedwind, Bell-bind, Bell-binder, Bell-bine, Bellwine, Bell Woodbind, Hedge Bells, Beswinor, Beswind, Bethwine, Common Bind, Bindweed, Great Bindweed, Bineweed, Great Bines, Convolvulus, Cornbind, Corn Lily, Creeper, Devil's Garter, Devil's Guts, Ground Ivy, Hellweed, Honey Suckle, Jack-run-in-country, Lady's Smock, Harvest, Hedge, White Lily, Lily-bine, Lily-flower, Milk Maid, Night-caps, Grandmother's, Lady's, and Old Man's Nightcap, Robin-in-the-hedge, White Smock, Wave Wine, Way Wind, Weather Wind, Weedbine, Wither Wine, With Wind, Withy Wind. It was called Devil's Guts because of the long creeping roots that every gardener knows.

The name Hedge Lily is thus whimsically explained by Turner: "There is a flower not unlyke unto a lylye in the herbe which is called convolvulus, it groweth among shrubbes and busses and hath no savour, nether any little Chyves lyke saffrone as a lyly hath, only representing a lily in whytenes, and it is as it were an imperfect worke of nature learninge to make lilies". When expanded it was regarded as a sign of fine weather. It was called Devil's Garter because of its supposed association with the evil one. It is purgative in principle.

**Essential Specific Characters:**

220. _Calystegia sepium_, Br.—Stem climbing, leaves sagittate, with blunt lobes, flower-stalks square-flowered, flowers white, campanulate, axillary, with two large bracts, enveloping the calyx.

**Red Bartsia** (Bartsia Odontites, Huds.)

This ericetal plant has been found in the Clyde Beds at Garvel Park, of Late Glacial age. Its present distribution is the N. Temperate Zone of Europe, N. Asia, N. Africa, and the Himalayas. It is found in all parts of Great Britain except the Shetlands, as far north as the Orkneys, ascending to 1200 ft. in the Highlands. It is native in Ireland as well as the Channel Islands.

Red Bartsia is found in fields and waste places over a wide area. It is a common roadside plant growing with Tufted Vetch, Yellow
No. 1. Red Bartsia  
(*Bartsia* Odontites, Huds.)  
*a*, Flower (enlarged), showing labiate corolla, with 3-lobed lower lip, 2 long and 2 short stamens, and mucronate anther-cells.  
*b*, Persistent calyx, with capsule within, and long persistent style.  
*c*, Flowering stem, with linear-lanceolate leaves, and flowers in a spike in the axils of paired leafy bracts.

No. 2. Wood Basil  
(*Clinopodium vulgare*, L.)  
*a*, Floret, showing lobed corolla swollen above, and stamens hardly exserted.  
*b*, Calyx-tube with spreading teeth, enclosing nutlets, with long persistent forked style.  
*c*, Flowering stem, with square stem, reflexed hairs, paired leaves, and flowers in whorls in different stages.

No. 3. Ground Ivy  
(*Nepeta hederacea*, Trev.)  
*a*, Flower, showing gamosepalous calyx, tubular labiate corolla, and stamens slightly exserted.  
*b*, Floret, cut open to show 4 epipetalous stamens, 2 long, 2 short.  
*c*, Flowering stem, showing flowers in whorls, in the axils of orbicular or reniform leaves.

No. 4. Bugle  
(*Ajuga reptans*, L.)  
*a*, Flower, showing calyx with acute teeth, tubular, labiate corolla, veined within, and exerted stamens, and style.  
*b*, Nutlets, with persistent style.  
*c*, Flowering stem, with oblong ovate leaves, and flowers in whorls in the axils, with bracts overlapping between.

No. 5. Spurge Laurel  
(*Daphne laureola*, L.)  
*a*, Section of flower, showing half-tubular corolla with 2 (out of 4) corolla lobes, epipetalous stamens, and pistil with short style.  
*b*, Flower enlarged, showing scale, perianth (4-fld), and 4 stamens.  
*c*, Ovate-acute leaf with acute teeth.  
*d*, Group of winged fruits, with seed above the middle of the samara, with incurved lobes at the tip.

No. 6. Common Elm  
(*Ulmus campestris*, L.)  
*a*, Flowering branch, showing clusters of flowers, with purple anthers exserted, and in various other stages.  
*b*, Flower enlarged, showing scale, perianth (4-fld), and 4 stamens.  
*c*, Ovate-acute leaf with acute teeth.  
*d*, Group of winged fruits, with seed above the middle of the samara, with incurved lobes at the tip.
1. Red Barisia (Barisia lobata, Huds.).
2. Wood Basil (Clinopodium vulgare, L.).
3. Ground Ivy (Nepeta hederacea, Trev.).
5. Spurge Laurel (Daphne laureola, L.).
Vetchling, Brambles, Bryony, in the hedge, Cow Parsnip, Hedge Parsley, Cleavers, Hoary Ragwort, Wild Basil, Stinging Nettle, &c.

A rather short, shrubby, branched plant, with an erect stem, and widely spreading branches, Red Bartsia has often the same sort of candelabra habit as Hedge Mustard. The stem is occasionally square, roughly hairy. The leaves are long, lance-shaped, distantly coarsely toothed, alternately opposite, stalkless, turned back, toothed, and veined. The plant is a hemi-parasite growing upon the roots of grasses.

The bracts or leaflike organs are lance-shaped, and exceed the flowers, which are purplish-red or pink, and borne in a panicled spike, which is clustered, with flowers turned all one way and nodding. The sepals equal the tube, 4-5 mm. long, and are 4-toothed, and acute. The corolla is gaping, downy, with a hollow oblong lower lip, the upper divided into 3 segments. The capsule is flat and oblong, with striate white seeds.

Red Bartsia is 1 ft. in height. The flowers open in July, and continue till September. This plant is an annual propagated by seeds.

The honey is secreted at the base of the smooth ovary, and protected from the rain by the 4 adhering anthers, which lie close together and are clothed with hairs. Bees insert their probosces between the less closely aggregated filaments of the stamens to reach the honey, and in so doing they dust themselves with pollen, and transfer some of it to the stigma. Two or three purple spots at the bottom of the lower lip serve as honey-guides. The stamens all but touch below, and are clothed with sharp points inside, but just below the anthers they are smooth and further apart. Insects use the 3-lobed underlip as a resting place. The stigma projects some distance beyond the anthers in open sunny spots, but in shadier spots it hardly does so.
The anthers open inwards. All the anthers open if one is lightly touched. Hairs at the side directed downwards prevent the scattering of the pollen and ensure its transfer to the insect's proboscis.

The flowers are visited by the Honey Bee, *Bombus lapidarius*, and *B. silvarum*. The capsule splits open when ripe and opens above, and the seeds are dispersed around the parent plant.

Red Bartsia is a sand-loving plant, addicted especially to a sand soil, but it is also a clay-loving plant, and will grow on clay soil, whilst, being parasitic, it always requires pasture land.

Two fungi, *Plasmopora densa* and *Colcosporium euphrasie*, attack the leaves.

*Bartsia*, Linnaeus, is named after Bartsch, a Dutch botanist, who died in 1738, and *Odontites*, Pliny, is from the Greek, *odon*, tooth, because it was used for the toothache.

This plant is called Red Eyebright, Eyebright Cow Wheat, Hen Gorse, Sanctuary.

**Essential Specific Characters:**

239. *Bartsia Odontites*, Huds.—Stem erect, branched, leaves linear-lanceolate, narrowed below, serrate, flowers rose colour, in a one-sided raceme.

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**Wood Basil (Clinopodium vulgare, L.)**

Wood Basil is a southern plant not found in early deposits. It is confined to the Northern Temperate Zone in Europe, N. Africa, N. and W. Asia, as far east as Japan, and the Himalayas. It is wild in Canada, and has been introduced into the United States. In Great Britain it is found in the Peninsula, Channel, and Thames provinces, but not in Hunts in Anglia, occurring throughout the Severn provinces, but in South Wales not in Cardigan; in N. Wales only in Denbigh, Flint, and Anglesea; in the Trent, Mersey, Humber, Tyne, and Lakes provinces, except in the Isle of Man; in the W. Lowlands; in the E. Lowlands, except in Peebles, Selkirk, Haddington; in the E. Highlands, except in Stirling, N. Aberdeen; and in Dumbarton in the W. Highlands. It is found at 1000 ft. in the Highlands, but is rare in Ireland.

This plant is fairly ubiquitous in its choice of habitat, which is always of an upland character. It is to be found chiefly in rocky districts, being in this way more or less a rock plant. It occurs frequently by the wayside, in ditches or on banks, in dry open pastures, and often in woods, which last is indeed a sure place in which to search for it.

The stem is slender, wavy, usually simple, with distant, downy,
close, stalked leaves, egg-shaped to heart-shaped, rather coarsely toothed, and acute.

The flowers are pink, borne in axillary clusters, dense, and branched.

The calyx is bristly, striate or finely furrowed, and an involucre of fine bristles is formed. The two upper teeth are connected below into an upper lip. The clusters or whorls in which the flowers are borne are equal, and the upper ones are terminal. The flowers are numerous, and formed on slender flower-stalks.
Wood Basil is usually about 1 ft. high. The flowers are in full bloom in June, July, and August. The plant is perennial, propagated by division.

The stamens and stigma vary considerably in structure. The nectaries and the receptacle for honey are of the usual labiate type. The tube of the corolla is 10–13 mm. long, and the honey fills it up to a height of 3 mm. The inferior lobe of the style forms a broad, lance-shaped lamina, which is turned down, and is not distinctly covered with wart-like knobs. The upper one is narrower and shorter, and varies in size. The stamens may all or partly be useless. The Cabbage White Butterfly (Pieris brassicae) and Satyrus visit it. The hermaphrodite flowers may be either large, and the anthers ripe first, or small, when the anthers ripen with the stigma.

The nutlets are free, and fall off around the parent plant, which is thus dispersed by its own agency.

This is a rock-loving species growing on rock soil, which may be a sand soil or a lime soil.

A fungus, Puccinia menthe, attacks the leaves. Two moths, Hadena Chenopodii, Stephensia brunnicella, and a Heteropterous insect, Eysarcoris melanoccephalus, are found on Wood Basil.

Clinopodium, Dioscorides, is from the Greek eîne, bed, pous, foot. The tufted whorls have been compared to the castor of a bed, and the second name refers to its common occurrence.

This pretty wildflower is called Field, Stone, Wood Basil, Basilweed, Bed'sfoot, Horse Thyme.

It was regarded as an emblem of the devil in Crete, and placed as a charm on window ledges. It was employed in love matters. It was said to wither in the hands of the impure. Bacon said that if exposed too much to the sun it changed into Wild Thyme, an incipient idea of evolution. In Persia there is a couplet, which, translated, runs thus:

“The basil tuft that waves
Its fragrant blossom over graves”.

Essential Specific Characters:

251. Clinopodium vulgare, L.—Stem erect, slender, leaves dentate, ovate, bracts setaceous, forming an involucre, flowers purple, in dense whorls, branched, axillary, calyx straight.
Ground Ivy (Nepeta hederacea, Trev.)

The present distribution of Ground Ivy is the North Temperate Zone in Europe, Siberia, Western Asia, as far east as the Himalayas, and in America it is an introduced plant. It is not found with any other plants in ancient deposits. In Great Britain it is more or less universally distributed, but does not grow in Cardigan, Stirling, S. Perth, North Ebudes, and in the W. Highlands in Ross only, and not in the Northern Isles. In Northumberland, moreover, it ascends to 1300 ft.

Every hedgerow is covered in spring with the trailing, creeping Ground Ivy, which carpets the ground under the hedgerows along highways and in fields. It grows on sloping banks, covering wide spaces. It is also to be found in woods, though it prefers a hedge-bank in the open facing the south and the sun.

Ground Ivy, as the second Latin (and English) name implies, has the habit of the Ivy, the trailing habit, rooting at intervals, with suberect flower-stalks. The stem, which is smooth or hairy, is square and slender, and branched. The leaves are egg-shaped, opposite, on long leaf-stalks, kidney-shaped, scalloped, veined, the leaf-stalks furrowed below.

The flowers are purple or bluish-violet, or white or pink with spots,
in whorls, three on a flower-stalk, with a general involucre of awl-like bracts or leaflike organs. The calyx is tubular, with short curved-back teeth. The corolla is gaping, with an erect upper lip, blunt, notched. The lower lip is larger, spreading, in three segments, with three purple spots. The creeping runners put forth in summer flower the next year, and survive the winter. The nutlets (4) are oval and contained in the calyx.

Ground Ivy is about 6 in. to 1 ft. high in flower. The flowers are in bloom between March and May. The plant is perennial, propagated by division.

The flowers are proterandrous, and the larger are hermaphrodite, the smaller female, with a tube 6½–8 mm. long, which is 1½–2½ mm. wide in front. In the former it is 9–16 mm. (or 14–16 usually), and 2½–4½ mm. wide in front. The tube is lined below with stiff hairs. As many as 86 per cent of the flowers have been found to be female in one locality, and 24 per cent later on; in a second year in the same district the proportion was 50 per cent and 28 per cent. The honey in the female flowers can be reached by all humble bees, and the widened mouth in the longer flowers enables all but Bombus terrestris to obtain honey. The larger flowers are visited first, and frequently cross-pollination is ensured by the hermaphrodite flowers.

Visits are paid by Bombus, Apis mellifica, Anthophora, Osmia, Nomada, Andrena, Halictus, Bombylius, Rhiingia, Eristalis, Cabbage White Butterfly (Pieris brassicae), and the Humming-bird Hawk Moths (Macroglossa fuciformis) and M. stellatarum.

The nutlets are smooth, and when ripe fall out around the parent plant.

Being a sand-loving plant, Ground Ivy delights in a sand soil, but it is also found on clay soil.

The plant is often galled by Aulax Glechome and Cecidomyia bursaria. A fungus, Puccinia glechomatis, attacks the leaves. A beetle, Longitarsus abdominalis, a moth, Coleophora albitarsella, and a Homopterous insect, Eupteryx pictus, are found upon it.

Nepeta, Pliny, is from Nepi, a town in Italy, whilst the second Latin name refers to its ivy-like, trailing habit.

Ground Ivy is called Alehoof, Allhoove, Allhose, Alliff, Bird’s-eye, Blue Runner, Cat’s-foot, Deceivers, Devil’s Candlesticks, Fat Hen, Foalfoot, Folesfoth, Gell, Gill, Gill Hen, Gill-go-by-ground, Ground-avney, Ground Ivy, Hayhoofe, Haymaiden, Hay-maids, Hedge-maids, Heihow, Hen and Chickens, Heyhove, Hove, Jenny-run-ith-ground, Jill, Lion’s Mouth, Lizzy-run-the-hedge, Maiden-hair, Mould, Nip,
Robin-run-the-hedge, Rob-run-up-dyke, Run-away-Jack, Runnidyke Tudnoose, Tunhog.

Alehoof means that which will cause ale to heave or work. "The women of our northern parts", says Gerarde, "do turn the herb ale hovoc into their ale." Gill-ale is a beverage made from this plant. "The leaves were formerly thrown into the vat with ale to clarify it and to give it a flavour. This was called Gill-ale, Ground Ivy being named Gill or Gill-crept-by-the-ground in some places." The French quiller means to ferment beer. With Rue it was supposed to confer fine vision. Ground Ivy was also supposed to be associated with the evil one, and called "Devil's Candlesticks".

The leaves are bitter and aromatic, hence their use in ale. They have a strong, peculiar smell. This plant was considered a corroborant, aperient, and detergent, and was used for laxity, debility, for ulcers, the lungs, and the blood. Drawn up the nostrils, juice from an infusion was used for headache. The white specks in horses' eyes were said to be cured by this added to groundsel and plantain.

Essential Specific Characters:—


Bugle (Ajuga reptans, L.)

As a marsh plant to a great extent Bugle occurs as we should expect in Interglacial, Late Glacial, and Neolithic deposits. It is found to-day throughout Europe generally. In Great Britain Bugle grows in every county except Peebles, ranging as far north as the Shetlands, and up to 2000 ft. in the Highlands. It is found also in Ireland and the Channel Islands.

This plant is one of the numerous species which gravitate between a station in the open meadows, the woods, the wayside, or the hedge-row. But in each case the habitat is moist and damp, and usually in the shade. In the ride of a wood, where Self-heal also grows luxuriantly, it is especially fine, as well as along the secluded banks of a stream.

The stem is erect, with creeping, lateral stolons, or underground shoots (hence the second Latin name), smooth or roughly hairy, or roughly hairy on alternate faces, smooth on others, and purplish. The leaves are opposite, inversely egg-shaped, narrowed below, the radical leaves on long stalks, blunt, the upper stem-leaves stalkless, oblong, and those on the stolons spoon-shaped. They are smooth and shining,
and usually dark green, but may be red below, coloured by anthocyan, which turns the light rays into heat. The red underside helps to retain light.

The flowers are in whorls, in a dense spike which is tapering, the flower-stalks short, with bracts or leaflike organs shorter than the flowers, and often like the flowers purplish-blue, with a metallic tinge. The calyx of 5 segments is blue. The corolla is gaping, with a ring of hairs within the tube protecting the honey. The upper lip is very short. The bracts cover the anthers and stigma.

**Bugle (Ajuga reptans, L.)**

Bugle is 6 in. to 1 ft. high. The plant blooms in May and June. It is perennial and propagated by division, and quite deserves a place in the garden.

The flowers are protogynous, and the stigma is ripe when the flowers open, or homogamous or protandrous. The lobes spread out, and are covered with wart-like knobs, but as in *Teucrium* it is protected by the stamens. The flowers are close together, and though the upper lip is short (or absent) the honey is protected from the rain by the intervening bracts. The stamens later separate and the stigma is then accessible. The tube of the corolla is 9 mm. long and 2½ mm. wide.
below, at its wider part, where the honey is secreted, the honey being on the side turned to the underlip at the base of the ovary.

The lower lobe of the style is papilllose, and rests on short stamens, when young lying close together. Small bees do not force the stamens far apart. The anthers turn the pollen-covered sides upwards and downwards, and are touched by all kinds of visitors. The inferior stamens separating the style are released, and the lower lobe projecting between the anthers is then touched first by a bee with pollen from another flower and cross-pollinated. If bees do not visit the flowers they are self-pollinated by pollen falling on the stigma.

Bugle flowers are visited by the Honey Bee, Bombus, Anthophora, Osmia, Andrena, Halictus, Rhiingia, Large White Butterfly (Pieris brassicae), Green-veined White (P. napi), Small White (P. rapae), Brimstone (Rhodocera rhamni), Papilio podalirius, Hesperia alleus, Broad-bordered Bee Hawk Moth (Macroglossa ficiformis), &c.

The nutlets are dispersed by their own agency, and fall to the ground when ripe.

Bugle is distinctly a clay-loving plant, and addicted to a clay soil, being common on the soils of the Lias and Boulder Clay.

The radical leaves and flowerheads are galled by Eriophyes ajugae. A beetle, Meligethes viduatus, and a Heteropterous insect, Monanthia ampliata, are found on Bugle.

Ajuga, Pliny, is supposed to be derived from the Greek agnios, weak in limbs, in reference to an assumed efficacy against gout. The second Latin name refers to its creeping or stoloniferous habit.

Bugle is also called Wood Betony, Brown Bugle, Herb Carpenter, Middle Comfrey, Middle Consound, Dead Men’s Bellows, Helfring-wort, Wild Mint, Sickle Wort.

Gerarde says: “It is put in drinks for wounds, and that is the cause why some do commonly say that he that hath bugle and sanicle will scarce vouchsafe the chirurgien a bugle”. It was a reputed vulnerary, astringent and cooling.

The name Bugle is said to be a corruption of the late Latin name Bnigula, which is akin to bugillo, the classical Latin name for the plant.

Essential Specific Characters:

262. Ajuga reptans, L.—Stem erect, glabrous, with creeping stolons, leaves obovate, entire, upper sessile, lower stalked, flowers purple, in a spike, with bracts below.
Spurge Laurel (Daphne Laureola, L.)

A southern type, Spurge Laurel is not represented in fossil seed-bearing deposits. It is found to-day in Europe in the N. Temperate Zone, south of Belgium, except in Russia and Greece, and in N. Africa and W. Asia. In Great Britain, Spurge Laurel is generally distributed, but does not grow in Cornwall in the Peninsula province; in the Channel province generally, except in S. Sussex; in the Thames province, except in W. Kent; in N. Wales, only in Carnarvon and Anglesea; throughout the Trent provinces, except in S. Lines; in the Mersey province, only in Chester; in the Humber province; and in Scotland, only in Stirling; or generally from Durham to Devon and Kent, and in the Channel Isles.

Spurge Laurel grows in many shaded, secluded spots under hedges, especially in fields and by the roadside. Here and there it is obviously planted, but in woods and plantations and along some highways contiguous to woods it may be truly native.

It is a medium-sized shrub, with an erect, woody stem, which seldom branches, and the leaves are mainly at the end of each stem,
falling off below. They are lance-shaped, shiny, and smooth, the terminal buds being near the leaves, the lateral ones near the flowers.

The flowers are green (5), drooping, in cymes, axillary, with oblong bracts below, and funnel-shaped. The stamens are inserted on the upper part of the tube. The lobes of the calyx are as long as the tube. The fruit is a berry, which is blue or black, and egg-shaped.

It is an evergreen shrub, quite suited to the garden or shrubbery, where one may frequently find it. In height it varies from 2-4 ft. Flowers may be found between February and April.

In *Daphne Mezereum* the corolla tube is 6 mm. long and 2 mm. wide. The flower is suited to bees with a long proboscis, butterflies, *Apis, Anthophora, Osmia, Halictus, Eristalis*, Small Tortoise-shell Butterfly (*Vanessa urticae*). The stigma and anthers ripen together. The honey is secreted at the base of the ovary. An insect rubs its proboscis against the anthers, in 2 whorls of 4 stamens each, in the upper part of the tube, but does not dust it with pollen, which is only slightly sticky, and then touches at a lower level the stigma before it reaches the honey, so that it cross-pollinates it with pollen from a previous and different flower; and its proboscis is not dusted with pollen till it is withdrawn. If insects are absent pollen falls from the anthers upon the stigma.

The drupe is edible, black in colour, and dispersed largely by birds.

Spurge Laurel grows on a clayey or sandy soil.

*Daphne*, Dioscorides, is from Daphne, the name of a nymph changed by the gods into a bay tree. *Laureola*, Dodoneus, is from the Latin, *laurus*, laurel.

Dwarf Bay, Fox Poison, Laurel, Copse Laurel, Spurge and Wood Laurel, Sturdy Lowries are the names that have been bestowed upon the Spurge Laurel.

It is a useful, ornamental shrub, which grows in the shade and drip of trees. It is acrid and highly irritant. The juice causes inflammation, and has been used for blistering, and the bark and berries for ulcers and sores. The roots have been used for toothache. For irritation it is employed externally.

**Essential Specific Characters:**

Common Elm (Ulmus campestris, L. = U. sativa, Mill. = U. surculosa, Stokes)

No trace of the Common Elm has been found in ancient plant beds, though this cannot be said of the Wych Elm. The latter is thought to be native, the former not. The Common Elm does not usually set perfect seed, and is considered to be usually propagated by suckers. The roots reach a long way underground, 40 or 50 yds., and from these suckers are produced. The Wych Elm, however, is obtained from seedlings. The Common Elm is found as a native on the Continent, however, and is generally distributed throughout the Northern Temperate Zone in Central, Southern, and Eastern Europe, and West Asia, Siberia, and in N. Africa. In the British Isles the Common Elm is generally distributed, but it is not so widespread in Scotland, where it is usually planted, as indeed it is in England. It is found also in Ireland and the Channel Islands as a denizen. In Derbyshire it is found at an altitude of 1500 ft.

The habitat is hedges, hedgerows, woods, and fields. The Elm is often used as a boundary mark, and for avenues and parks in the country or town. To the writer are known lines of Elms called "The Twelve Apostles", and in many districts there are ancient Elms planted like Coronation Oaks and other trees to commemorate some national or local event of importance. The Common Elm, though frequently found in more upland habitats, occurs in the marsh formation in the Alder-Willow association. More frequent south of the Trent, it is more characteristic of the Lowlands than the Highlands.

The Elm has a characteristic habit. The main trunk is generally erect, branching at some distance from the base. But lateral boughs commence at half its height, and there are thus two crowns, as it were, one above the other, with a gap between. There are many forms and varieties of the Common Elm, however, which differ in their habit. The species *U. glabra* has drooping branches like the Wych Elm. The trunk is, when full-grown, sometimes 125 ft. in height, and the girth as much as 20 ft., or even 30-40 ft.

The bark is grey, rugged, and often corky (*U. suberosa*, Ehrh.). The young branches are sometimes corky. The lower horizontal branches are often very large and as much as 30-40 ft. long, sometimes becoming too bulky and snapping asunder. They may spring from the bole at about 10 ft. from the ground, or at a height of 15-20 ft. The leaves are oblique, unequal at the base, smaller than in the Wych
Elm, not much longer than broad, rough above, stellately downy in the axils of the veins below. The margin is coarsely toothed, and the leaf ends in a long, blunt point.

The veins form a fork at the margin, and are deeply impressed on the upper surface, prominent below. The main branches ramify into numerous smaller branches, and these into twigs turned up at the end,
lace-like in outline. The bole is stout and erect, with stout buttresses in old trees. The buds are dull brown, with many scales, each being really a pair of stipules, the lowest pair not lengthening in spring. There are several enclosing the leaf-bud within. The outermost scales serve to protect the inner from cold in winter. A pair of scales protects the leaves, and they are united to the base of the stem each side of the leaf-stalk. The scales fall at length. The leaf is folded up in bud upon the midrib. It is closed up in a fan-like manner on the lateral veins.

The flowers are not borne in catkins as in the other trees which belong to the Amentiferae, but are in tufted clusters. The perianth is cup-like, 4–5-fid, the lobes fringed with hairs, and contains five or four stamens with purple anthers, and a central pistil. There are two chambers in the ovary, but only one develops, and that rarely matures. The flower-stalk is short. The flowers appear before the leaves. They are vinous-red in colour. The fruit is an inversely ovate, or elliptic-oblong samara, notched, with the seed above the centre and near the notch. There is a wing all round the seed except at the notched apex, the lobes of the notch being incurved. The samara is greenish-brown or brown.

The Common Elm flowers in March, and is a deciduous tree.

Most trees are pollinated by the wind, and it is supposed that this mode of pollination is the most primitive. However this may be, the trees usually flower before the leaves are in bud, and have the parts of the flower especially modified to this end.

The Elm has usually hermaphrodite or complete flowers, but may be sometimes monocious. The perianth is a bell-shaped structure with a variable number of teeth, or segments, and tubular below. It is hairy on the lower part, and the teeth are sparingly glandular. The pistil lies in the centre surmounted by a bifid stigma, with papillae on the inner face and pectinate glandular structures or hairs. There are as many stamens as perianth-lobes. The stigma is usually said to ripen before the anthers, as is usually the case in wind-pollinated flowers, but sometimes the anthers ripen first. There are 2 anther-cells, and they open outwards. Soon after the stigma matures the anther-stalks lengthen, and if the stigma be still receptive, pollen falling on the stigmas, the flower will be self-pollinated. In the ordinary course pollen is blown upwards to another flower on the same tree. When the anthers have withered the style lengthens and the stigma protrudes from the perianth, in which it was at first included. In spite of its adaptation to cross-pollination by the wind the Common Elm does not, in England, set perfect seed as a rule. Personally, the writer is inclined to attribute
this to a tendency to self-pollination which seems not to have been generally noticed, especially when proterandry occurs and is not well marked. The fruit or samara is dispersed by aid of the wind, the broad wing serving this end.

Though generally planted, the Elm appears to flourish best in loamy or clayey soil, and if grown on sandy soil the horizontal roots are often exposed to the weather and to frost, and the tree is liable to die off in the upper part during drought, or from exposure of the roots.

The Elm is liable to the attacks of fungi, similar to those that infest the Wych Elm, as Taphrina ulmi, Mycosphaerella ulmi (Elm leaf spot), Psilocybe spadicea, Hypholoma fascicularis, Flammula ulmicola, Pholiota adiposa, Pleurotus ulmarinus, Collybia velutipes, Fomes fomentarius; Tinder fungus, Hydnium diversidens; Oak rot, Phleospora ulmi; galls such as Schizoneura ulmi, Pemphigus pallidus; the moths, Wood Leopard, Lime Hawk-moth, Copper Underwing, Common Dagger, Small Engraved Moth; the butterflies, Large Tortoise-shell, Comma, White-letter Hairstreak; the beetles, Orchestes ulni, Scolytus destructor, S. multistriatus, Hylesinus vittatus, Epipeda plana, Oedius versutalis, Ocytus fuscatus, Trichonyx sulcicollis, Symbiotes latus, Endomychus coecineus, Daene humeralis, Cerylon histeroides, Lamphophles aler, Mycetophagus populi, Teresias serra, Dorcus parallelopiedus, Ischnodes sanguinicoloris, Haplocnemus impressus, Rhagium inquisitor. The Hemiptera Heteroptera, Brachystethes parvicornis, Phytocoris ulmi, Orthotylis viridinervis, O. ochrotrichus, O. prasinus, Malacocoris chlorizans, Asciodema fieberi are found on Elm. The following Hemiptera Homoptera, also infest the Elm: Pediopsis ulmi, Allygus commutatus, Alebra albo-striella var. Wahlbergi, Typhlocyba ulmi, T. lethierryi. A Hymenopterous insect, Psen pallipes, is found on it.

The names by which the Elm is known are numerous, viz.: Allom-tree, Alme, Aum, Elem, Ellem, Elm, English Elm, Elmen, Elven, Helm, Horse May, May, Ome Tree, Owm. The name Elm is apparently cognate with the Latin Ulmus, a Plinyan name for the Elm, and Ellum is a general name for Elm. The corky type, Ulmus suberosa, is called All-heart.

Called in some districts Elven, the Elm seems to have been considered to have had some connection with fairies. The name May is applied to a piece of Elm gathered early in the morning of the first day of the month. The Elm in Devonshire is regarded as one of those trees which are not liable to be struck by lightning, but this is not generally the case.
Agricultural operations have been guided in the past by the time when the tree is in leaf, as is illustrated by the following lines:—

"When the Elmen leaf is as big as a mouse’s ear,
Then to sow barley, never fear;
When the Elmen leaf is as big as an ox’s eye,
Then say I ‘Hie! boys, hie!’"

A variety with broad leaves in Cornwall is called Horse May.

The Elm is a useful timber tree. Not only is the hard wood or brown heart used but also the sapwood. Water-pipes were once made of hollow Elm. The wood is durable and resists the action of water well, being employed for pumps, keels, bilge-boards on ships. It is also used for furniture and chairs.

**Essential Specific Characters:**

277. *Ulmus campestris*, L.—Tree, erect, branches ascending; leaves ovate, dentate, asperous, flowers 4–5-fid, seed above middle of samara, near the notch.

**Nettle** (*Urtica dioica*, L.)

Ubiquitous and common, the Nettle is also ancient, being found in Interglacial beds at Hoxne, Suffolk, and in Late Glacial beds also at the same place. It is found in the N. Temperate and Arctic regions in Europe, S. Africa, and the Andes. This is a ubiquitous species throughout Great Britain, and ranges as far north as the Shetlands, up to 2500 ft. in the Highlands.

The common Nettle is always to be found in a hedgerow, whether it be in fields and meadows or by the roadside. It is common in waste places, but it is erroneous to regard it as an indication of poor soil, for it requires simply an ordinary dry sandy loam, and where this sort of soil is exposed there it forms a clump, being a dominant species and excelling all other competitors.

The yellow fibrous roots of the Nettle are familiar to gardeners, and remarkable because of their interlacing habit. The habit is prostrate, then erect. The rootstock is creeping, and the plant is stoloniferous, with yellow, long, root fibres. The stem is downy, simple or branched, dark-green, protected by stinging hairs, which point forwards, each hair on a cushion of delicate tissue with an acid fluid, with a round head, situated obliquely, with easily fractured siliceous tissue just below the head. The point is directed forwards, and if seized from below the plant does not sting. The protoplasm in the stinging hairs is repelled by red light and attracted by blue. The leaves are egg-shaped to
No. 1. Nettle
(Urtica dioica, L.)

a, Flower (staminate) showing the 4-fid perianth, and 4 stamens, bent back.  
b, Pistillate flower, with perianth and pistil.  
c, Fruit, or nut, with style (enlarged), and hairy pericarp.  
d, Stinging hair, showing the swollen base containing poisonous juice, and long point.  
e, Upper part of plant showing cordate leaves, and inflorescence.

No. 2. Black Bryony
(Tamus communis, L.)

a, Staminate flower, with stamens, and 6-fid perianth.  
b, Pistillate flower, with inferior ovary, and styles exerted.  
c, Raceme of pistillate flowers.  
d, Stem, with cluster of ripe berries (poisonous).  
e, Branch with cordate leaves (net-veined), and racemes of staminate flowers.

No. 3. Lords-and-Ladies
(Arum maculatum, L.)

a, Spathé with spadix (purple), and 2 flies (Psychoda).  
b, Arrow-shaped net-veined leaf, with spots.  
c, Section of spathé, showing spadix, sterile whorl of bracts, whorl of stamens, whorl of bracts, whorl of ovaries.  
Both whorls of bracts horizontal.  
Flies entering can pass down through them, but not out again in this stage.  
d, The same, with bracts withered, when flies can escape.  
The ovaries have now been fertilized, after pollination by aid of the flies. (See also Text.)  
e, Section of spathé from above, showing the chevaux-de-frise of bracts below at.......

f, Cluster of berries, with withered base of spathé.  
g, One of the ovaries, or pistillate flowers (enlarged).  
h, Staminate flower (enlarged), with stamens.
heart-shaped, lance-shaped, deeply toothed, the leaf-stalk long or short, with prominent impressed nerves. The stipules are linear to oblong.
The flowers are in axillary paniced spikes, in pairs, the males in loose panicles, the females dense, bent back. The fruit is small, with a flat border. It is 2–4 ft. in height. Flowers are to be met with between July and September. The plant is perennial, propagated by cuttings.

The plant is dioecious (hence dioica) or unisexual. The stamens are elastic; in bud they are curled inwards. The anthers, which are borne on kidney-shaped anther-stalks, open by the coiling of the stalks in bud and the opening of the calyx, and when they uncoil they spring out and disperse the pollen in a small cloud. They open in the sun, and the discharge of pollen goes on for half an hour. The flowers are wind-pollinated.

The fruit is small, and when ripe falls to the ground or is blown away by the wind.

Addicted to a sand soil, the Nettle is a sand-loving plant.

The first stage of a fungus, Puccinia carieis, grows on this, the second on a sedge. Uromyces urticae, Peronospora urticae, also grow on it. It is infested by Dodder (Cuscuta europaea), and galled by Cecidomyia urticae. Several beetles, Brachypterus urticae, Thyamis exoleta, Demetrius atricapillus, Halyzia punctata, Meligethes tumbaris, Elatier sanguinolentus, Longitarsus luridus, Cepcidodera ferruginea; the Lepidoptera, Small Tortoise Shell (Vanessa urticae), Red Admiral (V. atalanta), Peacock (V. io), Comma (Grapta c-album), Ghost Swift (Hepialus humuli), Reddish Buff (Phragmatobia caliginosa), Light Spectacle (Abrostola urticae), Burnished Brass (Plusia chrysitis), Scarlet Tiger (Callimorpha dominula), Botys verticalis, B. urticata, Choreutis fabriciana, &c.; Heteroptera, Schinus bicolor, Heterogaster urticae, Scolopostethus affinis, Nabis rugosus, Lygus pabulinus, Peciloscyllus gylenhalii, Capsus lanarius; and the Homoptera, Eupteryx urticae, E. auratus, Trioza urticae, feed upon it.

Urtica, Pliny, is from the Latin ura, I burn, and the second Latin name refers to its diocious character.

This plant is called Naughty Man’s Plaything, Nettle, Stinging Nettle, Scaddie, Stingy Nettle, Tinging Nettle.

Nettles are thrown on the fire to guard against lightning. It is called Devil’s Apron because associated with the evil one, and it was believed it could drive away evil spirits. There is a proverb for those who in spite of every kindness are themselves the reverse: “He that handles a nettle tenderly is soonest stung”. Peasants use nettle tea as a remedy for nettle-rash, and the tops cut in June for a nettle broth. When carried about the person it was said to drive away fear, and so worn in time of danger.
The tops are cut and used as a pot-herb as spinach. This plant was used in religious festivals, preventing disease for a year, so it was thought. When salted it will curdle milk. The stems are fibrous as well as the root, and have been used for hemp to make ropes and paper. Whipping with nettles was practised for lethargy, rheumatic pains, palsy. The Nettle is refused by cattle.

Essential Specific Characters:

279. *Urtica dioica*, L.—Stem erect, tall, leaves opposite, cordate, serrate, plant dioecious, male flowers in lax panicles, female crowded, seeds ovate.

**Black Bryony** (*Tamus communis*, L.)

The present distribution of Black Bryony is the North Temperate Zone in Europe, south of Belgium, N. Africa, to Asia, and it is unknown in ancient deposits. In Great Britain it is found throughout the Peninsula, Channel, Thames, Anglia, and Severn provinces, but is not found in Radnor in S. Wales, Montgomery or Merioneth in N. Wales, occurring in the Trent, Mersey, Humber, Tyne, and Lakes provinces generally, except in the Isle of Man, or from Belgium southwards, and in the Channel Islands.

Black Bryony is common enough in England, growing usually in hedges, either by the roadside or in fields, scarcely a hedge in some districts being without it, while the White Bryony is far from general. It is also to be found in moist woods.

Black Bryony has the twining or climbing habit, the shoots revolving in two and a half to three hours. The rootstock is large, egg-shaped, subterranean, black, and fleshy. The stems are very long, slender, angular or round, branched. The leaves are undivided, egg-shaped to heart-shaped, acute, with a long narrow point, obscurely lobed laterally, long-stalked, glossy, 5-7-nerved, net-veined as in Dicotyledons, the lip bristle-like. The stipules are bent backwards.

The flowers have a bell-shaped perianth, and are small, yellowish-green, and regular, in axillary racemes on long stalks. The plant is dioecious. The male flowers are solitary or grouped in slender racemes, branched at the base, with 6 stamens inserted on the base of the perianth-segments. The female flowers are in shorter racemes, bent back, few-flowered, with a perianth adhering to the ovary, and short functionless stamens. The bracts are very small. The limb of the perianth is 5-partite. There is a single style. The berry is red, oblong, few-seeded, imperfectly 3-celled.
Black Bryony is a perennial plant, propagated by the root, which is fleshy and black. The plant is a climber. It flowers from May to June. The stamens open inwards. The stigmas are bilobed and bent backwards. Pollination by insects is a necessary precursor to fertilization in this plant. The male flowers are in lax racemes, and solitary or branched; the female flowers are in short racemes, which are recurved, and have few flowers. In the allied Dioscorea only rudimentary flowers are produced.

The fruit is a berry, which is red when ripe, and attractive to birds, but usually dispersed by falling to the ground around the parent plant.
Black Bryony is a clay-loving plant, and addicted to a clay soil, or partly a sand-loving plant, and found on sand soil.

*Tamus*, Gesner, Pliny says, was used as asparagus, as a diuretic, and for spleen. In Tuscany it is called *tamaro*, and is now eaten as asparagus there. The second Latin name refers to its wide distribution.

The plant is called Adder’s Meat, Adder’s Poison, Bead Bind, Bindweed, Broynt, Bryony, Black Bryony, Elphamy, Isle of Wight Vine, Lady’s Seal, Mandrake, Murrain Berries, Oxberry, Poison Berry, Roberry, Rowberry, Rueberry, Rollberry, Serpent’s Meat, Snakeberry, Snake’s Food, Wild Vine.

It is called Serpent’s Meat where an idea prevails that snakes are always lurking about the places where it grows, perhaps by Doctrine of Signatures, on account of its serpentine habit. In Montgomery it is used to rub on the joints of animals, especially of pigs, that are lame from a disease which is there called Broynt. It is called Oxberry because the berries are collected by the farmers as a cure for barrenness in cattle. It was named Our Lady’s Seal because of the supposed efficacy of its roots, when spread in a plaster, and applied to heal up a scar or bruises. It is a climbing plant, which hibernates by tubers formed by a lateral outgrowth of the first two internodes of the stem.

**Essential Specific Characters:**


**Lords and Ladies** (*Arum maculatum*, L.)

This common hedgerow plant is distributed throughout the N. Temperate Zone in Europe from Gothland southward, N. Africa, and is not represented in early deposits. Cuckoo Pint, as it is also widely styled, is found generally throughout England and Wales; in the E. Lowlands only in Roxburgh, Berwick, Edinburgh; in the Highlands only in Stirling, Mid and East Perth, Dumbarton, Clyde Islands, S. Ebudes; or from Caithnness southward, and up to 1000 ft. in N. England. It is doubtfully wild in Scotland, and grows in Ireland and the Channel Islands.

Lords and Ladies is a peculiar plant, having likes and dislikes, just as Dog’s Mercury, Red Campion, Greater Stitchwort, and some other common species, for certain areas. It is a shade plant, fond of growing in woods and under hedges, and is not a lover of sand, but rather of mild humus.
Perhaps the most striking feature of the Cuckoo Pint is its curious flower. There is no true stem, and the leaves all spring from the base of the tuberous root, which is used as sago. The leaves are net-veined (which is unusual in monocotyledons), spear- or arrow-shaped, with long lobes behind, the surface glossy green, spotted with black patches (hence the second Latin name), stalked, with sheaths at the base, enclosing the spathe, triangular and channelled above.

The inflorescence of this monoeious plant, with male and female flowers, consists of a spadix, club-shaped, pink or purple, narrow below, borne on a smooth, rounded scape, and enclosed within a thin, white spathe, often yellowish-green, swollen below; and at the base are the oval ovaries. Below, the stamens and the stigmas are bearded with long hairs. No styles are found. The spathe falls off when ripe. The berries are scarlet.

Cuckoo Pint is a foot high, and flowers about April and May. It is perennial, propagated by seeds.

Cuckoo Pint is proterogynous, and the female flowers open first and lose the chance of being pollinated before the anthers on the same plant, which are above, are ripe. So that it is necessary for fresh
pollen to be brought from other flowers for cross-pollination to take place. The plant's own pollen drops to the bottom of the tube, useless, unless carried away.

This mode of crossing is effected by flies, which creep down the wide, conspicuous spathe, the plant attracting, by its ammonia-like smell, small Diptera (Psychoda) into the lower part. This forms a prison for the time being. When they reach the metamorphosed stamens or hairs, which point downwards (and at first act as a chevaux de frise around the lower part of the spatix), they are effectually prevented afterwards, did they so wish, to do so at once, or until a certain time, from returning, though entrance is easy.

The stigmas are at the base of the spatix and are mature first, and if the flies bring pollen, from anthers, from another flower at a later stage they cross-pollinate the plant. It is considered by Father Gerard, S.J., that the liquor secreted by the stigmas has a stupefying effect on the flies, which are found killed and digested in the inner part of the spathe, so that the plant is in this sense apparently insectivorous.

During the second stage the stigmatic papillae wither, and a drop of sweet liquid appears in the middle of each stigma as a reward, whilst in the third stage the anthers open and pollen falls on the floor of the chamber, and can hardly fail to dust the flies. When the palisade of hairs withers, these helpful insects pass out and may enter another flower in the first stage. The flowers are visited by Ceratopagon, Chironomus, Sciara, Psychoda, Limosina, Drosophila.

The fruit is a berry, fleshy, and red when ripe, poisonous, but eaten sometimes by birds and man. Usually the berries fall when ripe around the parent plant.

Cuckoo Pint is a humus-loving plant, growing in a humus soil, and largely a clay-loving plant, preferring clay to sand.

Two fungi, Protomyces ari and one stage of Puccinia phalaridis, grow on this plant.

A moth, the Lesser Broad-border (Triphena ianthina), is found upon it.

Arun, Dioscorides, is from an Arabic root, and the second Latin name refers to the spotted leaves.


The red berries are men and the green women, hence Devil's Men-and-Women. Holme says: "This is of some called Friar's Cowle because of the hooding of the pestle, when it is springing forth." The light spadices represent ladies, the dark gentlemen, hence Ladies-and-Gentlemen and Lords and Ladies, Adam-and-Eve, Bulls-and-Cows; but as to the first, Holloway quaintly says: "So called, I presume, from the stately appearance the blossom has by being partially enclosed and protected by the sheath, so that the flower appears as though it were a kind of state chair or carriage."

The spadices are like bobbins in use formerly in Bucks, hence the name Bobbins.

"Where peep the gaping speckled Cuckoo flowers,
Prizes to rambling schoolboys' vacant hours."

As it was supposed to be associated with the evil one it was also called Devil's Ladies-and-Gentlemen. The spots were ascribed to drops of blood from the Cross. Half-starved bears, after hibernating, are said to be restored by eating it, and its juice was thought to be good for the plague.

The root is insipid and mucilaginous, but pungent afterwards. It loses the bitter taste when dry, and the roots are farinaceous, and were formerly used as Portland Starch, but it is difficult to remove the poisonous principle and is not much used. It is stimulating and diaphoretic. The root has been used for soap and juice for cosmetics, cypress powder. It has been applied for asthma and dropsy.

Essential Specific Characters:—

311. *Aran maculatum*, L.—Scape with leaves sheathed at the base on long petioles, leaves sagittate, spotted, flower in spathe twice as long as the spadix, which is clavate, berries scarlet.
SOME GENERAL HINTS AND NOTES

SECTION V

WOODS AND COPSES

The Density of the Woods.—An outstanding feature of a wood or forest, especially in its natural state, is its dense character. It is for this reason that one resorts to it, for its cool and shady character in summer is at once a pleasing contrast to the open fields where the full blaze of the sun is felt. But the density of a wood has a more particular bearing on the component parts of the woodland flora. In the first place, it is the density of the wood that makes the habit of the tree zone. The close ranks of the tree-trunks themselves cause each to have a particular habit, and regulate the mode of branching above. This is well shown where different degrees of closeness are exhibited, as in natural glades or clearings, or where artificial thinning or coppicing is carried out.

The density of a wood also regulates the extent and character of all the lower strata, e.g. scrub and ground flora. Where a wood is dense the scrub may be absent, or as in case of the trees, attenuated, and growth confined mainly to upward extension. In the case of the ground flora the density of a wood will cause the societies to be large or small proportionally, or even absent in many cases, as in a Beech woodland. Apart from this effect on habit, a dense woodland is far moister, darker, and more liable to fungal pests.

The Darkness of Woods.—The darkness of a wood has less effect upon habit than upon the character of the lower zones, when the absence of light is due to the density of the tree zone. Since plants depend for the formation of starch very largely upon light, it is obvious that this factor is of very great importance. In a dense wood one may see numerous instances of complete etiolation or bleaching, and partial etiolation or variega-
tion. The vigour of plants is also correspondingly affected in other directions, in the size and extent of their parts, the absence of flowering or successful fruiting. Many trees even may not succeed in flowering or maturing seeds in a dark wood.

The prevalence of fungi, which obtain their carbohydrates ready made, is a feature of woodlands, and their existence in a dark wood is due to their ability to adapt themselves in this way. The kindred groups of phanerogamic saprophytes or parasites, such as Broomrapes, Toothwort, Bird's-nest Orchis, &c., that live on the roots of trees, is another feature of woods, and their dark character has perhaps been here responsible for the differentiation of such groups.

Moisture of the Woods.—Woods are the principal agents in condensing the moisture of the atmosphere in the bulk, and for this reason their preservation is an actual necessity. It is only since the greater part of the wooded areas have been disafforested that the climate of this country has become so much drier.

One feature of woodland life that should be noticed is the extraordinary wealth of the lower plants or Cryptogams. These depend upon water for the effective fertilization of the ovum by the spermatozoid, which must meet it in water. Hence the habitat they require must be moist, and a woodland is an ideal type of vegetation for this purpose.

Here, too, is the home of those higher plants that are unable to exist in the open glare of the sun and need moist conditions. Another effect of the moisture of the woods that must not be overlooked is the luxuriance of the vegetative organs.

Coldness of the Woods.—A condition that regulates the distribution of plants is the
amount of heat available. This is little liable to vary in open meadows and pastures within several degrees of latitude. But in a wood the temperature is considerably lower than that of the surrounding open country. Heat and colour go together; hence it may be that there is an absence of colour in the woodlands.

Moreover, each plant requires a definite amount of heat before it will commence to flower and later ripen seed. If one excludes the bulbous plants that flower before the trees are in leaf, and the trees themselves, the generality of the woodland plants flower late, in spite of their usually perennial character.

Temperature has also an effect upon the general conditions of plant-life, and this explains the absence of life (lower zones) in a cold dry wood. The absence of moisture with cold prevents the proper balancing of conditions for assimilation; respiration, transpiration, and osmosis are slow.

Protection of the Woods.—The denseness, darkness, and coldness of woods generally are retarding factors which may be well compensated by another feature, and that is their protection. The association of the trees in a close formation, not only serves as a protection in itself to the tree unit, but it has a corresponding conservative effect upon the rest of the flora of a wood. The scrub layer and the ground flora are effectively protected. Wind erosion is almost minimized by the covering tree zone. The effect of frost is also greatly reduced.

Trees further protect the soil from being worn away by the denuding effect of rain or hail. Where trees drip there is some local erosion, but this is restricted in its work, and the soil is not carried far away.

In a wood, also, the effect of a drought is far less marked, though a clayey soil suffers more severely in this respect. The scorching heat of the sun in ordinary weather is again moderated by the tree zone. Hence the protective effect of trees is, on the whole, decidedly advantageous to woodland plants.

Wet and Dry Woods.—Whilst the character of the soil determines the type of woodland—there being five main types: pedunculate Oak, sessile Oak, Birch, Beech, Ash, with combinations—the water content of the soil has a good deal to do with tree dispersal, and also affects the scrub and ground flora.

Thus a wet clay is characterized by the pedunculate Oak, whilst a dry, sandy soil is occupied by the sessile Oak. The extent of the effect of soil may be seen in the same tract of wood, for on the siliceous slates of the Charnwood Forest region, which give rise to a wet clay, Birch, which is a wet-soil type of tree, is found, with Oak encircling it where those rocks are in turn surrounded by the drier, more sandy red marl.

The ground flora in a wet and dry wood will differ correspondingly, such plants as Bugle and Tussock Grass indicating a wet wood. The extreme type of wet wood is afforded by the Alder-Willow association, which is characteristic of marshy or aquatic plant formations.

Effect of Tree-felling on Rainfall.—When trees are felled, not only is the shade which they afford at once lost and sunlight able therefore to penetrate near to the surface, but the removal of the trunk and branches, with the numerous leaves, causes the moisture which they accumulate to fall directly upon the earth. Here, on a porous surface, the water percolates and finds its way down to a subterranean reservoir. Water accumulated upon a clayey soil soon evaporates in the open. Radiation is more rapid over a treeless area than in a forest area.

The retention of the moisture by the individual trees may be, moreover, considered apart from the aggregate amount of moisture present in a forest, regarded as a unit in itself. The association of numbers of trees causes the atmosphere itself to remain charged with moisture, and evaporation is consequently slow. The preservation of moisture at the surface by a tree layer, and its retention by the lower strata of plants, are also features of a woodland area that must be considered in estimating the value of forests as water reservoirs.

The retention of dew is also an important aspect.

Effect of Woodlands upon Soil.—Perhaps the most outstanding feature of a wood or forest is the part it plays in the accumulation of organic matter, plant and animal, upon the surface, which in course of time becomes a valuable asset to the soil. This matter is known as humus, and it is to the presence of this in the soil that the woodland plants owe their distribution to a great extent. Whilst many plants that grow in a wood are able to exist in the open upon other soils, or those not rich (or even deficient) in humus, some that grow in the open do not care for humus. It is suggested that simple experiments be made in growing plants in soil with and without humus, and noting the effect.

Since the original vegetation was woodland, it should be expected that the removal of this from a large area by disafforestation has been the cause of differentiation into meadow and pasture, heath, and other types of vegetation.
derived from woodland vegetation. It is probable that moisture and altered light-and-heat conditions have played as important a part as that of the absence of humus.

Woodlands also affect the water content and physical character of the soil, preventing it from becoming pulverized. All these points should be carefully explained.

**Causes of Cutting Down of Woodlands.**—When the original area of woodland is compared with its extent to-day (there are fourteen national forests of insignificant total acreage) it is obvious that the cause of the reduction in forests has been multiple.

Primarily there was the need for wood for fuel. In Saxon or Norman times, or later even, only the churches, castles, &c., were built of stone, and wood was used for dwellings. From Alfred's day, also, till the time of Nelson there was a constant demand upon the forests for ship-building. Incidentally, hunting and similar causes were responsible for the clearing of forests; and the need for cultivating, especially from the Conqueror's time, has finished the work of depletion.

**Woodlands the Origin of many Fruit Trees, &c.**—The origin of many of the fruit trees of this country is wrapped in obscurity. It is certain, however, that some, such as the Cherry, were introduced from the south of Europe, and the apples, plums, pears, peaches, &c., that have been cultivated and improved in orchards and kitchen gardens for centuries have lost their original characters.

De Candolle has traced the history of many of them by the comparative method, and if we regard the quasi-wild or truly wild species, such as the Crab, Wild Plum, Wild Pear, it will be found that they are largely reversions to a wild stock from cultivated plants. None the less, there are a number of the smaller fruit trees, such as the Sloe or Bullace, Raspberry, Hazel, that certainly originated in our woodlands, whilst the Currant and Gooseberry, and the Plum are found in a wild state to-day.

**The Value of Woodlands.**—Reference is made elsewhere to some of the causes of the disappearance of woodlands, which is one proof of their value, economically considered. Another reason for their preservation, to which allusion has also been made, is their effect in preserving moisture.

A very prominent feature of woodlands also is their beauty, and it is to be hoped that the efforts to preserve beauty spots which has been so well begun by the National Trust will be fostered and extended in the future. The afforestation of the whole country on scientific lines is urgently required. The rising generation may lend their support by taking part in Arbor Day, or the planting of trees on festive occasions.

**Natural and Artificial Woodlands.**—It is very important that a careful distinction should be drawn between woods that are natural and those that are artificial. Natural woodlands upon clay and loam commonly consist of the pedunculate Oak, while on sandy soil sessile Oak prevails. This may occur also on siliceous soils, which are also characterized by Birch scrub. Heath tracts also consist of Birch in some areas, and on gravelly soils of the Pine. Ash is the principal tree in limestone areas, and also occurs on chalk. But the chief tree on chalk and oolite is the Beech.

Where such conditions occur, the woodlands may be regarded as natural.

All these trees are likewise found in a planted state, but an examination of the ground flora and scrub will reveal this as a rule. The coniferous woods and plantations, except Pine and Yew (the latter found on the chalk), are artificial also. The distinguishing of the characters of a wood will be an excellent piece of work if skilfully directed.

**The Home of the Lower Plants.**—Woodlands are the particular resort of a variety of Cryptogams. The whole group of Fungi are especially fond of moisture, and as they can grow in the shade they flourish in the woodlands. They are to be found on the trunks of the trees, to which they do a great deal of harm. Old stumps are especially the habitat of many fungi that flourish upon the putrescent wood. Upon the sticks or dead (or living) undergrowth a large number of the microscopic forms are to be found. Upon the ground the agarics and peziziform fungi grow, and the beautiful earth-stars.

Lichens grow well in woodlands upon the trunks, and where the wood is rocky on the rocks. They need a clear atmosphere and moisture. Here, too, those delicate, moisture-loving plants known as Hepatics or Liverworts are particularly at home. They grow upon the base of the tree-trunks, amongst the undergrowth, on rocks, and upon the bare ground, in open clearings and rides. The same remarks apply to Mosses. Horsetails and Ferns are especially fond of moist habitats that are to be found in woods.

**Animal Life of the Wood.**—In all types of vegetation there is an intimate connection between the plant and the animal life, but the woodlands are the especial resort of many types of animal life. The density of the woods compared with the openness of the meadow or pasture affords an additional means of protection. It is in the woods that those animals
called vermin by the game-keeper are especially at home.

It is probable that a certain amount of dispersal of plants is effected by these animals, the pads of the fox being often filled with clay in which seeds may be carried long distances. Upon the spines of the hedgehog large fruits such as crabs may be transixed, and burs may stick to them.

Birds, especially in woodlands, act as carriers of seeds from one place to another. The hard seeds of fruits may be dropped after the soft exterior has been eaten. In the same way squirrels may disperse nuts, storing them and forgetting them. Woodpeckers and titmice are factors in a woodland to be considered, because they aid the destruction in time of the trunks, which they riddle with holes and expose to air and rain, causing them to rot. The innumerable interactions between plants and animals are full of material for study.

**Ancient Woodlands.**—The antiquity of the woods and forests in this country is undoubted, but as yet little definite information is available, from the absence of any clear evidence earlier than the deposits that just precede the Ice Age or the Cromer Forest bed. In addition to the numerous other plants, some, as *Trachyandra* (Water Chestnut), denoting a warmer climate, there were remains of the following trees: Elm, Oak, Beech, Hazel (rare), Alder, White Birch, and three species of Willow. These indicate the same type of woodland that is met with in this country to-day. If one were to examine the flora of the earlier Oligocene or Eocene one would find that the climate was still warmer, and in the Bovey Tracey beds the giant or mammoth tree type of California, Cinnamons, Evergreen Oak, Fig, Laurel, and in the Bournemouth beds of the same age, Eucalyptus, Araucaria, *Sequoia*, *Platanus*, are found, indicating as warm a climate.

Between these beds and the Cromer Forest bed we have no very clear connection, but Oak, Elm, and Poplar of allied species occur. The submerged forests around the coast belong to a later period than the Cromer Forest bed, and contain the present-day trees.

The Peat beds of Scotland have two forest beds, the lower containing largely White Birch, whilst the upper contains Pine, and these lie over Glacial beds. In Norway there is a third forest bed of Spruce. Thus, whilst we are largely foiled by the influence of the Ice Age in determining the area and age of ancient woodlands, there are certain data which indicate that they are Preglacial.

**Tree Zones.**—The influence of altitude upon plants varies in degree. The tree type is especially affected by altitude, and in a corresponding manner by latitude or climate. In the tropics the belts as the loftier mountains are ascended correspond with those which are observed as one travels from the Equator to the poles. Thus at the Equator there are wet jungles of palms and bananas, followed by Savannahs, 10 degrees north to 20 degrees. Between 20 degrees and 30 degrees the main deserts are met with. Then come the Steppes and woods, made up of evergreen trees between 30 degrees and 45 degrees.

The large deciduous forests range between 45 degrees and 55 degrees, and it is in this zone mainly, the cold temperature zone, that the British Isles are included. Northward from 55 degrees to 65 degrees come the Pine forests of Norway and countries of the same latitudes, as Canada in North America. The frozen Tundras, all but treeless, come between 65 degrees and 75 degrees. The everlasting snow lies north of this, and beyond the snowline only mosses and lichens will flourish as a whole.

In ascending a tropical mountain there are from sea-level to 4000 ft. tropical forests, from this point to 8000 ft. sub-tropical forests, and upward to 9500 ft. temperate deciduous forests. A zone of conifers comes next between 9500 and 11,500, alpine shrubs between 11,500 and 13,300, alpine herbs up to the snowline, and above it mosses and lichens.

**Woodland Habitats and Associations.**—Habitats in general may be wet or dry, rocky or not, upland or lowland. The wettest habitats (especially E. Anglia) are afforded by the Alder-Willow associations, where the scrub and ground flora is made up of such plants as Guilder Rose, Currant, Gooseberry, Meadow-sweet, Yellow Flag, Reed, &c., Bitter-cress, Kingcup, Figwort, Great Hairy Willow-herb, Tussock Grass, &c. The tree types are scattered, and the ground itself is open, allowing such large herbaceous plants to thrive.

On clays and loams, sandy and siliceous soils, the trees are Oak, pedunculate and sessile, Birch, with other trees. The scrub and ground flora are very variable. The woodland may be close or open. On clays and loams the ground flora is largely gregarious, e.g. Bluebell, Bracken. On sandy soils more often there is a good deal of bare rock surface with deep soil elsewhere, giving a variety of habitats. The same applies to a Birch wood. Here also there are wide associations of grasses, such as Heath Hair Grass, Matweed, &c., and the heaths also form wide gregarious associations. These habitats are largely upland, whilst the oak-woods are mainly lowland, the sessile Oak not growing above 1500 ft. as a
rule. The pedunculate Oak has wet-soil conditions, the sessile being adapted to dry-soil conditions.

The woodlands on calcareous soils (Carboniferous Limestone, Chalk, Oolite) afford in the case of Ash woods varied habitats or types of association, the plants being often gregarious, as in the case of Dog's Mercury and Archangel. They rise to some altitude. On marls the Ash-Oak woods are variable in the types of association. In the case of Beech woods the habitat is upland very largely, and, dry, there being a scented scrub and ground flora.

**The Habit of Woodland Plants.**—The wet or dry character of the woodland determines largely the nature of the habit. Thus in Alder-Willow woodland associations the plants, such as Rushes, Grasses, and Sedges, with the grass habit are largely tufted or cespitose. Even the rosette types are frequently tufted, as in the case of Marsh Marigold and Buttercress. The procumbent or trailing habit is also characteristic. These habits are transitional to the submerged and floating habits of purely aquatic plants, which are intimately associated with fen formations.

In the normal dry woodlands the tree habit is the dominant one. The scrub is analogous to that of the tree habit, but is always influenced by the tree zone. The stems and branches are less strong, and thick, the leaves are small, and often several times pinnate. Spines are more numerous, and the flowers are more suited in most cases to pollination by insects.

The ground flora is variable in habit. There is the climbing habit of the Ivy or the Honeysuckle, &c., adapted to reliance upon the support of trees or scrub. The bulbous or tuberous habit is especially typical, e.g., Bluebell, Orchids. A large number of plants are prostrate or procumbent, or provided with creeping underground stems, as Strawberry, Wood Anemone.

**Flowering Seasons in the Woods.**—The shade conditions in a woodland have a marked effect upon the periods of flowering. There are thus, apart from the general seasons of flowering in May, June, and July, when the sunlight is fuller and stronger, early-flowering plants and late-flowering plants. Those plants that flower early, seize the opportunity of doing so before the leaves of the trees appear, or at least before the foliage is fully developed. The growth season of bulbous plants is short, and they flower early in consequence.

The earlier plants to bloom in the woods are the Winter Aconite, Snowdrop, Lesser Celandine, Spurge Laurel, &c.

The trees themselves largely flower before the leaves, owing to their adaptation for wind pollination, as the pollen would be less likely to be dispersed when the leaves are fully expanded. The Willows depend partly on the wind, partly on insects, and so flower early.

The scrub is largely influenced by the same factors also. The Hazel relies on wind pollination, and is the earliest to flower. The Blackthorn also flowers before the leaves appear, since it is more conspicuous than later. The Grasses, in spite of the fact that they are chiefly wind-pollinated, flower, as a rule, rather late in the woods.

The late-flowering groups are chiefly the Hawkweeds, rosette plants whose scapes are long. The Brambles, owing to the great output of stems and branches, also flower late. The latest plant to flower of all plants is a woodland plant, the Ivy.

**Height of Woodland Plants.**—A particular feature of the woodlands is the height of the dominant type, the trees. It is largely owing to their height, which is regulated to a considerable extent by the wind and soil, that they are the dominant type of plant, next to Grasses, in the world flora itself.

This characteristic enables them to outstrip other plants in the struggle for sunlight and air. They are thereby enabled to counteract the influence of all other classes of plants, which growing below do not affect them in these respects. These facts require special emphasis.

The lower strata of plants are directly influenced as regards height (and other factors equally) by the dominance of the tree zone. This is seen in its greatest extreme in a Beech wood, where the ground flora is often nil.

The scrub, e.g., Blackthorn, Elder, &c., suffers less than the ground flora, and this is seen in clearings, where the scrub may rival the younger trees in height, &c. Like the tree zone, the scrub normally has a definite upper limit. The undershrubs, that are in turn dominated by the scrub or large shrubs and smaller trees, also approximate in height to a certain standard.

The ground flora is of course influenced most by being covered by two strata above. Consequently, as a rule, it also approximates to a certain general height, e.g., Grasses, and others with the grass habit. Orchids and bulbous plants come next. Then there are the trailers, such as the Barren Strawberry; and lastly the mosses and hepatics.

**Life Duration of Woodland Plants.**—As a rule, shade plants are perennial, whilst the annuals and the biennials are to be found amongst the sun plants. A feature of the woods, dominated by the tree type as they are, is the deciduous character of the vegetation, at least in the cold temperate zone. This is an adaptation to
climatic conditions necessitated by the relation of the cold winter period to that of summer. No large tree in this country, except the Pine and Yew, is evergreen. The Holly and the Box are lesser trees which have adopted this habit.

The scrub also consists almost entirely of deciduous shrubs or trees. The hardy ligneous climbers are also deciduous, as the Honeysuckle. The Ivy, however, is an evergreen. A large part of the ground flora is made up of deciduous herbaceous perennials. Unless the woodland plants were as a whole perennial, it is difficult to understand how as annuals they could in the short growing period manage to germinate, and develop stems, leaves, flowers, and fruit; for the light is so feeble compared with that of the open pasture that assimilation would not keep pace with the demands of the plant for rapid growth. Hence also the prevalence of vegetative modes of reproduction.

Pollination of Woodland Plants.—Apart from grasses, docks, and plantains, &c., which are largely pollinated by the wind, the bulk of the meadow and pasture plants are pollinated by insects.

The case is different in the woods. If one excludes beetles, which are very partial in their choice of plants for pollination, and certain types of Hymenoptera, the group of flower-seeking insects is not so conspicuous in close woods as in the open. True Lepidoptera, especially moths, are frequent in woodlands, but the majority are not bearers of pollen. The Honeysuckle is a familiar example of the dependence of long-tubed plants upon crepuscular moths with a long proboscis, such as the Humming-bird Hawk Moth.

The main feature of woodland plants is the prevalence of wind pollination in the case of the trees. The Grasses are also pollinated by the same agency. Another feature is the occurrence of cleistogamy, as illustrated by the Violet and the Wood-sorrel. A considerable proportion are monocious plants adapted to self-pollination, whereas the dioecious species are in the majority in open habitats.

The Dispersal of Seeds in Woods.—In a wood the struggle for existence is so great, owing to the abnormal conditions of light and heat and the density of the vegetation, that plants must necessarily adopt special means of dispersal to a distance. The trees themselves have set the example by being practically all dispersed by the wind. In this, again, they have a pull over the other plants, for being lofty their fruits are more likely to be carried the farthest.

The lower strata of plants are also largely dispersed by the agency of the wind. The Rosebay and other Willow-herbs have cottony appendages, which enable the seeds to travel like parachutes and to settle at a distance. Red Campion, Bluebell, and many other plants possess censer fruits, whilst others are propelled by a catapult or explosive mechanism, as in the case of Wood-sorrel and Wood Spurge.

Animal agency is also largely influential in dispersing seeds. Luscious edible fruits, as those of the Cherry, Rowan, &c., are so scattered. Ivy berries serve the birds in winter. Many fruits have hooks which catch in the coats of animals, as Enchanter's Nightshade, Sanicle, Woodruff, Wood Forget-me-not. The Violet is largely distributed by ants. The small seeds, too, of Grasses and orchids are scattered by aid of the wind.

Soil and the Woodlands.—The influence of soil is well shown in the case of woodland plants in the predilection of the several types of dominant tree for a particular kind of soil. But the ground flora is also made up of plants that prefer certain types of soil before others. Whilst most woodland plants live in a soil rich in humus, there are many that do not absolutely require it. Typical humus-loving plants are Wood Anemone, Goldilocks, Wood-sorrel, Enchanter's Nightshade, Angelica, Ivy, Woodruff, Small Periwinkle, Wood Forget-me-not, Betony, Dog's Mercury, Aspen, &c. A few are especially addicted to a sandy soil, as the Lime, Wild Cherry, Strawberry (the two last need some humus), Wych Elm (also on clay), Oak (or on clay), Snowdrop, Bluebell (both the latter need some humus too). Clay is preferred by Sanicle, Honeysuckle, Wood Loosestrife, Yellow Archangel, Twayblade, Rampants, which are damp-loving plants, and they need some humus. Chalk or limestone is required by Green Hellebore, Wayfaring Tree, Marjoram, Wood Spurge, Beech, Bee Orchis, Lily of the Valley, and here, again, there is some humus required. The Columbine, Holly, Mountain Ash, Foxglove, Wood Sage, as a rule, grow on more rocky shallow soils.

Methods of Survey.—The first object to aim at in surveying a wood is to estimate the nature of the dominant tree type. This may be done by marking out squares, and numerically counting or mapping the trees in such a space. If an entire wood is done the most perfect results will be obtained. It is possible, however, to estimate this factor by taking one or two small squares in different parts. A further fact to be ascertained is whether the wood is open or close, whether it is coppiced or not, and whether the tree types are artificial or natural. The character of the soil must be
ascertained, and the trees should in mapping be put down accurately on squared paper, ruled to a definite scale. What applies to the trees also applies to the scrub.

In surveying the ground flora it is not enough to make a list of the plants found in the woods in order of dominance, noting the relative frequency of each, but attention should be paid to the form of association, and to the relative position of certain types which occur in a definite connection with each other. As there are early and late flowering periods, surveys should be made at different seasons of the year, in order to get a full and accurate idea of the whole formation. The conditions of light, moisture, height, soil, &c., must also be noted in each case, so that a connected idea may be formed of the full nature of the environment and its influence upon the woodland flora.

SECTION VI
ROADSIDES AND HEDGES

Accessibility of the Roadside.—One of the features that the roadsides possess in common with meadows and pastures, or fields, for the botanist commencing to study plants in the field, is their accessibility. There is, in fact, no law of trespass applicable to roadsides. It is advisable to respect the rights of those who rent the grass strips on each side of the road during the summer for the grass which is laid to hay. This ought not to be promiscuously trampled down. Other points to notice are the necessity of avoiding the breaking down of weak fences, or the damaging of trees or hedges, by making gaps.

Diversified Character of the Roadside.—The roads or highways are essentially diversified. One of their main features is their continuity, which causes the flora to be exceptionally varied. Thus we may pass from a road in the west amongst ancient rocks of a sandy or siliceous character to others in the Pennines where limestone predominates, and the change in the flora will be most marked. Moreover, roads exhibit a great variation in form. Some roads, especially the Roman roads, are remarkably straight, and the aspect is thus essentially the same, whereas other roads are wending in character, and we may thus have the opposite aspects upon the same side of the road.

Then there are upland and lowland roads, the former more ancient. The plants of the one differ from those of the other. Frequently a road will exhibit repeated undulations as it crosses transversely a series of valleys, and this will give the flora a diversified character, introducing alternate wet and dry conditions.

Artificial and Modern Character of Roads.—A road is essentially artificial in character. But in spite of this fact there are even from the natural point of view some features of interest, e.g. the dispersal of certain groups of plants by their agency, and the juxtaposition of three or four types of vegetation that make it of particular interest, as the sward, hedge, and ditch.

Moreover, it is really chiefly the macadamized part that is entirely artificial and of no especial interest, though even this has its special features, as the predilection of certain plants for macadam borders, e.g. Silverweed, and especially some mosses that are rarely found (though naturally they do exist) elsewhere, e.g. Pottia bryoides, dependent upon the dispersal of nitrogenous matter in manure, &c.

Then, again, roads, especially primitive unfenced roads, or the roadsides, are actually parts of ancient pasture or meadow, or even woodland in many cases.

As a whole, roads, however, are modern, and it is only a question of degree in each case. The ancient roads naturally are likely to have a more varied flora, made up of plants that have been carried along them by human agency or otherwise, and the more modern roads will necessarily be more uniform.

Enclosure of Roads.—As a general rule, roads, especially main roads, are bounded by hedgerows or walls, and where necessary and possible by ditches. But very often in country districts the road, which is in such cases intersected at each field boundary by gates, is not enclosed at all, but is simply a macadamised track through fields, often arable.

This, moreover, is very largely the case in hilly districts, where there are large tracts of heather or furze which may or may not be common land. It was at the time of the enclosure of the common lands that the majority of the roads now fenced in were also enclosed, so that the enclosing portions, hedgerows and
ditches, are not, as a rule, more than 200, and usually only about 100 years old. And as the enclosure of a road, as will be seen, is of importance in determining the flora of a roadside, these are really points of importance that need emphasizing.

Planting of Roadside Hedges with Trees, &c.

The enclosure of roadsides demanded the planting of hedgerows and trees in order to keep cattle, &c., from straying upon the roads promiscuously. As the enclosure is modern, comparatively speaking, so also is the planting of the hedgerows. Where roads pass through wooded districts, however, hedges may be more ancient, the natural tree and scrub of the woods being utilized for the purpose. Moreover, some roads that were not enclosed already had trees on either side of the road before the hedgerows were planted, some old avenues dating at least 200-300 years back. The influence of planting in hedgerows and along roadsides is important alike in establishing a tree zone and in controlling the light for both hedgerow, or scrub layers, and the ground flora.

The Preservation of the Roadsides.—Our English roadsides have been noted for their beauty; and this is a subject for praise well-earned in many a district still. But there are factors that are disturbing the conditions that make for the beauty of the wayside to-day. They may be divided into three sections: (1) upkeep of the roadside, (2) traffic of the roadside, (3) hawking and collecting of wayside plants.

The upkeep of the roadside by Urban and District Councils results in the reduction of the wild nature of the vegetation to the clipped and neat appearance of a park walk. Chacun à son goût, and everything in its place, one may say, but the essential beauty of a country lane lies in its natural, not artificial character. So that the trimming of the hedge, which reduces it to a dead level of purely vegetative branches, and also affects the undergrowth, is misplaced enthusiasm. So, also, is the too frequent clearing out of ditches, and the plasting of their contents upon the hedge-banks.

The rooting up of plants for sale along the roadside is another factor. In a few counties, such as Devon, Surrey, Kent, Sussex, and part of Essex, local by-laws have been framed to prevent this. It is hoped all counties will follow suit. Since these lines were written, other counties have actually done so.

Influence of the Macadam.—The macadam is normally the artificial part of the road. It varies in different districts, owing to absence or presence of quarries suitable for road-mending purposes. Over a large area of this country certain quarries distribute their special materials, e.g., quartzite from Nuneaton, granite from Mountsorrel, syenite from Charnwood Forest generally, basalt from Rowley Regis.

These rocks afford, when broken down into grit and dust, siliceous particles, and accordingly, when distributed over the Eastern Counties or east of the Pennines, introduce new soil conditions, and may in this way help to disperse new plants in the district. For the margin of the macadam abuts upon the soil, and plants grow close up to the fringe of turf. Silverweed, White Clover, Strawberry-headed Clover, &c., are plants that grow commonly by the wayside where a siliceous macadam is put down.

The macadam is liable when gritty to get swept on to the greensward, where, indeed, a pile of the sweepings is often laid. When macadam is sandy or gravelly the margin, or in an infrequently used road the grassy ridges between the racks and the middle area of macadam, is often a special habitat for sand- or gravel-loving plants, as Trifolium piliferum, Menchia erecta, Bird’s Foot, Subterranean Clover.

A chalky, flinty, or limestone, or oolite road is often made on such rocks which may have shallow soils, and in such cases the macadam is merely the soil exposed. Here the Rockrose, Horseshoe Vetch, Squinancy Wort, &, grow.

Effect of Traffic.—The maintenance of a road is for traffic, and this factor is one of the most important in determining the type of flora upon a roadside. There are three or four classes of road dependent upon traffic:

(1) Main road with frequent and heavy traffic, much used.
(2) By-road with less frequent traffic, little used, but maintained as a main road.
(3) By-road, where the road is not maintained, and only the effect of vehicular traffic keeps the track open, and this produces ruts, and alternating strips of grass between.
(4) Ride, or unused road, generally grassed over, and to all intents and purposes continuous pasture or meadow.

Along the first type the hedges are often close-clipped, and there may be pathways (tarred, &c.) at the side. Dust will almost invariably stick to and clog the leaves of the plants, giving the wayside plants a sickly appearance. But the frequency of agricultural traffic may introduce here a good many fresh plants.

In the second case the first factor is less aggravated, and the wayside flora more
luxuriant and less covered with dust, &c. The frequent traffic with wagons, &c., causes a good proportion of cornfield weeds to be dispersed along the way.

In the case of (3) and (4) the effect of traffic is more or less negligible.

Dispersal by Roads.—As the media for traffic of all kinds it is not to be wondered at that roads afford one of the greatest means of dispersal of plants. And though this is obvious if one thinks about the matter at all, yet it does not seem, like many other facts of this nature to which attention is drawn in these notes, to have been adequately considered.

It should be noticed that the distribution is in the first instance linear, but may be later much more general, and the origin (via any particular highway) may be obscured. Another equally important fact is the extra protection afforded by the unusual closeness of the hedges, and the ample shelter they, and the ditches, afford. The greensward also is subject to interference from traffic by man or horses, &c., or mowing in summer, or the operations of the road-scaper, hedger, or ditcher.

Man himself is responsible for some dispersal of seeds. Workmen carry in their bags plants and soil, liable to be dropped in passing to and fro. People using roads who have traversed arable or even grass fields or woods are liable to leave seeds behind embedded in mud from boots or shoes, or which have been caught in the clothing. Gardening operations in allotments, &c., are responsible for a good deal also, weeds being thrown over the hedge into the road.

Birds especially are liable to carry seeds and drop them along the highway. Cattle, horses, &c., disperse them in hoofs; and in their coats, which are woolly or hairy, seeds that are furnished with hooks or spines may be caught, and so dispersed. The carting of hay, corn, stones, lime, dressings, manure, &c., is a very frequent source of dispersal on highways.

Wind is another factor. So also is the drainage by ditches, water plants being introduced in this manner.

The Hedgerows in Fields and along the Roadside.—Since an integral part of the highway is the hedgerow on each side, it is best to regard the hedgerows in fields as similar in character to the roadside hedgerows, for both have the same origin. One feature of roadside hedgerows, however, is their continuity in a more or less parallel course, whilst hedgerows in fields are limited in extent and direction to moderately-sized rect-

angles; so that dispersal along the wayside is if anything more permanent.

The roadside or border of each hedge on a highway is frequently the habitat of a more numerous ground flora, as it is less disturbed in rural districts, but the hedge itself is usually kept well trimmed and layered, whereas the hedges in fields are often allowed to grow for a long period untouched.

Village Outskirts and their Influence on a Roadside Flora.—When a series of roads has been studied and the floras of all compared, one outstanding feature will become apparent. It will be found as a rule, allowing for the possible change in soil, altitude, moisture, &c., that the flora of the roadside is fairly uniform, when the immediate effect of villages or towns upon the route is eliminated.

But a noticeable fact, which will soon become apparent, is the occurrence at variable distances from a village of certain plants, which do not travel far along the highway on either side of a town or village. Such plants are, for example, Greater Celandine, Winter Cress, Dwarf Elder, Tea Plant, Hop, Horse-radish, Chickweed, Comfrey, Borage, Alkanet, Clary, Black Horehound, White Horehound, Pellitory-of-the-Wall, Good King Henry, &c.

Rarely, if ever, do these plants occur in the majority of districts in any other or a possibly native station. The probable reason of the occurrence at all near villages or on the highways, is the former use of these plants for domestic or herbal or other purposes. They cannot, in fact, be regarded as truly native.

Gate-posts, Gateways, Bridges, Stone-heaps, &c.—The continuity of the greensward or the hedgerow on a highway is sooner or later broken by gateway, bridge, and stone-heap, or some other equally welcome variation of the general monotony.

The gate-posts and gates on every highway are a frequent source of interest to the lichenologist. They afford also to the student of flowering plants an easy means of wandering for a while from the highway on either side, and this makes the flora to be studied along a highway more varied and interesting.

About a gateway unusual plants will occur, such as Wart Cress, Charlock (Raphanus), Great Plantain, Knot Grass, various Chenopodia, Docks, &c., dispersed from arable or similar open soil.

Pearlwort may be found on the sides of bridges, or Cerastium triviale, or Rumex Acetosella, and on a wet bridge over a road I have seen growing amongst the bricks, Epilobia, Scrophularia aquatic, &c. In the water or on the margin, aquatic plants may be found, such as Glyceria, Calandra, Lythrum,
&c. Where heaps of stones have been thrown down and then cleared away, on the open ground one may find Red Poppy, Fumitory, Shepherd’s Purse, Persicaria, Spurrey, Charlock, Wild Oat, &c., weeds that have strayed there from the cornfield or elsewhere quickly colonizing the new ground.

**Antiquity of the Highways.**—It is a common fallacy to suppose that the earliest roads were made by the Romans. But since there are a great number of other roads of importance, and certainly early origin, not made like those of the Romans, it is better to consider that these other roads are the earlier, and that the Romans took the roads they found and improved them themselves.

This is, moreover, shown by the occurrence along Roman roads of implements of the Bronze and Neolithic Ages, and Pre-Roman earthworks and burial-places with pottery, &c., as well as tumuli and other remains of Roman age.

The situation of some of the oldest sites of early civilization along the highway is in any case largely responsible for the introduction of plants into this country. Flex and some of the cereals were brought by the early peoples from the Continent, and the subsequent colonization of the country by Anglo-Saxons, Danes, Normans, and others has in each case augmented the original native flora, and it was largely by the agency of the ancient highways that these plants found their way into the districts where now they are considered to be native.

**High-level Roads and Low-level Roads.**—Owing to the effect of the Ice Age it was not possible in the Palaeolithic or early Stone Age for any direct tracks to be made across the country as in later times, nor was man then able to construct such roads, for his implements were of the crudest character, and his intelligence of no higher order. When the climate became ameliorated, man in the New Stone Age or Neolithic period was able to traverse the country more easily, and means of communication became a necessity as the beginnings of trade and agriculture became possible.

So it is found that there are certain types of ancient road which date from the ensuing era or Bronze Age. The low-lying country was then of a marshy and unsuitable character for cultivation, and impassable, so that the roads at first ran along the ridges, and are known as *ridgesways*. Remains found along these roads are the earliest. Next to these were *hillside* roads, which ran along the sides of the valleys or the hills dividing them. These were made in the late Bronze Age. Of a still later type are the *harrow ways* of the South of England, which are of late Celtic Age, just preceding the Roman period, and it is probable that these were largely utilized by the Romans in making their own way across the country.

All these types are high-level roads, and the low-level roads were not made until the country was brought under cultivation and drainage after the felling of forests.

The distinction between these types of roads is important in estimating the relative age of introduction of plants by such means as roads.

**Roadside Habitats.**—Though a roadside appears to present extremely uniform conditions at first sight, in reality there is a good deal of diversity. A solitary bush by the wayside may form exactly the habitat for such a plant as Hemp Nettle, which requires such protection, but not that of a moist ditch.

The maccadam at its margin or on old unfrequented roads affords a habitat for a number of characteristic plants, such as Silverweed and Common Cinquefoil. Along the sward at the side of the road grow the usual meadow or pasture plants, varying with the soil. On clay in early spring on open ground the Lesser Celandine may be seen, on sandy loamy soil later appears the Upright Meadow Crowfoot.

The ditch affords a habitat for moisture-loving plants, such as Watercress, Willow-herbs, Figwort, and in wide ditches one may find Duckweed and Starwort, or Water Buttercup. The bank of the hedge affords a shelter for numerous plants that require shade and protection, such as the Herb Robert, Jack-in-the-Hedge, Avens, White Dead Nettle, Nettle, Docks of various kinds which grow near water, with Sedges and Rushes and many others. The three-nerved Sandwort and Chickweed grow in the hedge bottom, as do Archangel and Mouseherb.

In the hedge itself grow Hawthorn (widespread), Elder, Sloe, Buckthorn, Cornel, Blackberry, Rose, Field Maple, Guelder Roses, and such trees as Oak, Ash, Beech, Wych and Common Elm, &c.

There is frequently a little scrub at the side of the road, in some parts made up of Sloe or Furze or Bramble, amongst which many other plants, as Grass Stichwort, &c., will grow. Further variety is afforded by the occasional occurrence of ponds or streams by the wayside.

**Limits of Roadside Vegetation.**—Soil alone does not cause the variation to be noticed in a roadside flora. Much depends upon the altitude of a road also, apart from the effect this usually has upon the upkeep of the road. Above 1000 ft. cultivation ends, and with this
limit also other plants disappear. The typical vegetation above this is the moorland heather, &c., varied with Matweed or wet-soil plants, as in the bogs, which cover so large a part of the uplands. As a whole, in fact, the flora of a roadside is usually very uniform in this respect, as it is a sine qua non to provide a level road. But there are considerable variations in altitude in the same road, and the flora even at the bottom of a long steep hill will differ from that at the top, if only from the greater exposure to wind.

At low levels in flat country the roads may frequently be under water for some period of the year, or the surrounding district over-saturated with moisture, especially near rivers. In this case many plants will be dispersed, owing to the floods, by the carrying of seeds from elsewhere, and aquatic plants often spring up along such roads.

The influence of altitude upon plants in this way should be carefully noticed, and lists of plants at different heights should be made and compared.

Effect upon Habit.—The tree types and hedge or scrub of a roadside may be continuous or discontinuous. In the former case, if the two sides of the road are equally allowed to attain their full development, as in an avenue, to take an extreme case, the effect upon the rest of the flora will be similar to that of a ride or glade in a wood, and the conditions as regards light, moisture, and protection will be such as shade-plants require. The latter have several types of habit, as the inversely pyramidal, grass habit, and rosette habit. Where the tree and scrub are discontinuous the conditions will be intermediate, and sun-plants will in this case be more dominant, whilst shade-plants will seek the shelter of the hedge bottom or ditch. In the opposite extreme case, where both trees and scrub are absent and the hedges layered or cut back, shade-plants will survive only in the hedge bottom and ditch.

The flora of the sward in the first case will be more akin to that of a woodland, whilst in the third case the flora will be of a dry-soil meadow type. The plants in the ditches, owing to the narrow character of the latter, will be erect and drawn up, developing spike-like flowering stems, and reduced or rosette foliage, whilst the aquatic types will be less well-developed, and in the intense struggle for existence will at the lowest level show abnormal characters. The hedgerow plants and trees are largely affected in habit by artificial trimming or layering.

Flowering Seasons.—The flora of the roadside is decidedly composite, so that the seasons of flowering of wayside and hedgerow plants are sufficiently representative. The meadow types that flourish on the sward are akin to those that grow in the fields, and these, except Grasses, are more or less early. Plants such as Ragworts, Red Bartsia, and Rushes are late-flowering. The Sedges usually meet with are early-flowering species, as Carex verna (or praecox), Carex glauca, &c. The Daisy and the Dandelion are almost perennial.

The ditch vegetation, like that of truly aquatic formations, is as a whole late, e.g. Watercress, Great White Stitchwort, many Rushes, Sedges, &c., whilst Cuckoo Flower is early in flowering. The plants that lurk in the hedge bottom are representative of all months of the year. The Lesser Celandine appears almost before any other flowers, and the Spurge Laurel soon after. The Common Chickweed is nearly perennial. Moschatel is fairly early, and so, as wayside plants, are Lords and Ladies and Dog's Mercury, indicating former woodland. The Red Campion, also a woodland plant, is a little later. Ground Ivy is one of the early plants, and Germander Speedwell also.

In the hedge the Hazel is the first to bloom, then come the Sloe, Crab Apple, Hawthorn, and still later the Dog Rose, Cornel, Guelder Rose, and Buckthorn. Privet is the latest, save the Ivy. Of the trees, the Elms are very early, as are the Willows, then the Ash, the Oak, Beech, Field Maple, and Lime commence to flower by degrees.

Effect upon Height.—The continuity or otherwise of the trees and scrub in the hedgerow has a marked effect upon the rest of the roadside flora. Much depends upon the direction of the road, and the relation of the sun to the barriers that the hedges form to its path across the road.

There are roughly four types of vegetation along a roadside or a hedgerow, and the plants of each type more or less retain the same relative standard as to height, save in the case of the plants on one side which receive least sun, or are hidden by an overhanging hedge or tree belt. The height of the ditch plants is regulated by the height of the ditch. Those that grow vigorously, as Great Hairy Willow-herb, endeavour to reach above the banks on either side, and are usually abnormally long. Hence they must not be taken as typical examples. The plants at the bottom, as Watercress, are necessarily dwarfed, and consequent upon the crowded character of the ditch often lie along the bottom in a procumbent manner, and so lose height, even if they do not spread much more extensively than usual. The plants below or at the bottom of the hedge, as Three-nerved Stitchwort, usually lie on the surface,
but some are elongated to reach the sun. Those that grow on the hedgebank, such as Hedge Mustard, are frequently much elongated when on the northern aspect. Others, as Herb Robert, have a straggly habit, as a result of their growing forward to the light through the hedge itself.

**Diversity of Types on the Roadside in Relation to Perennation.** — The composite character of the wayside flora renders it variable in respect of the way in which the plants adapt themselves to the growing season, or acquire their life duration or mode of perennation.

The Elm, Ash, Oak, Lime, Poplar, Willows, Hazel, Hornbeam, Sycamore, &c., all frequently planted by the wayside, are deciduous trees. Holly and Yew or Pine are evergreen. The scrub or shrub type is similarly deciduous e.g. Hawthorn, Cornél, Spindle, Buckthorn, Apple, Field Maple, Rose, and the Bramble, Spurge Laurel, &c., among under-shrubs, are all also deciduous. Box is evergreen, but is only native on the chalk and oolite at Boxhill and one or two other places. The aquatic vegetation is largely herbaceous and perennial. The sward is made up of herbaceous perennial or annual Grasses, and some other perennials. The bulk of the annuals, as Shepherd’s Purse, Wart Cress, &c., are derived from other sources, cornfields, &c.

**Pollination of Roadside Plants.** — A particular feature of the roadsides is the wandering of insects along the roadside. They do not, as a rule, fly away over the adjoining fields, but continue their course along the highway.

It is thus not surprising that the bulk of the wayside plants are adapted to insect visits, which are numerous, and that most of them are cross-pollinated. But since nature has allowed for the exigencies of the weather and the occurrence of rainy periods, many of these plants are equally adapted to self-pollination, as Hedge Garlic, Greater Stitchwort, Perforate St. John’s Wort, Herb Robert, Common Bramble, Crab Apple, Hedge Parsley, Cornél, Moschatel, and Elder and Cleavers are self-pollinated, as a rule. In some the anthers are mature first, as in the Teasel, Ground Ivy, and Bugle, in others the stigma, as in the Sloe, and Hawthorn, and Lords and Ladies. The Ash, as well as the other hedgerow trees, and the Nettle are largely pollinated by aid of the wind.

**The Dispersal of Seeds of Roadside Plants.** — The linear nature of a roadside, and its boundary on either side by hedgerows, places a certain restriction upon wayside plants so far as the dispersal of seeds is concerned; and it is therefore, in so far as the agency of the wind is concerned, more or less definite in direction, either along the road or from one side to the other. But it must be remembered also that the field side of each hedge acts as a barrier to the dispersal of seeds from the fields, &c., from a distance, and there may thus be an aggregation of seeds, stopped by such barriers, along the highway. Moreover, the very fact that a road is devoted to traffic, as has been shown, ensures that seeds will be dispersed by external artificial agency along the way. The Clematis, Barren Strawberry, Hemlock, Hogweed, Teasel, Nipplewort, Ash, Nettle, have their seeds or fruits dispersed by the wind. A large number of fruits are edible or have hooked fruits, and are dispersed by animals, e.g. Barberry, Sloe, Bramble, Rose, Crab Apple, Hawthorn, Bryony, Hedge Parsley, Cornél, Moschatel, Cleavers, Spurge Laurel, Black Bryony, Cuckoo Pint.

In other cases, such as Hedge Garlic, Hedge Mustard, Greater Stitchwort, St. John’s Wort, Herb Robert, Trailling Vetch, Meadow Vetchling, Great Bindweed, Red Bartsia, Wood Basil, Ground Ivy, the plant has a mechanism of its own for dispersing its seeds.

**Soil and the Roadside.** — The soil of the roadside is liable to much alteration, not only from the length and continuity of the road, and the existence of cuttings which expose new layers, but also on account of the interlacing character of the roads. A road taken from S.W. to N.E. on the east side of Birmingham would largely pass over the same geological formation and rock soil.

A road such as the Walling Street, or Great North Road, which cuts across these in a S.E. to N.W. or S. to N. direction, however, passes across a number of different formations. In the west of England the rocks are all older, and contribute to form siliceous soils. A few plants need limestone or chalk, as Clematis or Wood Basil.

A large proportion grow on humus, as Barberry, Greater Stitchwort, Herb Robert, Bryony, Cornél; and some are equally at home on either sand or clay, as Barbarea, Hedge Garlic, Spindle Tree, Rose, Hogweed, Hedge Parsley, Lords and Ladies. Sand without humus is needed by Hedge Mustard, Trailling Vetch, Bramble, Barren Strawberry, Hawthorn, Teasel, Nipplewort, Great Bindweed, Nettle. Clay or sand is the requirement of Barberry, Crab Apple, Elder, Cleavers, Red Bartsia, Ground Ivy, Black Bryony; and pure clay is the soil for Moschatel and Bugle, as well as the Ash, which grows in a native state best on limestone. Each plant thus has a special predilection for some one type of soil.

**Methods of Survey.** — The vegetation of the roadside is composite. There are zones of
vegetation, each of which should be studied separately.

The margin of the macadam forms one zone, the greensward forms a second, and answers to the meadow type of flora. In each case a percentage of the most dominant plants should be noted. A note should be made as to the soil characters here, as in the other zones, also the slope, and relation to the tree zone if it be well developed. Any unusual features of this zone, as the occurrence of scrub, of ponds, or streams that sometimes run parallel with the macadam should be noted. Where stone-heaps or gateways with open ground occur these may be treated as units in themselves.

The intersection of road drains or roadways at right angles to the macadam should be noted, and any influences these bring to bear discriminated.

The next zone, the ditch, is studied as a small stream or river, where it may show embryonic zonation or bands of vegetation of different types. When dry it may be considered as a ground flora to the semi-woodland type of hedgerow vegetation. Bridges crossing such ditches should be studied apart, and the special features recognized.

The hedgerow bank is treated separately, and the influence of the hedge upon the ground flora should be carefully studied. The hedge itself is treated in the same way as scrub, and plants in the hedge bottom as its ground flora. Where walls occur they should be studied as in the section dealing with walls, &c.