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FLORA SCOTICA;

OR,

A DESCRIPTION

OF

SCOTTISH PLANTS.

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FLORA SCOTICA;

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A DESCRIPTION

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SCOTTISH PLANTS,

112

ARRANGED

BOTH ACCORDING TO THE ARTIFICIAL AND NATURAL METHODS.

IN TWO PARTS.

BY

WILLIAM JACKSON HOOKER, LL.D.

F.R.A. AND L.S., MEMBER OF THE WERN. SOC. OF EDINB., OF THE IMP. ACAD. NATURÆ CURIOSORUM, OF THE ROYAL BOT. SOC. OF RATISBON, OF THE HELVETIC SOC. OF NAT. HIST., ETC.
AND REGIUS PROFESSOR OF BOTANY IN THE UNIVERSITY OF GLASGOW.

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1821.

TO THE MOST NOBLE

JAMES DUKE OF MONTROSE,

CHANCELLOR OF THE UNIVERSITY OF GLASGOW,

&c. &c. &c.

The work, which I take the liberty of inscribing to Your Grace, contains a description of the plants of Scotland, a very large proportion of which are indigenous to the domains belonging to the Chief of the family of GRAHAM. *The materials methodized by me in this volume were, many of them, collected at a period when I could not anticipate that I should ever be called to discharge those duties of public instruction which have*

devolved upon me in consequence of Your Grace's kindness and protection; but a full reward will be given to the labours of my earlier years, if they now contribute to assist the pursuits of the students confided to my care.

By striving, as far as my humble efforts will extend, to promote the prosperity of the University of Glasgow, I can alone testify the gratitude which I owe to its Chancellor.

I have the honour to subscribe myself,

My Lord,

Your Grace's very obedient

and very obliged

humble Servant,

W. J. HOOKER.

Glasgow, April 10, 1821.

PREFACE.

The general division of Scotland into Highlands and Lowlands is in itself sufficiently indicative of the nature of the country, and of its aptness to the purposes of Natural History. The Lowlands, adjoining the English frontier, present an extensive and level range of the most fertile corn-fields, interspersed with moist woods, and occasional tracts of barren heath. In a surface thus diversified, and also containing a correspondent variety of soil, the botanist will meet with the greater number of the plants peculiar to the southern districts of Great Britain; while the mountains and rocks of the Highlands furnish a considerable number of others, for which search has in vain been made in any other part of the United Kingdom.

Such a country, though happily now forming an undivided portion of the empire, is of itself so naturally separate, and was so long regarded politically so, that there can scarcely be raised a question as to how far it deserves the distinction of having a volume dedicated expressly to the elucidation of its vegetable productions. In England, as well as upon the continent, the advantage of partial Floras has been generally recognised: they supply the natives of peculiar districts with the means of examining and ascertaining the plants of their vicinity at a comparatively small expense; they furnish an important contribution to vegetable geography; and they record a multitude of facts which would otherwise escape observation; as well as contain in many instances more laboured and more minute descriptions than can be admitted into works of more extensive range.

Sibbald, as early as the year 1684, published his *Scotia Illustrata, sive Prodromus Historiæ Naturalis Scotiæ*, in two small folio volumes, the second of which was devoted exclusively to plants. This work was shortly afterwards attacked with severe invectives, which he met with a *Vindiciæ contra Prodromomas-*

tiges. Whether it was owing to the rebuff which poor Sibbald experienced; or to the unsettled state of the country, little qualified to encourage scientific pursuits; or to any other cause; no further attempt appears to have been made to illustrate the vegetables of Scotland, till the appearance of the *Flora Scotica* of Lightfoot, in the latter half of the last century; a publication soon followed by *Two lists of plants lately discovered in Scotland by Mr. Dickson;* the one communicated to the Linnean Society, the other printed in his own 2d fasciculus of Cryptogamous Vegetables. At a subsequent period, the late indefatigable George Don made many, and in certain instances very unexpected, additions to the Scotch Flora, the greater part of which he published through the medium of Smith's *Flora Britannica*, or Sowerby's *English Botany;* but some of them are to be found in his own fasciculi of Dried Plants. In times more immediately our own, Mr. Hopkirk of Glasgow, the founder of our Botanic Garden, has made a more important contribution to the Natural History of Scotland, by the publication of his *Flora Glottiana*; but still, with the exception of Lightfoot's work, none has yet appeared professing to be a complete Flora of the country north of the Tweed. It will be observed that, in making this remark, I speak only of a Flora exclusively devoted to Scotland; it would be an invidious, and it would also be a needless, task, to provoke a discussion of the merits or demerits of those among my cotemporaries whose publications embrace the plants contained in the whole extent of the British Isles. With these I enter into no competition; nor have I a single observation to offer that may deteriorate from the merits of Lightfoot. His work contains a great mass of curious and valuable matter, selected with judgement when it is a compilation, and admirable where it is original. But it has long been out of print; and it may be added, without any diminution of his fame, that during the last fifty years Botanical science has made such advances that a new and a different work is now required. To supply, therefore, this desideratum is the object of the present publication. The want of a similar work was felt by

myself severely during the last course of my Lectures, and I have reason to believe that it has been equally complained of in the other Universities of Scotland. Of my own qualifications for the task it would by no means become me to speak: I, most assuredly, cannot lay claim to the advantages arising from a long residence in the country; but, on the other hand, I am not altogether a stranger to it. Two successive tours, undertaken for the purpose of the cultivation of this branch of Natural History, the one in company with Mr. Borrer, the other with Mr. Turner, and both of them extending over by far the greatest part of the country, have rendered me, in some measure, acquainted with its vegetable productions. For a much more extensive and intimate acquaintance with them, I am proud to acknowledge myself indebted to the communications of my friends, who are residents in various parts of the kingdom: the information they have supplied me with is invariably accompanied with their names; but in a peculiar manner I feel myself bound to acknowledge the exertions made by my friend R. H. Greville, Esq. who devoted a very large portion of his time to the study of the minuter Fungi, with a success to which that portion of the work will bear ample testimony. Still much remains to be done in that extensive tribe, as well as among the Confervæ, nor could the Botanists of Scotland render a more acceptable service to their Flora than by searching for new individuals of these families: and I can assure them that their labours will be rewarded by numerous interesting discoveries.

The work is divided into Two Parts: the First comprising all the plants of Scotland, arranged according to the Linnean system, with the exception of the last class Cryptogamia. It contains generic and specific characters, with further descriptions and observations, where considered necessary, and occasional remarks on the uses of the plants. The synonyms are curtailed as much as possible, a single reference being considered sufficient where such can be made to a good figure, or to some work which shall have described the plant as a native of Scotland. The Second

Part is devoted to the Natural Arrangement[a]: and here I may claim the merit of being the first who has made such an attempt with the indigenous plants. This section begins with the Cryptogamia, which in the Linnean system immediately follows the 23d class, or the last included in the first part of the work, and which may thus be said to occupy its right place, whichever method may be followed by the student. In the Cryptogamous or Acotyledonous plants, observations are frequently added to the synonyms and habitats; but in the other two classes which correspond with the 23 Linnean classes, treated of in the foregoing part of the Flora, it has been desirable to exclude all remarks and particular stations, and refer for these to the First Part. In all this, my aim has uniformly been to avoid the inconvenience and the expense of a large book. Could the whole have been comprised in a still smaller compass, it would have been my wish that it should have been so; but to have acquired brevity at the expense of clearness would have been no benefit to those who may use this work, and would have been an obvious failure in my own object.

Glasgow, 10*th April*, 1821.

[a] In collecting the characters given of a large proportion of the natural orders; indeed, of all, with the exception of the Acotyledones, it is with much pleasure that I acknowledge the able and willing assistance that has been rendered me by my friend J. Lindley, Esq. That part must be considered as a joint production, and we alike claim the merit, or are responsible for the defects, which it may be found to contain. Of any thing original, however, as to matter, little can be attributed to ourselves; the difficulty has been to select with care from materials which lie scattered in the various productions and memoirs of Linnæus, Jussieu, Decandolle, Mirbel, Richard, and lastly, though among the very first in point of value, those of our learned countryman, Mr. Brown. But it must be observed, that although the name of some author is in most instances added to the characters of the orders, we nevertheless have used our discretion in altering those characters so as to make them suit our purpose. For by generally omitting such distinctions as only apply to extra European genera, we flatter ourselves that the subject has become considerably simplified, without any disadvantage to the student. In those cases where no name is cited we must be considered as wholly responsible.

FLORA SCOTICA.

PART I.

CONTAINING

GENERIC AND SPECIFIC CHARACTERS, WITH DESCRIPTIONS AND REMARKS OF THE 23 FIRST CLASSES OF THE

LINNÆAN SYSTEM.

Flora Scotica.

I. MONANDRIA.

1. MONOGYNIA.

1. Salicornia. *Perianth* single, turbinate, fleshy, entire. *Stam.* 1 or 2. *Fruit* (*Utricle*) included in the enlarged perianth.
2. Hippuris. *Cal.** superior, forming a slightly elevated margin to the Germen. *Cor.* 0. *Fruit* a 1-seeded Nut.

(*Chara*, Crypt. *Zostera*, Monœc. *Valeriana rubra*, Triandr. *Alchemilla arv.*, Tetr.)

2. DIGYNIA.

(*Callitriche*, Monœc.)

1. MONOGYNIA.

1. SALICORNIA.

1. S. *herbacea* (*jointed Glasswort*), stem herbaceous erect, articulations compressed and somewhat thickened upwards notched, spikes cylindrical slightly tapering at the extremity. *Lightf.* *p.* 69. *E. B. t.* 415 (*S. annua*), et *t.* 2475 (*S. procumbens*).

Hab. Salt marshes near the coast, plentiful. *Fl.* Sept. ⊙.

Plant leafless, much branched and jointed; articulations cylindrical or only a little thickened upwards. *Spikes* of fructification lateral and terminal, their articulations scarcely longer than broad. At the base of each articulation, on two opposite sides, is a cluster of three *flowers*, each flower composed of a single turbinate, fleshy *perianth*, apparently quite closed at the top, and pierced, as it were, by the small bi- or trifid *stigma* and the single or two *stamens*; when two, each appears in succession.

2. S. *radicans* (*creeping-rooted Glasswort*), stem woody procumbent and rooting, articulations cylindrical spreading and notch-

* I here use the term "*Calyx*," though there is but one covering to the flower, rather than "*single Perianth*," in opposition to my general rule, because this genus belongs to a natural family whose flowers are furnished both with calyx and corolla; so that the absence of the latter, in this instance, seems to be the effect of abortion.

ed at the top, spikes oblong obtuse. *E. B. t.* 1691. and *t.* 2467. (*S. fruticosa.*)

Sea-coast near Montrose. *D. Don. Fl.* Aug. Sept. ♃.

Differs from the foregoing in being perennial, in its long, straggling branches and short spikes. *Stam.* mostly two. The various species of *Salicornia* are used in the south of Europe and northern coasts of Africa in the manufacture of alkali, whence their English name.

2. HIPPURIS.

1. H. *vulgaris* (*Mare's-tail*), leaves whorled linear. *Lightf. p.* 70. *E. B. t.* 763.

Hab. Ditches and stagnant waters. Near Edinb., and in Ilay, by the sides of lochs, *Lightf.* West end of Duddingston Loch, Edinb., *Maugh.* Castle-Semple Loch near Glasgow, *Hopk.* About Forfar, *G. Don.* Loch of Clunie, and marsh of Bonachally, *Mr. Arnott. Fl.* June. ♃.

Stem erect, simple, jointed. *Whorls* of about eight leaves. *Flowers* at the base of each of the superior leaves, of the most simple structure. *Germen* ovate, inferior, the calyx forming a slightly elevated rim on the top. From the inside of this calyx arises a single *stamen*, at first shorter than the filiform style, but soon equalling it in length. *Anther* very large, of two rounded lobes, in an early stage having the style between the lobes. *Seed* fixed to the top of the cell of the pericarp, and thus inverted.

II. DIANDRIA.

1. MONOGYNIA.

* *Perianth double* (*having Cal. and Cor.*), *inferior, monopetalous, regular.*

1. Ligustrum. *Cor.* 4-cleft. *Berry* 2-celled, with the cells 2-seeded.

** *Perianth double, inferior, monopetalous, irregular. Seeds inclosed in a distinct pericarp* (*Angiospermous*).

4. Veronica. *Cor.* 4-cleft, rotate, lower segment narrower. *Caps.* 2-celled.
5. Pinguicula. *Cal.* 4—5-cleft. *Cor.* ringent, spurred. *Caps.* 1-celled.
6. Utricularia. *Cal.* 2-leaved, equal. *Cor.* personate, spurred. *Caps.* 1-celled, opening with a circular fissure.

*** *Perianth double, inferior, monopetalous, irregular. Seeds naked* (*incorporated with the pericarp, Gymnospermous*).

7. Lycopus. *Cal.* tubular, 5-cleft. *Cor.* tubular, *limb* nearly equal, 4-cleft, upper segment broader, and notched. *Stam.* distant, simple.

8. SALVIA. *Cal.* 2-lipped. *Cor.* ringent. *Filaments* attached laterally to a footstalk*.

**** *Perianth double, superior.*

3. CIRCÆA. *Cal.* 2-leaved. *Cor.* of 2 petals. *Caps.* 2-celled. *Cells* with 1 seed.

***** *Perianth single or none.*

2. FRAXINUS. *Cal.* 0, or 4-cleft. *Cor.* 0, or of 4 petals. *Caps.* 2-celled, 2-seeded, compressed, and foliaceous at the extremity. *Seeds* solitary, pendulous. (*Flowers polygamous.*)

9. LEMNA. *Perianth* single, monophyllous, membranaceous, urceolate. *Fruit* a *Utricle.*

10. CLADIUM. *Cal. Glumes* of 1 valve, 1-flowered, imbricated, outer glumes sterile. *Cor.* 0. *Fruit* a *Nut*, with a loose external coat (*Epicarp*), destitute of bristles at its base.

(*Salicornia*, MONANDR. *Schœnus albus* and *Erioph. alp.*, TRIANDR. MONOG.)

2. DIGYNIA.

11. ANTHOXANTHUM. *Cal. Glume* of 2 valves, 1-flowered. *Cor. Glume* double, each of 2 valves: *ext.* awned; *int.* small, awnless.

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1. MONOGYNIA.

1. LIGUSTRUM.

1. L. *vulgare* (*Privet*), leaves elliptico-lanceolate somewhata cute, panicle compact. *Lightf. p.* 72. *E. B. t.* 764.

HAB. Hedges, not common: about Hamilton, *Lightf.* About Alva, between Kinross and Stirling, *Mr. Arnott.* *Fl.* July. ♄.

Leaves opposite, sessile, entire, more or less obtuse, remaining through the winter if the weather be mild. *Flowers* small, white. *Berries* black, globose.

2. FRAXINUS.

1. F. *excelsior* (*common Ash*), leaflets lanceolate acuminate serrate, flowers destitute of perianth. *Lightf. p.* 641. *E. B. t.* 1692.

HAB. Woods and hedges. *Fl.* May. ♄.

One of the noblest of our trees, remarkable for the curving upward of the extremities of the lower pendent branches in old plants. *Leaves* pinnated with an odd one. *Leaflets* 13—15. A variety (?) is found, rarely in England, with many entire leaves, the *F. heterophylla* of authors. In *F. excels. flowers* polygamous, clustered, appearing be-

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* The structure of the stamens in this genus is very curious, but is not here correctly described. Brown considers them as having a branching filament, one division ascending and bearing one cell of an anther, the other abortive, often indeed bearing the rudiment of another cell.

fore the leaves. *Stamens* and *pistils* springing from the naked extremity of the peduncles. *Capsules* large, flat. (*Samara* Gært.)

3. CIRCÆA.

1. C. *Lutetiana* (*common Enchanter's Nightshade*), stem erect pubescent, leaves ovato-cordate denticulate. *Lightf. p.* 80. *E. B. t.* 1056.

Hab. Woods and coppices. *Fl.* June, July. ♃.

Leaves delicate, on long footstalks, acute, scarcely cordate at the base; upper ones nearly ovate. *Racemes* (as well as the stems) more or less branched, pubescent. *Flowers* white or rose-coloured. *Calycine leaflets* reflexed. *Petals* obversely heart-shaped, patent. *Germen* hispid.

2. C. *alpina* (*alpine Enchanter's Nightshade*), stem ascending glabrous, leaves cordate toothed shining. *Lightf. p.* 80. *E. B. t.* 1057.

Hab. Alpine woods and coppices, and by the side of the Highland lochs frequent. *Fl.* June, July. ♃.

Stems glabrous or nearly so, though they are represented, as well as the leaves, as very pubescent in *E. B.* *Leaves* broadly cordate, glabrous, notched at the base, even in the upper ones, more decidedly toothed and more shining than in *C. Lutet.*: whole plant smaller. Such are the principal marks I can discover that will serve for distinguishing the two species. These differences however are retained in cultivation, at least in transplanted roots. Of the *C. alpina* I have never seen perfect seeds.

4. VERONICA.

* *Spikes or Racemes terminal* (*plants perennial*).

1. V. *serpyllifolia* (*thyme-leaved Speedwell*), racemes spiked many-flowered, leaves ovate slightly crenate, capsule broadly obcordate as long as the style. *Lightf. p.* 73. *E. B. t.* 1075. β. *alpina*, stems prostrate, racemes shorter. *V. humifusa. Dicks. in Linn. Trans. v.* ii. *p.* 288.

Hab. Pastures and road-sides, abundant.—β. Highland mountains. *Fl.* June, July. ♃.

Stems procumbent, five or six inches long. *Leaves* opposite, as in almost all the genus, nearly sessile, more or less pubescent and crenate. *Spikes* or *racemes* lax, very long in α, bracteated. *Cor.* pale blue, with deeper lines.

2. V. *alpina* (*alpine Speedwell*), raceme corymbose, leaves elliptico-ovate subserrate, capsule ovato-cordate longer than the style. *Lightf. p.* 72. *E. B. t.* 484.

Hab. Near the summits of many of the Highland mountains;—of Badenoch, *Mr. J. Mackay.* Garway Moor and Ben Nevis, *Dicks.*—Sparingly on Ben Nevis, *Mr. Murray.* Ben Lawers, Ben Lomond, &c. Mountains in Perthshire, Angus-shire, and Aberdeenshire, *G. Don. Fl.* June, July. ♃.

About four inches in height; turning black when dry. *Leaves* glabrous, nearly sessile. *Bracteas* and *calycine segments* sometimes ciliated. *Racemes* short, forming a *Corymbus*, by which, as well as by its much

longer leaves, brighter blue flowers, and shorter style, it is known from all the varieties of *V. serpyll.*

3. V. *saxatilis* (*blue Rock Speedwell*), raceme lax few-flowered corymbose, upper leaves oblongo-obovate subserrate, stems spreading, capsule ovate longer than the calyx. *E. B. t.* 1027.

Hab. Rocks on mountains, very rare. Ben Lawers, *G. Don* and *Mr. J. Mackay*. Mael Greadha, Breadalbane, *Mr. Borrer*. *Fl.* July. ♃.

Stems woody, very straggling; *flowering branches* long, ascending; lower *leaves* shorter than the upper ones, very obtusely serrated below the point:—in these respects the figure in *E. B.* does not accord with my specimens. *Corymb* (rather than *raceme*) with from 3 to 7 flowers, in fruit lengthening into a short raceme. *Pedicels* much longer than the floral leaves. *Corolla* deep and brilliant blue, by far the most beautiful of the genus. *Cal.* in four deep, oblongo-obovate segments, more or less downy. *Capsule* very large and ovate, the two valves frequently parting some way down from the apex, so as to appear 4-valved.

4. V. *fruticulosa* (*flesh-coloured procumbent Speedwell*), raceme many-flowered subspicate, upper leaves oblong serrate, stems procumbent, capsule ovate scarcely longer than the calyx. *E. B. t.* 1028. *Don's Fasc.* 202.

Hab. Scotland, the *Rev. Dr. Walker*. Has been found on Ben Lawers, *Sm. in E. B.* Mr. Don supposes Dr. Walker gathered it on Ben Cruachan, and that the *V. saxatilis* was mistaken for it on Ben Lawers; so that the identity of this plant as a native requires to be confirmed*. *Fl.* July, August. ♃.

Stems less straggling at the base than the last; *flowering branches* longer; but never so large on the native rocks in Switzerland as the figure in *E. B.*, nor so hairy. Indeed it approaches very near to *V. saxat.*, especially the few-flowered varieties; so much so, that, except what is given in the above specific character, I can point out no further marks of distinction than the flesh-coloured blossoms. Linnæus and Haller supposed them to be varieties of each other: De Candolle questions if they are permanently distinct; but Schrader, Wahlenberg, and Smith, high authorities, wonder that there ever should have been a doubt of their right to rank as species.

** *Spikes or Racemes axillary* (*plants perennial*).

5. V. *scutellata* (*Marsh Speedwell*), racemes alternate, pedicels divaricated, leaves linear somewhat toothed, stem nearly erect. *Lightf. p.* 74. *E. B. t.* 782.

Hab. Bogs and sides of ditches; not unfrequent: as in Kenmuir and Possil bogs, and about Frankfield and Huggenfield Lochs, near Glasgow, *Hopk.*, who has also found a hairy variety at Possil. South side of Duddingston Loch, *Maugh.* Marshes about Edinburgh, Perthshire, Kinross-shire and Angus-shire, *Mr. Arnott*. *Fl.* July. ♃.

Racemes very rarely opposite. *Pedicels* or partial footstalks remark-

* It has been planted by Dr. Walker on a garden wall at Collington, Edinburgh.

ably divaricating; when bearing fruit quite reflexed. *Capsule* large, didymous, of two flattened suborbicular lobes. *Plant* eight to ten inches high. *Flowers* flesh-coloured, with darker blueish veins.

6. V. *Anagallis* (*Water Speedwell*), racemes opposite, leaves lanceolate serrate, stem erect. *Lightf. p.* 73. *E. B. t.* 781.

Hab. Ditches and watery places*. King's Park, Edinb.; and in ditches at Mutton-hole, *Maugh.* Burntisland and Forfar, *Mr. Arnott. Fl.* during summer. ♃.

Intermediate as it were between *V. scutell.* and *Beccab.*, yet abundantly distinct from both. *Stems* succulent, a foot or more in height. *Leaves* varying somewhat in width. *Racemes* long, many-flowered. *Pedicels* short, never reflexed. *Flowers* blueish or purplish.

7. V. *Beccabunga* (*Brooklime*), racemes opposite, leaves elliptical obtuse subserrate glabrous, stem procumbent throwing out roots at the base. *Lightf. p.* 72. *E. B. t.* 655.

Hab. Ditches and water-courses. *Fl.* Summer months. ♃.

Whole plant glabrous and succulent. *Racemes* of many bright blue flowers.

8. V. *officinalis* (*common Speedwell*), flowers spiked, leaves broadly ovate serrate rough with short thick pubescence, stem procumbent very pubescent, capsule obcordate deeply notched. *Lightf. p.* 72. *E. B. t.* 765.

Hab. Woods and pastures, common. *Fl.* July. ♃.

Stem half a foot to a foot long, naked and rooting below.

9. V. *hirsuta* (*small hairy Speedwell*), flowers spiked, leaves ovato-lanceolate acute slightly serrated with a few scattered hairs, stem procumbent glabrous below, capsule obcordate entire. *Hopk. Fl. Glott. p.* 9. *V. setigera. D. Don, Descr. of rare Plants of Scotl. p.* 4.

Hab. District of Carrick, Ayrshire, in dry heathy places, *Mr. James Smith. Fl.* June. ♃.

It is not without considerable hesitation that I have published this as really distinct from *V. officinalis*. The following characters however appear to be permanent, even in cultivation. Its whole length does not exceed two or three inches. *Stems* glabrous below. *Leaves* ovato-lanceolate, often quite lanceolate, entire, or slightly serrated, with only a few scattered hairs. *Racemes* long, many-flowered. *Calyces, pedicels* and *bracteas* longer than in *V. offic.*, much less hairy. *Segments* of the *Cor.* bluer and narrower. *Capsule* almost glabrous, *not* notched at the extremity. The permanent *style*, upon which stress is laid by Mr. D. Don, is the same in *V. offic.* The discovery of this curious little plant is due to Mr. James Smith, a very able and intelligent botanist, of the Nursery-ground, Monkswood-Grove, Ayr.

10. V. *montana* (*Mountain Speedwell*), racemes few-flowered, leaves cordato-ovate petiolate serrate, stem hairy on all sides. *Lightf. p.* 74. *E. B. t.* 766.

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* Not included in the *Fl. Glott.*, and probably rare in Scotland, though common in England. It is not found in Lapland.

Hab. Moist woods, not very common. Dunglass, near the river, *Lightf.* Langside wood, Glasgow, *Dr. Brown.* Woods, Cartlan crags, Glasgow, *Hopk.* Arniston and Lugton woods about Rosslyn, *Maugh.* Campsie and Cathkin, *Mr. Murray.* Cliesh, Kinross-shire, *Mr. Arnott.* *Fl.* June. ♃.

Stem a foot or more in length, weak, trailing. *Leaves* large, slightly hairy. *Flowers* few, pale blue, veined, in loose racemes; pedicels long. *Caps.* large, twice the size of the calyx, of two orbicular lobes, flat, crenate at the margin and ciliated.

11. V. *Chamædrys* (*Germander Speedwell*), flowers racemed, leaves ovate obtuse sessile inciso-serrate, stem bifariously hirsute. *Lightf. p.* 74. *E. B. t.* 623.

Hab. Woods and pastures, common. *Fl.* May, June. ♃.

Stem procumbent, a foot long, with a hairy line running down on each side, and these lines taking different sides between each pair of leaves, or decussate. *Leaves* wrinkled and hairy; upper ones cordato-ovate. *Racemes* long, of many large pale, but bright blue or purplish flowers, sometimes white. *Caps.* shorter than the calyx, obcordate.—In habit resembling the preceding, but very distinct in essential characters.

12. V. *Allionii* (*smooth-leaved Speedwell*), flowers densely spiked, leaves ovate subserrated rigid and as well as the procumbent stem perfectly glabrous. *Vill. Delph. p.* 8. *D. Don, MSS. inedit.*

Hab. Mountains in Anguss-shire, *G. Don.* *Fl.* June, July. ♃.

A valuable addition to our British *Veronicæ*, nearly allied to *V. officinalis*, but differing in the total absence of every kind of pubescence or roughness on the stems and leaves, and in the very dense spike of brilliant blue flowers.

**** Flowers axillary, solitary (plants annual).*

13. V. *agrestis* (*procumbent Speedwell*), leaves (all) petiolate cordato-ovate inciso-serrate shorter than the flower-stalks, stem procumbent. *Lightf. p.* 75. *E. B. t.* 783.

Hab. Fields and waste places. *Fl.* April to July. ☉.

Plant 3 to 4 inches in length, slightly hairy. *Flowerstalks* longer than the leaves, recurved when bearing fruit. *Cor.* small, bright blue. *Caps.* of two turgid lobes, pubescent. *Seeds* large, few.

14. V. *arvensis* (*small Speedwell*), leaves cordato-ovate serrate the lower ones petiolate, floral leaves sessile lanceolate longer than the flowerstalk, stem nearly erect. *Lightf. p.* 75. *E. B. t.* 734.

Hab. Fields and walls. *Fl.* April to July. ☉.

Habit and size of the preceding, or rather smaller, and often mistaken for it, though more from the similarity of the names, as Curtis well observes, than from any absence of characters. *Flowers* sessile or nearly so. *Caps.* obcordate, much compressed, ciliated.

15. V. *hederifolia* (*Ivy-leaved Speedwell*), leaves cordato-ovate mostly 5-lobed, calycine segments cordate ciliated, stem procumbent. *Lightf. p.* 76. *E. B. t.* 784.

Hab. Fields and hedge-banks, common. *Fl.* April to July. ☉.
Stems weak, procumbent. *Leaves* rather fleshy, slightly hairy; terminal lobe the largest: upper leaves sessile. *Peduncles* longer than the leaves, recurved when bearing fruit. *Cor.* pale blue with darker veins. *Caps.* of two turgid glabrous lobes. *Seeds* large, two in each cell.

5. PINGUICULA.

1. P. *vulgaris* (*common Butterwort*), spur cylindrical acute as long as the veinless petal, upper lip 2-lobed, lower one in three unequal obtuse segments. *Lightf. p.* 76. *E. B. t.* 70.

Hab. Marshy places and wet sides of mountains, common. *Fl.* June. ♃.
Whole plant covered with minute crystalline raised points. *Leaves* radical, ovate, fleshy, the margins singularly involute. *Scapes* single-flowered. *Flowers* drooping, purple, *palate* hairy. *Stam.* two, short, white, thick, curved; one on each side the rounded germen. *Anthers* one-celled, vertical. *Style* short. *Stigma* very curious, large, expanded, fixed at the margin and spurred behind, covering the anthers with its broad disk, and bent down over them. *Caps.* ovate, one-celled, bursting half-way into two short valves. *Seeds* numerous, small, fixed to a central column or receptacle.—Near *P. grandiflora* of *E. B.*, but that is twice as large, especially in the flower, which is beautifully veined. In the form of the corolla there unfortunately appears to be little or no difference.

2. P. *Lusitanica* (*pale Butterwort*), spur obtuse curved shorter than the corolla, divisions of the petal nearly equal, leaves and scape hairy. *Lightf. p.* 77 (*P. villosa*). *E. B. t.* 145.

Hab. Marshes and wet moors towards the north-west coast of Scotland and the Isles, not uncommon. Isle of Skie, *Lightf.* Bute and Arran, *Mr. Murray.* Isle of Mull and west coast of Ross-shire:—but no where have I seen it so plentiful as in Sutherland, upon the wet moors adjoining Cape Wrath, growing with *Arbutus alpina* and *Jungermannia cochleariformis.* *Fl.* July, August. ♃.
Much smaller than, and altogether very different from, the preceding. *Leaves* far less succulent, marked with purplish reticulated veins. *Cor.* with a faint purple tinge; *throat* yellow. Found only in Portugal, Scotland, Ireland, and very rarely in England. In our island, confined wholly to the western side.

6. UTRICULARIA*.

1. U. *vulgaris* (*greater hooded Milfoil*), spur conical, upper lip as long as the projecting palate, leaves pinnato-multifid. *Lightf. p.* 77. *E. B. t.* 253.

Hab. Ditches and deep pools. *Fl.* June, July. ♃.

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* The British species of this highly curious and beautiful genus are all aquatics: their roots, stems, and even leaves being furnished with numerous membranaceous, reticulated *vesicles*, which, according to Heyne, are filled with water till it is necessary the plant should rise to the surface and expand its blossoms above the fluid. The vesicles are then found to contain only air, which again gives place to water when the plant descends to ripen its seeds at the bottom.

Roots much branched. *Stems* prostrate in the water. *Leaves* capillary, multifid with minute bristles at the margin, mixed with the vesicles. *Scape* erect, 4—6 inches high, 6—8-flowered. *Flowers* in a raceme, large, bright yellow. Lower *lip* convex, much larger and broader than the upper one, and having a very projecting *palate* closing the mouth. *Spur* bent down, short. *Anthers* curved, thick, resembling those of *Pinguicula*. *Stigma* large, plain, roundish. *Caps.* globose.

2. U. *intermedia* (*intermediate hooded Milfoil*), spur conical, upper lip twice as long as the palate, leaves tripartite their segments linear dichotomous. *E. B. t.* 2489.

Hab. Ditches and deep pools. In a ditch by the side of Rescalin Lake, four miles east of Forfar, *D. Don.* Probably in a marsh at Possil and Robroyston, Glasgow, *Hopk.*, since that gentleman found upon the plants there little green balls or bulbs, the germs of future individuals, a mode of propagation considered peculiar to this species. *Fl.* June, July. ♃.

It is smaller than *U. vulgaris*, the *flowers* are of a paler colour, and have a longer upper lip. The *stems* are more leafy, and the *vesicles* grow distinct from the leaves. The latter are broader, linear, tripartite, with the segments again di- trichotomous, the margins bristly.

3. *U. minor* (*lesser hooded Milfoil*), spur extremely short obtuse keeled upper lip as long as the palate, leaves subtripartite the segments linear dichotomous. *Lightf. p.* 78. *E. B. t.* 254.

Hab. Ditches and pools, rare. Coryattachan in Skie, *Lightf.* Turf-pits, east side of Black Loch, Kirkmichael, Dumfries-shire, *Dr. Burgess.* Loch near Kilpatrick, *Hopk.* Peat-pits, Ravelrig-toll, Edinb., *Maugh. Fl.* June, July. ♃.

Still smaller than the last. *Vesicles* mixed with the leaves. *Leaves* glabrous at the margin. *Flowers* 5—6, very pale yellow. *Spur* scarcely any. Lower *lip* almost plane, *palate* rather smaller, not closing the mouth, equal in length to the upper lip.

7. LYCOPUS.

1. L. *europæus* (*Water Horehound*), leaves deeply sinuato-serrate. *Lightf. p.* 79. *E. B. t.* 1105.

Hab. Ditches and river-banks (not in *Fl. Glott.*). Margins of Loch of Lindore, Fifeshire, *D. Don.* In Arran; Delvine, Perthshire, *Mr. Murray. Fl.* June, July. ♃.

Stems two feet, erect, four-sided, as in all the Class *Didynamia* and Ord. *Gymnosp.* (*Labiatæ* Juss.), to which very natural family this and the following genus belong, though placed here in consequence of their having but two stamens. *Leaves* opposite, nearly sessile, large, ovato-lanceolate, rugose, very deeply sinuato-serrate, almost pinnatifid, especially the lower ones. *Flowers* sessile, in dense whorls at the base of the superior leaves, whitish with purple dots, hairy within.

8. SALVIA.

1. S. *verbenaca* (*wild English Clary*), leaves serrate sinuate, corolla narrower than the calyx. *Lightf. p.*79. *E. B. t.* 154.

Hab. Pastures and banks, rare. Salisbury crags, and bank entering Kirkcaldy from Dysart, *Lightf.* Burntisland and near Pettycur, Edinb., *Maugh. Fl.* June. 2|.

One or two feet high. *Lower leaves* petiolate, ovate, lobed or sinuated and crenate rather than serrate; upper ones sessile, more acute, less lobed, but deeply serrated; all rugose, veined. *Bracteas* two under each whorl, cordate, acute, entire, ciliated. *Cal.* hairy, segments mucronate. *Cor.* small, purple, ringent. *Upper lip* concave, compressed. *Lower lip* three-lobed, middle lobe large.

9. LEMNA*.

1. L. *trisulca* (*Ivy-leaved Duckweed*), fronds thin elliptico-lanceolate caudate at one extremity at the other serrate, roots solitary. *Lightf. p.* 537. *E. B. t.* 926.

Hab. Clear stagnant waters, as in Duddingston Loch, *Dr. Parsons in Lightf. Fl.* June, July. ⊙.

The most delicate of the genus. *Fronds* one-half to three-fourths of an inch in length, pellucid at the margins, reticulated. The young *fronds*, which are continually produced from the lateral clefts in this, as in all the following species, are of exactly the same shape as the parent plant, and are again proliferous before they are detached. A frond may thus be seen to be triply pinnate with its offspring.

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* A most singular genus, whose characters have not been at all accurately defined by any author. I have been fortunate in meeting with two species, *L. trisulca* and *minor*, in all stages of fructification, a more complete analysis of which than has yet been given I hope to publish soon in the *Fl. Lond.*—All the species are aquatics, floating on the surface or sinking only when the seed is ripe, and the plant dying away. *Fronds* (for I cannot consider the whole plant, from which spring the flowers, as a leaf) minute, ovate or orbicular, compressed, foliaceous or thick and succulent; from the centre beneath throwing out one or more long slender roots, which are terminated by a sheath-like appendage, resembling the calyptra of a moss. The margins of the fronds at one extremity, on each side, have a cleft in which sometimes are produced one or more flattened, orbicular *Gemmæ* (and this is their common mode of increase), which there grow into perfect fronds, and then fall away, or a single *flower* consisting of an urceolate, membranaceous, monophyllous *perianth*, from a small opening in the top of which the stigma is protruded, and which bursts irregularly as the *stamens* become developed. These are two in number (*rarely* wanting). *Anthers* of two rounded lobes, opening nearly vertically each into two valves. *Germen* roundish, compressed, carinated on one side, tapering into a style about its own length, and terminated by a flattish rather expanded stigma. *Fruit* a *Utricle*, transversely oblong, compressed, emarginate at the top, on which is the short persistent style. *Seed* one, very hard, oval, lying horizontally in the Utricle, and fixed by its lower side. *Embryo* oblong, monocotyledonous, horizontal, central, surrounded by a whitish, fleshy albumen.

2. L. *minor* (*lesser Duckweed*), fronds nearly ovate compressed, roots solitary. *Lightf. p.* 537. *E. B. t.* 1095.

Hab. Stagnant waters, common. *Fl.* July. ⊙.

About a line or a line and a half long; of a rather thick, succulent and firm texture, slightly convex beneath. The most abundant of all, increasing prodigiously by *Gemmæ*; rare in *fr.* The young fronds constitute the *L. arhiza* of French authors.

3. L. *polyrhiza* (*greater Duckweed*), fronds obovato-rotundate compressed, roots numerousc lustered. *Lightf. p.* 538. *E. B. t.* 2458.

Hab. Stagnant waters. *Flowers* unknown in Britain. ⊙.

The largest species of all, half an inch in length and nearly as broad, succulent, firm and faintly striated; a little convex beneath, where it is especially of a purple colour. *Roots* numerous from one point.

4. L. *gibba* (*gibbous Duckweed*), fronds obovate nearly plane above hemisphærical beneath, roots solitary. *E. B. t.* 1233.

Hab. Stagnant waters, rare. Lochend at Duddingston Loch, Edinb., *Maugh. Fl.* June. ⊙.

Size of *L. minor*, but readily distinguished by the gibbous or even hemisphærical underside, which is pellucid, beautifully cellular and appearing reticulated; upper surface plane, green, compact.

10. CLADIUM.

1. C. *Mariscus* (*prickly Bog-rush*), panicle much divided leafy, spikelets capitato-glomerate, culm rounded leafy, margins of the leaves and keels rough. *Br. Prodr. p.* 236. *E. B. t.* 950 (*Schœnus Mariscus*).

Hab. Bog of Restenat, near Forfar, *G. Don.*, but now destroyed as well as *Erioph. alp.* by the draining of the moss, *D. Don. Fl.* July, August. ♃.

Habit very different from *Schœnus*, as is the fruit, being a nut with a remarkably thick shell, whose brown and glossy epicarp or external skin separates readily from the osseous part. *Plant* 3—5 feet high, leafy; leaves remarkably rough, almost prickly at the edge and keel. *Glumes* ovate, brown, 6—7 in an ovate spikelet; inner ones longest, two innermost bearing flowers. *Stam.* two. *Stigmas* three. One flower becomes perfect and produces a fruit almost as large as the spikelet.

2. DIGYNIA.

11. ANTHOXANTHUM*.

1. A. *odoratum* (*sweet-scented vernal Grass*), panicle spiked oblong, flowers upon short footstalks and longer than the awn. *Lightf. p.* 81. *E. B. t.* 647.

Hab. Meadows and pastures. *Fl.* May, June. ♃.

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* A Grass, removed from its affinities in consequence of the number of the stamens.

A foot high; *smell* (when in the act of drying) like *Woodruff* (*Asperula odorata*), and giving the well-known scent to new-made hay. *Leaves* short. *Panicle* compact, spiked, yellow in age. *Flowers* lanceolate, *valves* of the *cal.* unequal, very sharp-pointed, slightly pubescent; *valves* of the *ext. cor.* as long as the smaller valve of the *cal.*, very obtuse, hairy, brown; *one* with a straight awn from the back, *the other* with a twisted awn from near the base; *int. cor.* very small; *valves* membranaceous, obtuse, equal.

III. TRIANDRIA.

1. MONOGYNIA.

** Flowers superior.*

1. Valeriana. *Cal.* involute, at length unfolding into a feathery pappus. *Cor.* monopetalous, 5-cleft, gibbous, or spurred on one side at the base. *Fruit* crowned with the feathery pappus. *Seed* 1.
2. Fedia. *Cal.* toothed. *Cor.* monopetalous, 5-cleft, gibbous on one side at the base. *Fruit* 3-celled, 2 generally abortive.
3. Iris. *Perianth* single (*Cor. of Auth*), 6-cleft, petalous, each alternate segment reflexed. *Stigma* petaliform.

*** Flowers inferior, glumaceous.*

4. Schœnus. *Cal. Glumes* of 1 valve, imbricated on all sides, the exterior ones smaller, sterile. *Cor.* 0. *Fruit* naked, or with bristles at its base.
5. Scirpus. *Cal. Glumes* of 1 valve, 1-flowered, imbricated on all sides, 1 or 2 of the outer ones sometimes sterile. *Cor.* 0. *Fruit* naked or with bristles at the base.
6. Eriophorum. *Cal. Glumes* of 1 valve, 1-flowered, imbricated on all sides. *Cor.* 0. *Fruit* with very long silky hairs springing from the base.
7. Nardus. *Cal.* 0. *Cor.* of 2 valves.

2. DIGYNIA.

** Calyces 1-flowered* (except *Arundo Phragmites*).

† Flowers perfect (each having *Anthers* and *Pistils*).

+ Cor. of 1 valve.

9. Alopecurus. *Cal.* 2-*valved*, *valves* nearly equal, acute, united at the base. *Valve* of the *Cor.* awned at the base.

+ + Cor. of 2 valves.

8. Panicum. *Cal.* of 3 *valves*, single flowered, the third *valve* very small. *Seed* invested with the permanent hardened corolla.

10. PHALARIS. *Cal.* of two rather unequal valves containing a double corolla. *Seed** invested with the inner hardened corolla.

11. PHLEUM. *Cal.* of 2 valves, valves nearly equal, acuminate or mucronato-aristate, including a single awnless corolla. *Seed* free.

12. MILIUM. *Cal.* of 2 valves, valves ventricose. *Seed* invested with the permanent hardened corolla.

13. AGROSTIS. *Cal.* of 2 valves, valves acute, compressed, awnless. *Cor.* shorter than the calyx, slightly hairy at the base. *Seed* free.

14. ARUNDO. *Cal.* of 2 valves (in *A. Phragmites* many-fl.). *Cor.* surrounded with long hairs. *Seed* free covered with the corolla.

31. ROTTBOLLIA. *Cal.* of 2 valves, valves lateral. *Flowers* alternate, ranged upon a jointed rachis.

†† *Flowers polygamous.*

30. HORDEUM. *Cal.* in threes, 2-valved, valves lateral, intermediate ones perfect; lateral ones with Anthers or Pistil. *Cor.* 2-valved, awned.

** *Calyces 2- or rarely 3-flowered.*

† *Flowers perfect.*

17. AIRA. *Cal.* of 2 valves, unequal. *Cor.* 2-valved, the outer one awned above the base (rarely awnless). *Florets* without any imperfect ones between them. *Seed* free, but covered with the *Cor.*

18. MELICA. *Cal.* of 2 valves, about 2-flowered, with the rudiment of a third floret. *Cor.* 2-valved, awnless. *Seed* free, covered by the cartilaginous *Cor.*

†† *Flowers polygamous.*

15. HOLCUS. *Cal.* of 2 valves, 2-flowered. *Cor.* 2-valved. *Anther-bearing* floret awned. *Seed* free, or enveloped in the membranaceous *Cor.*

16. HIEROCHLOE†. *Cal.* of 2 valves, 3-flowered. *Cor.* of 2 valves: *the lateral florets* triandrous; pistil 0; *terminal* (or *central*) *one* perfect, diandrous. *Br. in Prodr. Fl. Nov. Holl.*

*** *Calyces many-flowered.*

(Flowers all perfect, or upper florets only sometimes imperfect.)

† *Calyx of* 1 *valve.*

28. LOLIUM. *Cal.* lateral, fixed. *Cor.* 2-valved, firmly en-

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* In all the Grass tribe I use the almost universally adopted term of *Seed* for *Fruit*. This fruit is of that kind called a *Caryopsis*, which is when the seed is intimately united with the pericarp so as to form apparently but one piece with it.

† "Genus distinctissimum, plures species complectens, in frigidis hemisphærici utrinque provenientes." *Br. l. c.*

veloping the seed, valves lanceolate, *ext.* with or without an awn, inserted below the extremity.

†† *Calyx of 2 valves.*

19. Sesleria. *Cal.* 2—3-flowered, compressed, acute, somewhat awned. *Cor.* variously toothed or awned. *Seed* free, covered with the *Cor.*

20. Poa. *Cor.* 2-valved, valves sub-ovate somewhat acute, awnless. *Seed* free, covered with the *Cor.*

21. Briza. *Cor.* 2-valved, ventricose, the valves cordate, obtuse, awnless. *Seed* adnate with the *Cor.*

22. Dactylis. *Cal.* valves unequal, the larger 1-keeled. *Cor.* 2-valved, valves lanceolate, awnless. *Seed* invested with the permanent hardened *Cor.*

29. Elymus. *Cal.* lateral, in pairs or ternate, the valves nearly equal. *Cor.* firmly enveloping the seed, valves lanceolate, *ext.* acuminate or lengthened into an awn. (*Fl.* spiked.)

24. Festuca. *Cal.* valves opposite, unequal. *Cor.* of 2 valves, lanceolate, *ext.* one acuminate, or awned at the extremity.

27. Triticum. *Cal.* valves opposite, solitary, nearly equal. *Cor.* 2-valved, valves lanceolate; *ext.* one acuminate or lengthened into an awn. *Seed* adnate with the *Cor.* *Rachis* zigzag, toothed. (*Fl.* spiked.)

25. Bromus. *Cor.* bivalved, valves lanceolate: *ext.* one awned below the extremity. *Seed* adnate with the *Cor.* (Inner valve fringed. *Sm.*)

26. Avena. *Cor.* bivalved, valves lanceolate, firmly inclosing the seed: *ext.* one bearing a twisted awn on its back.

23. Cynosurus. *Cal.* 2—5-flowered, having a pectinated involucrum. *Cor.* valves linear lanceolate: *ext.* awnless or awned below the extremity. *Seed* incorporated with the *Cor.*

3. TRIGYNIA.

32. Montia. *Cal.* of 2 leaves. *Cor.* of 1 petal. *Caps.* 3-valved, 3-seeded.

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1. MONOGYNIA.

1. VALERIANA.

* *Corolla spurred. Stam.* 1. (*Centranthus*, D. C.)

1. V. *rubra* (*red Valerian*), leaves ovato-lanceolate. *E. B. t.* 1531.

Hab. Old walls at Inverleith, *Mr. E. S. Maughan.* (I fear escaped from a garden, as in England. Its native country is the South of Europe.) *Fl.* July. ♃.

One foot or more in height, glabrous, sometimes glaucous. *Leaves*, as in all this and the following genus, opposite, and *flowers* corymbose. Here the *flowers* are rose-coloured.

** *Corolla gibbous at the base. Stam.* 3. (*Valeriana*, D. C.)

2. V. *officinalis* (*great wild Valerian*), leaves all pinnated, leaflets lanceolate nearly uniform serrated. *Lightf. p.* 85. *E. B. t.* 698.

Hab. Ditches and marshy places, and in mountainous pastures, frequent. *Fl.* July. ♃.

Stems 3—4 feet high, striated. Lower *leaves* very long, with many leaflets. *Flowers* pale flesh-colour. The *root* is warm and aromatic and much used in medicine.

3. V. *pyrenaica* (*heart-leaved Valerian*), leaves dentato-serrate heart-shaped petiolate, upper ones with one or two pair of small lanceolate leaflets. *E. B. t.* 1591. *Don's Herb. Brit. fasc. n.* 77.

Hab. Collington woods, Edinb., *G. Don*. Woods, Daldowie, Glasg., *Dr. Brown*. Abercorn woods, Edinb., *Maugh*. Ditches in the west of Kinross-shire, as at Blair Adam, Cliesh, and near Dupplin, *Mr. Arnott*. *Fl.* July. ♃.

Three or four feet high; *habit* of *V. officinalis*, but very different in its *leaves*. *Flowers* pale rose-coloured. I can hardly satisfy myself that this species, any more than *V. rubra*, is really indigenous to Scotland. No Flora of the continent, except that of the Pyrenées, can boast of it, but it has been long cultivated in gardens throughout Britain.

4. V. *dioica* (*small marsh Valerian*), flowers dioecious, radical-leaves spathulato-ovate undivided, stem-leaves pinnatifid. *Lightf. p.* 85. *E. B. t.* 628.

Hab. Marshy meadows, frequent, *Lightf*. Bogs to the westward of Borthwick, *Mr. Neill* and *Maughan*. Pentland Hills, *Mr. Arnott*. Linlithgow, *Miss Baird*. *Fl.* June. ♃.

Stem erect, from 6 to 8 inches high. *Leaves* more or less serrated, upper lobe large. *Flowers* very pale rose-coloured.

2. FEDIA.

1. F. *olitoria* (*Corn-salad* or *Lamb's Lettuce*), fruit tridentate ovato-rotundate inflated glabrous, flowers capitate. *Lightf. p.* 85, and *E. B. t.* 811 (*Valeriana Locusta*).

Hab. Corn-fields and banks. *Fl.* May, June. ☉.

Stem sometimes a foot high, dichotomous, and, as well as the leaves, more or less scabrous. *Radical leaves* spathulate, *cauline* ones oblongo-obovate, rarely with the upper ones a little toothed. *Flowers* pale blue, in terminal heads, at the base of which are oblong bracteas forming a kind of involucrum.

2. F. *dentata* (*narrow-fruited Corn-salad*), fruit sub-tridentate obpyriform glabrous, flowers corymbose with a single flower between the upper divisions of the stems. *E. B. t.* 1370 (*Val. dentata*).

Hab. Hedge-banks and fields. Near Crossgate-toll, 3 m. S. of Musselburgh, *Maugh*. Fields about Edinb., *Mr. Greville*. Water of Leith, and field near Kirkcaldy, *Mr. S. Stewart*. *Fl.* June, July. ☉.

This has often been confounded with the preceding species, but attention to the above characters will remove every difficulty. This is the larger plant of the two; the *cauline leaves* are more linear, the *upper* ones more frequently toothed or even pectinated. *Flowers* flesh-coloured, not in heads but in loose corymbs, with fewer and narrower bracteas. In the axil of the upper forks of the stem is always a solitary flower. The fruit is widely different in shape, marked with five elevated ribs, and crowned with three unequal, almost foliaceous teeth.

3. IRIS.

1. I. *Pseudacorus* (*yellow Water-Iris*), leaves ensiform, each alternate segment of the beardless perianth smaller than the stigma. *Lightf. p.* 86. *E. B. t.* 578.

Hab. Ditches and marshy places, common. *Fl.* July. ♃.

Flowers large, yellow. *Roots* large, horizontal, fleshy, very acrid. A piece held between the teeth is said to cure the tooth-ache. In Arran they are used to dye black, and in Jura mixed with copperas, to make ink. *Lightf.*

4. SCHŒNUS.

* *Culms leafy.*

1. Sch. *albus* (*white-headed Bog-rush*), culm triangular, leaves lineari-setaceous, flowers terminal sub-corymbose as long as the involucrum. *Lightf. p.* 87. *E. B. t.* 985.

Hab. Moors and boggy places, common. *Fl.* July, Aug. ♃.

Culm 6—8 inches high, leafy, leaves sheathing at the base. Each head consists of three or four clusters of almost white *flowers* collected into a sort of corymbus as long or longer than the involucrum, by which it is at once distinguished. *Bristles* eight or ten at the base of the fruit. *Stam.* two or three.

** *Culms naked.*

2. Sch. *nigricans* (*black Bog-rush*), culm rounded, spikelets of flowers collected into an ovate cluster, involucrum of two leaves, the exterior one longer than the flowers. *Lightf. p.* 86. *E. B. t.* 1121.

Hab. Moors and boggy places, common. *Fl.* June, July. ♃.

Culms about a foot in height, the base sheathed with the black remnants of the former year's leaves. *Leaves* setaceous, rigid, generally shorter than the culms. *Spikelets* several, dark, shining, purplish-brown, almost black at the base of the glumes. *Leaflets* of the involucrum subulate, dilated at the base and dark-brown, the upper part greenish, one much shorter, the other generally much longer than the flower.

3. Sch. *compressus* (*compressed Bog-rush*), culm roundish, spike distichous shorter than the single involucrum, spikelets many-flowered, leaves plane. *Lightf. p.* 87. *E. B. t.* 791. (*Scirpus Caricis. Willd. et Host. Carex uliginosa. L.*

Hab. Bogs, rare. By the side of lochs in Ilay, *Lightf.* Dumbarton

Castle, by the river's side, *Mr. Yalden.* Neighbourhood of Borthwick Castle, *Maugh. Fl.* June, July. ♃.

Root creeping. *Culm* 6 or 8 inches high, covered for almost half its length with the very long sheathing bases of the leaves. *Leaves* about as long as the culms, linear, acuminate. *Spike* oblong, with as olitary involucre at its base, which is longer than the spike. *Spikelets* placed in two ranks, oblongo-ovate, shining, ferruginous, 5—6-flowered; *glumes* all but the lower one fertile, so that this is perhaps as well as the following species, rather a *Scirpus* than a *Schœnus*.

4. Sch. *rufus* (*brown Bog-rush*), culm rounded spike distichous longer than the involucrum, spikelets few flowered, leaves setaceous channelled. *E. B. t.* 1010. *Lightf. p.* 86 (*S. ferrugineus*), and *t.* 24 (as *S. compressus, var.*).

Hab. Moorish places, rare. Isle of Mull, *Lightf.* Dunbar, Arran, Skye, *Mr. Mackay.* Fife and Angus-shire, *G. Don.* Near Creiganferry. On the coast, 2 m. east of S. Queensferry, *Maugh.* Guillon Loch, Edinb., *Mr. Greville.* Bressay, Shetland, *Rev. Mr. Fleming. Fl.* July. ♃.

Allied to the last, especially in the distichous spikes; but much slenderer. *Leaves* much shorter and setaceous, never plane. *Spikes* ovate, dark brown, of 5—6 spikelets, each of 3—4 *flowers*. *Glumes* more obtuse.

5. SCIRPUS.

* *Spike solitary.*

† *Culms simple.*

1. Sc. *cæspitosus* (*scaly-stalked Club-rush*), culm rounded sheathing terminating in the rudiments of leaves, two outer glumes as long as the spike involucrate, stigmas 3. *Lightf. p.* 87. *E. B. t.* 1029.

Hab. Moors every where, most abundant. *Fl.* July. ♃.

Culms cæspitose, 2—6 inches high, clothed at the base with the old sheathing scales, upper sheaths ending in a short imperfect subulate leaf. *Spike* small, pale brown, or ferruginous; the two large outer glumes cuspidate, green at the keel; the rest rather acute. *Fruit* surrounded by six bristles, tipped with the scaly incrassated base of the styles. Principal food of the sheep in the Highland mountains in the spring. *Lightf.*

2. Sc. *pauciflorus* (*chocolate-headed Club-rush*), culm rounded, sheaths leafless, spike ovate naked, glumes obtuse nearly equal, two outer ones the largest but shorter than the spike, stigmas 3. *Lightf. p.* 1078. *E. B. t.* 1122. (*S. Bœothryon, Willd.*).

Hab. Highland mountains, as upon Malghyrdy in Breadalbane, *Dr. Stuart.* Leith Links, *Mr. J. T. Mackay.* Near Mugdoch Castle, N. of Glasgow: and on the Ochill Hills plentiful, *D. Don.* Lochleven and Cliesh hills and sides of mountains in Breadalbane frequent, *Mr. Arnott. Fl.* Aug. ♃.

In general appearance very near *S. palustr.*, but much smaller and slenderer. *Spike* of fewer flowers, 3—6. *Glumes* more obtuse.

Stigmas 3. *Style* swelling at the base. *Fruit* with 5—6 bristles at the base.

3. Sc. *palustris* (*Marsh Club-rush*), culm rounded, sheaths at the base leafless, spike oblongo-ovate naked, glumes nearly equal in size, stigmas 2. *Lightf. p.* 87. *E. B. t.* 131.

β. *minor*, smaller, spikes fewer-flowered, glumes deeper brown. *S. multicaulis*, *E. B. t.* 1187.

Hab. Ditches and marshy places, frequent. β. Isle of Skye, *Mr. Mackay*. Various parts of Scotland, *G. Don*. *Fl.* July. ♃.

Culms many from the same root, 6—12 inches high. No *leaves* at all. *Spike* many-flowered, brownish, margin scariose, 2 outer ones sterile, obtuse, inner ones more acute. *Fruit* crowned with the swelling base of the stigma, which constitutes, in conjunction with the almost constant presence of its bristles at its base, the genus *Eleocharis* of Mr. Brown. *Bristles* 4—5 around the fruit.

4. Sc. *acicularis* (*least Club-rush*), culm compressed grooved, sheaths leafless, spike ovate acute naked (no involucrum), glumes acuminate, stigmas 3, fruit without bristles. *Lightf. p.* 88. *E. B. t.* 749.

Hab. Sides of lochs, even under water, and marshy places; about a mile N. W. from Laswade, *Dr. Parsons in Lightf.* Lochleven, and Loch W. of Dunning, *Mr. Arnott*. Loch of Clunie and Stormont Loch, *Rev. Mr. M'Richie*. *Fl.* July, Aug. ♃.

The most slender and delicate of all the club-rushes. *Culms* 3—4 inches high, setaceous or capillary, tufted, often without flowers. *Spikes* small, pale brown, with a broad green nerve. *Fruit* oblong, beautifully impressed with points in lines, tipped with the sphærical base of the style.

†† *Culms branched.*

5. Sc. *fluitans* (*floating Club-rush*), culm rounded leafy flaccid, spikes ovate naked (no involucrum), glumes rather obtuse, stigmas 2, fruit destitute of bristles. *Lightf. p.* 88. *E. B. t.* 216. *Isolepis fluitans*, *Br. Pr. Fl. Nov. Holl.*

Hab. Pools and ditches; Loch, Isle of Rum, *Lightf.* Braid Hill marshes and Revelrig Toll Moss, *Mr. Arnott*. *Fl.* July. ♃.

Stems 6—10 inches in height, much branched, slender, jointed. *Leaves* linear, short, floating, sheathing, and thus concealing the whole stem. *Peduncles*, or rather the fertile branches of the culm, terminal and lateral. *Spike* small, few, 3—4 flowers. *Glumes* greenish, with a scariose whitish margin. *Fruit* without bristles, and no incrassated base to the style, articulated as it were on the germen: hence the *Isolepis* of Brown.

** *Spikelets many.*

† *Culms rounded.*

6. Sc. *lacustris* (*Bull-rush*), upper sheaths leafy, cyme terminal twice compound, involucrum 2-leaved. *Lightf. p.* 88. *E. B. t.* 666.

β. *glaucus*, smaller and glaucous. *S. glaucus*, *E. B. t.* 2321.

Hab. Margins of lakes and ponds.—β. Coast of Angus, *G. Don.* Banks of the Tay below Newburgh, and other parts of Fifeshire, *D. Don.* *Fl.* July. ♃.

Root creeping. *Culms* 3—8 feet high, rounded all the way up, slightly tapering; outer or lower sheaths brown, leafless, upper ones ending in a linear subulate channelled leaf 3—4 inches long. The *Involucres* of 2 leaflets, varying much in length; in general one is nearly as long as the cyme, and ends in a green rigid point, the other much shorter and more membranous, brown. There are besides what may be called *partial involucres* to the clusters of spikelets, larger than the glumes and often with a rigid point. *Glumes* brown, fringed, often emarginate, the nerve running up between the notch into a mucro. *Stigmas* 2—3. *Fruit* obovato-triquetrous, surrounded by 6 bristles. The *culms* are much used for mats, chair-bottoms, &c., and form an article of trade.

7. Sc. *setaceus* (*setaceous Club-rush*), culms setaceous rounded or very slightly compressed, sheaths leafy, spikelets terminal germinate, involucrum 1-leaved. *Lightf. p.* 88. *E. B. t.* 1693.

Hab. Moist gravelly places, common. *Fl.* July, Aug. ⊙.

Culms tufted, 2—5 inches high, slender. *Leaves* 1 or 2 with sheathing bases. *Involucre* of 1 subulate leaflet, green, dilated at the base, erect and so appearing a continuation of the culm, having *lateral* fructification. *Spikelets* 1—2. *Glumes* broadly ovate, acute, smooth, brown, with green margins and nerve. *Stam.* 2. *Stigmas* 3. *Fruit* broadly obovate, beautifully longitudinally striated.

†† *Culms triangular.*

8. Sc. *maritimus*, (*Salt-marsh Club-rush*), culm leafy, spikelets terminal clustered pedunculate and sessile, involucre of many foliaceous leaflets, glumes with a mucro between the acute segments of a notch. *Lightf. p.* 89. *E. B. t.* 542.

Hab. Salt marshes near the coast, not uncommon. *Fl.* July. ♃.

Root creeping, often swelling into knots or tubers. *Culm* 2—3 feet high, leafy. *Leaves* linear flat acuminate, often exceeding the culms. *Leaflets* of involucrum variable in number and size, mostly much larger than the cluster of spikelets. *Spikelets* large, ovate, brown. *Stigmas* 3. *Bristles* 3—4 at the base of the smooth obovato-triangular seed.

9. Sc. *sylvaticus* (*Wood Club-rush*), culm leafy, cyme terminal many times compounded, involucrum of many foliaceous leaflets, glume entire acute. *Lightf. p.* 89. *E. B. t.* 919.

Hab. Edge of Cum Burn, opposite Lochrighead, in the parish of Kirkmichael, Dumfries-shire, and Killin, Breadalbane, *Lightf.* Moist woods near Rosslyn Castle, *Dr. Parsons in Lightf.* Damp woods frequent, as in woods Bothwell, Hamilton and Lanark, Kelvinbank and Woodhall; in which latter place is found a *var.* with striped variegated leaves, *Hopk.* Wet woods between Laswade and Rosslyn, by the river, *Messrs. Arnott and Greville.* *Fl.* July. ♃.

Culm 2—3 feet high, very leafy. *Leaves* broadly linear, acuminate, reaching beyond the culm. *Leaflets* of the *involucre*, 3—4, one

generally longer than the cyme. *Spikelets* very small, numerous, greenish. *Stigmas* 3. *Fruit* with about 6 bristles.

6. ERIOPHORUM.

* *Spike solitary.*

† *Culm naked.*

1. E. *alpinum* (*alpine Cotton-grass*), culm triangular, leaves much shorter than the sheaths, spike oblongo-ovate. *E. B. t.* 311.

Hab. Mountain bogs, rare. First discovered in a bog 3 m. E. of Forfar, but which is since drained, by *Mr. Brown* and *G. Don.* Mountains in Breadalbane, *Mr. Somerville.* *Fl.* June. ♃.

Root creeping, throwing up many upright *culms*, 6—8 inches high, slender, with short subulate leaves from the long inner sheaths. *Spike* very small, few-flowered. *Glumes* ovate ferruginous obtuse, nerve green, in the 1—2 outer and sterile ones extended into a mucro. *Stam.* mostly 2, sometimes wanting. *Fruit* surrounded by erect silken hairs more than twice as long as the spike.

†† *Culm leaf-bearing.*

2. E. *vaginatum* (*Hare's-tail Cotton-grass*), culm above triangular, spike ovate. *Lightf. p.* 90. *E. B. t.* 873. (*E. cæspitosum, Host et Schrad.*)

Hab. Turf-bogs, not uncommon.—Pentland-hills, and Dalmahoy-hill, Edinb., *Maugh.* Appin, Argyleshire, *Capt. Carmichael.* *Fl.* May. ♃.

Culms, when in flower, shorter than the leaves, when bearing seed much elongated, 1—1½ foot high. *Leaves* almost subulato-setaceous, compressed, channelled, sheathing; upper *sheaths* with gradually shorter leaves, the uppermost leafless and inflated obtuse. *Spike* large, ovate, acuminate, remarkably thin, membranaceous, pellucid, blackish. *Silky hairs* of the seed twice as long as the spike.

3. E. *capitatum* (*round-headed Cotton-grass*), culm rounded to the top, spike almost sphærical. *E. B. t.* 2387.

Hab. Ben Lawers, by the side of a rivulet near the limits of perpetual snow, *G. Don.* *Fl.* Jul. Aug. ♃.

Smaller than the last, 8—10 inches high, but stouter, with fewer leaves on the stem. Besides the different shape of the *spike*, the *glumes* are brown, more opaque, with the outer ones frequently much the largest, so as to resemble an *involucrum*. In other respects they are alike. It is, in all countries, a very alpine plant.

** *Spikes many, pedunculated.*

4. E. *gracile* (*slender Mountain Cotton-grass*), culms trigonous channelled, spikes longer than the involucre. *E. B. t.* 2402. (*E. triquetrum, Host et Schrad.*)

Hab. Boggy places in the micaceous soil of Ben Lawers and on Clova, *G. Don.* *Fl.* July. ♃.

Much the slenderest of this division. *Leaves* few, narrow, much keeled at the back, grooved or channelled on the upper side. *Spikes* 2—3, oblong, at first sessile, then pedunculated, longer than the involucre. *Glumes* oblongo-ovate, greenish-brown, obtuse, membranaceous and ribbed.

5. E. *angustifolium* (*common Cotton-grass*), culms subtrigonous, leaves linear grooved, involucre longer than the flowering spikes. *Lightf. p.* 89 (*E. polystachion*). *E. B. t.* 564.

Hab. Moors and peat-bogs, very frequent. *Fl.* May. ♃.

This, as Dr. Schrader justly observes, is intermediate between the foregoing and following species, differing principally from the latter in the *culms* rounded at the base, in the narrower and channelled *leaves*, and simple *pedicels*, and from the former in its larger size, longer *involucrum*, and more acute *glumes*.

6. E. *polystachion* (*broad-leaved Cotton-grass*), culms trigonous, leaves broadly linear plane, involucrum longer than the flowering spikes. *E. B. t.* 563.

Hab. Pentland Hills, *G. Don.* Common in Scotland, *Dicks. Fl.* May, June. ♃.

Distinguished by the breadth of the *leaves* and their plane surface. The *spikes*, when in seed, are on very long drooping footstalks, and then often ramified. *Silky hairs* shorter than in *E. angustif.*

7. NARDUS.

1. N. *stricta* (*Mat-grass*), spike erect slender, the florets all pointing one way. *Lightf. p.* 90. *E. B. t.* 290.

Hab. Moors and heaths, most abundant. *Fl.* June. ♃.

A grass of a very simple structure, growing in tufts, surrounded at the base with the remains of former years' leaves. *Culms*, as well as the divaricating leaves, setaceous, rigid, 4—6 inches high. *Spike* terminal, erect, grooved, and toothed at short distances for the insertion of the florets, which are all distichous and pointing upwards. *Cal.* 0. *Cor.* of 2 valves, lanceolate, outer one coriaceous, purplish green, tapering gradually into an awn ; inner one smaller, awnless, membranous. *Stam.* 3. *Style* and *Stigma* 1.

2. DIGYNIA.

8. PANICUM.

1. P. *sanguinale* (*Cock's-foot Panic-grass*), spike digitate, florets in pairs secund pubescent at the margins, leaves and sheaths slightly hairy. *E. B. t.* 849.

Hab. A single plant found at Dalbeth, *Hopk.* A doubtful native even in England. *Fl.* July, Aug. ☉.

About a foot high, bent and jointed at the base. *Leaves* broad, and as well as the *sheaths* more or less hairy; hairs springing from minute, elevated, points. *Calyx* of 3 very unequal *valves*, the outermost an extremely minute scale, the one opposite to it twice its size and pubescent at the margin, innermost one thrice the size of the second, rigid, ribbed, and pubescent at the margins. *Valves* of *Cor.* nearly equal in length, whitish, membranaceous.

9. ALOPECURUS.

1. A. *pratensis* (*Meadow Foxtail-grass*), culm erect smooth,

panicle spiked cylindrical obtuse, calycine glumes lanceolate acute hairy connate at the base, awn twice the length of the corolla. *Lightf. p.* 9. *E. B. t.* 759.

Hab. Meadows and pastures, common. *Fl.* May, June. ♃.

Culms 1½ to 2½ feet high. *Spike* with silvery hairs, yellow-green colour. *Glumes* of *Cal.* and *Cor.* in this and all the species remarkably compressed, and both are much ciliated.

2. A. *alpinus* (*alpine Foxtail-grass*), culm erect smooth, panicle in an ovate spike, calycine glumes ovate abruptly acute hairy united at the base, awn scarcely longer than the corolla. *E. B. t.* 1126.

Hab. Mountains about Loch na Gore in Aberdeenshire, and of Clova, Angus-shire, *G. Don.* Ben Lawers, *R. Brown, Esq.* *Fl.* July. ♃.

I scarcely know which of the abovementioned Botanists has the honour of the discovery of this rare plant, of which no other station is at present known in the world. Mr. Brown gave me a specimen gathered very many years ago at Ben Lawers. Distinguished at first sight by its short ovate or rather oblongo-ovate *spike*. The *calycine glumes* come suddenly to a point, neither gradually tapering as in *A. pratensis*, nor obtuse and truncated as in *A. geniculatus*. *Glumes* of the *Cor.* at least twice as broad as in the former species; its awns scarcely reaching beyond the glumes.

3. A. *agrestis* (*slender Foxtail-grass*), culm erect scabrous above, panicle spiked cylindrical acuminate, calycine glumes acute almost glabrous united as far as the middle. *Lightf. p.* 91. *E. B. t.* 843.

Hab. Fields and by way sides. June, July. ☉.

Well distinguished by its attenuated *spikes* frequently of a purplish brown tinge. *Cal.* glumes lanceolate, acute, glabrous, or a little rough on the keel and nerves. *Cor.* quite smooth, with the awn 3 or 4 times its length.

4. A. *geniculatus* (*floating Foxtail-grass*), culm ascending bent at the joints, panicle spiked cylindrical obtuse, calycine glumes united at the base truncated slightly hairy, awn twice as long as the Corolla. *Lightf. p.* 92. *E. B. t.* 1250, and *t.* 1467 (*A. fulvus*).

Hab. Wet meadows and marshy places. *Fl.* July, Aug. ♃.

Florets smaller than in any other species. *Glumes* of the *cal.* very obtuse, truncate, membranaceous at the margin, ciliated at the back, scarcely hairy elsewhere. *Glumes* of the *cor.* equally obtuse, membranaceous, glabrous, varying in the length of the awn. In dry places the plant is smaller and has a bulbous root, *Hopk.* The Messrs. Don have found the *A. fulvus* of E. Bot. in Angus-shire and Fifeshire: but I cannot find a single character to distinguish this as a species, nor even as a *var.* In a recent examination of original specimens from the habitat given in *E. Bot.*, I observe the unprotruded anthers, exactly as they are in *A. geniculatus*; when they are exserted and have discharged their pollen they contract in length and become of a deeper colour, which is also the

case with *A. genic.*: and authors (*Host* and *Gaudin*) figure and describe the anthers of our species as both *yellow* and *fulvous*.

10. PHALARIS.

1. Ph. *canariensis* (*manured Canary-grass*), panicle spiked ovate, calycine glumes boat-shaped entire at the point, *ext.* cor. of 2 valves. *E. B. t.* 1310.

Hab. Naturalized as in England, by fields and road-sides occasionally. About the sand-hills Toll-cross, Glasg. *Hopk.* Sometimes seen about Edinb., *Mr. Greville.* *Fl.* July. ⊙.

One to two feet high, glaucous. *Leaves* broad. *Spike* large, handsome. *Glumes* of the *cor.* greenish, with deeper lines, obsoletely pubescent, deeply and sharply keeled at the back. *Ext. cor.* of 2 small valves; *inner* double the size and closely investing the seed when ripe, as we see it in the yellow seeds which are the food of Canary birds (*Fringilla canaria*).

2. Ph. *arundinacea* (*Reed Canary-grass*), panicle erect, branches patent, florets clustered secund, *ext. cor.* of 2 very minute hairy valves. *Lightf. p.* 90. *E. B. t.* 402, and *t.* 2160. *f.* 2. (*Arundo colorata, Sm. Fl. Brit. p.* 147.)

Hab. Sides of lakes and rivers, frequent. *Fl.* July, Aug. ♃.

Frequent in gardens, with variegated leaves. Very different in habit from the last, but the same in essential gen. char. *Panicle* large, rather lax, 6—8 inches long, often brownish or purplish green. *Cal. glumes* lanceolate, *valves* acute remarkably compressed, nerved, rough at the keel. *Ext. cor.* of 2 extremely minute, oblong scales, with a tuft or pencil of hairs at the end. *Int. glumes* almost as long as the *cal.* lanceolate, valves unequal, much compressed, the larger one embracing the other, especially when they envelop the ripened seed.

11. PHLEUM.

1. Phl. *pratense* (*common Cat's-tail-grass*), spike cylindrical, *cal.* glumes truncate mucronato-aristate ciliated at the back longer than the awn. *Lightf. p.* 91 *E. B. t.* 1076.

Hab. Meadows and pastures, very common, *Hopk.* *Fl.* June, July. ♃.

Root sometimes bulbous (*Phl. nodosum* Willd.). *Culms* 1—2 feet high. *Spike* from 2—5 inches long, pale green, very compact, obtuse. *Cal.* glumes, as in all the species, extremely compressed, almost glabrous, ovate, truncate, each *valve* ciliated at the back, and having the dorsal, green nerve, running out into a slightly spreading *awn*, scarcely half so long as the valve. *Glumes* of the *cor.* small, membranous, obtuse, unequal, the larger one crenulated.

2. Phl. *alpinum* (*alpine Cat's-tail-grass*), spike ovato-oblong, *cal.* glumes truncated mucronato-aristate ciliated at the back equal in length to the awn. *E. B. t.* 519.

Hab. Highland mountains. Craigneulict, a hill above Killin, *Lightf.* Garway Moor, *Dicks.* Ben Lawers, *R. Brown, Esq.* *Fl.* July. ♃.

Spike short, purple-brown.

3. Phl. *Michelii* (*Michelian Cat's-tail-grass*), panicle spiked cylindrical, *cal.* glumes lanceolate acuminate strongly ciliated at the back. *E. B. t.* 2265 (*Phalaris alp. Host*).

Hab. Rocky parts of the high mountains of Clova, Angus-shire, *G. Don. Fl.* July, Aug. ♃.

Distinguished at once from the two former species, by the gradually tapering *glumes*. It wants the double *cor.* and hence Host and Willdenow have fallen into an error in making it a *Phalaris*.

4. Phl. *arenarium* (*Sea-side Cat's-tail-grass*), panicle spiked oblongo-obovate, *cal.* glumes lanceolate acute ciliated at the back. *Lightf. p.* 1080. *E. B. t.* 222 (*Phalaris aren.*).

Hab. Loose blowing sand, near the sea shore, *Lightf.* Sands of Barrie, *G. Don.* Near Burntisland, *Mr. Arnott.* Fifeshire coast, not uncommon, *Mr. Greville. Fl.* July. ♃.

Culms 5—6 inches high, many from the same root, ascending. *Cor.* twice as short as the *cal.*, membranous, truncated.

12. MILIUM.

1. M. *effusum* (*spreading Millet-grass*), flowers loosely panicled awnless. *Lightf. p.* 92. *E. B. t.* 1006.

Hab. Moist shady woods. By the Aqueduct Bridge, Kelvin. Hamilton and Lanark, *Hopk.* Rosslyn woods, *Mr. Arnott* and *Mr. Greville. Fl.* June. ♃. (⊙ *Sm.*)

Culms 3—4 feet high, slender. *Panicle* diffuse, lax, delicate. *Cal. glumes* equal, ovate, concave, glabrous, or slightly scabrous, green. Those of the *cor.* cartilaginous, very concave, at length closely investing the seed, which is the principal character that distinguishes this grass from *Agrostis*.

13. AGROSTIS.

* *Outer valve of the Cor. awned.*

1. A. *canina* (*brown Bent-grass*), branches of the panicle long slender erecto-patent, *cal.* valves unequal lanceolate rough at the back, *cor.* of 1 valve with a dorsal awn from below the middle, leaves linear. *Lightf. p.* 93. *E. B. t.* 1856 (*Trichodium cans., Schrad.*).

α. flowers purple.

β. flowers straw-coloured, somewhat larger.

γ. panicle longer, slenderer, pale green. *A. gracilis, D. Don. MSS. inedit.*

Hab. α. Moist heaths and moory places, plentiful. β. sent me by Mr. Winch as gathered by *G. Don,* in Scotland. γ. meadows about Gark, Perthshire, *D. Don. Fl.* June, July. ♃.

Panicle lax, slender. *Flowers* small. *Cal.* valves rather acuminate, glabrous, rough on the back. *Valve* of the *cor.* single! (hence the genus *Trichodium* of Michaux), shorter than the *cal.*, ovate, truncate and concave, white, thin, membranous, dotted with rough points, having 4 longitudinal nerves, 2 of which (the lateral ones) often project into very short awns; between these, on the back, from

below the middle, arises an *awn* about twice the length of the valve. Instead of the second valve of the *cor.*, is an extremely minute tuft of hairs. Var. β. has the panicle smaller, and the flowers, in proportion, rather larger, yellow, but not so large as in the *Agr. flavescens* of Host, nor are the glumes so much acuminated. *Var.* γ. I cannot distinguish specifically from *A. canina.*—Sometimes the awn does not reach to the top of the glumes, and then it is by some called awnless.

2. A. *setacea* (*bristle-leaved Bent-grass*), branches of the panicle short erect, valves of the *cal.* unequal lanceolate rough at the back, outer valve of the *cor.* with a longish awn from the base, inner one ovate very minute, leaves setaceous. *E. B. t.* 1188.

Hab. I have this mentioned in a list of Scotish plants, furnished by *Mr. D. Don,* but without any particular station being given. *Fl.* Aug. ♃.

This grass has a peculiarly stiff and rigid habit. *Leaves* numerous, bristle-shaped, glaucous. *Panicle* very compact, greenish brown. *Outer valve* of *cor.* membranous, with 4 nerves, the 2 lateral ones terminating in short teeth; *awn* arising from the base and exceeding in length the larger acuminated calycine valve. This plant was made known to the botanical world by Mr. Curtis, and appears to be peculiar to Britain. In the structure of the flowers and leaves there is the closest affinity with *Agr. rupestris* of the continental Botanists; but that plant is much smaller, less rigid, and the panicle is spreading when in flower and of a fine purple. May they be varieties arising from situation?

** *Corolla awnless* (*or mostly so*).

3. A. *vulgaris* (*fine Bent-grass*), branches of the panicle smoothish, branchlets diverging, outer valve of the *cor.* 3-nerved, ligule extremely short and truncate. *Lightf. p.* 93 (*A. capillaris*). *E. B. t.* 1671.

β. Outer valve of the *cor.* awned.

γ. scarcely 3 inches high. *A. pumila, Lightf. p.* 1081, fig. in frontispiece.

Hab. Meadows, pastures and banks, common, *Hopk.* β. Pentland hills, *Maugh.* γ. Pentland hills, *Lightf. Fl.* June, July. ♃.

Root creeping, throwing out many, mostly ascending, culms, 1 or 1 and a half foot high. *Panicle* purplish, *rachis* smooth and the branchlets nearly so. *Cal. glumes* lanceolate, smooth, shining, rough on the back. *Cor.* glume of 2 thin, delicate, membranous, unequal valves. *Outer one* a little shorter than the *cal.*, 3-nerved, tridentate, awnless in α, bearing an awn of uncertain length, but mostly short in β, arising from the central nerve, a little below the middle of the back; *inner valve* half as small, two-nerved, bifid. I possess specimens of this species bearing the rudiment of a second flower upon a rather long footstalk in the same calyx.

4. A. *alba* (*Marsh Bent-grass*), branches of the panicle hispid, branchlets patent, outer valve of the *cor.* 5-nerved, ligule ob-

long. *Lightf. p.* 93 (*A. alba, et stolonifera ?*); *E. B. t.* 1189 (*A. alba*); and *t.* 1532 (*A. stolonif.*). *Schrad.*[a] *Germ. p.* 209.

β. Leaves glaucous, panicle more compact, *cal.* glumes more rough on the back. *Agr. glaucescens, D. Don. MSS. inedit.*

Hab. Hills and road-sides, common. β. Isle of May, *D. Don. Fl.* July. ♃.

Plant stouter than the last and generally larger. *Culms* ascending, o ten rooting at the base, and throwing out runners. *Panicle* rather contracted, pale green or purplish, branchlets patent. *Cal. glumes* as in *A. vulgaris,* as are *those* of the *cor.* but the *outer valves* have 5 nerves and as many teeth, and the inner one is only faintly 2- or 3-nerved at the base, nearly entire and obtuse at the extremity. In some individuals, but I know not if they are found in Scotland, there is a short awn at the base of the outer valve of the *cor.*; this is the *Agr. compressa* Willd.: and sometimes the flowers are viviparous, which is the *A. sylvatica* Linn. It is even difficult to distinguish this plant from the last; and I have never seen any British awnless *Agrostides* that may not be reduced to one or other of these two. I feel strongly persuaded that the *Agr. stolonifera* and *alba* of *E. B.* are one and the same species, the former best agreeing with what I call *alba,* in the oblong ligule, but not according in the extremely dense erect flowers; whilst, on the other hand, the flowers of the latter plant of Smith are too few and lax, and the ligule is short and truncate like those of *A. vulgaris.* What may be the Linnæan *A. stolonifera* can only be determined by a reference to the *Linn. Herb.* The accurate Schrader, I know not upon what authority, says that *that* is the *Agr. verticillata* of Villars and Willd., remarkable for its hispid calyx and panicles. The famous *Fiorin grass* of Dr. Richardson and the Irish agriculturists, is what I here call *alba,* as I have determined by the aid of specimens gathered in company with the late Dr. Richardson himself. Schrader has, I think with great propriety, reduced the *awnless Agrostides* to the two here adopted; Gaudin makes 5 of them in his *Agrost. Helvet.*; yet says of them "adeo variabiles sunt, ut, me quidem judice, natura inter eas vix certos constanterque limites statuerint;" and Host, I lament to say, has, besides *A. vulgaris,* 5 species of this family, which appear to me to offer no decided mark of distinction[b].

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[a] I include this synonym of a foreign author because the description there referred to is the only satisfactory one I am acquainted with of what *I* intend by *A. alba.*

[b] Since the above was written, and when on the point of going to the press, I have received a letter from my friend, J. E. Bicheno, Esq. of Newbury, Berks, on the subject of these two *Agrostides*; and as his opinion, the result of actual observation, tallies so well with my own, it would be doing him an injustice were I not here to insert it. "I find the greatest puzzle," he says, "in the variations of *Agrostis vulgaris* and *alba.* The extremes of each I know well by the divergent, smooth branches in the panicle of the former, and the altogether less nerved and smooth flower. The panicle branches of *A. alba* and the calyx are hispid, and the nerves of the outer valves of each marked distinctly. This also throws out great numbers of

14. ARUNDO.

* *Calyces* 1-*flowered* (*Calamagrostis* of authors).

† *Corolla awned.*

1. A. *Calamagrostis* (*small Reed*), panicle erect diffuse, *cal.* valves acuminate, *cor.* shorter than the *cal.* and the tuft of hairs with a small terminal awn. *Lightf. p.* 106. *E. B. t.* 2159.

Hab. Shady moist places, but not common, *Lightf. Fl.* July. ♃.

Two or three feet or more high. *Leaves* linear, acuminate. *Cal.* glabrous shining, purple brown. *Cor.* very thin and membranous. *Tuft* of hairs silky, very apparent from their length, and giving the panicle, when in full blossom, a beautiful silky appearance.

2. A. *stricta* (*smallest close Reed*), panicle erect close, valves of the *cal.* acute, *cor.* about as long as the cal. longer than the tuft of hairs, with a dorsal awn equal to it in length. *E. B. t.* 2160.

Hab. White Mire Marsh, 1 mile from Forfar, *G. Don. Fl.* June. ♃.

One to two feet high. *Leaves* narrow, linear, when dry involute. *Panicle* 1—4 inches long. *Cal.* brown, glabrous. *Cor.* brownish, truncate. *Hairs* few, short, visible on dissection.

†† *Corolla awnless.*

3. A. *arenaria* (*Sea-side Reed*), panicle spiked, valves of the *cal.* acute, *cor.* as long as the *cal.* thrice as long as the tuft of hairs, leaves involute pungent. *Lightf. p.* 107. *E. B. t.* 520.

Hab. Sandy places on the sea-shore. Cantyre, between Mackreanish Bay and Barr, and near Aberbrothick in Angus, *Lightf.* Common in Orkney, *Mr. Neill.* ♃.

Two or three feet high, glaucous. *Root* much creeping. *Leaves* very long and acuminate. *Panicle* in a very compact spike, attenuated at each extremity. *Cal.* rough at the keel, submembranous. *Cor.* far more rigid, awnless, nerved. *Anthers* large, purple. Called *Muran* in Gaelic (*Lightf.*), in Norfolk *Marram.* Very serviceable in binding the loose sands by the sea-shore.

** *Calyces many-flowered* (*Arundo* of authors).

4. A. *Phragmites* (*common Reed*), *cal.* about 5-flowered, florets longer than the *cal.* *Lightf. p.* 106. *E. B. t.* 401.

Hab. Abundant in ditches, margins of lakes, rivers, &c. *Fl.* July. ♃.

Six feet or more high. *Leaves* broad, lanceolate, much attenuated. *Panicle* large, purple-brown, at length drooping, very handsome. *Valves* of the *cal.* very unequal; *ext.* ovato-lanceolate; *int.* twice its length, thin, membranous. At the base of each floret is a very

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creeping stolons. *Agrostis stolonifera* of most English authors, I have no doubt, is only a *var.* (if as much) of *A. alba.* Dr. Richardson's famous *Fiorin* is certainly so; but whether such a plant exists in England as *A. stolonif.* Linn., with the *cal.* and panicle still more hispid than *alba*, I cannot determine. I am inclined to think, that our *A. stolonif.* is only the extreme of *alba* in harshness, and consequently hispidness, arising from the richness of the soil."

large tuft of white silky hairs. *Plant* much used for thatching, for fences and various economical purposes.

15. HOLCUS.

1. H. *avenaceus* (*Oat-like Soft-grass*), perfect floret superior scarcely awned, imperfect one antheriferous with a very long jointed awn, root knotted. *Lightf. p.* 105 (*Avena elatior*). *E. B. t.* 1813.

Hab. Hedges and pastures, frequent. *Fl.* July. ♃.

Two to three feet high. *Leaves* linear-acuminate. *Panicle* long, loose. *Spikelets* greenish brown. *Cal. glumes* unequal, shorter than the florets, lanceolate, keel pubescent; *valves* of the *cor.* bifid at the extremity, outer ones hairy, much nerved. Habit of an *Avena*, but flowers polygamous. *Arrhenatherum* Beauvois. The *Holcus bulbosus* of Schrader seems to be scarcely different from it.

2. H. *mollis* (*creeping Soft-grass*), perfect floret inferior and awnless, imperfect one antheriferous with a bent awn reaching beyond the *cal.*, root creeping. *Lightf. p.* 631. *E. B. t.* 1170.

Hab. Among corn, but not frequent, *Lightf.* Hedges and shady places, occasionally about Glasgow, *Hopk. Fl.* July. ♃.

Two feet high, hairy. *Leaves* linear-lanceolate, acute. *Spikelets* ovate, with a protruded awn. *Cal.* glumes equal in length, ovato-lanceolate, much compressed, larger than the florets, having short hairs. *Valves* of the *cor.* ovate, nearly equal. Both florets often destitute of pistil.

3. H. *lanatus* (*Meadow Soft-grass*), perfect floret inferior and awnless, imperfect one antheriferous with a curved awn included in the *cal.*, root fibrous. *Lightf. p.* 631. *E. B. t.* 1169.

Hab. Meadows, pastures, and woods, common. *Fl.* June, July. ♃.

Much resembling the last, but in every part covered with a large and softer pubescence. *Panicle* generally larger; *spikelets* rather smaller; but the great difference between the two is in the protruded or included awn.

16. HIEROCHLOE.

1. H. *borealis* (*northern Hierochloe*), panicle subsecund, peduncles glabrous, florets awnless, outer valves of the *cor.* ciliated at the margin. *Roem. et Schultz Syst. Veg. v.* 2. *p.* 513. *Holcus odoratus*, *Linn. Suec. n.* 918. *G. Don. MSS. ined.*

Hab. In a narrow mountain valley called *Kella*, Angus, *G. Don. Fl.* July. ♃.

A valuable discovery of the late acute Mr. G. Don;—called *Hierochloe*[a] by Gmelin, because in some parts of the Prussian dominions it is dedicated to the Virgin Mary, and strewed before the doors of the churches on festival days. It has, like others of the genus, an agreeable scent, resembling that of *Anthoxanthum odoratum*. Linnæus tells us it is a soporific, and sold in the towns in Sweden to be suspended over the beds, and induce sleep. About one foot high,

[a] From ἱερος, sacred, and χλοα or χλοη, a Grass.

glabrous. *Leaves* linear-acuminate. *Panicle* brownish, shining. *Spikelets* broadly ovate. *Cal.* valves ovate, acute, rather unequal, sometimes a little serrated at the point. *Florets* rather longer than the *cal.* and the *outer* valves of a firmer texture, scabrous when highly magn., distinctly fringed at the margin, the point sharp but not awned. Central floret the smallest.

17. AIRA.

* *Corolla awnless.*

1. A. *cristata* (*crested Hair-grass*), panicle spiked, florets longer than the *cal.*, glumes acuminate, leaves hairy. *Lightf. p.* 98 (*Poa cristata*). *E. B. t.* 648 (*Koeleria Pers.*).

Hab. Dry and mountainous pastures, frequent, *Lightf.* About Port Patrick, abundant. *Fl.* June, July. ♃.

Six to eight inches high. *Leaves* linear, short, glaucous. *Spike* shining, ovato-lanceolate. *Spikelets* ovato-lanceolate. *Glumes all* acute or slightly acuminate, lanceolate, compressed, glabrous, or a little rough at the keel, inner valves of the *cor.* white, membranous.

2. A. *aquatica* (*Water Hair-grass*), panicle spreading, glumes obtuse, florets longer than the *cal. Lightf. p.* 94. *E. B. t.* 1557.

Hab. Banks of rivulets and ponds, but not common, *Lightf.* Near Dumbarton, *Dr. Brown.* Wet fields a little to the E. of Gilbertfield Castle, abundantly, *Hopk. Fl.* June. ♃.

Culms one or one foot and a half long, ascending. *Leaves* linear-lanceolate, obtuse. Panicle erect, branches spreading. *Spikelets* oblong. *Cal.* valves very small, unequal, plane, purplish, obtuse, and bluntly toothed at the extremity. *Florets* thrice the length of the *cal.* upper ones pedunculated, their *valves* concave, brown, with green ribs, diaphanous at the point.

** *Corolla awned.*

3. A. *cæspitosa* (*turfy Hair-grass*), panicle diffuse, branches scabrous, florets villous at the base rather longer than the *cal.*, awn strait inserted near the base of and not exceeding the *cor.*, leaves plane. *Lightf. p.* 94. *E. B. t.* 1453.

Hab. Moist and rather shady places, abundant. *Fl.* July, Aug. ♃.

Much tufted in its growth. *Culms* 2—4 feet high. *Leaves* linear, acuminate, rigid, rough at the margin. *Panicle* large, silvery gray or greenish, much branched. *Spikelets* acute. *Cal. valves* unequal, lanceolate, subglabrous, rather acute, erose. *Florets* with a few longish hairs at the base, upper ones pedunculated, their valves ovate, obtuse, erose. Mr. D. Don in his unpublished MSS. enumerates the following varieties of this common grass as natives of Scotland. *β. vivipara*, on the sea-shore. *γ. glomerata*, branchlets clustered; on the Clova mountains, *G. Don.* *δ. gracilis*, slenderer, leaves shorter; meadows in Angus-shire, *G. Don.*

4. A. *alpina* (*smooth Hair-grass*), panicle subcoarctate, branches and pedicels perfectly smooth, florets villous at the

base as long as the *cal.*, awn inserted above the middle of and scarcely exceeding the *cor.*, leaves linear. *A. alp. Linn. fide Wahl. Lapp. p.* 34. *A. lævigata, E. B. t.* 2102. *D. Don. MSS. inedit.*

Hab. Moist rocks in the mountains of Angus-shire, *G. Don.* Ben Lomond, *D. Don.* Ben Arthur and Highland mountains, probably not uncommon. *Fl.* July. ♃.

About 1 foot high, very smooth. *Leaves* only scabrous to the touch on the upper side, short. *Panicle* rather small, branches erect, on the lower ones, when viviparous (which they mostly are) patent and even drooping. *Spikelets* purple brown, not numerous, larger than in *A. cæspitosa* and more resembling, as does the whole plant, *A. flexuosa*. *Cal.* valves equal, quite smooth. *Florets* with a short tuft of hairs at the base; *upper one* not pedunculated. *Valves* of the *cor.* lanceolate, acute, entire, not compressed. Wahlenburg considers this to be the true Linnæan *A. alpina*, of which no specimen however exists in the Linn. Herb. at Norwich. Very nearly allied to it is the *A. atropurpurea* of *Wahl. Fl. Lapp.* (*A. alpina Fl. Dan.*), but it differs in the still fewer-flowered panicle and in the florets being considerably shorter than the *cal.*

5. A. *flexuosa* (*waved Hair-grass*), panicle (when flowering) diffuse, florets villous at the base as long as the *cal.*, awn jointed inserted near the base much longer than the *cor.*, leaves setaceous. *Lightf. p.* 95. *E. B. t.* 1519.

Hab. Heaths and hilly places abundant. *Fl.* July. ♃.

Habit of the last, but taller. *Florets* larger and awn protruded considerably beyond the *cal.* *Valves* of the *cor.* as in the two last species.

6. A. *caryophyllea* (*Silver Hair-grass*), panicle divaricate, florets scarcely villous at the base shorter than the *cal.*, awn inserted below the middle jointed longer than the *cal.*, leaves setaceous. *Lightf. p.* 95. *E. B. t.* 812.

Hab. Gravelly hills and pastures, frequent. *Fl.* June, July. ♃.

From 2 to 6—8 inches. *Leaves* short, few. *Panicle* trichotomous. *Florets* silvery grey. *Cal.* valves nearly equal, lanceolate, the upper part pellucid and white. *Valves* of the *cor.* scabrous at the back, unequal, apex bifid.

7. A. *præcox* (*early Hair-grass*), panicle somewhat spiked, florets scarcely villous at the base about as long as the *cal.*, awn twisted inserted below the middle longer than the *cal.*, leaves setaceous. *Lightf. p.* 95. *E. B. t.* 1296.

Hab. Sandy hills and pastures. *Fl.* May, June. ⊙.

One to three inches high. *Panicle* or spike few-flowered, pale silvery green. *Valves* of the *cal.* lanceolate, scabrous when much magn., those of the *cor.* narrow, acuminate, scabrous; the point bifid.

18. MELICA.

1. M. *nutans* (*Mountain Melic-grass*), panicle nearly simple

racemed secund, spikelets drooping ovate two-flowered. *Lightf.* *p.* 96 (*M. nutantis var.*). *E. B. t.* 1059.

Hab. Lord Breadalbane's woods, Armaddy, in Nether-Lorn, *Lightf.* On banks in Angus-shire, *D. Don.* Rosslyn woods, plentiful, *Mr. Arnott* and *Mr. Greville.* *Fl.* May, June. ♃.

One foot or more high, leafy. *Leaves* linear-lanceolate. *Cal. glumes* ovate, convex, nerved, deep purple brown, margin pale. *Valves* of the *cor.* cartilaginous, unequal, nerved, *outer one* large. Between the two perfect flowers the rudiments of a third, pedunculated, consisting of a 2-valved hardened *cor.* without either pistil or stamen.

2. M. *uniflora* (*Wood Melic-grass*), panicle branched slightly drooping, spikelets erect ovate with only one perfect floret. *Lightf. p.* 96 (*M. nutans*). *E. B. t.* 1058.

Hab. Shady wood, not uncommon, *Lightf.* Hamilton, Blantyre and Bothwell woods, Glasgow, *Hopk.* Rosslyn woods, plentiful, *Mr. Greville.* Ardvorlich and Castle Campbell, *Mr. Arnott.* *Fl.* June, July. ♃.

mperfect flower upon rather a long footstalk. *Leaves* broader than the last, and whole plant rather larger.

3. M. *cærulea* (*purple Melic-grass*), panicle erect subcoarctate, spikelets erect oblongo-cylindrical. *Lightf. p.* 96. *E. B. t.* 750.

Hab. Wet heathy places and moors, abundant. *Fl.* Aug. ♃.

Habit very different from the last, and has hence been made a genus, *Enodium* of Gaud., and *Monilia* of the Baron de Beauvois. *Culms* 1—2 feet, or more, high. All the *leaves*, which are long and linear, acuminated, springing from the base, or from the *single* joint immediately above it. *Panicle* from 2—8 inches in length, purple, rarely, and probably only when growing in much sheltered situations, green. *Cal. valves* lanceolate, nearly equal. *Florets* generally 1—2 perfect and 1 sterile, much exceeding the *cal.* *Anthers* large, purple. When there is but 1 flower in a *cal.*, this is longer than when there are two. Specimens in this state, with the whole panicle pale green, slenderer, and the leaves somewhat exceeding the panicle in height, yet differing in noo the rrespect, are the *M. alpina* of D. Don's *MSS. inedit.*—Brooms are made of their culms in some parts of England. (*With.*) In Skye the fishermen make excellent ropes for their nets of this grass. *Lightf.* This circumstance in quoted by Withering as of the *M. nutans.*

19. SESLERIA.

1. S. *cærulea* (*blue Moor-grass*), panicle spiked ovate bracteated, spikelets 2—3-flowered, *ext.* valve of the *Cor.* aristate and toothed. *Lightf. p.* 100 (*Cynosurus cær.*). *E. B. t.* 1613.

Hab. Highland mountains, common. Plentiful on Ben Lomond. *Fl.* April—June. ♃.

robably the very earliest flowering of the mountain grasses and an exceedingly beautiful one. Much tufted; 6—12 inches high. *Leaves*

linear, obtuse. *Spike* of a shining blueish gray with large yellow *anthers* tipped with purple. *Spikelets* generally in pairs, oblongo-ovate, the lower ones with an ovate ciliated and toothed bractea at the base. *Cal. valves* ovato-lanceolate, toothed, middle tooth lengthened into an awn, pubescent at the keel and margin. *Florets* longer than the *cal. Valves* of the *cor.* oblongo-ovate, *ext.* ribbed, pubescent and ciliated with 3 or 5 teeth, the middle tooth lengthened into a short awn: *int.* bifid.

20. POA[a].

1. P. *aquatica* (*Reed Meadow-grass*), panicle erect very much branched, spikelets linear of about 6 obtuse florets which have 7 ribs[b]. *Lightf. p.* 1083. *E. B. t.* 1315.

Hab. Sides of rivers, ponds and ditches, but not common, *Lightf.* Banks of Leith river, at Bonnington bridge, *Maugh.* About Perth and Forfar, *G. Don.* Kilmenney, Fifeshire, *Mr. Arnott.* *Fl.* July, August. ♃.

Four to six feet high, erect. *Leaves* linear, lanceolate, rough. *Ligule* short, obtuse. *Cal.* valves small, ovate, obtuse, membranous, smoothish. *Ext. valve* of *cor.* twice as large as the calyx, *int.* one narrower and bifid at the point.

2. P. *fluitans* (*floating Meadow-grass*), panicle nearly erect slightly branched, spikelets linear appressed of from 7—11 obtuse florets which have 7 ribs with short intermediate ones at the base, root creeping. *Lightf. p.* 103 (*Festuca fluitans*). *E. B. t.* 1520.

Hab. Plentiful in ditches and stagnant waters. *Fl.* July, August. ♃.

Culms from 1—3 feet high, thick and succulent. *Leaves* linear-lanceolate, acute. *Ligule* oblong, pointed. *Panicle* subsecund, very long, slender. *Cal.* valves unequal, small, ovate, membranous, obtuse. *Cor.* valves ovato-oblong, thrice as long as the *cal.*; outer ones scabrous. The little *scale* (*Nectary* L.), at the base of the germen is of 1 fleshy piece, and the stigmas are much divided, on which account Mr. Brown makes of it a new Genus *Glyceria*. It is found in New Holland. The seeds, under the name of *Manna seeds*, are sold in Hol-

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[a] The different species of *Poa* border so closely the one upon the other that it is hardly possible to subdivide the Genus by means of well defined characters. The following may serve to aid the student in his investigation.

* *Cal. as long as the florets, ext. valve of the cor. tridentate,* (*Triodia* Br.)

P. decumbens, 15.

** *Cal. shorter than the florets, ext. valve entire.*

† *Spikelets more or less linear.*

P. aquatica, 1. fluitans, 2. maritima, 3. distans, 4. procumbens, 5. rigida, 6.

†† *Spikelets more or less ovate.*

P. compressa, 7. alpina, 8. laxa, 9. cæsia, 10. trivialis, 11. pratensis, 12. annua, 13. nemoralis, 14.

[b] When the bluntness or acuteness, and the ribs or nerves of the flowers are spoken of, the outer valve of the *cor.* alone is alluded to.

land as food, and according to Lightfoot in Poland and Germany. Sold also in our shops and employed occasionally as a nourishing and mild diet.

3. P. *maritima* (*creeping Sea Meadow-grass*), panicle erect subcoarctate (rigid), spikelets linear of about 5 obtuse flowers which are obsoletely 5-nerved, leaves convolute, root creeping. *Lightf. p.* 98. *E. B. t.* 1140.

Hab. Sea-coast in many places. Isles of Oransa and Skye and at Loch Broom, Ross-shire, *Lightf.* *Fl.* July. ♃.

Eight to twelve inches high, rigid, glaucous. *Leaves* involute, somewhat pungent. *Ligule* ovate, bluntish. *Glumes* all firm, cartilaginous. *Cal.* valves nearly as large as the *cor.*, with mostly 3 ribs. *Florets* hairy at the base, sometimes purplish.—Lightfoot was quite mistaken in supposing it might be a var. of *P. fluitans*.

4. P. *distans* (*reflexed Meadow-grass*), panicle divaricate, branches at length deflexed, spikelets linear of about 5 obtuse flowers which are obsoletely 5-nerved, leaves plane, root fibrous. *E. B. t.* 986.

Hab. Coast of Angus-shire and other parts of Scotland, *G. Don.* *Fl.* July, Aug. ♃.

One foot high. *Leaves* linear, plane, not pungent. *Ligule* short, obtuse. *Branches* of the panicle singularly deflexed, slender. *Spikelets* much smaller than in the last species. *Glumes* membranous, softer. *Cal.* valves much smaller than the *cor.*, unequal; *larger one* obscurely 3-nerved.—Allied to the last, but very distinct.

5. P. *procumbens* (*procumbent Sea Meadow-grass*), panicle compact ovato-lanceolate disticho-secund (rigid), spikelets linear-lanceolate of about 4 flowers which are 5-ribbed. *E. B. t.* 532.

Hab. Salt marshes, not uncommon, *D. Don.* *Fl.* June, July. ☉.

Culms procumbent, 6—8 inches long, glaucous. *Leaves* linear. *Ligule* short, very blunt. *Panicle* about 2 inches long, branches patent distichous, their spikelets secund. *Cal.* valves smaller than the floret, obtuse, strongly ribbed. *Florets* oblong, distant upon the rachis. *Inner cor.* valve membranous, bifid at the point.

6. P. *rigida* (*hard Meadow-grass*), panicle lanceolate disticho-secund (rigid), spikelets linear acute of about 7 flowers which are almost ribless, root fibrous. *Lightf. p.* 1084. *E. B. t.* 1371.

Hab. On walls, rocks, and dry barren soils. On Salisbury Craigs and all the rocks in the King's Park, Edinb., *Lightf.* Road-side from Edinb. to Haddington, near Drummore, and on walls Burntisland, plentiful, *Maugh.* About Edinb. and coast of Fife, common, *Mr. Arnott.* *Fl.* June. ☉.

Whole plant very rigid and wiry, 3—5 inches long, ascendent or erect. *Leaves* rigid, linear, setaceous. *Ligule* oblong, jagged. *Rachis* angled, sometimes at once bearing the spikelets (when it looks very like *Triticum loliaceum*), but more usually throwing out branches. *Cal.* valves nearly as long as the *cor.*, ribbed. *Florets*

almost entirely ribless, linear-oblong, rather distant, smooth, bluntish.

7. P. *compressa* (*creeping Meadow-grass*), panicle subsecund spreading (afterwards subcoarctate), spikelets oblongo-ovate of from 5—7 obtuse flowers connected by a web, culm compressed, root creeping.

Hab. Walls, Melrose Abbey, *Lightf.* Walls about the King's Park, Edinb., *Maugh.* Walls and in dry pastures about Glasg., very rare, *Hopk.* Common about Edinb., *Mr. Arnott.* *Fl.* July, Aug. ♃.

One foot or more high, subglaucous. *Culms* compressed, at the base procumbent. *Leaves* short, linear, acute. *Ligule* very short, blunt. *Panicle* not much branched. *Cal.* valves ribbed, acute. *Valves* of *cor.* obtuse, *outer one* very obsoletely ribbed; the lower florets webbed at the base.

8. P. *alpina* (*alpine Meadow-grass*), panicle diffuse, spikelets ovate of 4—5 acute flowers hairy below (but not webbed), leaves broadly linear obtuse, ligule of the upper leaves oblong acute of the lower ones short obtuse. *Lightf. p.* 96. *E. B. t.* 1003.

β. *glomerata*, spikelets crowded. *D. Don's MSS. ined.*

Hab. Common upon elevated mountains in the Highlands. β. Banks of the Esk, *G. Don.* *Fl.* July, Aug. ♃.

Six to twelve inches high, nearly erect. *Leaves* short, linear, obtuse with a very small mucro. *Spikelets* rather large, close. *Cal.* valves ovato-lanceolate, much compressed; dorsal rib scabrous, terminating in a very sharp point or short awn, with a short lateral rib or nerve at the base. *Ext.* valve of *cor.* ovato-lanceolate, acute; dorsal rib scabrous, no lateral ones; lower part villous; upper part glabrous, purple; margin diaphanous: *int.* valve notched or bifid at the extremity.—This grass is very frequently viviparous.

9. P. *laxa* (*slender Meadow-grass*), panicle contracted lax slightly drooping, spikelets ovate of about 3 flowers which are acute connected by a web, leaves narrow linear-acute, ligules all lanceolate. *Willd. Sp. Pl. p.* 386. *E. B. t.* 1123 (*P. flexuosa*).

Hab. Ben Nevis, *Mr. J. T. Mackay.* *Fl.* July. ♃.

A very slender subglaucous grass, scarcely able to support the weight of its panicle, which consequently droops slightly. *Leaves* more numerous than in *A. alpina*, and much narrower. *Florets* very obscurely ribbed, all very acute, green and purple, with diaphanous margins. *Cal.* valves nearly equal, pubescent on the keel, as is the *cor.* which is also webbed.

10. P. *cæsia* (*sea-green Meadow-grass*), "panicle spreading, spikelets ovate 5-flowered, glumes lanceolate silky-edged unconnected by any web, stipule (*ligule*) very short and blunt." *Sm. in E. B. t.* 1719.

Hab. Scotland, *Mr. Fairburn.* Ben Lawers and other Highland mountains, *Mr. J. T. Mackay.* Rocks of Ben Lawers and Clova; mountains of Aberdeenshire, not rare, *G. Don.* *Fl.* June, July. ♃.

I know this plant only from the figure (taken from a cultivated specimen) and description in *E. Bot.* To judge from them, I must confess, it seems to have few characters to recommend it as a species, though I am not prepared to say to what individual it may belong; probably to *P. glauca* of the same work, of which Wahlenberg makes it the *var. β. latifolia, panicula magis diffusa:* but those very characters may be the effect of cultivation.—See *P. nemoralis, var. glauca,* of this work.

11. P. *trivialis* (*roughish Meadow-grass*), panicle diffuse, spikelets oblongo-ovate of about 3 flowers which are acute 5 nerved connected with a web, culm and sheaths roughish, ligule oblong, root fibrous. *Lightf. p.* 97 (*P. trivialis* and *P. angustifolia?*). *E. B. t.* 1072.

Hab. Meadows and pastures, common. *Fl.* June, July. ♃.

One foot to 2 feet high. *Leaves* linear, acute. *Panicle* much branched.

12. P. *pratensis* (*smooth-stalked Meadow-grass*), panicle diffuse, spikelets oblongo-ovate of about 4 flowers which are acute 5-nerved webbed, culm and sheath smooth, ligule short, root creeping. *Lightf. p.* 97. *E. B. t.* 1073.

β. *minor*, much smaller, subglaucous, panicle fewer-flowered. *P. humilis, Ehrh. Gram. p.* 115 (fide *Sm.*). *E. B. t.* 1004 (*P. subcærulea*).

Hab. Meadows and pastures, common.—β. Wall-tops and dry sandy places, not uncommon, *Mr. Arnott.* Upland pastures, common, *G. Don.* Sandy banks Edinb., and sea-shore Kirkcaldy, *Mr. Greville.* Duncansby-head, Caithness. *Fl.* June, July. ♃.

Much as this species is allied to the last, the differences in the above characters prove the two to be abundantly distinct. Var. β. seems but a starved state of it.

3. P. *annua* (*annual Meadow-grass*), panicle subsecund divaricated, spikelets oblongo-ovate of about 5 flowers which are a little remote 5-ribbed destitute of web, culm ascending compressed, root fibrous. *Lightf. p.* 97.

Hab. Meadows and pastures and by road-sides, every where. *Fl.* spring and summer. ⊙.

Culms 6—10 inches long, below prostrate and throwing out roots. *Leaves* distichous, linear, rather blunt, flaccid, often waved, bright green. *Ligule* oblong, acute. *Panicle* pale green, its branches at length much divaricated. *Cal.* valves very unequal, ovato-lanceolate, rough at the back, nerved. *Ext.* valve of *cor.* ovato-lanceolate, acute, white and diaphanous at the margin, keel and base hairy.

14. P. *nemoralis* (*wood Meadow-grass*), panicle slender slightly leaning one way lax attenuate, spikelets lanceolate of about 3 rather distant slightly-webbed flowers, ligule short truncate, culms subcompressed and sheaths glabrous, root subrepent. *Lightf. p.* 98. *E. B. t.* 1265.

β. *glauca*, slenderer glaucous, panicle more contracted. *P. glauca, E. B. t.* 1720; and *P. cæsia? E. B. t.* 1719. *P. pulchella, G. Don, MSS. ined.*

Hab. Common in woods and thickets.—β. Scotch Alps, plentiful. *Fl.* June, July. ♃.

One to three feet high, slender and delicate in all its parts. *Leaves* narrow, linear, acute. *Panicle* with the branches at most erecto-patent. *Spikelets* not crowded. *Cal.* valves unequal, ovato-lanceolate, acute, rather obscurely ribbed. *Ext. valve* of *cor.* lanceolate, very obscurely ribbed, pubescent on the keel and hairy at the base, but very slightly webbed. *Inner valves*, as, I believe, in all the genus, bifid at the point.—There can, I think, be little doubt of the *P. glauca* being merely an alpine var. of this;—glaucous, smaller, with the spikelets rather larger in proportion. Such seems to be the opinion of Schrader; and Wahlenberg and Gaudin have united the *P. cæsia* of *E. B.* with the *P. glauca;* the latter considering both as varieties of *P. nemoralis*. Wahlenberg, indeed, though he makes a species of *P. glauca*, says that it is as it were intermediate between *P. trivialis* and *nemoralis*; "sed colore glauco eximio ab utraque differt." The *P. pulchella* of *D. Don's MSS.* I am sorry I cannot distinguish from the glaucous var. here noticed; except that it is somewhat less glaucous, or, as Mr. Don expresses it, "*glauco-virescens.*"—In all I find at the base of the florets a more or less apparent filamentous, webbed substance.

15. P. *decumbens* (*decumbent Meadow-grass*), panicle nearly simple contracted few-flowered, calyx as long as the 4-flowered spikelet, ligule a tuft of hairs. *Lightf. p.* 102 (*Festuca dec.*). *E. B. t.* 792.

Hab. Dry mountain pastures. Abundant in the Isle of Canay, *Lightf.* Marsh beyond Possil, Glasg., *Hopk.* Ochil hills; Newburgh and Cathkin hills, Glasg., *D. Don.* Arthur's Seat; coast of Fife; in Forfar- and Kinross-shires; Breadalbane, *Mr. Arnott.* Pentland hills, *Mr. Greville.* *Fl.* July. ♃.

One foot long, procumbent, flowering culm only erect. *Leaves* linear, rigid, acuminate, hairy as well as the sheaths. *Cal.* valves nearly equal, lanceolate, acute, nerved, with broad thin margins, scabrous on the keel. *Ext.* valve of the *cor.* ovate, nerved or ribbed, having a small tuft of hairs on each side the base; apex with three teeth: *int.* valve obtuse, entire at the point, ciliated at the angles of the fold.—*Habit* very different from *Poa*; and Mr. Brown suggests that it may belong to his genus *Triodia*. It is *Danthonia* of Decandolle[a].

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[a] Besides the foregoing species of *Poa*, the two following are to be added as natives of Scotland: but as I have never seen specimens, so as to be able to verify them, or to put them in their proper place in the genus, I think it better to give them in a note.

1. P. *stricta*, panicle branched, spikelets of 3 flowers ovate, *cal.* glumes lanceolate 3-nerved nearly equal mucronated keeled, florets 5-nerved truncated at the apex villous at the base. *D. Don, Descr. of New or Rare Plants of Scotl. p.* 4.

Hab. Pastures in Angus-shire, *G. Don.*—Said to be very near *P. pratensis*.

2. P. *leptostachya*, panicle contracted somewhat racemed, pedicels very short glabrous, spikelets 2-flowered, *cal.* glumes lanceolate mucronate equal

21. BRIZA.

1. Br. *media* (*common Quaking-grass*), spikelets broadly ovate of about 7 flowers, *cal.* shorter than the florets. *Lightf. p.* 99. *E. B. t.* 340.

Hab. Meadows and pastures, but rare in the Highlands, *Lightf.* About the ponds at Dongalston. At the entrance to the falls of the Clyde, and about Airdrie, *Hopk.* *Fl.* June. ♃.

Whole plant very elegant. *Culms* slender, 1 foot or more in length. *Leaves* short, linear, acuminate. *Panicle* a good deal branched, branches thread-shaped, divaricating, purple. *Spikelets* tremulous with every breeze, very smooth, shining, purple, more or less green or greenish white at the edges. *Cal.* valves very concave, subcompressed. *Ext.* valve of *cor.* much like the *cal.* but rather smaller; *int.* one minute, resembling a flat scale, within the larger one.

22. DACTYLIS[a].

1. D. *glomerata* (*rough Cock's-foot-grass*), panicle crowded secund, leaves plane. *Lightf. p.* 99. *E. B. t.* 335.

Hab. Way-sides, meadows and woods, abundant. *Fl.* July. ♃.

One to two feet high. *Leaves* rather broadly linear, acuminate, scabrous. *Panicle* secund. *Spikelets* of 3—4 flowers, thickly clustered on the branches, clusters ovate. Valve of the *cal.* membranous, smaller than the *cor.*, lanceolate, acuminate, unequal, glabrous, scabrous at the back of the valves, which are more or less obliquely keeled. *Ext.* valve of *cor.* subcartilaginous, lanceolate, much compressed, scabrous, ribbed, ciliated at the keel, with a short *awn* at the point; *int.* bifid at the extremity.

23. CYNOSURUS.

1. C. *cristatus* (*crested Dog's-tail-grass*), raceme spiked linear, florets with a very short awn. *Lightf. p.* 100. *E. B. t.* 316.

Hab. Dry pastures, frequent. *Fl.* July. ♃.

One to one and a half foot high, slender. *Leaves* narrow, linear, acuminate. *Raceme* secund. *Involucre* beautifully pectinated, one at the base of each spikelet, their divisions linear, acute, greenish, subglumaceous, a little curved, rough. *Spikelets* 3—5-flowered. *Cal.* valves lanceolate, nearly equal, membranous, rough at the keel, as long as the floret. *Ext.* valve of *cor.* lanceolate, obscurely nerved, green, scabrous, especially at the keel, terminating in a short rough awn; *int.* white, bifid, pubescent at the angles of the fold.

3-nerved incurved at the extremity, florets lanceolate rather acute at the point. *D. Don, Descr. of New or Rare Plants of Scotl. p.* 6.

Hab. Banks of the Tay, west of Dundee, *G. Don.*—Said to be totally distinct from any British *Poa.*

[a] This agrees very imperfectly with the character given of *Dactylis*, especially in what concerns the *cal.* In reality it accords with *Festuca*, but the clustered secund panicle indicates a different genus.

24. FESTUCA.

1. F. *ovina* (*Sheep's Fescue-grass*), panicle subsecund subcoarctate, spikelets oblong of about 4—5 flowers with short awns, culms square (upward), leaves setaceous. *Lightf. p.* 101. *E. B. t.* 585, and *t.* 1917 (*F. cæsia*).

β. *vivipara*, plant taller, leaves capillary. *F. ovina* β., *Lightf. F. vivipara*, *E. B. t.* 1355.

Hab. Abundant in dry elevated pastures. β. Mountains common, especially the lofty ones; rare in the plains. Wall, Helensburgh, *Hopk. Fl.* June, July. ♃.

Leaves short, often curved, smooth or slightly scabrous, much tufted and affording excellent feed for sheep. *Ligule* very short, projecting on each side. *Culms* 4 to 8 inches high, in the upper part more or less square. *Cal.* valves much shorter than the *cor.*, acute, subglabrous. *Cor.*: *outer valve* more or less glabrous, sometimes pubescent upward, or even hairy[a], terminated by an *awn*, which, though varying in size, at the utmost does not exceed half the length of the valve. Whole plant more or less glaucous, with a purple tint in the spikelets. In the *F. vivipara* of authors, which I cannot otherwise consider than as a var. of *ovina*, the *florets* are not more compressed than in α.; the *cal.* varies in its pubescence, or is sometimes glabrous; nor are the leaves more smooth than in some specimens of α. In my authentic specimens of *F. cæsia* I find no character by which it may be distinguished from the true *ovina*; the marks given by its author in *E. B.* and *Comp. Fl. Brit.* being equally found in *ovina*. Mr. D. Don, in his MSS. now before me, considers the *F. cæsia* of Sm. to be the same as *F. Halleri* of Vill. and Gaud.; but my foreign specimens of that plant from Prof. Hoppe have a very different panicle, and awns as long as the florets. Very near *F. ovina*, and by many considered a var., is the *F. tenuifolia* of Sibth. and Schrad.; far more slender in every part, the leaves much longer. *Spikelets* smaller, green, glabrous, acute, not awned.

2. F. *duriuscula* (*hard Fescue-grass*), panicle subsecund subcoarctate, spikelets oblong of about 6 flowers with short awns, stem leaves nearly plane, radical ones subsetaceous. *Lightf. p.* 101. *E. B. t.* 470. *F. glauca*, *G. Don MSS. inedit.*

β. root creeping. *Lightf. p.* 102. and *p.* 1085 (*F. glabra*). *E. B. t.* 2056.

Hab. Pastures and waste grounds. β. Rocks in Ailsa, abundant. Arbigland in Galway, *Lightf.* Shores and islands of the Forth, plentiful, *D. Don. Fl.* June, July. ♃.

Sir James Smith justly observes, it is hard to say what is a species in this genus; and to me it appears that authors have raised very slight varieties of *F. ovina* and *duriuscula* into that rank. Even these two species themselves it is difficult to distinguish in words, so closely do their more important characters agree. *F. duriuscula* is generally, however, twice or thrice the size of the former; the

[a] When hairy, it is the *F. hirsuta* Host. *Gram. Austr.*

spikelets large, but varying as well as the pedicels in roughness and pubescence, often smooth. The *lower leaves* are complicate, the *upper ones* more or less plane. The *colour* of the plant is generally glaucous green, the spikelets more or less tinged with red. The *F. glauca* of Mr. D. Don's unpublished MSS., which he considers to be that of Lamarck and Decandolle, has no character which is not included in my *F. duriuscula*, nor any mark that appears to me to require particular notice. Host and Schrader and Gaudin have added greatly to the species (if such they can be called) of this tribe of *Festucæ*.

3. F. *bromoides* (*barren Fescue-grass*), panicle secund racemose, flowers shorter than the awn monandrous, culm above leafless. *Lightf. p.* 102. *E. B. t.* 1411.

Hab. Dry pastures, but not common, *Lightf.* Frequent on walls about Edinb., *Dr. Yule.* Walls and dry sandy places about Glasg., but rare, *Hopk.* *Fl.* June. ⊙. (♂, *Schrad.*)

Six to eight inches high. *Leaves* linear, setaceous, complicate. *Cal.* valves unequal, lanceolato-acuminate, nerved, rough at the keel. *Florets* about six in each spikelet. *Ext. valve* of *cor.* linear-lanceolate, scabrous, tapering into a straight *awn*, twice the length of the valve.

4. F. *Myurus* (*Wall Fescue-grass*), panicle secund elongate contracted, flowers shorter than the awn monandrous, culm leafy in its upper part. *E. B. t.* 1412.

Hab. Walls and barren places, but not common, *Hopk.* N. of Forfar, *Mr. Arnott.* *Fl.* June. ⊙.

Much resembling the last, but taller. One foot high. *Leaves* shorter, their sheaths longer and springing even from the upper part of the culm. *Panicle* often 4—5 inches long. *Cal. valves* and *florets* narrower, rather more scabrous, *awns* longer.

5. F. *gigantea* (*tall Fescue-grass*), panicle branched drooping towards one side, spikelets lanceolate compressed, flowers shorter than the awn, leaves linear-lanceolate, ribbed. *Lightf. p.* 104 (*Bromus gig.*). *E. B. t.* 1820.

β. *triflora*, panicle more erect, slenderer, with three flowers, leaves narrower. *F. triflora.* *E. B. t.* 1918.

Hab. Shady woods, as Armaddy in Nether Lorn, *Lightf.* Moist woods and hedges, frequent about Glasg., *Hopk.* β. On the banks of the Esk, near Forfar. *Fl.* July, Aug. ♃.

A tall grass, 3—4 feet high, with broad leaves, having the habit of *Bromus*, but placed by Smith among the *Festucæ* on account of the absence of the fringe to the inner valve of the *cor.* *Panicle* large. *Spikelets* from 3—6 florets. *Cal.* valves very unequal, larger one with three ribs. *Outer* valve of *cor.* lanceolate, obscurely ribbed, nearly glabrous, membranous at the edge upward. *Awn* very long, inserted a little below the bifid point.—I fear the *F. triflora* is only a starved var. of this plant; since I can find no difference but what I have indicated above.

6. F. *calamaria* (*Wood Fescue-grass*), panicle subsecund much

branched spreading nearly erect, spikelets oblong awnless 3—5-flowered, leaves linear-lanceolate. *E. B. t.* 1005.

β. minor. F. decidua, *E. B. t.* 2266.

Hab. Woody valley at the foot of B. Lawers, 1793, *Mr. J. T. Mackay*. Kenmuir bank, Glasg., *Dr. Brown*. Dumbartonshire; Breadalbane, and near Fort Augustus, *G. Don*. I suspect not uncommon in moist alpine woods and on banks. *β*. Perthshire, *G. Don*. *Fl.* July. ♃.

Two to three feet high, with large and broad leaves. *Cal. valves* narrow, linear-lanceolate, very unequal, small one single-nerved, larger one with three nerves. *Florets* rather distant upon the rachis. *Ext. valve* of *cor.* scabrous, lanceolato-acuminate.

7. F. *loliacea* (*spiked Fescue-grass*), raceme spiked distichous elongate, spikelets distant linear many-flowered, florets cylindrical awnless. *E. B. t.* 1821.

Hab. Moist meadows and pastures occasionally about Glasg., *Hopk.* Angus-shire, rare, *G. Don*. Marsh at the foot of Salisbury Craigs, *Dr. Yule*. N. bank of Loch Leven? *Mr. Arnott*. *Fl.* June, July. ♃.

Two feet high. *Leaves* few, short, linear, acute. *Racemes* 2—5 inches long. *Rachis* flexuose. *Spikelets* nearly sessile, 5—6-flowered. *Cal. valves* unequal, lanceolate, acute. *Outer valve* of *cor.* ovate, lanceolate, nerved, diaphanous at the apex, and obtuse (hence hardly agreeing with the Gen. char.), scarcely scabrous, or only on the nerves. Something the habit of *Poa fluitans*, but more so that of *Lolium perenne* or Rye-grass. Gaudin suggests that it may be a var. of the following.

8. F. *pratensis* (*Meadow Fescue-grass*), panicle patent branched, spikelets linear many-flowered, florets cylindrical awnless, leaves linear, root fibrous. *E. B. t.* 1592.

Hab. Moist meadows and pastures, common, *Hopk. Fl.* June, July. ♃.

One to two feet high. Distinguished at first sight from the last by its panicle (not spiked raceme), also by the *florets*, which, though much resembling the last, have their *outer valve* more acute.

9. F. *elatior* (*tall Fescue-grass*), panicle patent very much branched, spikelets ovato-lanceolate many-flowered, florets cylindrical subaristate, leaves linear-lanceolate, root creeping. *Lightf. p.* 102. *E. B. t.* 1593.

Hab. Moist meadows and banks of rivers, but not common, *Dr. Parsons*. Caroline Park, &c., Edinb., *Mr. Arnott*. *Fl.* June, July. ♃.

Habit much like the last, but twice or thrice the size in every part. *Outer valve* of the *cor.* always very acute or even acuminate, awnless, or with a short *awn* inserted just below the point.

25. BROMUS.

* *Awn terminal. Raceme spiked.*

1. Br. *sylvaticus* (*slender Wood Brome-grass*), raceme spiked slightly drooping, spikelets distichous linear erect remote, awns straight longer than the florets. *Lightf. p.* 103 (*Festuca sylv.*). *E. B. t.* 729.

Hab. Woods and hedges, not uncommon, *Lightf.* *Fl.* July. ♃.

Two feet high. *Leaves* broadly linear-lanceolate, very hairy. *Spike* long. *Cal.* valves unequal, lanceolato-acuminate, much nerved. *Ext.* valve of *cor.* linear-lanceolate, much nerved, scabrous, rarely hairy; *inner one* truncate, margins ciliated.

** *Awn from below the point of the Cor. Panicle branched.*

2. Br. *secalinus* (*smooth Rye Brome-grass*), panicle spreading, peduncles but little branched, spikelets oblongo-ovate (*ovate, Sm.*) compressed of about ten subcylindrical glabrous rather remote flowers, longer than the awn. *E. B. t.* 1171. (Not *Lightf.*)

Hab. Coast of Angus- and Fifeshire, *G. Don.* Cliesh, *Mr. Arnott.* *Fl.* July, Aug. ⊙.

Two to three feet high. *Leaves* somewhat hairy. *Cal.* and *ext.* valve of *cor.* broadly ovate; *int. cor.* valve bifid at the point, the margins strongly ciliated. When the seeds ripen, the upper spikelets are pendulous, and the florets exhibit more distinctly the distant mode of insertion.

3. Br. *velutinus* (*downy Rye Brome-grass*), panicle spreading, peduncles but little branched, spikelets oblongo-lanceolate compressed of about 12 cylindrical pubescent subimbricated florets, awns longer than the glume (at length patent, *Schrad.*). *Schrad. Fl. Germ. p.* 349. *Lightf. p.* 1086 (*Br. secalinus*, fide *Sm.*). *E. B. t.* 1884 (*Br. multiflorus*).

Hab. Corn-fields, but not common. Fields behind the Bot. garden, Edinb., *Mr. Yalden in Lightf.* Between Edinb. and Newhaven, *Smith in E. B.* *Fl.* June, July. ⊙.

Of this species I confess myself to know little. It is nearly allied to *Br. secal.*; but the awn is longer (at length patent, *Schrad.*), and the glumes are pubescent, circumstances undoubtedly likely to vary. The *Br. multiflorus* of Wiegel, which Sir James Smith supposes to be this, Schrader, upon the authority of Wiegel's own specimen, pronounces to be *Br. arvensis*. So difficult is it to be certain of mere descriptions of Grasses.

4. Br. *mollis* (*soft Brome-grass*), panicle erect close compound, spikelets ovate subcompressed, florets imbricated depressed pubescent, awn straight about as long as the glume, leaves very soft pubescent. *Lightf. p.* 103. *E. B. t.* 1078.

Hab. Meadows, pastures, banks, corn-fields, &c. *Fl.* June. ♂.

One to two feet high. *Panicle* 2—3 inches long. *Spikelets* standing nearly erect. *Florets* 5—10. *Ext. valve* of *cor.* convex, by no means forming such cylindrical florets as in the two last species.

5. Br. *racemosus* (*smooth Brome-grass*), panicle erect, peduncles simple, spikelets ovate subcompressed glabrous, florets imbricated depressed, awn straight about as long as the glume, leaves slightly hairy. *E. B. t.* 1079, and *t.* 920 (*Br. pratensis*).

Hab. Corner of a grass-field by the road near Ridrie, Glasg., rather

rare, *Hopk.* Fields Angus-shire, *G. Don.* Between Glasg. and Frankfield Loch, *D. Don.*, and *Hopk. MSS.* under the name of *Br. pratensis*. Caroline Park, Edinb., *Mr. Arnott* and *Mr. Greville*. *Fl.* June, July. ⊙. (♂, *Schrad.*)

Scarcely different from the preceding but in the glabrous spikelets, and less pubescent leaves. The excellent Schrader quotes as a synonym to this the *Br. pratensis* of Ehrh.; and I can see no difference in the *Br. pratensis* of Sm. (*E. B. t.* 920), except that the plant is more pubescent, and the spikelets somewhat narrower.

6. Br. *squarrosus* (*Corn Brome-grass*), panicle drooping, peduncles simple, spikelets ovato-lanceolate subcompressed, florets nearly glabrous imbricated depressed, awn divaricating, leaves pubescent. *E. B. t.* 1885.

Hab. Various parts of Scotland, *G. Don.* *Fl.* June, July. ⊙.

A very distinct species, remarkable for its divaricating awn, and very small inner valves of the *cor.* I think the late Mr. G. Don was too accurate a botanist to confound this with any other *Bromus*: but I must observe that upon the continent it is confined to the more southern parts; and Smith doubts if it be a native of England at all.

7. Br. *arvensis* (*tapering Field Brome-grass*), panicle spreading (at length drooping), peduncles branched, spikelets lanceolate compressed, florets imbricated depressed glabrous about as long as the straight awn, leaves hairy. *Lightf. p.* 104. *E. B. t.* 1984.

Hab. Grass- and corn-fields, not uncommon. Between Dalbeth and Clyde Iron Works, and about Cathcart, with *Br. mollis, Hopk. MSS.* *Fl.* June, July. ⊙.

Two to three feet high. Distinguished by its rather large, but slender, at length drooping panicle, and spikelets which have mostly a purplish tinge. Lightfoot speaks of a starved var. growing upon the sea-shore at Oronsay, with convolute leaves and awnless flowers, such as is figured in *Fl. Dan. t.* 293.

8. Br. *erectus* (*upright Brome-grass*), panicle erect, spikelets linear-lanceolate compressed, florets subcylindrical remote glabrous longer than the straight awn, radical leaves very narrow ciliated. *E. B. t.* 471.

Hab. King's Park, Edinb., *Mr. G. Anderson.* *Fl.* July. ♃.

Two to three feet high. This, as well as *Br. sylvaticus*, (both of which have the habit of *Festucæ*,) is truly perennial. The *radical leaves* are narrow; the *spikelets* erect.

9. Br. *asper* (*hairy Wood Brome-grass*), panicle branched drooping, spikelets linear-lanceolate compressed, florets remote subcylindrical hairy longer than the straight awn, leaves uniform the lower ones hairy. *Lightf. p.* 1087 (*Br. racemosus*). *E. B. t.* 1172.

Hab. Auchenbraith Linn., N. side of the water of Ea, near the church of Kirkmichael, *Dr. Burgess.* Moist woods, common, *Hopk.* *Fl.* June, July. ⊙ or ♂ (*Sm.*). (♃, *Schrad.*)

Four to six feet high. *Leaves* broad.

10. Br. *sterilis* (*barren Brome-grass*), panicle drooping slightly branched, spikelets linear-lanceolate, florets remote, subcylindrical scabrous shorter than the straight awn, leaves pubescent. *Lightf. p.* 104. *E. B. t.* 1030.

Hab. Waste ground, hedges and fields, common. *Fl.* June, July. ⊙.

Two feet high. Remarkable for its long, narrow, much awned, and drooping spikelets.

11. Br. *diandrus* (*upright annual Brome-grass*), panicle erect slightly branched, spikelets linear-lanceolate, florets remote subcylindrical subscabrous about as long as the straight awn, stamens 2 (sometimes 3, *Schrad.*), leaves subglabrous. *E. B. t.* 1006.

Hab. About Edinb., but not common, *Mr. Arnott. Fl.* June, July. ⊙.

One foot high. Allied to *B. sterilis*; but *panicle* smaller, erect or erecto-patent, often purplish.

26. AVENA.

1. A. *fatua* (*wild Oat*), panicle erect, spikelets drooping of about 3 flowers, florets smaller than the *cal.* hairy below, root fibrous (annual). *Lightf. p.* 105. *E. B. t.* 2221.

Hab. Corn-fields, *Sibbald. Fl.* July, Aug. ⊙.

Two to three feet high. *Leaves* linear-lanceolate. *Cal.* valves large, membranous, ovato-lanceolate, keeled, acuminate, ribbed. *Cor. ext. valve* with long fulvous hairs, bifid at the point. *Awn* long, twisted.—An excellent hygrometer.

2. A. *pubescens* (*downy Oat-grass*), panicle erect nearly simple, spikelets of about 3 flowers which are longer than the *cal.* their pedicels villous, leaves plane downy, edges smooth. *Lightf. p.* 105. *E. B. t.* 1640.

Hab. Dry mountain pastures, *Lightf.* Pastures about Glasg., but rare; banks of the Cart opposite the Mill, *Hopk.* Arthur's seat, Salisbury Craigs and shores of the Firth, *Mr. Arnott. Fl.* June, July. ♃.

Spikelets half the size of the former, nearly erect. Upper part of the *glumes* very white, silvery. *Cal.* valves lanceolate, acute. *Ext. valve* of the *cor.* oblong, jagged at the extremity; *int.* very membranous, point bifid. *Pedicel* or *receptacle* of the floret with a tuft of long white hairs.

3. A. *planiculmis* (*flat-strawed Oat-grass*), panicle erect slightly branched (subspicate), spikelets of about 5 flowers which are much longer than the *cal.*, margins of the leaves and sheaths scabrous, culms and sheaths compressed. *E. B. t.* 2141.

Hab. Rocks on the summits of the highest mountains in Clova, Angus-shire, *G. Don. Fl.* July. ♃.

Two feet high. *Leaves* all very broad without pubescence. Receptacle of the florets less hairy than in *A. pubescens, with* which the general appearance of the plant agrees.

4. A. *pratensis* (*narrow-leaved Oat-grass*), raceme erect simple,

spikelets of about 5 flowers which are longer than the *cal.*, leaves glabrous finely serrrated, lower ones involute. *Lightf. p.* 105. *E. B. t.* 1204.

Hab. Dry mountain pastures about Blair, *Dr. Parsons. Fl.* July. ♃.

Remarkable for its short leaves, finely serrated at the margin, the *lower ones* being complicate and involute; and for the racemed spikelets. *Receptacle* of the flowers very slightly hairy.

5. A. *flavescens* (*yellow Oat-grass*), panicle much branched lax, spikelets of about 3 flowers which are longer than the very unequal valves of the *cal.*, root creeping. *Lightf. p.* 106. *E. B. t.* 952.

Hab. Dry meadows and pastures, *Dr. Parsons.* Common about Edinb., *Mr. Arnott. Fl.* July. ♃.

The smallest of our *Avenæ*, about 1 foot high. *Spikelets* numerous, small, pale yellow green. *Valves* of the *cal.* unequal, ribbed; *one* almost subulate. *Receptacle* of the florets hairy. *Outer valve* of *cor.* faintly 5-nerved, with five very short, acuminated points, and an awn about twice its length: hence the genus *Trisetum* of Pers.

27. TRITICUM.

* *Spike distichous.*

1. Tr. *junceum* (*Sea rushy Wheat-grass*), valves of the *cal.* obtuse much ribbed with 4—5 awnless flowers, leaves involute pungent, root creeping. *Lightf. p.* 109. *E. B. t.* 814.

Hab. Sea-coast in sandy places, frequent. Bute; west coast of Cantire; Oransay and Icolmkill, *Lightf. Fl.* July. ♃.

Whole plant glaucous, rigid, 1 foot and a half to 3 feet high. *Spike* long. *Spikelets* oblong, much compressed, distant, sessile. *Cal.* valves oblongo-lanceolate, often tridentate. *Ext. cor.* valves similar, with 5 nerves.

8. Tr. *repens* (*creeping Wheat-grass, Couch-grass*), valves of the *cal.* much nerved with from 4—8 awned (rarely awnless) flowers, leaves plane, root creeping. *Lightf. p.* 109. *E. B. t.* 909.

Hab. Fields and waste places every where. *Fl.* throughout the summer. ♃.

Height and general aspect of *Tr. junceum*, but rather more slender, of a glaucous colour only when growing near the sea. *Leaves* plane, or nearly so. *Spikelets* smaller, less compressed than in *Tr. junc. Cal.* and *ext. cor. valves* 5-nerved, acute or terminated by an awn of greater or less length. Nerves in the *cal.* both of this and the former species vary from 5 to 9.—Pest of the corn-field, and difficult of extirpation from its long creeping roots.

3. Tr. *caninum* (*bearded Wheat-grass*), valves awned (mostly 3-) nerved with about 5-awned flowers, leaves plane, root fibrous. *Lightf. p.* 108 (*Elymus can.*). *E. B. t.* 1327.

Hab. Woods and hedges occasionally about Glasgow, *Hopk.* Coast, not rare; between Caroline Park and Crammond, Edinb., *Mr. Greville. Fl.* July. ♃.

Except the fibrous roots and long awns, it is difficult to point out a mark to distinguish this from the foregoing species. In its fructification, and that of *Tr. caninum* and *Tr. junceum*, the varieties are so numerous that it is scarcely possible to draw the line of discrimination.

4. Tr. *cristatum* (*crested Wheat-grass*), valves of the *cal.* subulate keeled aristate scarcely nerved of about 4 awned flowers, spikelets much crowded. *E. B. t.* 2267.

Hab. Sea-side between Arbroath and Montrose, *G. Don. Fl.* July. ♃.

Culm 1 foot or more high, pubescent upward. *Leaves* linear, acuminated, hairy on the upper surface. *Spike* dense, oblong, almost 4-sided. *Spikelets* very regularly distichous, standing out nearly horizontally, lanceolate. *Cal.* valves small, subulate, awned. *Outer valve* of the *cor.* lanceolate, longer than its awn.—A rare Grass, very little known even on the continent.

** *Spike secund.*

5. Tr. *loliaceum* (*spiked Sea Wheat-grass*), valves of the *cal.* indistinctly 3-nerved obtuse of many awnless flowers, root fibrous annual. *E. B. t.* 221.

Hab. Sea-coast, Angus-shire, *G. Don.* Shore of the Isle of May and Firth of Forth, plentiful, *D. Don.* Walls, Caroline Park; and rocks east of Granton, and west pier of Burntisland, Edinb., *Mr. Arnott.* Pettycur, Fifeshire, abundant, *Mr. Greville. Fl.* June, July. ☉.

Singularly stiff and wiry, equally so with *Poa rigida.* 3—4 inches high. *Leaves* linear, rigid, plane. *Spikelets* more or less distant, secund, on very short footstalks; lower ones sometimes 2—3 together. *Ext. valve* of the *cor.* broadly ovate, concave.

28. LOLIUM.

1. L. *perenne* (*perennial Darnel* or *Rye-grass*), spikelets much longer than the *cal.*, florets awnless linear-oblong compressed, root perennial. *Lightf. p.* 107. *E. B. t.* 315.

Hab. Way-sides, pastures and waste places, abundant. *Fl.* June, July. ♃.

One to one foot and a half high. *Spike* with the habit of *Triticum rep.*, sometimes from luxuriance compound. *Florets* linear-oblong, nerved.

2. L. *arvense* (*annual Darnel*), spikelets about as long as the calyx, florets elliptical with very short soft awns, root annual. *E. B. t.* 1125.

Hab. Forfar, and fields Angus-shire, *G. Don. Fl.* July. ☉.

Very nearly allied to the following species.

3. L. *temulentum* (*bearded Darnel*), spikelets shorter than the *cal.*, florets elliptical about as long as the rigid awn, root annual. *Lightf. p.* 107. *E. B. t.* 1124.

Hab. Corn-fields, but not common, *Dr. Parsons.* Corn-fields occasionally about Glasg., *Hopk. Fl.* Aug. ☉.

Culms 2 feet high, often rough above. *Leaves* linear-lanceolate, acuminate. *Spike* long. *Cal.*, as in the last species, very large. *Spikelets* distant. *Florets* about 6, elliptical, rather obscurely ribbed.—Said to have the power of intoxicating, if the seeds are eaten, and even of occasioning death.

29. ELYMUS.

1. E. *arenarius* (*upright Sea Lyme-grass*), spike upright dense, spikelets pubescent, flowers awnless as long as the calyx, leaves involute rigid. *E. B. t.* 1672.

Hab. Common on the east and north coast of Sutherland, and shores of Caithness, *Borrer and Hooker*. Heughs of St. Cyrus near Montrose, and sea-coast near Ayre, *Maugh*. *Fl.* (rarely) July. ♃.

Root much creeping, and hence, as the *Arunda arenaria*, of great value in binding loose blowing sands. *Culms* 3—4 feet high, glabrous. *Leaves* glaucous, pungent. *Ligule* short. *Spike* 4—6 inches long. *Spikelets* geminate, of about 3 flowers, distant on the rachis. *Cal.* valves 2, lanceolate, acuminate. *Valves* of *cor.* resembling them, but *ext. one* broader; *int.* bifid at the point, angles of the folds ciliated. *Seeds* made into bread in Iceland.

30. HORDEUM.

1. H. *murinum* (*Wall Barley*), *cal.* valves of the intermediate floret linear-lanceolate ciliated, those of the lateral florets setaceous scabrous. *Lightf. p.* 108. *E. B. t.* 1971.

Hab. Walls and by way-sides, *Lightf. Mr. Arnott* thinks it is not found to the north of the Firth of Forth. *Fl.* June, July. ⊙.

One foot high.

2. H. *pratense* (*Meadow Barley*), *cal.* valves all setaceous scabrous. *E. B. t.* 409.

Hab. East point of Salisbury Craig, *Mr. J. Neill*. *Fl.* summer months. ♃.

One foot and a half to two feet high, nearly erect.

3. H. *maritimum* (*Sea-side Barley*), *cal.* valves smoothish, the int. one of the lateral florets semi-lanceolate, the rest setaceous. *E. B. t.* 1205.

Hab. Sea-coast, Angus-shire, *G. Don*. *Fl.* July. ⊙.

Similar as these 3 species of *Hordeum* may appear to a casual observer, they are truly distinct, and admirably characterized by the form, &c. of the *cal.* valves.—This is the smallest species, seldom exceeding 8 or 10 inches, glaucous and procumbent at the base.

31. ROTBOLLIA.

1. R. *incurvata* (*Sea Hard-grass*), spike filiform or awl-shaped, *cal.* 2-valved.

α. spike subulate, curved. *Ægilops incurvata*, *Lightf. p.* 632. *Rotbollia incurv.*, *E. B. t.* 760.

β. slenderer, spike filiform, nearly erect. *R. filiformis, Roth. —G. Don, Herb. Brit. n.* 178. *D. Don, MSS. ined.*

Hab. Sea-shores, but not common. Arbigland in Galloway, *Lightf.* Various parts of the Scottish coast, *G. Don.*—β. Salt marshes, near Aberlady, *G. Don. Fl.* July, Aug. ⊙.

Plant from 2 to 6 or 8 inches long, in α. more or less curved (including the spike) and stout. In β. nearly upright, longer and more slender. *Leaves* linear-acuminate. *Spike* long. *Florets* distant, solitary, alternate, imbedded in a hollow of the rachis. *Cal.* valves 2, ensiform, acute, or slightly acuminate. *Cor.* of 2 lanceolate, rather unequal, white, membranous valves.—After a most careful examination of Mr. Don's specimens of *R. filiformis*, I can find no difference but what I have above noted. Smith takes up the species in Rees's *Cyclopedia*, but without indicating that it is of British origin. Host's *R. pannonica* seems to be not different from this var. β. in any thing but in its having *two-flowered* calyces.

3. TRIGYNIA.

32. MONTIA.

1. M. *fontana. Lightf. p.* 110. *E. B. t.* 1206.

Hab. In rills, springy and wet places, frequent. *Fl.* June, July. ⊙.

Whole plant succulent. *Stem* prostrate and rooting, 2—4 inches long. *Leaves* small, opposite, spathulate. *Peduncles* nearly terminal, often forked. *Flowers* white, at first drooping. *Stam.* inserted on the *cor.*, short. *Germen* and *caps.* roundish. *Seeds* 3, subreniform, dotted.

IV. TETRANDRIA.

1. MONOGYNIA.

* *Perianth double* (*Cal.* and *Cor.*).

† *Flowers of* 1 *petal*, 1-*seeded, superior.*

1. Dipsacus. *Involucre* many-leaved. *Cal.* double, *ext.* very minute; *int.* cup-shaped, entire. *Receptacle* chaffy, spinous. *Fruit* angular, crowned with the double *cal.* (Flowers capitate.)
2. Scabrosa. *Involucre* many-leaved. *Cal.* double, variously cut. *Receptacle* chaffy or naked. *Fruit* crowned with the enlarged double *cal.* of which the *ext.* is mostly membranaceous; *int.* feathery or bristly. (Flowers capitate.)

†† *Flowers of* 1 *petal*, 2-*seeded, superior.*

5. Galium. *Cor.* rotate, 4-cleft. *Fruit* a dry *nut*, crowned with the *cal.*

4. Asperula. *Cor.* funnel-shaped. *Fruit* not crowned with the *cal.*

3. Sherardia. *Cor.* funnel-shaped. *Fruit* crowned with the *cal.*

††† *Flowers of* 1 *petal,* 2- *or many-seeded, inferior.*

6. Plantago. *Cor.* 4-cleft, the segments reflexed. *Stam.* very long. *Caps.* of 2 cells, 2- or many-seeded, bursting all round transversely.

7. Centunculus. *Cor.* tubular, 4-cleft. *Stam.* short. *Caps.* of 1 cell, many-seeded, bursting all round transversely.

†††† *Flowers of* 4 *petals.*

9. Epimedium. *Cal.* of 4 leaves, caducous. *Pet.* inferior, with an inflated nectary on the upper side. *Pod* of 1 cell, 2 valves, many seeds.

10. Cornus. *Cal.* of 4 teeth. *Petals* without a nectary, superior. *Nut* of the *drupe* with 2 cells and 2 seeds.

** *Perianth single.*

11. Parietaria. *Perianth* 4-fid., inferior. *Filaments* at first incurved, then expanding with an elastic force. *Fruit* 1-seeded, inclosed in the enlarged perianth. (One or more of the central florets destitute of stamens.)

12. Alchemilla. *Perianth* inferior, 8-cleft, 4 alternate and outer segments the smallest. *Fruit* 1-seeded, surrounded by the perianth.

8. Sanguisorba. *Perianth* 4-lobed, superior, coloured, at the base having 4 scales or bracteas. *Fruit* 1—2-seeded, surrounded by the persistent base only of the perianth.

2. DIGYNIA.

(*Cuscuta*, Pent. Dig.)

3. TETRAGYNIA.

13. Ilex. *Cal.* 4—5-toothed. *Cor.* rotate, 4—5-cleft. *Stigmas* 4, sessile. *Berry* spherical. *Nuts* 4, 1-seeded. (Some flowers destitute of pistil.)

16. Sagina. *Cal.* of 4 leaves. *Petals* 4 (shorter than the *cal.*). *Caps.* of 1 cell, 4 valves.

17. Mœnchia. *Cal.* of 4 leaves. *Petals* 4 (as long as the *cal.*). *Caps.* of 1 cell, opening with several teeth at the extremity.

18. Radiola. *Cal.* many-cleft. *Petals* 4. *Caps.* superior, 8-valved, 8-celled. *Seed* solitary (*Sm.*).

14. Potamogeton. *Perianth* single, of 4 leaves. *Anthers* sessile, alternating with the dvisions of the perianth. *Nuts* 4, 1-seeded, sessile. (*Flowers* numerous, on a spadix, and spathaceous.)

15. Ruppia. *Perianth* 0. *Drupes* 4, pedicellate, their *nuts* 1-

seeded. (*Flowers* 2, on a spadix arising from the sheathing bases of the leaves, which perform the office of a *spatha*.)
(*Cerastium tetrandrum*, DECANDR. PENTAG.)

I. MONOGYNIA.

1. DIPSACUS.

1. D. *Fallonum* (*Fuller's Teasel*), leaves subconnate, scales of the receptacle hooked at the extremity, involucres spreading (reflexed, *Sm.*). *Lightf. p.* 113. *E. B. t.* 2080.

HAB. Rude uncultivated places, as at Lord Elgin's lime-works, near Dunfermling, &c., *Lightf.* Fields near Cathcart and Langside, Glasgow, *Hopk. Fl.* July, Aug. ♂.

Stem 4—5 feet high, very angular, and prickly. *Leaves* large, oblong or oblongo-lanceolate, obtusely and irregularly serrated, sometimes, especially the upper ones, connate. *Involucre* spreading, about as long as the head of flowers. *Flowers* in oval heads, pale purple or whitish.—Used in dressing cloth, for which purpose the hooked scales of the receptacle are admirably calculated.

2. D. *sylvestris* (*wild Teasel*), leaves opposite rarely connate, scales of the receptacle straight, involucres curved upward. *E. B. t.* 1032.

HAB. Inch Colm, near Edinb., *Maugh. Fl.* July. ♂.

The more slender habit, the leaves not or scarcely ever connate, involucre not spreading, and the scales of the receptacle being straight, are the principal marks which serve to distinguish this from the preceding.

3. D. *pilosus* (*small Teasel*), leaves petiolate with a small leaflet at the base on each side, involucres short deflexed. *Lightf. p.* 113. *E. B. t.* 877.

HAB. Moist hedges, but not common, *Lightf. Fl.* Aug. Sept. ♂.

Stem slender, 2—4 feet high, angular, rough with short inflexed prickles, longer, and resembling bristles, on the peduncles. *Leaves* ovato-acuminate, serrated, eared at the base. *Heads of flowers* smallish, round, hairy. *Scales* straight, blossoms white. *Anthers* white, much protruded.

2. SCABIOSA.

1. S. *succisa* (*Devil's-bit Scabious*), corollas 4-cleft their segments equal, cauline leaves subdentate, heads of flowers nearly globose. *Lightf. p.* 114. *E. B. t.* 878.

HAB. Meadows and pastures, common. *Fl.* July, Aug. ♃.

Root as it were cut off abruptly, or bitten (*radix præmorsa*). *Stems* nearly simple. *Leaves* hairy, rather stiff; radical ones ovate, mostly petiolate; those of the stem oblong. *Flowers* purplish blue.

2. S. *arvensis* (*Field Scabious*), corollas 4-cleft radiating, stem hispid branched, stem-leaves pinnatifid (often) cut. *Lightf. p.* 114. *E. B. t.* 659.

Hab. Corn-fields, frequent, *Lightf.* Rare in meadows and pastures about Glasgow. Corn-fields near Tollcross, *Hopk.* *Fl.* July. 4.

Stems 2—3 feet high. *Radical leaves* lanceolate, slightly serrate, hairy. *Heads of flowers* convex, purplish; *outer florets* large, with their segments unequal, the lower one very large, and forming a sort of ring; *inner florets* with equal segments.—A white-flowered var. is mentioned by M. Neill as not uncommon in Orkney.

3. S. *columbaria* (*small Scabious*), corollas 5-cleft radiating, stem hairy, radical leaves oblongo-ovate and crenate or lyrate those of the stem pinnatifid with linear segments. *Lightf.* *p.* 114. *E. B.* *t.* 1311.

Hab. Dry mountain pastures, but rare, *Sibbald.* Near Arbroath, Angus-shire, and with white fl., *G. Don.* Plentiful near Montrose, and at Blackford, *Mr. Murray.* *Fl.* July, Aug. 4.

Rarely a foot high, hairy. *Lower leaves* on rather long footstalks; *cauline ones* cut into narrow, linear or setaceous pinnæ. *Flowers* purplish blue. *Involucre* of narrow leaves, longer than the flowers. *Inner cal.* with 5 bristles.

3. SHERARDIA.

1. S. *arvensis* (*blue Sherardia*), leaves about 6 in a whorl, flowers terminal sessile umbellate. *Lightf.* *p.* 114. *E. B.* *t.* 891.

Hab. Dry corn-fields, not unfrequent. Near Cambuslang, plentifully; on the bank at the foot of Cathcart Castle, and about Balvie, Glasgow, *Hopk.* *Fl.* Summer months. ⊙.

A small, slender, branched and spreading plant. *Leaves* obovato-lanceolate, acute, edges rough, upper ones 7—8, forming an *involucre* to the small *umbel* of pale blue flowers. *Fruit* 2-lobed, 2-seeded, each lobe crowned with a trifid portion of the *cal.*

4. ASPERULA.

1. A. *odorata* (*sweet Woodruff*), leaves about 8 in a whorl lanceolate, flowers paniculate on longish stalks. *Lightf.* *p.* 115. *E. B.* *t.* 755.

Hab. Woods and shady places, plentiful. *Fl.* May, June. 4.

About 6 inches high, erect. *Flowers* white. Whole plant very sweet-scented, like *Anthoxanthum*, especially when in the act of drying.

5. GALIUM.

** Fruit glabrous, flowers yellow.*

1. G. *verum* (*yellow Bed-straw*), leaves about 8 in a whorl linear grooved, flowers in dense panicles. *Lightf.* *p.* 116. *E. B.* *t.* 660.

Hab. Dry banks and sandy sea-shores, common, *Lightf.* *Fl.* July, Aug. 4.

Readily distinguishable by its yellow flowers and linear deflexed leaves. Gerard says that the milk of the best Cheshire cheeses was coagulated with this plant [a].

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[a] Lightfoot tells us that the Highlanders use the roots of this plant, prin-

2. G. *cruciatum* (*Crosswort*), leaves 4 in a whorl ovate hairy, flowers polygamous clustered lateral, peduncles 2-leaved. *Lightf.* p. 633 (*Valantia cruciata*). *E. B. t.* 143.

Hab. King's Park, Edinburgh, *Dr. Parsons.* Hedges and bushy places, very common, *Hopk. Fl.* May, June. ♃.

** *Fruit glabrous, flowers white.*

3. G. *palustre* (*white Water Bed-straw*), leaves 4—6 in a whorl oblongo-lanceolate obtuse unequal in size, stem lax spreading branched, branches patent. *Lightf. p.* 115. *E. B. t.* 1857.

Hab. Sides of lakes and rivulets. *Fl.* July. ♃.

Keel and edges of the leaves a little rough. *Fruit* smooth.

4. G. *Witheringii* (*rough Heath Bed-straw*), "leaves about 5 in a whorl reflexed (horizontal in fig. in *E. B.*) lanceolate aristate ciliated, stem nearly erect simple scabrous" (*Sm. Comp.*) *E. B. t.* 2206.

Hab. Moist woods near Forfar, *G. Don.* Ochill hills, above Duning, Perthshire, *D. Don.* East end of the lake at Forfar, *Maugh. Fl.* July. ♃.

A very doubtful species, of which I have seen no specimen. Number of leaves as in *G. uliginosum*, but the prickles on the leaves, according to the description in *E. B.*, directed upwards like those of *G. erectum*. Prickles of the stem pointing downwards according to *E. B.*, upwards according to Withering.

5. G. *uliginosum* (*rough Marsh Bed-straw*), leaves six in a whorl lanceolate mucronate, the margins rough with reflexed prickles. *Lightf.* p. 115. *E. B. t.* 1972.

Hab. Meadows and sides of rivers and ditches, common. Possil Marsh, N. side of the canal, and marsh W. end of Hugginfield Loch and Frankfield Loch, Glasg., *Hopk. Fl.* Aug. ♃.

Stems lax, slender, branched, angular, rough with small prickles, which, as in the leaves, point downwards. *Fruit* smooth.

6. G. *saxatile* (*smooth Heath Bed-straw*), 6 in a whorl obovate mucronate, stem very much branched procumbent glabrous. *E. B. t.* 815. (*G. montanum, Huds.* and *Lightf.*, the latter confounding it with *G. uliginosum.*)

Hab. Hilly and heathy places, most abundant. The ground in the Fir Park near the High Church, Glasg., is almost white with it during *summer*. ♃.

Plant small, very glabrous. *Leaves* of a thickish and rather soft texture. *Fruit* granulated (*Sm.*). Not so in my specimens, but become shrivelled in drying.

7. G. *erectum* (*upright Bed-straw*), leaves about 8 in a whorl lanceolate mucronate their margins rough with prickles point-

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cipally the bark, to dye a red colour; boiling them with the yarn and adding alum to fix the colour. They also employ it as a rennet to curdle milk, adding the leaves of the stinging Nettle (*Urtica dioica*) and a little salt.

ing forwards, panicle much branched trichotomous, stem glabrous flaccid. *E. B. t.* 1972.

Hab. Fish-wives Causeway, near Portobello, *Maugh. Fl.* July. ♃.

Larger than *G. uliginosum*, with which it agrees in habit and shape of the leaves. *Fruit* smooth.

8. G. *diffusum* (*spreading smooth-stalked Bed-straw*), "leaves about 8 in a whorl linear aristate glabrous their margins obsoletely serrated" (rough with prickles pointing forwards), "panicle corymbose, stems diffuse very much branched." *D. Don. MSS. ined.*

Hab. Near Kinnaird, Angus-shire, *G. Don. Fl.* —. ♃.

Stems many, diffuse, very much branched, from a span to a foot high, angular, glabrous, shining, swelling at the joints. *Leaves* 8 in a whorl, linear, plane, glabrous, aristate at the point, with the margin obsoletely serrulate. *Branches* and *branchlets* opposite, subdecussate, striated. *Flowers* corymbose, white. *Fruit* glabrous. —Very like *G. austriacum* of Jacq., but differing in the above character." *Don's MSS.*

9. G. *verrucosum* (*warty-fruited Bed-straw*), leaves 6 in a whorl lanceolate their margins rough with prickles pointing forwards, peduncles axillary 3-flowered, fruit warted drooping. *G. Don's Fasc.* 5, 103 (*G. Tricorne*). *E. B. t.* 2173.

Hab. Corn-fields Carse of Gowrie, and near Forfar, *G. Don. Fl.* July. ☉.

Prickles of the stem deflexed. The two lateral *flowers* on each peduncle sterile, falling away and leaving their pedicels, one on each side the large warted fruit, which together with the marginal prickles of the leaves pointing forwards essentially distinguish this from the English *tricorne*.

10. G. *spurium* (*smooth-fruited Corn Bed-straw*), leaves 6—8 in a whorl their margins as well as the stem rough with reflexed prickles, peduncles axillary many-flowered, fruit smooth spreading. *E. B. t.* 1871.

Hab. Corn-fields near Forfar, rare, *G. Don. Fl.* July. ☉.

Habit of the preceding. *Leaves* hispid on the upper surface. *Peduncles* much longer than the leaves, bearing several flowers. *Partial flower-stalks* not bent back with the fruit, which is smooth.

11. G. *pusillum* (*least Bed-straw*), "leaves about 8 in a whorl linear-lanceolate mucronate entire subpubescent, peduncles dichotomous, fruit very smooth" (*Sm.*). *E. B. t.* 74.

Hab. Habbies How, in the Pentland hills, and lower rocks of Clova, Angus-shire, *G. Don.* Strathblane hills N. of Glasgow, *D. Don. Fl.* July, Aug. ♃.

I confess myself to be but imperfectly acquainted with this species, and have seen no Scotch specimens. Mine under this name, from Ireland, are totally free from pubescence, and have the leaves very closely imbricated all the way up, in which particular it does not

accord with the *E. B.* figure. It seems to be the *G. læve* of Decandolle, who says it is a most variable species.

12. G. *Mollugo* (*great Hedge Bed-straw*), leaves about 8 in a whorl elliptical mucronate rough at the margin, flowers panicled spreading. *Lightf. p.* 116. *E. B. t.* 1643.

Hab. Hedges and shady rocks by the sides of rivers, but not common. Cartland rocks, near Lanark, *Lightf.* Near Dreghorn; road-side, at 4-mile hill, between Corstorphine and Kirkliston, *Maugh.* Banks of the Clyde at Carmyle, *Hopk. Fl.* July, Aug. ♃.

Stems very long, straggling. Prickles of the margin of the leaves pointing forwards. Segments of the *Cor.* mucronate.

**** Fruit hispid.*

13. G. *boreale* (*cross-leaved Bed-straw*), leaves 4 in a whorl lanceolate 3-nerved glabrous, stems erect, fruit muricated. *Lightf. p.* 116. *E. B. t.* 105.

Hab. Rocks by the sides of rivers and lakes, not unfrequent, *Lightf.* Bowling bay, Dalbeth, Carmyle, &c., Glasg., *Hopk.* Breadalbane woods, *Mr. Arnott.* Banks of the Clyde and in Arran, *Mr. Murray. Fl.* July. ♃.

Flowers numerous, crowded, white. *Bristles* of the fruit hooked.

14. G. *Aparine* (*Goose-grass* or *Cleavers*), leaves 6—8 in a whorl linear-lanceolate hispid their margins keel and the stem rough with reflexed prickles, stem weak, fruit hispid. *Lightf. p.* 117. *E. B. t.* 816.

Hab. Hedges, very common. *Fl.* June, July. ☉.

Habit of *G. verrucosum* and *spurium*, and, like them, annual. *Plant* straggling. *Flowers* few, on two or three short simple footstalks, arising from the axils of the leaves. *Bristles* of the *fruits* hooked, which by this means catch hold of the coats of animals, and are widely dispersed.

6. PLANTAGO.

** Dissepiment of the Capsule plane, each cell many-seeded.*

1. Pl. *major* (*greater Plantain*), leaves broadly ovate mostly on longish footstalks, scape rounded, spikes long cylindrical. *Lightf. p.* 117. *E. B. t.* 1558.

Hab. Pastures and road-sides. *Fl.* June, July. ♃.

Leaves all radical, large, more or less spreading, with 7 nerves, entire or toothed, smooth or pubescent *Petioles* varying in length, sometimes as long as the leaf, ribbed. *Spike* dense. At the base of each flower a concave bractea. *Cal.* of 4 minute leaflets. *Caps.* ovate, 6 or 8 seeds in each cell.—This plant varies with the spike leafy, leaves disposed in a rose-like or pyramidal form. *Hopk.*

*** Dissepiment of the Capsule plane, each cell* 1*-seeded.*

2. Pl. *media* (*hoary Plantain*), leaves ovate mostly with very short footstalks, scape rounded, spike cylindrical. *Lightf. p.* 118. *E. B. t.* 1559.

Hab. Pastures in a gravelly soil, but not frequent, *Lightf.* Roman camp above Newbattle, plentiful; road-side between Inveresk and Path-head, 9 m. S.E. from Edinb., *Maugh.* About Glasg., but not common, *Hopk.* *Fl.* June, July. ♃.

Root large, woody, injurious to Grass-lands. Resembling the last species. *Leaves* variable in the length of the footstalks, but generally almost sessile, spreading on the ground, with from 7—9 nerves, pubescent or glabrous, the margins mostly entire. *Spike* shorter than in *Pl. major*; but the most important character is that there is only 1 seed in each cell.

3. Pl. *lanceolata* (*Ribwort Plantain*), leaves lanceolate, scape angular, spike ovate. *Lightf. p.* 118. *E. B. t.* 175.

Hab. Meadows and pastures, plentiful. *Fl.* June, July. ♃.

Spike having the bracteas sometimes, by luxuriance, converted into leaves. Lightfoot mentions a var. with globular heads.

4. Pl. *maritima* (*Sea-side Plaintain*), leaves linear grooved fleshy woolly at the base, scape rounded, spike cylindrical. *Lightf. p.* 118. *E. B. t.* 175.

Hab. Sea-coast, as at Helensburgh, *Hopk.* Road-side near the avenue to White Moss, Glasg., *Ure.* Summits of the Highland mountains.

**** Dissepiment with* 4 *angles* (*thus forming* 4 *cells*), 1 *seed in each cell.*

5. Pl. *Coronopus* (*Buck's-horn Plantain*), leaves linear pinnatifid, scape rounded. *Lightf. p.* 718. *E. B. t.* 892.

Hab. Gravelly sterile soils, inland and upon the coast. *Fl.* June, July. ⊙ (*Sm.*). ♃ (*Hopk.*).

Leaves mostly spreading, very variable in size and pubescence, pinnatifid; segments often toothed or again divided. *Scape* hairy. *Spike* mostly cylindrical. In small plants growing at Staffa I have seen the spike ovate, and composed of not more than 7 or 8 flowers; whilst the leaves and scapes were quite hispid.

7. CENTUNCULUS.

1. C. *minimus* (*Bastard Pimpernel*). *Lightf. p.* 119. *E. B. t.* 531.

Hab. Gravelly places that are a little moist, but not common, *Dr. Parsons.* Marsh near Langside, *Dr. Brown:* and Kenmuir bog, Glasg., *Hopk.* *Fl.* June, July. ⊙.

Plant 1—2 inches high, more or less branched. *Leaves* alternate, ovate, glabrous. *Flowers* extremely minute, sessile, axillary, solitary. *Cor.* pale rose colour, remaining upon the ripe *caps.*—Allied to *Lysimachia.*

8. SANGUISORBA.

1. S. *officinalis* (*great Burnet*), glabrous, spikes ovate, stamens about as long as the perianth. *Lightf. p.* 119. *E. B. t.* 1312.

Hab. Low moist meadows near Dumfries and elsewhere, but not

common, *Lightf.* Banks of the Nith at Kirkconnell, Stewartry of Kirkcudbright, *Maugh.* *Fl.* June, July. ♃.

One foot to two feet high, branching upward. *Leaves* pinnate with a terminal leaflet; the rest of the leaflets opposite, all ovate, sometimes cordate at the base, glabrous, strongly serrated, petiolated; at the base of each pair of petioles are two small toothed appendages in the larger leaves: these are wanting in some specimens. *Heads* of *flowers* much crowded, dark purple. *Limb* of the *perianth* in 4 ovate segments, its *tube* enveloping the germen and having at its base 4 ciliated scales or bracteas (*cal.* of authors). *Seed* 1, rarely 2.—Allied to the plants in the natural class *Icosandria.*

9. EPIMEDIUM.

1. E. *alpinum* (*barren Wort*). *E. B. t.* 438.

Hab. About the ruins of Mugdoch castle, near Glasg., abundantly, *Hopk.* Hunter's Tryste, near Edinb., *Dr. Hastings.*—A naturalised plant in all probability. *Fl.* May, June. ♃.

Stems several from the same root, erect, simple, bearing a compound, triternate leaf; base of the *petioles* swollen; *leaflets* heart-shaped, extremely delicate, ciliated at the margin, hairy beneath, cordate, serrated, *lateral ones* inequilateral. *Panicle* shorter than the leaf, springing from the swollen base of its petiole. *Flowers* reddish, *nectary* white, like an inflated membrane. *Anthers* very curious, of 2 cells, opening by 2 valves, which spring back upwards, and suffer the *pollen* to escape.

10. CORNUS.

1. C. *sanguinea* (*wild Cornel-tree* or *Dog-wood*), arborescent, branches straight, leaves opposite ovate green on both sides, cymes destitute of involucre. *E. B. t.* 249.

Hab. Quoted doubtfully by *Mr. Lightfoot* as growing by the sides of mountains in Scotland. Strathearn, *Mr. Arnott.* Woods near Revelrigtoll, *Maugh.* *Fl.* June, July. ♄.

Five to six feet high. *Bark* in the older branches dark red, as are the *leaves* before they fall; these are strongly nerved, entire, slightly hairy beneath. *Cymes* of numerous white flowers at the ends of the branches.

2. C. *suecica* (*dwarf Cornel*), herbaceous, leaves all opposite ovate glabrous, flowers few umbellate surrounded by a 4-leaved involucre and springing from the axil of the forked extremity of the stem. *Lightf. p.* 119. *E. B. t.* 310.

Hab. Moist places in the Highland mountains, not unfrequent. In Athol, about Loch Rannoch, on Ben More and Chealleach in Breadalbane; about Loch Broom, Ross-shire, *Lightf.* Pentland hills, *Dr. Hope.* Plentiful on the foot of the precipice on the N. side of Ben Nevis, *Mr. Murray.* About Inverness, *Mr. G. Anderson.* *Fl.* July, Aug. ♃.

Root creeping. *Stem* about 6 inches high. *Umbel* terminal from the axil of two young branches, which do not exceed the general flower-stalk in height till the fruit is ripe. *Drupes* red, said by the Highlanders to create appetite, and hence called, *Lus-a-chraois,* Plant of gluttony. (*Lightf.*)

11. PARIETARIA.

1. P. *officinalis* (*Pellitory of the Wall*), leaves ovato-lanceolate, involucre of many ovate leaflets. *Lightf. p.* 634. *E. B. t.* 879.

Hab. Waste places and upon walls, as at Burntisland, near Edinb., *Lightf.* Old walls on the road-side between Rutherglen and Farme, *Ure.* On Bothwell castle, abundantly, *Hopk.* Walls at Cannon Mills, Edinb., *Mr. Greville.* *Fl.* summer months. ♃.

Stems often procumbent upon the wall, reddish, pubescent. *Leaves* alternate. *Flowers* small, hairy, purplish, collected by threes in clusters in the axils of the leaves, and within a small many-leaved involucre. Central of the 3 flowers *female*. *Filaments* jointed, in which peculiarity exists the elastic property for the purpose of discharging the pollen, which is very observable in a hot summer's day. *Fruit* ovate, black, shining. *Pericarp* closely investing the *seed*, and concealed by the persistent perianth.

12. ALCHEMILLA.

1. A. *vulgaris* (*common Lady's*[a] *Mantle*), leaves uniform plaited many-lobed serrated.

α. *major*, leaves almost smooth. *A. vulg., Lightf. p.* 120. *E. B. t.* 597.

β. *minor*, much smaller, leaves very pubescent. *A. hybrida, Pers.*

Hab. Dry pastures and sides of mountains, abundantly.—β. Hills, as at Cathkin, near Glasg., *Hopk.* *Fl.* June, July. ♃.

One foot high, or more. *Radical leaves* large, on long footstalks, those of the stem with connate toothed stipules, upper ones sessile and very small, *lobes* 6—9. *Flowers* in many rather lax, corymbose, terminal clusters, yellowish green. *Germens* 1—2, and seeds 1—2: *style* lateral. *Var.* β. is much smaller, very pubescent, and has the clusters of flowers more compact. Foreign authors make this a species, and transplanted roots preserve their character.

2. A. *alpina* (*alpine Lady's Mantle*), leaves digitate serrated at the extremity white and satiny beneath. *Lightf. p.* 120. *E. B. t.* 244.

Hab. Highland mountains, most abundant. *Fl.* July, Aug. ♃.

One of the most elegant of our native vegetables. *Inflorescence* much as in our *A. vulgaris*; but *leaves* very different, and under-side beautifully satiny.

3. A. *arvensis* (*Field Lady's Mantle* or *Parsley Piert*), leaves trifid pubescent, lobes deeply cut, flowers sessile axillary. *Lightf. p.* 121 (*Aphanis arv.*). *E. B. t.* 1011.

Hab. Fields and gravelly soils, common, *Lightf.* *Fl.* May, June. ☉.

Stems branched, leafy, 4—5 inches high. *Leaves* alternate, with large stipules. *Stam.* varying in number. *Germens* 1—2.

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[a] Mantle of *our Lady* (the Virgin Mary), therefore not *Ladies'* Mantle, as written by most authors.

2. TETRAGYNIA.

13. ILEX.

1. I. *aquifolia* (*common Holly*), leaves ovate acute spinous. *Lightf. p.* 121. *E. B. t.* 496.

Hab. Woods and hedges. Abundant in woods about Lanark, *Hopk. Fl.* May, June. ♄.

A small evergreen *tree* with smooth grayish *bark*. *Leaves* alternate, deep shining green, very rigid, the lower ones remarkably spinous at the margin, upper ones entire[a]. *Flowers* in the axils of the leaves, clustered. *Cal.* slightly hairy, small. *Cor.* white. *Berries* bright scarlet. Excellent for fences, as it bears clipping well. Of the mucilaginous bark bird-lime is made. With the leaves and berries the houses and churches are adorned at Christmas, a relic probably of Druidism, during the prevalence of which, according to Dr. Chandler, "houses were decked with them, that the sylvan spirits might repair to them and remain unniped by frost and cold winds, until a milder season had renewed the foliage of their darling abodes."

14. POTAMOGETON.

* *Upper leaves floating.*

1. P. *natans* (*broad-leaved Pond-weed*), upper leaves floating coriaceous oblongo-ovate petiolate, lower ones membranous lanceolate gradually tapering into a footstalk. *Lightf. p.* 121. *E. B. t.* 1822.

Hab. Lakes and still waters. *Fl.* July. ♃.

Varying much in length, often many feet. Upper *leaves* green, acute, sometimes heart-shaped at the base where the petiole is inserted.

2. P. *heterophyllum* (*various-leaved Pond-weed*), upper leaves coriaceous elliptical petiolate, lower ones membranous linear-lanceolate sessile (peduncle clavate, *Sm.*). *E. B. t.* 1285.

Hab. In Bardowie Loch, E. side, plentiful, *Hopk.* Lakes of Rescalin and Balgowie, Augus-shire, *G. Don.*

Smaller than the last, upper leaves olivaceous.

3. P. *fluitans* (*long-leaved floating Pond-weed*), upper leaves

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[a] This has not escaped the notice of our poet Southey.

"O reader! hast thou ever stood to see
The holly tree?
The eye that contemplates it well perceives
Its glossy leaves;
Ordered by an intelligence so wise,
As might confound the atheist's sophistries.

Below, a circling fence, its leaves are seen
Wrinkled and keen;
No grazing cattle through their prickly round
Can reach to wound;
But, as they grow where nothing is to fear,
Smooth and unarmed the pointless leaves appear," &c.

floating subcoriaceous ovato-lanceolate tapering into a rather short footstalk, lower ones long lanceolate sessile. *E. B. t.* 1286.

Hab. In the Clyde at Dalbeth, *Hopk.* Ditches and lakes near Forfar, *G. Don. Fl.* Aug. Sept. ♃.

Two feet or more long. Upper *leaves* far less coriaceous and more obtuse than in the two former species. Whole plant olivaceous or even reddish, beautifully veined.

** *Leaves all submersed.*

4. P. *perfoliatum* (*perfoliate Pond-weed*), leaves cordate embracing the stem. *Lightf. p.* 121. *E. B. t.* 168.

Hab. Rivers and lakes, very common. *Fl.* July. ♃.

Very distinct in the shape and insertion of the leaves. *Spike* on a rather short peduncle, oblongo-ovate.

5. P. *densum* (*close-leaved Pond-weed*), leaves (all) opposite crowded ovato-acuminate sessile, stem forked, spike of about 4 flowers. *Lightf. p.* 122. *E. B. t.* 397.

Hab. Ditches on the right hand of the walk going down the meadows, near Edinb., and Corstorphine hills, *Dr. Parsons.* About Glasg., but not common; in Bardowie Loch, *Hopk. Fl.* June, July. ♃.

Plant rather small. *Leaves* much crowded upward. *Spike* of fructification very small. *Peduncle* very short.

6. P. *lucens* (*shining Pond-weed*), leaves ovato-lanceolate petiolate. *Lightf. p.* 122. *E. B. t.* 376.

Hab. Rivers and lakes, frequent. *Fl.* July. ♃.

Stems long. *Leaves* large, very pellucid and beautifully veined. *Spike* or *spadix* the longest and most crowded with flowers of any in the genus.

7. P. *crispum* (*curled Pond-weed*), leaves lanceolate tapering sessile remarkably waved serrate. *Lightf. p.* 122. *E. B. t.* 1012.

Hab. Ditches and ponds, frequent. *Fl.* June, July. ♃.

Stems long. *Flowers* rather distant on the spike.

8. P. *lanceolatum* (*lanceolate Pond weed*), leaves linear-lanceolate tapering at the base sessile. *E. B. t.* 1985.

Hab. Loch of Linthothen, Augus-shire, *G. Don.* In a mill-head close by the bridge at Bervie, Kincardineshire, *Maugh.*

9. P. *compressum* (*flat-stalked Pond-weed*), leaves linear very obtuse sessile, stem compressed, spikes about 4-flowered. *Lightf. p.* 123. *E. B. t.* 418.

Hab. Ditches and stagnant waters, but not common, *Lightf.* Frankfield Loch, and loch near New Kilpatrick, plentifully, *Hopk. Fl.* July. ♃.

Plant small. *Leaves* the same width throughout. *Stipules* large, very conspicuous, whitish.

10. P. *gramineum* (*grassy Pond-weed*), "leaves linear-lanceolate alternate sessile broader than the stipules, stem rounded, subdichotomous" (*Sm.*). *Lightf. p.* 123. *E. B. t.* 2253.

Hab. Ditches and ponds, not very common, *Lightf.* In the Clyde, *Ure. Fl.* Aug. ♃.

Not being acquainted with this, as really distinct from the preceding, I quote Smith's description. I should doubt its being a good species.

11. P. *pusillum* (*small Pond-weed*), "leaves linear opposite and alternate distinct spreading from the base, stem cylindrical" (*Sm.*). *Lightf. p.* 124. *E. B. t.* 215.

Hab. Ditches and stagnant waters, *Lightf.* Common, *Hopk. Fl.* July. ♃.

Having no authentic specimens of this species in my possession, I can add nothing from my own observation to the above character from Smith.

12. P. *pectinatum* (*fennel-leaved Pond-weed*), leaves distichous setaceous alternate sheathing, stipules scarcely any, spike of flowers interrupted. *Lightf. p.* 123; and *p.* 124 (*P. marinum*). *E. B. t.* 323.

Hab. Rivers, lakes and salt-water ditches. Lake of Rescalin, near Forfar, *D. Don.* River Tweed, near Kelso, *Maugh.*

This species, from the *leaves* being rather closely set and regularly distichous, has, when growing, a remarkably pectinated appearance. *Sheaths* of the *leaves* long. The *spike* is interrupted, and as well as the general habit not unlike *Ruppia maritima.*

15. RUPPIA.

1. R. *maritima* (*Sea Ruppia*). *Lightf. p.* 124. *E. B. t.* 136.

Hab. Stagnant waters by the sea-side, not uncommon, as at Glen-Elg, Inverness-shire, *Lightf.* Salt-water pools at Guillon Links, Edinb., *Maugh.* Aberlady Bay, *Mr. Arnott. Fl.* July, Aug. ♃.

Stems slender, filiform, flexuose, branched, leafy. *Leaves* linear-setaceous, *sheaths* an inch long, membranaceous, inflated. *Spadix* at first very short, included in the sheaths, with 2 naked green *flowers* one above the other, on opposite sides. *Anthers* large, sessile, subquadrate, bursting horizontally. *Germens* resembling 4 minute tubercles in the centre between the anthers. After flowering, the *spadix* lengthens remarkably, five or six inches or more, and becomes spirally twisted, so that it may extend or contract itself with the rising or falling of the waters; at the same time the *germens* swell, and rise upon footstalks (as the fruit ripens) of an inch in length. *Drupes* 4, ovate, acuminate.—For a more full account than I am able to insert here of this highly curious plant, and a full analysis of the parts of fructification, I must refer to the New Series of the *Flora Londinensis.*

16. SAGINA.

1. S. *procumbens* (*procumbent Pearl-wort*), perennial glabrous, stems procumbent, leaves shortly mucronate, petals much shorter than the cal., caps. longer than the cal. *Lightf. p.* 125. *E. B. t.* 880.

Hab. Sandy and gravelly soils, frequent. *Fl.* June, July. ♃.

Two to four inches long. *Leaves* linear, subulate, connate, membranous at the base, convex beneath, plane above, tipped with a short point. *Peduncles* solitary, from the axils of the leaves and longer than they. *Flowers* at first drooping.

2. S. *apetala* (*annual small-flowered Pearl-wort*), annual subpubescent, stems erect, or procumbent only at the base, leaves aristate, petals much smaller than the cal., caps. longer than the cal. *E. B. t.* 881. *Don's Fasc.* 7. *No.* 156.

Hab. Dry gravelly places, not unfrequent, *G. Don. Fl.* May, June. ⊙.

More slender and of a paler green than the last. *Stems* and *leaves* more or less pubescent, with short spreading hairs, point much longer. The *leaves* are also more narrow.

3. S. *maritima* (*annual Sea-side Pearl-wort*), annual glabrous, stems erect, or procumbent only at the base, leaves fleshy obtuse, petals none, cal. rather longer than the caps. *Don's Fasc.* 7. *No.* 155. *E. B. t.* 2195.

Hab. Sea-coast, not unfrequent, as in Angus-shire, Isle of Skye, Aberdeen, Queensferry and Edinb., *G. Don.* On Ben Nevis! *Id.* Isle of May, abundant, *D. Don.*

This very distinct species of *Sagina*, first discovered in Scotland by the acute Mr. G. Don, has been for many years known as a native of the coast of Ireland, where it was detected by my learned friend R. Brown, Esq. In England, too, it is not unfrequent. It is of a reddish brown colour, perfectly glabrous and essentially distinguished from the two former species by the obtuse *leaves*, apetalous *flowers*, and lengthened *capsule*.

17. MŒNCHIA.

1. M. *glauca* (*glaucous Mœnchia*). *Pers. Hook. in Curt. Fl. Lond. ed.* 2. *Sagina erecta*, *Lightf. p.* 125. *E. B. t.* 609.

Hab. Pastures of a gravelly soil, *Dr. Parsons. Fl.* May. ⊙.

Stem about 2—4 inches high, erect, or at the base a little reclining, smooth, as well as the *leaves*, which are opposite, linear-lanceolate, acute, rigid, glaucous. *Cal.* leaves large, acuminate, white and membranous at the margin. *Pet.* lanceolate, entire, as long as the cal. *Caps.* as in *Cerastium*.

18. RADIOLA.

1. R. *millegrana* (*All-seed*). *Lightf. p.* 174 (*Linum Radiola*). *E. B. t.* 893.

Hab. Moist gravelly soils, and where water has stood in the winter. Icolmkill, *Sir Joseph Banks.* Langside, *Dr. Brown.* Road-side between Dumbarton and Helensburgh, plentiful, *Hopk.* Banks of the Spey, between Fochabers and Orton, *Maugh.* Kinross-shire, and Angus-shire, *Mr. Arnott.* Cluny, *Rev. Mr. M'Ritchie.* About Loch Ransa in Arran, and common in the N. counties, Perth, Inverness, &c., *Mr. Murray. Fl.* July, Aug. ⊙.

Very minute *plant*, 1—2 inches high, repeatedly dichotomous, bushy. *Leaves* distant, opposite, ovate, entire, smooth. *Flowers* axillary,

solitary, stalked. *Cal.* segments 3-fid. *Petals* white, oblong, differing much in habit from *Linum*, where Decandolle still places it.

V. PENTANDRIA.

1. MONOGYNIA.

* *Flowers monopetalous, inferior, with* 4 (*apparently*) *naked seeds.* ASPERIFOLIÆ[a].

10. ECHIUM. *Cor.* irregular, its orifice open and naked. *Stigma* bipartite.

5. PULMONARIA. *Cal.* prismatic, 5-cleft. *Cor.* infundibuliform, its orifice naked.

2. LITHOSPERMUM. *Cal.* 5-partite. *Cor.* infundibuliform, its orifice naked.

6. SYMPHYTUM. *Cal.* 5-cleft. *Cor.* ventricose, its orifice closed with connivent subulate scales.

7. BORAGO. *Cal.* 5-cleft. *Cor.* rotate, having at its orifice 5 obtuse emarginate teeth.

9. LYCOPSIS. *Cal.* 5-cleft. *Cor.* infundibuliform, with an incurved tube, its orifice closed with convex connivent scales.

8. ASPERUGO. *Cal.* 5-cleft, unequal, with alternate smaller teeth. *Cor.* (short) infundibuliform, its orifice closed with convex connivent scales. *Seeds* (or *Nuts*) covered with the conduplicate and compressed *cal.*

4. CYNOGLOSSUM. *Cal.* 5-cleft. *Cor.* (short) infundibuliform, its orifice closed with convex connivent scales. *Seeds* (or *Nuts*) depressed, fixed to the style by their inner margin.

3. ANCHUSA. *Cal.* 5-cleft, or 5-partite. *Cor.* infundibuliform, its orifice closed with convex connivent scales. *Seeds* (or *Nuts*) hollowed out at the base.

1. MYOSOTIS. *Cal.* 5-cleft. *Cor.* hypocrateriform, the segments very obtuse, its orifice closed with short connivent scales.

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[a] The following arrangement of the Genera of the Scotch *Asperifoliæ* is after one by Lehmann in his *Plant. Fam. Asperif.*—They have all *Four distinct* 1-*celled Nuts.*

A. *Nuts fixed to the bottom of the Cal.*

* *Nuts imperforate at the base.*

† *Orifice of the Cor. naked.*

Pulmonaria, 5. Lithospermum, 2. Echium, 10.

†† *Orifice of the Cor. closed with scales.*

Myosotis, 1. Borago, 7.

** *Nuts perforated at the base* (*orifice of the Cor. closed with scales*).

Anchusa, 3. Lycopsis, 9. Symphytum, 6.

B. *Nuts fixed to a central column* (*imperforate at the base, orifice of the Cor. closed with scales*).

Asperugo, 8. Cynoglossum, 4.

** *Flowers monopetalous, inferior. Seeds covered with a distinct capsule.*

14. Anagallis. *Cal.* 5-partite. *Cor.* rotate. *Stam.* hairy. *Caps.* bursting all round transversely.

13. Lysimachia. *Cal.* 5-partite. *Cor.* rotate. *Caps.* of 1 cell, 10-valved.

11. Primula. *Cal.* 5-toothed. *Cor.* hypocrateriform, tube cylindrical, its orifice naked. *Stigma* globose. *Caps.* 1-celled, opening with 10 teeth.

12. Menyanthes. *Cal.* 5-cleft. *Cor.* hairy. *Stigma* sulcate. *Caps.* 1-celled, 2-valved.

24. Hyoscyamus. *Cal.* tubular, 5-cleft. *Cor.* infundibuliform, irregular, its lobes obtuse. *Caps.* 2-celled, operculate.

23. Verbascum. *Cal.* 5-partite. *Cor.* rotate, irregular. *Stam.* declined, often hairy. *Caps.* 1-celled, 2-valved.

27. Erythræa[a] (*Chironia, Sm.*). *Cal.* 5-fid. *Cor.* infundibuliform, its limb short, marcescent. *Anthers*, after flowering, spirally twisted. *Style* erect. *Stigmas* 2. *Caps.* linear, 2-celled. *Br.*

16. Convolvulus. *Cal.* 5-cleft. *Cor.* campanulate, plicate. *Stigmas* 2. *Caps.* 2—3-celled, with as many valves; *cells* 1—2-seeded.

17. Polemonium. *Cor.* rotate, 5-cleft. *Stam.* inserted upon the 5 teeth or valves which close the orifice of the *Cor.* *Caps.* 3-celled, 3-valved.

15. Azalea. *Cor.* campanulate. *Stam.* inserted upon the receptacle. *Caps.* 5-celled, 5-valved.

35. Vinca. *Cor.* hypocrateriform, twisted. *Follicles* 2, erect. *Seeds* naked (destitute of seed-down).

26. Solanum. *Cor.* rotate. *Anthers* opening with two pores at the extremity. *Berry* 2-celled.

25. Atropa. *Cor.* campanulate. *Stam.* distant. *Berry* 2-celled.

*** *Flowers monopetalous, superior.*

28. Samolus. *Cor.* hypocrateriform, having small scales alternating with its 5 lobes. *Caps.* half inferior, 1-celled, with 5 short valves.

19. Jasione. *Cor.* rotate, 5-cleft. *Anthers* united at their base. *Stigma* clavate. *Caps.* 2-celled, opening at the top. (*Flowers aggregate on a common naked receptacle.*)

20. Lobelia. *Cor.* irregular, cleft longitudinally on the upper side. *Anthers* united into a tube. *Caps.* 2—3-celled.

18. Campanula. *Cor.* campanulate. *Stam.* with filaments

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[a] *Chironia* diversa est, calycis figura, corollæ limbo tubum superante, stylo declinato, pericarpii placentis collo coarctato. *Br. in Prodr. Fl. Nov. Holl.*

broader at the base. *Stigma* trifid. *Caps.* 3—5-celled, opening with lateral pores.

29. LONICERA. *Cor.* irregular. *Berry* 1—3-celled; *cells* many-seeded.

**** *Flowers of* 5 (*in Euonymus and Rhamnus often of* 4) *petals, inferior.*

30. RHAMNUS. *Cal.* urceolate, 4—5-cleft. *Berry* 2—4-celled, 2—4-seeded.

31. EUONYMUS. *Cal.* plane, 4—5-cleft. *Caps.* with 5 angles, 5-celled, 5-valved. *Seeds* covered by a coloured *arillus.*

21. IMPATIENS. *Cal.* of 2 leaves. *Cor.* irregular, lower *petal* or *nectary* cucullate. *Anthers* connate. *Caps.* of 5 elastic valves.

22. VIOLA. *Cal.* 5-cleft, the segments produced at the base. *Cor.* irregular; upper *petal* spurred at the base. *Anth.* connate. *Caps.* 1-celled, 3-valved.

***** *Flowers of* 5 *petals, superior.*

32. RIBES. *Cal.* 5-cleft, bearing the *Petals* and *Stam.* *Style* bifid. *Berry* 1-celled, many-seeded.

33. HEDERA. *Cal.* 5-toothed. *Petals* broadest at the base. *Style* simple. *Berry* 5-seeded, crowned by the *Cal.*

****** *Flowers incomplete.*

34. GLAUX. *Perianth* single, inferior, campanulate, coloured, 5-lobed. *Caps.* globose, 1-celled, 5-valved, 5-seeded.

2. DIGYNIA.

* *Flowers monopetalous, inferior.*

41. GENTIANA. *Cor.* tubular at the base, campanulate or infundibuliform, destitute of nectariferous pores. *Caps.* of 1 cell, 2-valved, with the *seeds* fixed to the inner margin of the valves.

40. CUSCUTA. *Cal.* 4—5-cleft. *Cor.* campanulate, 4—5-lobed. *Caps.* bursting all round transversely at the base, 2-celled, with the *cells* 2-seeded.

** *Flowers incomplete.*

38. SALSOLA. *Perianth* single, inferior, 5-cleft, persistent, enveloping the fruit with its base, and crowning it with its broad scariose limb. *Seed* single, its cotyledon spiral.

36. CHENOPODIUM. *Perianth* single, inferior, 5-cleft, persistent, closing upon, but not wholly enveloping, the fruit. *Seed* single, orbicular.

37. BETA. *Perianth* single, semi-inferior, 5-cleft, persistent. *Seed* single, reniform, imbedded in the fleshy base of the *Cal.*

39. Ulmus. *Perianth* single, inferior, persistent, 4—5-cleft. *Caps.* membranous, compressed, 1-seeded.
(*Scleranthus*, Decandr.)

*** *Flowers of 5 petals, superior, 2-seeded.* Umbellatæ.

A. *Umbels with a partial and universal involucre.*

42. Eryngium. *Flowers* sessile, capitate. *Receptacle* conical, chaffy. *Fruit* bristly.

43. Hydrocotyle. *Flowers* in a simple umbel or capitate. *Cal.* 0. *Petals* ovate, acute, equal. *Fruit* without teeth (or calycine segments), suborbicular, laterally compressed, striated.

44. Sanicula. *Umbellules* clustered, subcapitate, central *flowers* abortive. *Petals* obcordate. *Fruit* clothed with hooked bristles.

52. Heracleum. *Involucres* deciduous. *Flowers* radiant. *Petals* bifid. *Fruit* elliptical, dorsally compressed, striated.

57. Œnanthe. *Flowers* radiant, those of the disk sessile and abortive. *Fruit* crowned with the *Cal.* and *Styles*, corky.

45. Caucalis. *Involucres* undivided. *Flowers* radiant, those of the disk abortive. *Fruit* subovate, striated, rough with rigid bristles.

46. Daucus. *Involucres* pinnatifid. *Flowers* somewhat radiant, those of the disk abortive. *Fruit* muricated.

50. Peucedanum. *Gen. involucre* very short. *Flowers* nearly uniform, those of the disk abortive. *Fruit* ovate, compressed, striated, bordered.

48. Conium. *Partial involucres* of 3 leaves, all on one side. *Petals* nearly uniform. *Fruit* ovate, tumid, with 5 undulated ribs on each side.

47. Bunium. *Partial involucres* setaceous (often wanting). *Petals* uniform. *Fruit* oblong, striated, with the interstices tuberculated.

55. Sium. *Involucres* of many leaves. *Petals* heart-shaped, nearly uniform. *Fruit* nearly oval, laterally compressed and striated.

49. Selinum. *Involucres, general* and *partial*, reflexed. *Petals* heart-shaped nearly uniform. *Fruit* compressed, striated down the middle.

51. Crithmum. *Cal.* entire. *Petals* uniform, entire, broadest at the base, their extremities curved inwards. *Fruit* oval, striated.

53. Ligusticum. *Gen. involucre* membranaceous. *Petals* uniform, incurved at the extremity, entire. *Cal.* of 5 teeth. *Fruit* oblong, furrowed.

54. Angelica. *Gen. involucre* often wanting. *Petals* uniform, incurved, entire. *Fruit* roundish with three wings on each side.

56. Sison. *Gen.* and *part. involucre* of about 4 leaves (the

former wanting in *S. inundatum*). *Petals* nearly uniform, inflexed. *Fruit* ovate, striated.

B. *Umbels with partial involucres, universal none.*

60. ÆTHUSA. *Partial involucre* of 3 leaves, all on one side, pendulous.

63. CHÆROPHYLLUM. *Partial involucre* of about 5, reflexed, concave leaves. *Fruit* linear-oblong, glabrous, smooth, or striated.

61. SCANDIX. *Fruit* terminated with a very long rough beak. *Partial involucre* cut or pinnated.

62. ANTHRISCUS (*Pers.*). *Fruit* ovate, hispid, with a short glabrous beak.

58. PHELLANDRIUM. *Flowers* of the disk smallest. *Fruit* ovate, smooth, crowned with the *cal.* and *styles*.

64. IMPERATORIA. *Fruit* nearly elliptical, compressed, bordered, swelling in the middle with 3 ribs on each side.

59. CICUTA. Fruit subovate, furrowed.

(*Caucalis inf.*, *Sison inund.*, *Œnanthe fist.*, DIV. A.)

C. *Universal involucre rarely any, partial none.*

68. APIUM. *Petals* uniform. *Fruit* roundish, ribbed.

67. PIMPINELLA. *Petals* inflexed. *Stigmas* subglobose. *Fruit* ovato-oblong, striated.

69. ÆGOPODIUM. *Petals* unequal. *Stigmas* simple. *Fruit* ovato-oblong, ribbed.

65. SMYRNIUM. *Petals* acute, keeled, incurved. *Fruit* ovato-globose, gibbous. *Seeds* (*Akenia*) reniform, angular.

66. CARUM. *Gen. involucre* of 1 or very few leaves. *Petals* inflexo-emarginate. *Fruit* ovato-oblong, striated.

3. TRIGYNIA.

70. VIBURNUM. *Cal.* very minute, 5-cleft. *Cor.* of 1 petal, 5-lobed. *Berry* inferior, 1-seeded.

71. SAMBUCUS. *Cal.* small, 5-cleft. *Cor.* of 1 petal, 5-lobed. *Berry* inferior, of 1 cell, 3-seeded.

(*Stellaria media*, DECANDR.)

4. TETRAGYNIA.

72. PARNASSIA. *Cal.* 5-cleft. *Petals* 5. *Nectaries* 5, heart-shaped, fringed with globular-headed filaments. *Caps.* 3-valved.

5. PENTAGYNIA.

74. LINUM. *Cal.* persistent. *Petals* 5. *Caps.* globose, mucronate, with 10 valves and 10 cells. *Seeds* ovate, compressed.

75. SIBBALDIA. *Cal.* in 10 alternating large and small segments. *Petals* 5, inserted on the *cal.* *Seeds* (*capsules*) 5, clustered in the bottom of the *cal.* (Allied to *Alchemilla* and *Agrimonia*, and of the *Nat. Ord. Rosaceæ*.)

73. STATICE. *Cal.* of 1 piece, infundibuliform, plaited, scariose. *Petals* 5. *Fruit* invested with the *cal.* *Seed* 1.
(*Cerastium semidec.*; *Spergula arv., subul., pentandra*; DECANDR.)

6. HEXAGYNIA.

76. DROSERA. *Cal.* 5-cleft. *Pet.* 5. *Caps.* 1-celled, 3—5-valved, many-seeded.

7. POLYGYNIA.

77. MYOSURUS. *Cal.* of 5 leaves prolonged at the base. *Petals* 5, their claws tubular (nectariferous). *Capsules* (*seeds* of most authors) collected upon a very long receptacle. (Allied to *Ranunculus*.)
(*Ranunculus hederaceus*, POLYANDR.)

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1. MONOGYNIA.

1. MYOSOTIS.

(*Seeds naked.*)

1. M. *sylvatica* (*Wood Scorpion-grass*), leaves oblongo-lanceolate with soft hairs, racemes very long lax, pedicels (in fruit) divergenti-patent longer than the 5-fid connivent cal., limb of the cor. expanded longer than the tube. *Lehm. Asperif. p.* 85. *M. scorpioides* γ. *Sm. Fl. Brit. p.* 212[a].
HAB. Woods, common. *Fl.* summer. ♃.
Stems 1 foot high, with soft, spreading hairs. *Radical leaves*, as in all the species, spathulate. *Pedicels* short in flower, then elongated and patent, at length erecto-patent, twice as long as the *cal.* Lower hairs upon the *cal.* rigid, patent, hooked; upper ones longer, erect. *Flowers* large, bright pale blue, next in size to those of *palustris* and *alpestris*.

2. *M. alpestris* (*Rock Scorpion-grass*), leaves oblongo-lanceolate hairy, racemes short, pedicels (in fruit) patent rather longer than the connivent 5-fid cal., limb of the cor. expanded longer than the tube. *Schult. Fl. Aust. n.* 788. *Lehm. Asp. p.* 86. *M. rupicola*, *E. B. t.* 2559.
HAB. Highland mountains, not uncommon, especially on the more elevated ones, *G. Don* and *Mr. J. T. Mackay*. Ben Lawers, *Maugh.* near the summit in great perfection and abundance. Schechallion, Mealgreadha and others of the Breadalbane range, *Borrer* and *Hook.* *Fl.* July, Aug. ♃.
Four to six inches high, with patent hairs. *Lower leaves* on very long

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[a] Lightfoot's *M. scorpioides* cannot be quoted under any of the individual species here enumerated, because it was intended to include nearly all of them. That specific name should, perhaps, as Wahlenberg has done, have been reserved to the *M. palustris*.

footstalks. *Flowers* so compact as to be almost capitate, then lengthened into racemes. *Pedicels* after flowering erect, in fruit patent, a little longer than the *cal.* Hairs of the *cal.* more or less hooked at their extremity. *Flowers* large, very bright blue.

3. M. *palustris* (*Marsh Scorpion-grass, Forget me not*), leaves oblongo-lanceolate rough with short mostly appressed hairs, racemes rather short, peduncles (in fruit) divergent twice as long as the 5-toothed patent cal., limb of the cor. expanded longer than the tube. *E. B. t.* 1973.

β. Racemes below leafy. *M. repens, G. Don. MSS. ined.*

Hab. Ditches and sides of rivers, most abundant. β. Moist hills about Glasg. *D. Don*; and Ochil hills, *G.* and *D. Don. Fl.* summer months. ♃.

A very beautiful though common plant, and considered to be the emblem of friendship in almost every country in civilized Europe. About 1 foot high. *Root* creeping in the mud and often throwing up runners, as in the *M. repens* of D. Don, which has moreover bracteas on the racemes, or rather small leaves between the lower pedicels (not inserted at their very base), and sometimes white or yellow flowers. Hairs of the *cal.* erect, straight; those of the leaves as well as the stem (though on this latter they are mostly appressed) vary in length and direction, especially in cultivation, as is observed by Mr. Hopkirk. *Flowers* very large, pale blue.—The *cal.*, with its short but expanded teeth when in fruit, and its generally few but erect and appressed hairs, distinguishes this species.

4. M. *arvensis* (*Field Scorpion-grass*), leaves oblongo-lanceolate hairy, racemes very long, pedicels (in fruit) patent twice the length of the 5-cleft and closed *cal.*, limb of the *cor.* erecto-patent about as long as the tube. *E. B. t.* 2558.

Hab. Fields and waste places. *Fl.* June, July. ☉.

Six to eight inches high, hairy with patent rather rigid hairs. *Pedicels* twice as long as the fruit-bearing *cal.* Lower hairs of the *cal.* patent, hooked.—The annual root and small flowers with long pedicels, when in fruit, are the characteristics of this species.

5. M. *versicolor* (*yellow and blue Scorpion-grass*), leaves oblongo-lanceolate hairy, racemes very long, pedicels (in fruit) erecto-patent shorter than the 5-cleft acute closed *cal.*, limb of the *cor.* patent shorter than the tube. *E. B. t.* 480.

Hab. Dry sterile waste places. *Fl.* June, July. ☉.

From 2 to 8 inches high. Hairs, long, divergent. Lower hairs of the *cal.* hooked and patent.—Well marked by the annual *root*, small yellow and blue flowers (which, according to Lehman, always retain their respective colours, and do not change from yellow to blue), and above all by the short *pedicels* and long *cal.*

Scarcely any two authors are agreed with regard to the species of *Myosotis*. I have followed Lehman, who has so admirably illustrated the difficult family of *Asperifoliæ* in a work lately published in Germany.

2. LITHOSPERMUM.

1. L. *officinale* (*common Gromwell*), stem erect very much branched, leaves broadly lanceolate acute nerved rough above hairy beneath, tube of the cor. as long as the cal., nuts smooth. *Lightf. p.* 132. *E. B. t.* 134.

Hab. Waste uncultivated places, as near the Monastery of Beaulieu at Inverness, and under the west side of Salisbury Craigs, and at Roslin, *Dr. Parsons.* Old walls of Mugdoch Castle, Glasgow, *Hopk.* Arniston woods, and woods at Culross, Edinb., *Maugh. Fl.* June. ♃.

One to one foot and a half high. *Fl.* pale yellow. *Nuts* whitish brown, highly polished, seldom more than 2 or 3 ripening in each *cal.*

2. L. *arvense* (*Corn Gromwell*), stem erect branched, leaves lanceolate acute hairy, cal. a little shorter than the cor., its segments patent when containing the ripe rugose nuts. *Lightf. p.* 133. *E. B. t.* 123.

Hab. Corn-fields, not uncommon, *Dr. Parsons.* Occasionally about Glasg. Fields about Bogles hole, frequent, *Hopk. Fl.* May, June. ☉.

Corolla white. *Cal.* segments thrice as long as the fruit.

3. L. *maritimum* (*Sea-side Gromwell*), glabrous, stem procumbent branched, leaves ovate obtuse fleshy glaucous. *Lehm. Asperif. p.* 291. *Pulmonaria marit., Lightf. p.* 134. *t.* 7. *E. B. t.* 368.

Hab. On the sea-coast, not uncommon among loose stones. Coast of Fife, near St. Andrews, Isle of Bute, Arran, &c., *Lightf.* Most abundant on the shores of Sutherland, Caithness and Orkney. *Fl.* July, Aug. ♃.

In habit this plant is *sui generis;* but in character it accords certainly better with *Lithospermum* than with *Pulmonaria,* where it has hitherto been placed. *Lower leaves* on footstalks and acute; upper ones sessile: all very minutely tubercled, though appearing smooth. *Flowers* somewhat racemed, beautiful purplish blue: tube short. *Cal.* not prismatic. *Nuts* smooth. Whole plant glaucous, turning almost black in drying.

3. ANCHUSA.

1. A. *sempervirens* (*evergreen Alkanet*), leaves ovate nearly entire lower ones upon long footstalks, peduncles axillary, flowers subcapitate accompanied by two leaves. *Lightf. p.* 133. *E. B. t.* 45.

Hab. Glen of Dunglass, *Dr. Parsons.* Deanbank, near the village of the water of Leith; Road-sides between Crossgates and Keltie, Kinross-shire, *Maugh.* Banks of the Clyde above Hamilton; near Chatelherault and Castlemilk, Glasg. *Hopk.* Craig-Millar Castle, *Mr. Arnott. Fl.* May, June. ♃.

The flowers are of a beautiful blue, and the shape of the corolla is, as Sir James Smith observes, rather salver-shaped than infundibuliform, and thus with difficulty distinguished from *Myosotis.* Daily

experience teaches us that the more natural the families, the greater is the difficulty of distinguishing the genera.

4. CYNOGLOSSUM.

1. C. *officinale* (*common Hound's-tongue*), stem leaves lanceolate attenuate at the base sessile downy, stamen shorter than the cor. *Lightf. p.* 133. *E. B. t.* 921.

Hab. Waste places, about towns and villages, as Burntisland and Kinghorn, Edinb. and foot of the hill of Kinnoul, Perthshire, &c., *Lightf. Fl.* June, July. ♂.

Whole plant soft to the touch, dull green, of a fetid smell. Often 2 feet high. *Lower leaves* on long footstalks. *Flowers* purplish red. *Fruit* rough.

2. C. *sylvaticum* (*green-leaved Hound's-tongue*), stem leaves lanceolate broad at the base shining sessile slightly hairy and scabrous especially beneath, stamens shorter than the cor. *E. B. t.* 1642.

Hab. Carse of Gowrie, *G. Don. Fl.* June, July. ♂.

Distinguished readily by the more or less shining and brighter coloured leaves, free from pubescence, and their different figure. *Radical leaves* ovato-lanceolate, on very long footstalks.

5. PULMONARIA.

1. P. *officinalis* (*common Lungwort*), leaves scabrous, radical ones ovato-cordate petiolate, superior ones of the stem sessile ovate. *E. B. t.* 118.

Hab. Arniston woods, abundant; Banks of N. Esk, near Kevockmill, sparingly, *Maugh.* Banks of Clyde, about Dalbeth and Eastahill, probably an outcast of the garden, *Hopk. Fl.* May. ♃.

About 1 foot high. *Cauline leaves* all more or less ovate, lower ones petiolate, upper ones sessile; all with short hairs, frequently spotted. *Flowers* purple.

6. SYMPHYTUM.

1. S. *officinale* (*common Gomfrey*), stem winged above, leaves ovato-lanceolate attenuate at the base and very decurrent. *Lightf. p.* 134. *E. B. t.* 817.

Hab. Banks of rivers; water of Leith, opposite St. Bernard's well, and Coryton woods, Edinb., *Dr. Parsons.* Banks of Clyde, but not common, *Hopk.* Cliesh, *Mr. Arnott. Fl.* May, June. ♃.

Two to three feet high, branched above. *Radical leaves* ovate petiolated. *Racemes* in pairs, secund, drooping. *Corollas* large, yellowish white, often purple.

2. S. *tuberosum* (*tuberous-rooted Gomfrey*), stem simple, leaves ovato-oblong attenuate at the base, upper ones only very slightly decurrent. *Lightf. p.* 1091. *E. B. t.* 1502.

Hab. First discovered, in Britain, by *Mr. Yalden*, opposite the new well at the water of Leith, and plentifully in Dr. Robertson's walks at North Marchiston.—Collington woods, Woodhall, &c. Edinb., and on the banks of the North and South Esk, *Maugh.* Common in

rivers and groves about Glasg. as banks of the Clyde at Clyde works, Daldowie, Bothwell and Hamilton. Banks of the Calder abundantly, *Hopk.*, who says that this species and the purple flowered var. of *S. offic.* are by far the most frequent in the environs of Glasg. Cliesh, *Mr. Arnott.* Shady woods and river banks, frequent, *D. Don. Fl.* July. ♃.

Much like the last, but simple, or only very slightly branched above. *Upper leaves*, from which the peduncles spring, generally in pairs, large, ovato-lanceolate, a little decurrent; whereas those of *S. offic.* are very narrow and running down into winged appendages to the stem.

7. BORAGO.

1. B. *officinalis* (*common Borage*), lower leaves obovate attenuate at the base, segments of the cor. ovate acute spreading. *E. B. t.* 36.

Hab. Scarcely an aboriginal native of Britain. Road-sides and among rubbish, as at Burntisland, *Maugh.* About Glasg., but generally near gardens, *Hopk. Fl.* June, July. ♂.

Whole plant very hispid. *Radical leaves* ovate or obovate, petiolate. *Stem leaves* petiolate and eared at the base, superior ones sessile. *Cor.* large, brilliant blue.

8. ASPERUGO.

1. A. *procumbens* (*German Madwort*). *Lightf. p.* 135. *E. B. t.* 661.

Hab. Waste places, but not common. By the church at Dunbar, *Lightf.* (I found it in 1808 plentifully among the ruins of the castle at Dunbar.) Guillon Links, *Mr. Arnott* and *Mr. Stewart. Fl.* June, July. ⊙.

Stems procumbent, angular, rough with short hooked prickles. *Leaves* oblongo-lanceolate, solitary, or opposite, or 3 or 4 nearly from the same point of the stem, lower ones petiolate, all rough and slightly hispid. *Flowers* blue, axillary, solitary. *Peduncles* short, at first erect, then curved downward. *Cal.* small, much enlarged in fruit.

9. LYCOPSIS.

1. L. *arvensis* (*small Bugloss*), leaves lanceolate repando-denticulate very hispid, cal. erect while in flower. *Lightf. p.* 135. *E. B. t.* 938.

Hab. Corn-fields and hedge-banks, common. *Fl.* June, July. ⊙.

Whole plant very hispid, hairs or bristles seated on a white callous bulb. *Lower leaves* lengthened into a petiole; *upper* ones sessile semiamplexicaul. *Racemes* leafy. *Flowers* bright blue.—Differing from *Anchusa* only in the curvature of its tube.

10. ECHIUM.

1. E. *vulgare* (*common Viper's Bugloss*), stem herbaceous simple hispid with tubercles, leaves linear-lanceolate hispid, flowers in lateral spikes, stamens longer than the cor. *Lightf. p.* 136. *E. B. t.* 181.

Hab. Corn-fields and way-sides, not unfrequent, as about Kirkcaldy and Kinghorn, and at Charlestown, Lord Elgin's lime-works and under Arthur's Seat, *Lightf.* About Glasg. occasionally, among rubbish, but generally near houses and gardens, *Hopk.* Dumblane woods, and Peterhead, frequent; Arran sparingly, *Mr. Murray.* *Fl.* June, July. ♂.

Two to three feet high. *Radical leaves* spreading petiolate. *Spikes* of flowers lateral, secund, recurved, forming, in fact, upon the stalk one long common spike, or raceme. *Cor.* most beautiful, at first reddish purple, then brilliant blue. At Duncansby, Caithness, very dwarfish and with white flowers.

11. PRIMULA.

1. Pr. *vulgaris* (*common Primrose*), leaves dentate rugose, scape one-flowered, limb of the cor. plane. *Lightf. p.* 136 (*Pr. Veris γ.*). *E. B. t.* 4.

Hab. Woods, hedge-banks and pastures, abundant. *Fl.* Apr. May. ♃.

2. Pr. *elatior* (*Oxlip*), leaves dentate rugose contracted below the middle, scape umbellate, limb of the cor. plane. *Lightf. p.* 136 (*P. Veris β.*). *E. B. t.* 513.

Hab. Collington woods; sea-coast between N. Queensferry and Inverkeithing, *Maugh.* *Fl.* Apr. May. ♃.

3. Pr. *Veris* (*common Cowslip* or *Paigle*), leaves dentate rugose contracted below the middle, scape umbellate, flowers drooping, limb of the cor. concave. *Lightf. p.* 136 (*Pr. Veris α.*). *E. B. t.* 5.

Hab. Pastures and woods. Bothwell and Woodhall; but introduced and not indigenous about Glasg., *Hopk.* *Fl.* May. ♃.

Mr. Hopkirk, as well as other Botanists, maintains the opinion that the *P. elatior* is a hybrid produced by the other two.

4. Pr. *farinosa* (*Bird's-eye Primrose*), leaves crenate smooth mealy beneath, scape umbellate, flowers erect, limb of the cor. plane. *Lightf. p.* 137. *E. B. t.* 6.

Hab. Wet mountain pastures, but not very common, *Lightf.* Pastures by Bighouse and Armidale, Sutherland; east coast of Caithness; and in Orkney, but very dwarfish, *Borr.* and *Hook.* *Fl.* June, July. ♃.

One of the most elegant of all plants. The powdery substance on the *leaves* and *scape* has a musky smell. *Flowers* purple with a yellow eye.

12. MENYANTHES.

1. M. *trifoliata* (*common Buckbean*), leaves ternate. *Lightf. p.* 137. *E. B. t.* 495.

Hab. Marshy places, in pools of water, abundant. *Fl.* June, July. ♃.

Stem spreading. *Leaves* on long footstalks, ternate; leaflets obovate, obscurely toothed; the base of the leaves is sheathing, from whence springs the flowerstalk supporting a *raceme* or *thyrsus* of several flowers. *Pedicels* short, bracteated. *Cor.* infundibuliform,

5-cleft, pale reddish, its upper side clothed with long, white, filamentous appendages.—*Leaves*, used as Tea, considered by the Highlanders to strengthen weak stomachs, *Dr. Stuart.*

13. LYSIMACHIA.

* *Peduncles many-flowered.*

1. L. *vulgaris* (*yellow Loosestrife*), leaves ovato-lanceolate opposite ter- or quaternate, panicle terminal. *Lightf. p.* 138. *E. B. t.* 761.

Hab. Wet shady places, and the sides of rivers. Isle of Mull, *Lightf.* Banks of Clyde at Bowling bay; Kenmuir banks, Glasg., *Hopk.* Castle Loch, at Lochmaben, Dumfries-shire; in a field by the road-side opposite the hill of Dumbuck, Dumbartonshire, *Maugh.* Isle in the Loch of Monteith, *Rev. Dr. Graham.* Daldowie, *Dr. Brown.* *Fl.* July. ♃.

Erect, two to three feet high. *Leaves* nearly sessile, glabrous or downy beneath. *Panicle* large, leafy, much branched. *Corollas* large.

2. L. *thyrsiflora* (*tufted Loosestrife*), leaves opposite lanceolate, racemes pedunculated lateral. *E. B. t.* 176.

Hab. Watery places, rare. Margin of a drain in a marsh beyond Possil, south side of the canal, near the west end, *Hopk.* Edge of a lake to the N. of Glasgow, *Fl. Brit.*; where Mr. Hopkirk has sought for it in vain. Margins of Rescabie and Balgawen Lakes, Angus-shire, frequent; and Duddingston Loch, Edinb., *D. Don.* *Fl.* July. ♃.

Stems one to two feet high. *Flowers* numerous, small, crowded in axillary, pedunculated *racemes.* *Cor.* deeply cleft into very narrow segments, yellow, and as well as the *cal.* spotted with orange.

** *Peduncles* 1-*flowered.*

3. L. *Nemorum* (*yellow Pimpernel*, or *Wood-Loosestrife*), leaves ovate acute, stem creeping, peduncles solitary, calycine segments linear-subulate, stamens smooth. *Lightf. p.* 138. *E. B. t.* 527.

Hab. Woods and shady places, frequent. *Fl.* summer months. ♃.

4. L. *Nummularia* (*Moneywort*), leaves subcordate obtuse, stem procumbent, peduncles solitary, calycine segments ovate acute, stamens glandular. *Lightf. p.* 138. *E. B. t.* 528.

Hab. Shady places and pastures. Banks of the Clyde at Kenmuir and Bothwell, *Hopk.* Shady banks of the Esk, Angus-shire, abundant, *D. Don.* Daldowie, *Dr. Brown.*

14. ANAGALLIS.

1. A. *arvensis* (*scarlet Pimpernel*), leaves ovate sessile dotted beneath, margin of the cor. broadly and very obtusely crenate piloso-glandulose. *Lightf. p.* 139. *E. B. t.* 529.

Hab. Corn-fields, abundant. *Fl.* June, July. ☉.

Flowers scarlet.

2. A. *cærulea* (*blue Pimpernel*), leaves ovate sessile dotted be-

neath, margin of the cor. dentate scarcely at all glandulose. *E. B. t.* 1823.

Hab. Corn-fields, rare. About Glasgow with the former; said to grow about Lanark, *Hopk.* Dunglass, on the Clyde, *Mr. Stewart.* Fields on the banks of the Tay, near Delvine, *Mr. Murray.* *Fl.* July. ☉.

Flowers bright blue.

I have frequently compared, in England, wild specimens of these two species, and Scotch cultivated ones in the garden of my excellent friend P. Neill, Esq. at Canon Mills, Edinb., and find no difference but in the colour and margin of the corolla. Those marks, however, seem constant. Both are more or less procumbent and the leaves are alike in both.

3. A. *tenella* (*Bog Pimpernel*), stem creeping filiform, leaves ovate or roundish petiolate. *Lightf. p.* 139. *E. B. t.* 530.

Hab. Bogs, not uncommon, *Lightf.* Rare about Glasg.; banks of the Clyde at Ardoch cottage, *Hopk.* Marshy ground on the banks of the Esk, near Inveresk; Guillon Links; Isle of Bute, near Rothsay, *Maugh.* Pitkeathly wells, *Mr. Arnott.* Queensferry, *Mr. Stewart.* Port Glasgow, *Mr. Stark.* Staffa, Bute, Arran and Greenock, *Mr. Murray.* *Fl.* July, Aug. ♃.

A beautiful little plant, two to four inches long. *Leaves* small. *Flowers* large in proportion, on rather long footstalks. *Cor.* subcampanulate, pink or rose colour.

15. AZALEA.

1. A. *procumbens* (*trailing Azalea*), stems spreading procumbent, leaves opposite elliptical glabrous their margins revolute. *Lightf. p.* 139.

Hab. Dry heathy ground, near the summits of many of the Highland mountains, as on Ben More in Breadalbane, Ben Cruachan in Argyleshire, Ben-na-Scree, &c.; about Loch Urn in Inverness-shire, and sparingly upon Ben Lomond (where it is annually becoming more rare, *Mr. Murray*), *Lightf.* S.E. Shoulder of Ben Voirlich and on Ben Glow, &c., *Mr. Arnott.* Benvochart, near Inverness, *Mr. Anderson.* Ben Ferrag, by Loch Ericht, *Mr. Borrer.* Ben Wyvis, *Mr. Wynch.* *Fl.* July. ♃.

Plant growing in tufts of various sizes. *Stems* very woody, leafless below. *Leaves* small, almost like those of Thyme, very smooth and glossy, rigid, channelled down the middle. *Flowers* subcorymbose, terminal, rose-coloured. Allied to *Erica* and still more to *Menziesia.*

16. CONVOLVULUS.

1. C. *arvensis* (*small Bind-weed*), stem climbing, leaves sagittate their lobes acute, peduncles mostly 1-flowered, bracteas minute remote from the flower. *Lightf. p.* 140. *E. B. t.* 312.

Hab. Corn-fields, frequent, *Lightf.* Not common about Glasg., *Hopk.* Near Cathcart, *Dr. Brown.* *Fl.* June, July. ♃.

Flowers rather small, rose-coloured. *Root* running very deep in the ground and difficult of extirpation.

2. C. *Sepium* (*great Bind-weed*), stem climbing, leaves sagittate, the lobes truncate, peduncles 4-sided single-flowered, bracteas large heartshaped close to the flower. *Lightf. p.* 140. *E. B. t.* 313.

Hab. Moist hedges, but not common. Near Dumbarton, *Dr. Parsons.* Hedge by the road-side leading from Abbey-hill to Leith, *Dr. Yule.* Frequent about Glasgow; fields at Hamilton Farm and Bogleshole, *Hopk.* N. Banks of the Clyde, 4 m. below Glasg., *Maugh. Fl.* July, Aug. ♃.

Much larger than the last in every part. *Flowers* very large, showy, pure white.

3. C. *Soldanella* (*Sea Bind-weed*), stem prostrate, leaves reniform fleshy, peduncles 1-flowered 4-sided, their angles winged. *Lightf. p.* 140. *E. B. t.* 314.

Hab. Sea-shores in sandy places, frequent, as on the western coast of Cantire between Machrianish and Bar, and Isle of Oransa plentifully, *Lightf.* Near the Elg, *Sibbald.* Sandy fields between Troone and Irvine, *Mr. M'Nab.* Near Ayr, *Mr. Murray. Fl.* July, Aug. ♃.

Four to eight inches long. *Flowers* few, large, rose coloured. *Bracteas* large, ovate, close to the calyx.

17. POLEMONIUM.

1. P. *cæruleum* (*Jacob's Ladder*), leaves pinnate, flowers erect, cal. longer than the tube of the cor. *E. B. t.* 14.

Hab. Coast 2 m. E. of S. Queensferry, growing with *Arundo arenaria, Maugh.* Arnistone woods, *Mr. Arnott.* Delvine woods, *Mr. Murray. Fl.* July. ♃.

One to two feet high. *Stem* angular. *Flowers* large, blue, sometimes white.

18. CAMPANULA.

1. C. *rotundifolia* (*round-leaved Bell-flower*), glabrous, radical leaves subrotundo-cordate crenate, cauline ones linear entire. *Lightf. p.* 141. *E. B. t.* 866.

Hab. Dry and hilly pastures, frequent. *Flowers* white, Bute and at Auchterarder and Montrose, *Mr. Murray. Fl.* Aug. Sept. ♃.

The radical leaves soon wither, and thus this part of the specific character is often wanting. Whole plant slender, graceful. *Panicle* lax. *Flowers* drooping.

2. C. *persicifolia* (*Peach-leaved Bell-flower*), glabrous, radical leaves obovate lengthened into a petiole, those of the stem linear-lanceolate subserrate sessile remote. *Linn. Sp. Pl. p.* 232. *Don, Fasc. n.* 180.

Hab. Woods near Cullen, apparently indigenous, *G. Don.*

Segments of the *cal.* lanceolate, acuminate. *Cor.* very large, spreading.—Perhaps the outcast of a garden: but as an inhabitant of the northern parts of France, of Germany, Denmark and even Sweden, it is by no means unlikely to be a native of Britain also.

3. C. *latifolia* (*spreading Bell-flower*), leaves ovato-lanceolate scabrous toothed, stem quite simple rounded, flowers solitary peduncled erect, calyx glabrous, fruit drooping. *Lightf. p.* 141. *E. B. t.* 302.

Hab. Sides of rivulets at the foot of mountains in shady places, not unfrequent; as at Cartland rocks, near Lanark, at Taymouth hermitage, and by the falls of Moness, near Taymouth, *Lightf.* Collington and Rosslyn woods, *Maugh.* Not unfrequent near Edinb. and in Kinross-shire, in woods, *Mr. Arnott.* Banks of the Clyde at Daldowie and Kenmuir (with white fl., *Mr. Murray*); and woods at Crossbasket and Cambuslang, *Hopk.*

Two to three feet high. *Cal.* serrated. *Cor.* very large.

4. C. *rapunculoides* (*creeping Bell-flower*), leaves cordato-lanceolate scabrous crenate, stem branched, flowers solitary secund drooping axillary forming a spike, segments of the cal. patent. *E. B. t.* 1369.

Hab. Woods rare, Blair, *Dr. Skrimshire in E. Bot.* Corn-fields 2 m. N. W. from Kirkcaldy, *Mr. Chalmers*: considered there a troublesome weed by the farmer on whose land it grows. *Fl.* July, Aug. ♃.

Two feet high. *Leaves* narrower upwards. *Flowers* large. *Cal.* entire, rough.

5. C. *Trachelium* (*Nettle-leaved Bell-flower*), stem angular, leaves petiolate cordato-lanceolate acutely serrated hispid as well as the cal., peduncles few-flowered axillary. *Lightf. p.* 142. *E. B. t.* 12.

Hab. Shady places, but not common, *Lightf.* On the old walls of Mugdoch Castle, *Hopk. Fl.* July, Aug. ♃.

Leaves much like those of the Nettle, whence its English name.

6. C. *glomerata* (*clustered Bell-flower*), stem angular simple nearly smooth, leaves scabrous crenate oblongo-lanceolate, radical leaves petiolate, cauline ones semiamplexicaul, flowers sessile mostly in a terminal cluster. *Lightf. p.* 142. *E. B. t.* 90.

Hab. Dry mountainous pastures, but not very common, *Lightf.* Hills behind Petticur, Fifeshire, *Mr. P. Neill.* Links near Gosford, *Maugh.* Firth of Forth and along the coast, *Mr. Arnott.* Montrose and Arbroath, *Mr. Stewart.*

From 3 or 4 inches to a foot high. *Flowers* rather large, upright.

7. C. *hederacea* (*Ivy-leaved Bell-flower*), stem lax filiform, leaves all cordate angulato-dentate glabrous. *E. B. t.* 73.

Hab. Moist shady places. First discovered by *Dr. Brown* near the shores of the Clyde 2 or 300 yards to the westward of Clough lighthouse, Renfrewshire. Ardgowan, the seat of Sir Michael Shaw Stewart, on the lawns, *Mr. A. Edgar*, and *Mr. Murray.* Abundant in the immediate neighbourhood of Greenock, *Mr. W. M'Dermaid. Fl.* July, Aug. ♃.

A very slender and elegant plant, growing in lax tufts. *Peduncles* long, mostly terminal. *Flowers* half an inch long, at first drooping. pale purplish blue.

19. JASIONE.

1. J. *montana* (*Sheep's Bit* or *Sheep's Scabious*). *Lightf. p.* 504. *E. B. t.* 882.

Hab. Dry hilly pastures, as at Chatelherault, by Hamilton; at Brodie Castle, in the Isle of Arran, &c., *Lightf.* Dry sandy places about Glasg., frequent, *Hopk. Fl.* June, July. ⊙.

Stem 6—10 inches high, branched upward. *Leaves* rough, oblongo-lanceolate. *Flowers* bright blue, in terminal dense hemispherical heads, with a many-leaved involucre. *Cal.* small, superior, 5-toothed. *Cor.* cut into 5 deep segments. *Anthers* united at the base: and thus was placed in the class *Syngenesia* by the older writers.

20. LOBELIA.

1. L. *Dortmanna* (*Water Lobelia*), leaves linear 2-celled entire, scape nearly naked, flowers racemed. *Lightf. p.* 505. *t.* 21. *E. B. t.* 140.

Hab. Frequent in almost every fresh water lake in Scotland, and particularly in the Highlands and western isles, growing near the edges of the water, *Lightf.* In Bardowie and Mugdoch lakes, near Glasg., plentifully, *Hopk. Fl.* August. ♃.

Leaves about 2 inches long, immersed in the water, erecto-patent, a little curved backward, with two tubes or cells! *Scape* flowering above water, with 1 or 2 scales near the base, rounded, 1 foot high. *Flowers* distant on the raceme. *Peduncles* short, with a small bractea at their base, single-flowered. *Flowers* pale blue, a little drooping. *Cal.* tubular. *Cor.* subinfundibuliform, slit down on the upper side, limb of 5 irregular spreading segments, a little bearded at the base. *Fruit* erect.

21. IMPATIENS.

1. I. *Noli-me-tangere* (*yellow Balsam*), joints of the stem swelling, leaves ovate serrated petiolate, peduncles solitary many-flowered. *E. B. t.* 937.

Hab. Moist groves. Abundant in a wet glen at Castlemilk, perhaps escaped from a garden, *Hopk. Fl.* July, Aug. ⊙.

Stem 1 foot high, rounded, succulent, fragile. *Flowers* large, yellow, spotted with orange. *Cal.* of 2 yellow green leaves. *Caps.* bursting elastically and scattering its seeds with considerable force.

22. VIOLA.

* *Stigma acute, recurved* (*stipules undivided*).

1. V. *hirta* (*hairy Violet*), stemless, leaves cordate rough, as well as the petioles and capsules, with hairs, cal. obtuse. *E. B. t.* 894.

Hab. Woods and pastures. Blackford hills, and links between Cockenzie and Gosford, *Maugh.* Guillon links, E. Lothian, *Mr. Arnott. Fl.* May. ♃.

Flower-stalks taller than the leaves, and bearing below the middle two small bracteas.

2. V. *odorata* (*sweet Violet*), stemless, throwing out runners, leaves heart-shaped glabrous, as well as the petioles, cal. obtuse. *Lightf. p.* 507. *E. B. t.* 619.

Hab. Hedges and banks, common. *Fl.* March, April. ♃.

Leaves broader than the last, glabrous or nearly so. *Flowers* larger, deeper purple, often white. Pair of bracteas above the middle of the peduncle.—The Sorbet of the Turks, according to Hasselquist, is made of these flowers and sugar. Used as a cosmetic by the Highland ladies of former times, as appears by the following lines translated from the Gaelic, and given in *Lightf.* "Anoint thy face with goat's milk in which violets have been infused, and there is not a young prince upon earth who will not be charmed with thy beauty."

3. V. *palustris* (*Marsh Violet*), stemless, leaves reniform quite smooth veiny beneath, cal. obtuse, spur very short. *Lightf. p.* 506. *E. B. t.* 444.

Hab. Bogs and marshy grounds, not unfrequent. *Fl.* May, June. ♃.

Flowers very pale.

4. V. *canina* (*Dog's Violet*), stem at length ascending channelled, leaves cordate acute, stipules long dentato-ciliate, cal. acute. *Lightf. p.* 508. *E. B. t.* 620.

Hab. Woods, banks and pastures, frequent. *Fl.* April, May. ♃.

5. V. *lactea* (*cream-coloured Violet*), stem ascending, leaves ovato-lanceolate smooth, stipules dentate, cal. acute. *E. B. t.* 445.

Hab. Hilly pastures, near Peebles, *Maugh. Fl.* June. ♃.

Flowers cream-coloured. Whole plant much smaller than the last; but, notwithstanding the different form of the leaves, Smith, in a subsequent number of the *E. Bot.*, is disposed to consider it only a variety of *canina*, probably arising from poorness of soil. It is common on the sandy *dunes* of Holland and France, and is the *V. lancifolia* of Decandolle.

** *Stigma erect, large and perforated* (*stipules deeply divided*).

6. V. *tricolor* (*Pansy Violet*, or *Heart's-Ease*), stem angled branched spreading, leaves oblong deeply crenate, stipules lyrate pinnatifid.

Hab. Corn-fields, frequent. *Fl.* summer months. ☉.

Plant varying much, especially in the size and colour of the flowers.

7. V. *lutea* (*yellow Mountain Violet*), stem simple erect, leaves ovato-oblong crenate, stipules deeply lobed palmate. *Lightf. p.* 508 (*V. grandiflora*). *E. B. t.* 721.

Hab. Hilly pastures and mountains, common. Cathkin hills, near Glasg., plentiful, *Hopk.* Arthur's Seat, *Mr. Neill.* Corstorphine and Pentland hills, *Maugh. Fl.* June—Sept. ♃.

Flowers very large, showy, often yellow. When purple, the *V. amœna* of authors. I have a singular var. brought by Mr. Murray from Arran, with much broader leaves, deeper green and bright yellow flowers.

23. VERBASCUM.

1. *V. Thapsus* (*great Mullein*), leaves decurrent woolly on both sides, stem simple, 2 stam. longer, glabrous. *Lightf. p.* 143. *E. B. t.* 549.

Hab. Dry sandy places, between N. and S. Weems, on the coast of Fife, *Lightf.* Waste ground occasionally about Glasg. Calderwood, *Ure.* Banks of the Clyde below Renfrew and Woodhall, *Hopk.* Highlands, not uncommon, *Mr. Arnott.* Blackford-hill, Edinb., *Maugh.* *Fl.* July. ♂.

Stem 4—5 feet high, angular, winged. *Leaves* thick, excessively woolly, ovate or oblong. *Spike* long, cylindrical, dense. *Flowers* handsome golden yellow, when dried in the sun giving out a fat matter used in Alsace as a cataplasm in hæmorrhoidal complaints. 3 *Stam.* hairy, 2 long glabrous; therefore incorrectly figured in *E. Bot.*

2. V. *Lychnitis* (*white Mullein*), leaves oblong-wedge-shaped nearly glabrous on the upper side, stem angled paniculate. *Lightf. p.* 143. *E. B. t.* 58.

Hab. Road-sides. Back-walk at Stirling, called Edmonston's walk, *Lightf.* Lane leading from the glass-works to the Clyde, Dumbarton, *Hopk.* Kenmore, Breadalbane, *Maugh.* *Fl.* July. ♂.

Flowers numerous, rather small, cream-coloured. *Leaves* below very woolly. *Stam.* hairy.

3. V. *pulverulentum* (*yellow hairy Mullein*), leaves ovato-oblong subserrate pulverulento-tomentose on both sides, stem rounded panicled. *E. B. t.* 487.

Hab. In a den near Cullen, *Maugh.* *Fl.* July. ♂.

Remarkable for the mealy down on the leaves, which is easily separated from the substance of the leaf. *Flowers* large, handsome.

4. V. *nigrum* (*dark Mullein*), leaves oblongo-cordate petiolate crenate subpubescent. *E. B. t.* 59.

Hab. Links between Seton and Gosford, *Dr. Yule.* Banks of the river Esk opposite Coalpits, and at Borthwick Castle, *Maugh.* *Fl.* July, Aug. ♃.

Leaves nearly glabrous, dark green. *Flowers* in clusters, on the almost simple long spike. *Cor.* rather large, yellow. *Stam.* with bright purple hairs.

24. HYOSCYAMUS.

1. H. *niger* (*common Henbane*), leaves amplexicaul sinuated, flowers nearly sessile. *Lightf. p.* 144. *E. B. t.* 591.

Hab. Waste places near towns and villages. Firth of Forth, *Mr. Arnott.* Cathcart, *Dr. Brown.* Rocks, Dumbarton castle, *Hopk.* *Fl.* June. ☉ or ♂.

Stem much branched, rounded. Whole *plant* covered with unctuous, fetid hairs. *Leaves* subovate. *Cal.* veined, as is the large dingy yellow *cor.*, with brownish lines.—Highly narcotic.

25. ATROPA.

1. A. *Belladonna* (*deadly Nightshade*), stem herbaceous, leaves ovate undivided. *Lightf. p.* 144. *E. B. t.* 592.

Hab. Hedges and waste places. King's park at Stirling and at I-colmkill, *Lightf.* Banks of the Cart, near Cathcart Mill, *Dr. Brown.* Ruins of Borthwick-castle, *Mr. P. Neill* and *Maugh.* Den of Bonnington near Montrose, *Prof. Beattie.* *Fl.* June. ♃.

Stems 3 feet or more high, rounded. *Leaves* entire, in pairs of unequal sizes. *Flowers* axillary, on solitary peduncles, drooping, lurid purple. *Berries* shining black, injurious when taken internally; their effects best counteracted by drinking plentifully of vinegar.

26. SOLANUM.

1. S. *Dulcamara* (*woody Nightshade*, or *Bitter-sweet*), stem without thorns shrubby climbing, leaves cordate glabrous, superior ones hastate, corymbs opposite the leaves drooping. *Lightf. p.* 145. *E. B. t.* 565.

Hab. Moist hedges, but not common. At the end of Dalkeith nearest to Edinburgh, *Dr. Parsons.* Frequent about Glasg., and with white flowers, *Hopk.* About Edinb. and Balquidder, *Mr. Arnott.* Gartmore, *Dr. Grahame.* Banks of the Esk, above Musselburgh; and by the water of Leith, near Gorgie, *Maugh.* *Fl.* June, July. ♄.

Flowers purple, with 2 green tubercles at the base of each segment. *Anthers* large, yellow, united into a pyramidal or cone-shaped figure. *Berries* red, oval.

2. S. *nigrum* (*common* or *Garden Nightshade*), stem without thorns herbaceous, leaves ovate bluntly toothed and waved, umbels lateral drooping. *Lightf. p.* 145. *E. B. t.* 566.

Hab. Waste places, near towns and villages, frequent. *Fl.* July, Sept. ☉.

Flowers white. *Berries* spherical, black.

27. ERYTHRÆA.

1. E. *Centaurium* (*common Erythræa* or *Centaury*), stem nearly simple, leaves ovato-oblong, flowers sessile (or nearly so) fasciculato-paniculate, cal. half as long as the tube of the cor. *Pers. Syn. Pl. v.* 1. *p.* 283. *Lightf. p.* 152 (*Gentiana Cent.*) *E. B. t.* 417 (*Chironia Cent.*).

Hab. Dry pastures, not unfrequent, *Lightf.* *Fl.* July, Aug. ☉.

Stem 8 inches to a foot high. *Radical leaves* spreading, broader than the cauline ones, three-nerved. *Panicles* of flowers fascicled near the top of the stem, and forming a sort of corymbus. *Flower* large, rose coloured.

2. E. *pulchella* (*dwarf-branched Erythræa*), stem very much branched, leaves ovato-oblong, flowers pediceleate in lax panicles, cal. as long as the tube of the cor. *E. B. t.* 458 (*Chironia pulch.*).

Hab. Sandy places, especially near the sea. Near Guillon Links, *D. Don*[a]. *Fl.* Aug., Sept. ☉.

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[a] May not Mr. D. Don, as his father had done, have mistaken the *E. littoralis* for this? especially since Guillon Links are given as the station for the latter by Mr. Maughan.

Stem 2—4 or 6 inches high, very slender, and much branched from near the base. *Panicles* spreading, dichotomous with a single flower-stalk between the branches.

3. E. *littoralis* (*dwarf Sea-side Erythræa*), stem simple or much branched, leaves ovato-oblong, flowers sessile capitato-paniculate, cal. as long as the tube, deeply cleft. *Don, Fasc.* (*C. pulchella*). *E. B. t.* 2305 (*Chironia litt.*).

Hab. Fruit discovered, I believe, by *G. Don.* Sea-coast of Elgin, near Brodie House, *James Brodie, Esq.* of Brodie. Guillon Links, *Maugh.* Shores of the Moray Firth, *D. Don. Fl.* June. ⊙.

Rarely exceeding 2—3 inches high, stout in proportion to its height, very leafy; *radical leaves* small, lower *cauline leaves* almost linear obtuse. *Cal.* segments very long, in my specimens scarcely united by a membrane as in the two other species, and as long as the tube: but most of the characters here laid down are said by Mr. Turner to vary in specimens he has seen, and I doubt if the plant be really distinct from the *E. Centaurium.*

28. SAMOLUS.

1. S. *Valerandi* (*Brook-weed* or *Water Pimpernel*), leaves obtuse, racemes many-flowered, pedicels with a small bractea. *Lightf. p.* 142. *E. B. t.* 703.

Hab. Marshy places, but not very frequent. Isle of Gigha, *Lightf.* Banks of the Clyde and Bowling-bay, plentiful, *Hopk.* Largs, Bute, and Arran, *Mr. Murray.* Lime-kilns, Fifeshire, and Guillon Links, near Edinb., *Maugh. Fl.* July. ♃.

Stem 8—10 inches high, rounded, glabrous, as well as the ovate subpetiolate and entire fleshy *leaves. Flowers* small, white. *Cal.* small, 5-toothed.

29. LONICERA.

1. L. *Caprifolium* (*pale perfoliate Honeysuckle*), flowers ringent whorled terminal sessile, upper leaves connato-perfoliate. *E. B. t.* 799.

Hab. Collington woods, *Maugh.* and *Mr. Weatherhead.* Corstorphine-hill, and hedges near Dalmeny, Linlithgowshire, *Maugh. Fl.* June. ♄.

Berries smooth, orange-coloured.

2. L. *Periclymenum* (*common Honeysuckle* or *Woodbine*), flowers ringent capitate terminal, leaves all distinct. *Lightf. p.* 143. *E. B. t.* 800.

Hab. Woods and hedges, frequent. A var. with deeply notched leaves is found in a small wood at Calderbridge, *Hopk. Fl.* July. ♄.

Berries red. The *stems* of both species invariably twine in the same direction.

30. RHAMNUS.

1. Rh. *catharticus* (*Buckthorn*), spines terminal, flowers 4-cleft diœcious, leaves ovate sharply serrated. *Lightf. p.* 1092. *E. B. t.* 1629.

Hab. About Dumfries, *Mr. Yalden. Fl.* May. ♄.

Spreading shrub. *Petals* very small. *Stigmas* 4-lobed. *Flowers* much clustered on short footstalks, yellow green. *Berries* black, nauseous, strongly cathartic; they afford a *yellow* dye in an unripe state, as does the bark a *green* dye, when mature.

2. Rh. *Frangula* (*Berry-bearing Alder*), unarmed, flowers perfect, leaves obovate smooth entire. *E. B. t.* 250.

Hab. Cullum-wood, near Auchincruive, Ayrshire, *Mr. Smith*. *Fl.* May. ♄.

Small shrub. *Flowers* small, few, two or three together, axillary, on longish footstalks, whitish green. *Petals* very minute, as well as the *stam*. *Berries* dark purple with two seeds, purgative.

31. EUONYMUS.

1. E. *europæus* (*Spindle Tree*), flowers mostly tetrandrous, peduncles compressed many-flowered, leaves ovato-lanceolate on short footstalks, branches smooth. *Lightf. p.* 145. *E. B. t.* 362.

Hab. Woods and hedges in many places, according to *Sibbald*; but I found it not myself, *Lightf.* King's Park, Edinb. and near Craigmillar Castle, *Maugh*. *Fl.* May. ♄.

Shrub 3—5 feet high: *bark* green, smooth. *Leaves* opposite, glabrous, serrated. *Panicles* forked. *Flowers* small, white. *Cal.* segments and petals 4 or 5. *Stam.* upon glands in the disk of the *cal*. *Fruit* 5-angled, but much less acutely so than in *E. latifolius*. —*Berries* and even *leaves* said to be dangerous. Of the tough wood *skewers* are made, and Linnæus says it forms the best charcoal for drawing.

32. RIBES.

* *Without thorns.*

1. R. *rubrum* (*common Currant*), without thorns erect, racemes glabrous pendulous, flowers nearly plane, petals obtuse.

Hab. Isle of Isla among brushwood, on the banks of the Sound, *Lightf.* Culross woods, *Maugh*. *Fl.* May. ♄.

Leaves 5-lobed, doubly serrated, on longish footstalks; a small scale or bractea at the base of each pedicel. *Flowers* greenish. *Fruit* red, crowned with the withered *cal*.

2. R. *petræum* (*Rock Currant*), without thorns erect, racemes when in flower erect in fruit pendulous slightly downy, flowers nearly plane, petals bluntish, bracteas shorter than the pedicel. *E. B. t.* 705.

Hab. Woods near Airly-castle, by the river-side, *G. Don*. *Fl.* May. ♄.

Leaves as in the last species, but a little downy beneath. Differs from *R. spicatum* in having the fruit pendulous; but Smith doubts himself if that character is permanent. *Berries* red.

3. R. *alpinum* (*tasteless Mountain Currant*), without thorns erect, racemes erect both in flower and fruit, flowers plane shorter than the bracteas, leaves shining beneath. *Lightf. p.* 146. *E. B. t.* 704.

Hab. Woods and fissures of rocks, *Dr. Parsons*. *Fl.* May. ♄.

Leaves small, frequently 3-lobed; lobes acute, deeply serrated. *Racemes* few-flowered; flowers small. *Berries* red.

4. R. *nigrum* (*black Currant*), without thorns erect, racemes lax pubescent pendulous with a simple flower-stalk at their base, flowers campanulate, bracteas shorter than the pedicels, leaves punctato-glandulose beneath. *Lightf. p.* 146. *E. B. t.* 1291.

Hab. Woods. Wood on the bank of the Sound of Isla, with *R. rubrum*, *Lightf.* Auchindenny woods, *Mr. E. Shuter* and *Maugh. Fl.* May. ♄.

Leaves large, 5-lobed, serrate. *Pedicels* long. *Berries* large, black.

** *Thorny.*

5. R. *Grossularia* (*rough Gooseberry*), branches prickly, leaves rounded and lobed, peduncles hairy, pedicels single-flowered with a pair of minute bracteas, fruit hairy. *E. B. t.* 1292.

Hab. Hedges and woods. Hamilton woods, apparently indigenous, *Hopk. Fl.* Apr. May. ♄.

The thorns are by some considered indurated stipules, since they spring from the point of insertion of the leaves. The *R. Uva crispa* is but a var. of this, with the bracteas united for the greater part of their length, and the fruit smooth.

33. HEDERA.

6. H. *Helix* (*common Ivy*), leaves 5-lobed the lobes angular, floral leaves ovate, umbel erect. *Lightf. p.* 146. *E. B. t.* 1267.

Hab. Rocks and trunks of trees. *Fl.* Oct. Nov. ♄.

Stems long, creeping, throwing out numerous radicles with which they adhere to hard substances. *Leaves* very shining, dark green, often veined with whitish lines. *Flowers* small, pale green. *Cal.* teeth very minute. *Petals* reflexed.—Ointment made of the leaves much valued by the Highlanders as a cure for burns, *Dr. Stuart.*

34. GLAUX.

1. Gl. *maritima* (*black Salt-wort*). *Lightf. p.* 147. *E. B. t.* 13.

Hab. Sea-shore in muddy places, abundant. *Fl.* July. ♃.

Stem 2—4 or 5 inches high, stout, branched, often procumbent, reddish. *Leaves* ovate, smooth, fleshy, entire, sessile, small. *Flowers* sessile, solitary, axillary, rose coloured, with 5 obtuse spreading lobes.

35. VINCA.

1. V. *minor* (*lesser Periwinkle*), stems procumbent, leaves oblongo-lanceolate their margins as well as the small lanceolate teeth of the cal. glabrous. *Lightf. p.* 147. *E. B. t.* 917.

Hab. Coryton woods, *Dr. Parsons.* Kelburn and Skilmerlie woods, *Mr. Murray.* Woods, Bothwell, but introduced, *Hopk. Fl.* May, June. ♃.

2. V. *major* (*greater Periwinkle*), stem suberect, leaves ovato-

subcordate, their margins as well as those of the elongated subulate segments of the cal. ciliated. *E. B. t.* 514.

Hab. Woods. Dundas hill, *Mr. P. Neill.* Collington woods, *Maugh.* With the former in Kelburn and Skilmerlie woods, *Mr. Murray. Fl.* May. ♃.

Twice the size of the former in all its parts. *Cor.* in both mostly purple, but varying in intensity. The *Anthers*, *Stigma*, and *Fruit* (a *follicle*) are highly curious in this genus.

2. DIGYNIA.

36. CHENOPODIUM.

* *Leaves semicylindrical, fleshy.*

1. Ch. *maritimum* (*Sea-side Goosefoot*), leaves glabrous subulate semicylindrical fleshy, flowers clustered axillary sessile. *Lightf. p.* 150. *E. B. t.* 633.

Hab. Sea-coast in many places. Near M'Kennon's castle, Skye; at Glen-beg, and Loch Broom, *Lightf.* Banks of the Clyde at Helensburgh and Ardencaple, plentiful, *Hopk.* Aberlady Bay, *Mr. Arnott. Fl.* Aug. Sept. ⊙.

Surely the *Salsola fruticosa* of *E. Bot.* should be, as is done by Brown and Decandolle, removed to this genus.

** *Leaves plane, undivided, and entire.*

2. Ch. *olidum* (*stinking Goosefoot*), leaves ovato-rhomboid entire, flowers in dense clustered spikes, stem diffuse. *Lightf. p.* 149 (*Ch. Vulvaria*). *E. B. t.* 1034.

Hab. Waste places and under walls, especially near the sea. Fisherrow Links, Edinb., *Maugh. Fl.* Aug. ⊙.

Leaves greasy to the touch, and covered with a pulverulent substance, which gives out a most detestable odour, compared to putrid salt fish. *Leaves* petiolate, small.

3. Ch. *polyspermum* (*round-leaved Goosefoot*), leaves ovate entire, racemes subcymose divaricate leafless, stem decumbent or erect. *Lightf. p.* 150. *E. B. t.* 1430 and *t.* 1481 (*Ch. acutifolium*).

Hab. Waste places and on rubbish, frequent. *Fl.* Aug. Sept. ⊙.

Leaves petiolate, more or less acute, branches long. *Stalks* square, often reddish. *Seeds* (or rather seed-vessels) brown, shining, very apparent, and very numerous.

*** *Leaves plane, toothed, or lobed.*

4. Ch. *Bonus Henricus* (*perennial Goosefoot*, or *good King Henry*), leaves triangular arrow shaped entire, spikes compound terminal and axillary erect leafless. *Lightf. p.* 147. *E. B. t.* 1033.

Hab. Waste places and way-sides, frequent. *Fl.* Aug. ♃.

Leaves large, dark green. *Stem* 1 foot high, striated.—Used when boiled instead of spinach.

5. Ch. *urbicum* (*upright Goosefoot*), leaves triangular toothed,

racemes long erect approaching the stem subsimple nearly leafless. *Lightf. p.* 148. *E. B. t.* 717.

Hab. Waste places and under walls in towns and villages. *Fl.* Aug. ⊙.

Stems erect, angular. *Leaves* large, truncate at their base, light or subglaucous green, their margins deeply and irregularly toothed. *Flowers* on the racemes in rather small but distant clusters, very long and erect. *Seeds* large, "as big as rape seed" (*Sm.*).

6. Ch. *rubrum* (*red Goosefoot*), leaves rhomboido-triangular deeply toothed and sinuated, racemes erect compound leafy. *Lightf. p.* 148. *E. B. t.* 1721.

Hab. Dunghills and under walls. *Fl.* Aug. Sept. ⊙.

Darker green than the last. *Stems* reddish. *Leaves* lengthened out at the base, by no means truncate. *Racemes* very compound. *Seeds* small.

7. Ch. *murale* (*Nettle-leaved Goosefoot*), leaves ovateapproaching to rhomboid acute toothed shining, racemes much branched subcymose leafless. *Lightf. p.* 148. *E. B. t.* 1722.

Hab. Under walls and in waste places about towns and villages. *Fl.* Aug. ⊙.

Branches of the *raceme* spreading. *Flowers* rather distant. Smell unpleasant.

8. Ch. *hybridum* (*Maple-leaved Goosefoot*), leaves cordate angulato-dentate acuminate, clusters very much branched subcymose divaricated leafless. *Lightf. p.* 149. *E. B. t.* 1919.

Hab. Waste places and in cultivated fields; but not common, *Lightf.* About Edinburgh, *G. Don. Fl.* Aug. ⊙.

Stems slender, leaves large with very prominent teeth or angles. *Racemes* much like the last, but branches more distant and spreading.

9. Ch. *album* (*white Goosefoot*), leaves ovate inclining to rhomboid erose entire at the base upper ones oblong perfectly entire, racemes branched somewhat leafy, seeds smooth. *Lightf. p.* 148. *E. B. t.* 1723.

β. Leaves greener more entire, racemes elongate more branched.

Hab. Waste places, dunghills, &c. common. *Fl.* July, Aug. ⊙.

Leaves covered with a mealy substance, varying in width and in the erosion or blunt toothing of the upper half of the margins of the leaves. When nearly entire, it is the *Ch. viride* of Linn.

37. BETA.

1. B. *maritima* (*Sea-side Beet*), stems procumbent at the base, flowers solitary or in pairs, calycine segments entire. *Lightf. p.* 150. *E. B. t.* 285.

Hab. Sea-shore, in muddy places. Bass Island, *Dr. Parsons.* Opposite Gosfordgate, *Mr. P. Neill.* Sea-shore, near Kirkcaldy, *Maugh.*, and *Mr. Somerville.* Near Crammond, *Dr. Willis. Fl.* August. ♃.

Root large, thick, fleshy. *Stem* tall, branched, angular. *Radical leaves* subovate, succulent, entire, waved. *Spikes* of flowers numerous, leafy; leaves small at the base of each flower or pair of

flowers, greenish.—Decandolle says this is biennial, and distinguishes it from the *common Beet, B. vulgaris*, in having one or two instead of three or four flowers in the axil of the upper leaves. This is esteemed a wholesome food when boiled.

38. SALSOLA.

1. S. *Kali* (*prickly Saltwort*), stem herbaceous prostrate, leaves subulate spinous scabrous, segments of the perianth margined scariose. *Lightf. p.* 151. *E. B. t.* 634.

Hab. Sandy sea-shores, frequent. *Fl.* July. ⊙.

Stem angled, very much branched. *Flowers* solitary, pale reddish, sessile, with three leaf-like bracteas at the base of each.—Much used in some countries in the manufacture of alkali.

39. ULMUS.

1. U. *campestris*[a] (*common Elm*), leaves doubly serrated scabrous unequal at the base, flowers nearly sessile 4-cleft with 4 stam., fruit oblong naked (*Sm.*). *Lightf. p.* 151. *E. B. t.* 1886.

Hab. Woods and hedges, common. *Fl.* April. ♄.

A large tree with rugged bark. *Flowers* in dense heads, each subtended by a small scale or bractea.

2. U. *glabra* (*smooth-leaved* or *Wych Elm*), leaves doubly serrated smooth unequal at the base, flowers nearly sessile 5-cleft, fruit obovate naked cloven (*Sm.*). *Lightf. p.* 152 (mentioned as a var. of *U. campestris*). *E. B. t.* 2248.

Hab. Common in Scotland, in woods and hedges as far north as Ross-shire, Sutherland, *Lightf.* *Fl.* March, April. ♄.

Leaves narrower and smooth, except on the under side, where they are a little rough. *Bark*, too, smooth.

3. U. *montana* (*broad-leaved Elm*), leaves doubly serrated pointed rough unequal at the base, flowers on short stalks effuse 5—6-cleft with 5—6 stam., fruit roundish naked. *E. B. t.* 1887.

Hab. Common in Scotland, and certainly a native, *Lightf.* *Fl.* April. ♄.

A very handsome tree, with spreading branches and large leaves; and very distinct on the first aspect from the other kinds. The different species of *Elm* have, however, not been so satisfactorily defined as could be wished. They flower early, and, as is the case with trees in general in our climate, before the appearance of the leaves: and

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[a] I have had no means of ascertaining whether this, or, as I rather suspect, the *U. suberosa* of *E. B.* be the *common Elm* of Scotland; and Lightfoot's description does not at all help me. The characters of *U. suberosa* are, "*Leaves* doubly and sharply serrated, pointed, rough, unequal at the base. *Flowers* on short stalks, 4—5-cleft, with 4—5 *stam. Fruit* roundish, cloven; branches spreading, their bark corky." *Sm. in E. B. t.* 2161. Probably both species will prove to be natives of Scotland.

the different states of the plant, the flowers, leaves and fruit, should be carefully examined from the same individual tree.—*U. montana* produces good timber. The inner bark is esteemed antiscorbutic, and the Highlanders also make ropes of it. *Lightf. p.* 1094.

40. CUSCUTA.

1. C. *europæa* (*greater Dodder*), flowers sessile, cor. 4—5-cleft without any scale at the base of the stam., stigmas simple. *E. B. t.* 378.

Hab. Parasitic on nettles, flax, &c., rare. On lint, in a field near Musselburgh, *Mr. P. Neill. Fl.* Aug. Sept. ⊙.

Stems filiform, long, red, climbing, with small tubercles for roots, perfectly leafless. *Flowers* clustered, pale yellowish rose colour.

2. C. *Epithymum* (*lesser Dodder*), flowers sessile, cor. mostly 4-cleft with a small fringed scale at the base of each stam., stigmas simple. *Lightf. p.* 1090 (*C. europæa*). *E. B. t.* 55; *and descr. p.* 378.

Hab. On furze, heath, thyme and other plants in exposed hilly situations. On furze bushes near Mollance in Galloway, *Dr. Burgess.* Rare about Glasgow. On flax at Hamilton and Woodhall, *Hopk.*—May not this be the *C. europ.? Fl.* July. Aug. ⊙. (♃ ? *Sm.*)

Smaller than the last, but well distinguished by the scales on the cor.

41. GENTIANA.

* *Mouth of the Cor. naked, not ciliated.*

1. G. *nivalis* (*small alpine Gentian*), cor. 5-cleft infundibuliform, branches alternate 1-flowered, cauline leaves lanceolate. *E. B. t.* 896.

Hab. Ben Lawers, *Dickson. Fl.* Aug. ⊙.

One inch to four inches high, rarely simple. *Leaves* elliptical, upper ones narrower. *Flowers* brilliant blue. *Cor.* with small segments between the larger ones. *Cal.* with 5 teeth and as many angles, which are tinged with reddish brown.

** *Mouth of the Cor. ciliated.*

2. G. *amarella* (*autumnal Gentian*), cor. 5-cleft hypocrateriform bearded in the orifice, cal. 5-cleft, segments equal. *Lightf. p.* 152. *E. B. t.* 236.

Hab. Dry mountainous pastures, but not common, *Lightf.* Links to the eastward of Cockenzie, *Maugh.* Guillon Links, *Mr. Arnott.* Links of St. Fergus, *Mr. Murray. Fl.* Aug. ⊙.

Six to eight or ten inches high. *Stem* square. *Leaves* ovato-lanceolate, nerved. *Flowers* large, purplish.

3. G. *campestris* (*Field Gentian*), cor. 4-cleft hypocrateriform bearded in the orifice, cal. of 4 leaflets two outer ones very large. *Lightf. p.* 152. *E. B. t.* 237.

Hab. Upland pastures, especially in the Highlands, frequent, *Lightf.* About Kenmuir and Airdrie, *Hopk.* Hills between Pettycur and

Burntisland; and King's Park, Edinb., *Maugh.* Pentland hills; Breadalbane and Balquidder, Kinross-shire, *Mr. Arnott.* Old Kilpatrick hills, Bute and Arran, and about Glasg., *Mr. Murray.*

Except in the above characters, much resembling the last. All the *Gentians* contain the bitter principle abundantly. This is said by Linn. to be used by the poor in Sweden instead of hops.

Flowers of 5 *petals, superior,* 2-*seeded.* UMBELLATÆ.

A. *Umbels with a partial and universal involucre.*

42. ERYNGIUM.

1. E. *maritimum* (*Sea-side Eryngo*), radical leaves rounded plaited spinous, scales of the receptacle three-cleft. *Lightf. p.* 153. *E. B. t.* 718.

HAB. Sea-coast in sandy places, frequent; as at Musselburgh, Dunbar, Largo in Fife, Mackrianish Bay in Cantire, Jona, &c., *Lightf.* St. Andrews, &c., *Mr. Arnott.* Coast of Ayr, *Mr. Murray.* Bute, near Mount Stewart, *Maugh. Fl.* July, Aug. ♃.

Whole plant very stiff and rigid, glaucous. *Leaves* veined. *Flowers* blue.—The roots are good, candied, and Linnæus recommends the shoots, when blanched, to be eaten like asparagus.

43. HYDROCOTYLE.

1. H. *vulgaris* (*Marsh Penny-wort*), leaves peltate orbicular crenate, umbels of 5—8 flowers. *Lightf. p.* 154. *E. B. t.* 751.

HAB. Bogs and banks of lakes, frequent. *Fl.* June. ♃.

Stems creeping, from their joints producing clusters of petiolated leaves, and simple flower-stalks, which are much shorter than the petioles. *Flowers* reddish.

44. SANICULA.

1. S. *europæa* (*Wood Sanicle*), radical leaves simple, flowers all sessile. *Lightf. p.* 154. *E. B. t.* 98.

Woods, very abundant. *Fl.* May, June. ♃.

Leaves mostly radical, subpalmate, lobed and finely serrated, almost ciliated. *Umbels* of *flowers* roundish, whitish.

45. CAUCALIS.

1. C. *anthriscus* (*upright Hedge-Parsley*), leaves bipinnate, leaflets ovato-lanceolate, umbels of many close rays, general involucre of many leaves, branches nearly upright. *Lightf. p.* 155. *E. B. t.* 987.

HAB. Hedges and waste places. *Fl.* Aug. ☉.

Stem 2—3 feet high. *Fruit* covered with incurved bristles.

2. C. *infesta* (*spreading Hedge-Parsley*), leaves pinnate, leaflets lanceolate almost pinnatifid, umbels of many close rays, involucre often wanting, branches spreading. *Lightf. p.* 155 (*C. arvensis*). *E. B. t.* 1314.

HAB. Corn-fields. Isle of Lismore, near Upper-Lorn, &c., *Lightf.* Roadsides about Edinb., common, *Mr. Greville.* *Fl.* June, July. ☉.

3. C. *nodosa* (*knotted Caucalis*, or *Hedge-Parsley*), umbels lateral simple subsessile, stem prostrate. *E. B. t.* 199.

Hab. Waste places by road-sides, &c. Bank below Salisbury Craig, towards Duddingston Loch, and by the road-side leading from Drummore to Preston, *Maugh. Fl.* June. ⊙.

Leaves bipinnate, leaflets shortly cut. *Umbels* capitate, opposite the base of a leaf. *Flowers* reddish. *Petals* very small. *External fruits* of the umbels most bristly, striated, subcylindrical.

46. DAUCUS.

1. D. *Carota* (*wild Carrot*), stem hispid, leaves 2—3 pinnate, leaflets cut linear-lanceolate acute, fruit-bearing umbel concave, fruit bristly. *Lightf. p.* 156. *E. B. t.* 1174.

Hab. Pastures and borders of fields, common. *Fl.* July. ♂.

The origin of the cultivated carrot.—In the English *D. maritimus*, the leaflets are much broader, and the fruit-bearing umbel convex. Is it really a distinct species?

47. BUNIUM.

1. B. *Bulbocastanum* (*common Earth-nut*), general involucre of scarcely 3 leaves, leaves tripinnate linear glabrous, fruit ovate. *Lightf. p.* 156. *E. B. t.* 988 (*B. flexuosum*).

Hab. Woods and pastures, frequent.

Root a large, ovate, single, esculent *tuber*, from which spring the stem, about 1 foot high, and a few radical leaves. Whole plant slender.

48. CONIUM.

1. C. *maculatum* (*common Hemlock*), seeds without prickles, stem much branched polished and spotted. *Lightf. p.* 157. *E. B. t.* 1191.

Hab. Waste places, banks, &c., frequent. Field near the Bridewell, Glasg., abundant, *Hopk. Fl.* June, July. ♂.

Stem 2—4 feet high. *Leaves* much divided in a pinnated manner. *Leaflets* ovato-lanceolate, shining, serrated: when bruised, fetid. *General involucre* of several short, ovato-lanceolate leaves; *partial ones* subsetaceous, all on one side. *Fruit* ovate, smooth, furrowed. Highly narcotic and dangerous in large quantities: has been much used medicinally in ulcerous and cancerous disorders.

49. SELINUM.

1. S. *palustre* (*Marsh Milk-Parsley*), lactescent, leaflets pinnatifid, segments linear-lanceolate, stem solitary striated, rays of the umbels pubescent, styles after flowering divaricating. *E. B. t.* 229.

Hab. Marshes, rare. Ditch at Ardencaple wood, *Hopk. Fl.* July. ♃.

Three to five feet high, much branched above. *Umbels* large. *Involucres* of many, lanceolate, submembranaceous leaves. *Root* said to be used by the Russians instead of ginger. *Sm.*

50. PEUCEDANUM.

1. P. *Silaus* (*Meadow Sulphur-wort*), leaves tripinnate, leaflets

linear-lanceolate opposite, general involucre of 1—2 leaves. *E. B. t.* 2142.

Hab. Borders of corn-fields, near Oxenford castle; and road-sides, near Kelso, *Maugh. Fl.* July. ♃.

One foot to two feet high *Umbellules* small, distant. *Flowers* pale yellow. *Fruit* ovate, furrowed, scarcely bordered.

51. CRITHMUM.

1. Cr. *maritimun* (*Samphire*), leaflets lanceolate fleshy. *Lightf. p.* 158. *E. B. t.* 819.

Hab. Rocks by the sea-side. In Galloway, *Sibbald.* Below Kirkcudbright, Kirkmaiden, between Mull and Kirkpatrick, *Lightf. Fl.* Aug. ♃.

Whole plant very succulent, pale green. *Leaves* bi- triternate. *Umbels* crowded. *Petals* small, greenish white, ovate, incurved. *Involucres* all small, ovato-lanceolate.—Makes a warm aromatic pickle.

52. HERACLEUM.

1. H. *sphondylium* (*common Cow-Parsnip*), leaves pinnated, leaflets pinnatifid incised serrated. *Lightf. p.* 158. *E. B. t.* 939.

Hab. Meadows and borders of fields, common. *Fl.* July. ♂. (♃, *Decand.*)

Coarse rank weed, 4—5 feet high. *Leaves* large, serrated, sheath inflated. A narrow-leaved var. is common, the *H. angustifolium* of some authors.—Hogs are very fond of this plant, and hence in Norfolk and Suffolk the name of *Hog-weed.*

53. LIGUSTICUM.

1. L. *scoticum* (*Scottish Lovage*), leaves biternate. *Lightf. p.* 159. *E. B. t.* 1207.

Hab. Very frequent on the rocky coasts of Scotland. *Fl.* July. ♃.

Root fusiform, reckoned a good carminative; *leaflets* large, broadly ovate, deeply serrated, rather fleshy. *Umbels* large. Eaten raw in Skye, and called *Shunis.*—The English *Ligusticum Cornubiense* is by no means of this genus; and, though supposed to be peculiar to Cornwall[a], has been long known as a native of Piedmont, and figured in Allioni. It is the *Danaa aquilegifolia* of *Decand. Fl. Gall.*

2. L. *Meum* (*common Spignel, Meu,* or *Bald-money*), all the leaflets setaceo-multipartite. *Sm. Comp. p.* 46. *Lightf. p.* 157 (*Athamanta Meum*). *E. B. t.* 2249 (*Meum athamanticum*).

Hab. Mountainous pastures, not uncommon. In Lanarkshire; about Dunkeld, Perthshire, and W. Lothian, *Lightf.* Kittochside and Cross hill, in Kilbride, *Ure.* On Cathkin hills, and about Balvie, Glasg., *Hopk.* Loch Lomond, and N. side of Loch Ness, *Mr. Murray.* Highlands, more abundant. *Fl.* June. ♃.

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[a] See *E. B.* p. 683.

Root fusiform, eaten by the Highlanders as an aromatic and carminative:—at its summits are the fibrous remains of former years' leaves. *Leaves* long, dark green, above doubly pinnate. *Flowers* yellowish; *Fruit* oblong, furrowed.—Remarkable for its setaceous multifid leaflets.

54. ANGELICA.

1. A. *sylvestris* (*wild Angelica*), leaflets equal ovate serrated. *Lightf. p.* 160. *E. B. t.* 1128.

Hab. Moist woods and marshy places, frequent. *Fl.* July. ♃.

Plant very tall, stout. *Stem* purplish. *Leaves* bipinnate. *Leaflets* large, ovate, acuminate, serrated, sometimes lobed at the base. Stalks of the *Umbels* pubescent. *A. archangelica*, which, being an inhabitant of Sweden, Norway and Lapland, is very likely to be found also in Scotland, differs principally in the terminal leaflet being lobed. See *E. B. t.* 2561.

55. SIUM.

1. S. *latifolium* (*broad-leaved Water-Parsnip*), stem erect, leaves pinnated, leaflets oblongo-lanceolate equally serrated, umbels terminal. *Lightf. p.* 1095. *E. B. t.* 204.

Hab. Sides of lakes, ponds and rivulets, but rare. Loch at the corner of the King's Park, Edinb., *Mr. Yalden*. Forth of Clyde Canal 3 m. from Falkirk, towards Glasgow, *Maugh*. *Fl.* Aug. ♃.

Stem 3—4 f. high, furrowed. *Fruit* small. *Leaflets* distant, 5 to 9 on a leaf.

2. S. *angustifolium* (*narrow-leaved Water-Parsnip*), stem erect, leaflets unequally lobed and serrated, umbels pedunculate opposite the leaves. *Lightf. p.* 160. *E. B. t.* 139.

Hab. Ditches and rivulets, but not common, *Dr. Parsons*. *Fl.* July, Aug. ♃.

Much smaller than the last. *Stem* striated. *Upper leaflets* most unequal and laciniate; *radical ones* ovate, their lowermost leaflets distant.

3. S. *nodiflorum* (*procumbent Water-Parsnip*), stem procumbent, leaves pinnate, leaflets ovate sub-equally serrated, umbels sessile opposite to the leaves. *Lightf. p.* 161. *E. B. t.* 639.

Hab. Sides of rivulets, *Lightf*. *Fl.* July. ♃.

One and a half to two f. high. *Leaflets* of the radical leaves sometimes with a lobe at the base on the upper margin. *Petals* but slightly incurved.

4. S. *repens* (*creeping Water-Parsnip*), stem creeping, leaflets broadly ovate inciso-dentate, umbels pedunculate opposite the leaves. *E. B. t.* 1431.

Hab. Sides of rivers and boggy places, rare. Side of the river Fergus, a little above the bridge of Ennis, *Mr. J. T. Mackay*. Guillon Loch, *Maugh*. *Fl.* July, Aug. ♃.

Stems 6—10 inches long. *Leaflets* 5—9.

56. SISON.

1. S. *verticillatum* (*whorled Honewort*), leaflets all capillary in whorled segments. *Lightf. p.* 1096. *E. B. t.* 395.

Hab. Moist pastures. About Greenock, *Mr. Houstoun*. Nithsdale and Galloway and in Annandale, particularly between the farm-house of Stark in Ruthwell and the bathing place on the shore, *Dr. Burgess*. Salt marshes not uncommon, about Glasgow. Banks of the Clyde from Bowling-bay to Helensburgh, plentiful; and at Luss, *Hopk.* Isle of Bute, common, *Maugh.* *Fl.* July, Aug. ♃.

Leaves mostly radical. A long main common *petiole* supports a number of opposite, capillary, multifid leaflets, whose spreading makes them appear whorled. *Stem* a foot high, slender. *Umbels* few, terminal. *Involucres* very small.

22. S. *inundatum* (*Water Honewort*), stem creeping, inferior leaves capillaceo-multipartite superior pinnatifid, umbels generally of two rays. *Lightf. p.* 161. *E. B. t.* 227 (*Hydrocotyle, Sm. Fl. Brit.*).

Hab. Lakes and ponds that are dried up in the summer. *Fl.* June, July. ♂? ☉?

Stems 4—6 inches long. Most of them capillaceo-multifid; a few upper ones pinnatifid, with the segments small, lanceolate. *Umbellules* minute, scarcely longer than the partial involucres. *Gen. involucre* wanting. *Fruit* large, ovate, striated.

23. S. *Segetum* (*Corn Honewort*), stem erect, leaves pinnate, leaflets broadly ovate serrated radical ones lobed, umbels at first drooping their rays unequal. *E. B. t.* 228.

Hab. Grass-field in the Isle of Tirey, *Dr. Walker*. *Fl.* July, Aug. ☉.

One to a foot and a half high, spreading, branched. *Leaves* few, mostly radical. *Gen. involucre* of 2 linear leaves. *Rays* various in height. *Fruit* erect, ovate, striated.

57. ŒNANTHE.

1. Œ. *fistulosa* (*common Water-Dropwort*), root creeping stoloniferous, stem-leaves pinnated their main petiole as well as the stem cylindrical tubular, umbels of very few rays. *Lightf. p.* 161. *E. B. t.* 363.

Hab. Ditches and rivulets: as between Inverkeithing and North Queen's-ferry, *Lightf.* Banks of Clyde at Bowling-bay, *Hopk.* Common along the coast below Greenock, *Mr. Murray*. *Fl.* July, Aug. ♃.

Plant 2—3 f. high, remarkably tubular and fistulous; *stem leaves* and *leaflets*, which are few and small, confined to the upper extremity of the leaves. *Umbels* small. *Gen. involucre* often wanting.

Œ. 2. *pimpinelloides* (*Parsley Water-Dropwort*), leaflets of the radical leaves wedge-shaped cloven, those of the stem linear entire very long, gen. involucre of several linear leaves. *E. B. t.* 347.

Hab. Salt marshes, rare. Banks of the Clyde at Bowling-bay, with the Œ. *fist.*; and below Dumbarton, *Hopk.* Isle of Tirey, *Dr. Walker*. Near Greenock, *Mr. Stark*. *Fl.* July. ♃.

Two f. or more high. *Umbellules* thickly crowded, forming almost spherical heads when in fruit.

3. Œ. *crocata* (*Hemlock Water-Dropwort*), all the leaflets wedge-shaped cut nearly equal, involucre of many leaves. *Lightf. p.* 162. *E. B. t.* 2313.

Hab. Banks of ditches, rivers and lakes, frequent. *Fl.* July. ♃.

Three to five f. high. Distinguished by the broad leaflets even in the very uppermost leaves. *Umbel* rather large.

B. *Umbels with a partial involucre; universal none.*

58. PHELLANDRIUM.

1. Ph. *aquaticum* (*Water Hemlock*), segments of the leaves divaricated. *Lightf. p.* 163. *E. B. t.* 684.

Hab. Ditches and ponds, but not common. *Fl.* July. ♃.

Stem 2—3 f. high, very thick below, much branched, branches spreading. *Leaves* thrice pinnate or rather pinnatifid; segments small, lanceolate, spreading, dark green. *Umbels* opposite to the leaves, rather small.—The genus scarcely differs from *Œnanthe* but in the want of a general involucre: a very unnatural character; and this is, consequently, the *Œnanthe Phellandrium* of Decandolle.

59. CICUTA.

1. C. *virosa* (*long-leaved Water Hemlock*, or *Cow-bane*), umbels opposite to the leaves, sheaths of the leaves obtuse. *Lightf. p.* 164. *E. B. t.* 479.

Hab. Sides of lakes, but rare. Side of Loch-end, *Dr. Parsons.* Pow Mill, Kinross-shire, and Marshes near Forfar Loch, *Mr. Arnott.* Otterton Loch, Fifeshire, *Maugh.* Very abundant about Glasg.; about Mugdoch, Bardowie and Dongalston Lochs; and loch near New Kilpatrick, *Hopk.* *Fl.* July, Aug. ♃.

Three to four f. high, branched. *Root* and lower part of the *stem*, which is very large, hollow and divided by transverse partitions into numerous cells. *Leaves* biternate; the radicals ones pinnated. *Leaflets* lanceolate, serrated. *Umbels* on footstalks. A deadly poison.

60. ŒTHUSA.

1. Œ. *Cynapium* (*Fool's Parsley*). *Lightf. p.* 165. *E. B. t.* 1192.

Hab. Fields and gardens, common. *Fl.* July, Aug. ☉.

One f. high. *Stem* striated, branched, very leafy. *Leaves* glabrous, doubly or the lower ones trebly pinnate; segments ovato-lanceolate, variously cut. *Umbels* terminal, on long stalks. *Umbellules* small, distant. *Partial involucres* of 3 pendent leaves all on one side; *general* none, by which it is readily known from every other umbelliferous plant.—The smell is nauseous and it is esteemed very unwholesome.

61. SCANDIX.

1. S. *Pecten Veneris* (*Needle Chervil*), leaflets cut into many linear segments, fruit and beak roughish. *Lightf. p.* 166. *E. B. t.* 1397.

Hab. Corn-fields, common. *Fl.* June, July. ☉.

Stem nearly a foot high. *Leaves* triply pinnate. *Partial involucres*

pinnate, their segments cut. *Umbellules* very small, as are the flowers. *Fruit* singularly large, oblong, striated, rough, terminated by a beak of 2 inches in length, scabrous at the edges.—In this genus it has been usual to place the *S. Anthriscus*, *odorata* and *Cerefolium*: the former I agree with Persoon in thinking should constitute a new genus, the two latter in uniting with the *Chærophylla*.

62. ANTHRISCUS.

1. A. *vulgaris* (*common Anthriscus*), bristles of the fruit hooked, stem smooth, umbels mostly lateral. *Pers. Syn. Pl. v.* 1. *p.* 820. *Lightf. p.* 166, and *E. B. t.* 818 (*Scandix Anth.*).

Hab. Waste places and dry banks, near towns and villages, common. *Fl.* June. ⊙.

Two f. or more high, swelling under each joint. *Leaves* tripinnate, slightly hairy, segments lanceolate, cut, or deeply serrated. *Umbellules* small, with small involucres. *Fruit* rather large, ovate; beak smooth, about half its length, with a line down the middle.

63. CHÆROPHYLLUM.

* *Fruit smooth* (*not striated*).

1. Ch. *sylvestre* (*smooth Cow-Parsley*), stem a little swelling below each joint glabrous, umbels on long stalks. *Lightf. p.* 167. *E. B. t.* 752.

Hab. Under hedges and the borders of fields, abundant. *Fl.* May, June. ♃.

Three f. or more high, branched. *Leaves* triply pinnate; leaflets ovato-lanceolate, deeply cut. *Umbels* at first a little drooping. *Partial involucres* of several ovato-lanceolate leaves. *Fruit* linear, oblong, smooth and glabrous.

2. Ch. *sativum* (*Garden Cow-Parsley* or *Chervil*), umbels lateral sessile, fruit a little swelling below. *Pers. Syn. Pl. v.* 1. *p.* 320. *E. B. t.* 1262 (*Scandix Cerefolium*).

Hab. Hedges and about gardens, frequent near Glasg., *Hopk. Fl.* July. ⊙.

Stem slender, 1½ or 2 f. high. *Leaves* pale yellow green, delicate, bipinnate; leaflets ovate, cut. *Umbels* sessile, lateral, of few rays, pubescent. *Partial involucres* few, on one side. *Umbellules* small. *Fruit* large, smooth, tapering upwards.

** *Fruit striated.*

3. Ch. *temulentum* (*rough Cow-Parsley*), stem rough (spotted) swelling below each joint. *Lightf. p.* 167. *E. B. t.* 1571.

Hab. Hedges, common. *Fl.* June, July. ♃.

Three f. or more high, rough with hairs. *Leaves* doubly pinnate, leaflets pinnatifid or inciso-lobate. *Fruit* linear-oblong, striated. *Umbels* at first drooping.

4. Ch. *odoratum* (*sweet Cicely*), seeds deeply sulcate (very large). *Lightf. p.* 166, and *E. B. t.* 697 (*Scandix odor.*).

Hab. Frequent in the Lowlands, in orchards and waste places, but

always near houses, so that it is probably not indigenous, *Lightf.* Arniston woods; Cliesh and Arlary, *Mr. Arnott.* Caroline Park, Edinb., *Mr. Greville.* *Fl.* May. ♃.

Whole plant highly aromatic, 2 f. and more high, stout. *Leaves* large, triply pinnate; leaflets pinnatifid, ovato-lanceolate, inciso-serrate. *Umbels* terminal, large. *Fruit* very large, linear-oblong, with deep lines; ribs somewhat winged.

5. Ch. *aureum* (*tawny-seeded Cow-Parsley*), pubescent, stems slightly swelling below the joints, leaflets very acuminate inciso-pinnatifid, seeds coloured furrowed. *E. B. t.* 2103.

Hab. Fields between Arbroath and Montrose; also near Corstorphine, Edinb., *G. Don.* *Fl.* June. ♃.

Three feet or more high, branched, aromatic. *Leaves* tripinnate; the leaflets peculiarly attenuated, at least in the upper leaves (for the radical ones are more obtuse), which distinguishes this from every other British species.

6. Ch. *aromaticum* (*aromatic Cow-Parsley*), leaflets ovato-oblong sub-acuminate serrate undivided. *Jacq. Austr. t.* 150. *D. Don's Descr. of rare Scot. Plants, p.* 7.

Hab Near Guthrie, by the road-side leading from Forfar to Arbroath, *G. Don.* *Fl.* June. ♃.

Two to three feet high, slightly pubescent below, glabrous above. *Leaves* biternate; *leaflets* large, undivided, or rarely with a small lobe near the base, pubescent beneath.—In this, as well as in *Ch. aureum*, there is sometimes a small general involucre.—*Leaves*, as Persoon observes, resembling those of *Ægopod. Podagraria.* Has a heavy aromatic smell. *D. Don.*

64. IMPERATORIA.

1. I. *Ostruthium* (*Masterwort*). *Lightf. p.* 168. *E. B. t.* 1380.

Hab. Banks of the Clyde in several places, as Ardencaple, and in the Isle of Bute, near Mountstewart; but whether indigenous or not is uncertain, *Lightf.* Near Borthwick castle, *Maugh.*, and *Mr. Shuter.* Old wall at Langland house and waste ground near Jackton, Glasg., *Ure.* Edge of woods on the side of Gair Loch, sparingly, *Mr. Murray.* Plantation opposite the house of Black hall, West Lothian; and at Milnathort, 2 m. N. from Kinross: "a naturalized plant," *Maugh.* Beechwood, opposite Aikenhead, Glasg., *Hopk.* *Fl.* June. ♃.

Stem 1 or 1½ f. high. *Leaves* biternate; leaflets large, ovato-lanceolate, sometimes lobed, unequally serrated. *Umbel* large, dense, white.

C. *Umbels without involucres, rarely general, never partial ones.*

65. SMYRNIUM.

1. S. *Olusatrum* (*Alexanders*), cauline leaves ternate petiolate serrate. *Lightf. p.* 168. *E. B. t.* 230.

Hab. Upon the sea-coast at Dunglass, on the edge of Berwickshire, *Lightf.* Sea-shore below the old Castle of Ravensheugh, between Dysart and Kirkcaldy, *Dr. Walker.* By the side of a rivulet at Kinghorn; and Dirleton castle, E. Lothian, *Maugh.* Near Colzeen castle, Ayrshire, *Mr. Murray.* *Fl.* May, June. ♂.

Stems 3—4 f. high, very stout, furrowed. *Leaves* bright yellow green, twice or (the lower ones) thrice ternate, with a very broad membranous base; *leaflets* very large, broadly ovate, lobed and serrated. *Flowers* yellow green, in very dense numerous rounded umbels. *Fruit* almost black when ripe.

66. CARUM.

1. C. *Carui* (*common Caraway*). *Lightf. p.* 169. *E. B. t.* 1503.

Hab. Rocks of Edinb. castle towards the west, *Dr. Parsons.* Isle of Oransa, *Lightf.* Meadows and pastures, occasionally about Glasg. In the haugh of Dalbeth, *Hopk. Fl.* June. ♂.—Naturalized in Britain. *Fl.* June. ♂.

Stem 1—2 f. high. *Leaves* doubly pinnate, cut into linear segments, of which the lowermost are decussate. *Umbels* dense. *Seeds* a well known officinal aromatic.

67. PIMPINELLA.

1. P. *Saxifraga* (*common Burnet Saxifrage*), radical leaves pinnate, leaflets roundish sharply serrate, those of the stem bipinnate linear. *Lightf. p.* 169. *E. B. t.* 407.

Hab. Dry pastures, very common. *Fl.* July, Aug. ♃.

Stems 10 inches to a foot high. *Umbels* at first drooping.

68. APIUM.

1. A. *graveolens* (*Smallage* or *wild Celery*), stem leaves with their leaflets wedge-shaped, stem furrowed, umbels frequently sessile. *Lightf. p.* 169. *E. B. t.* 1210.

Hab. Marshy places by the sea-side. Ditches behind Musselburgh, *Dr. Parsons. Fl.* Aug. ♂.

Two feet high. *Leaves* ternate; *leaflets* large, wedge-shaped, lobed, and cut at the extremity; the lower ones are upon long stalks, and have the leaflets rounder and truncate at bottom. *Umbellules* very small.—The origin of the *garden Celery.*

2. A. *Petroselinum* (*common Parsley*), leaves of the stem with their leaflets linear, umbels all pedunculate. *Hull, Br. Fl. p.* 309.

Hab. Rocks by the sea-side at Dunvegan in Skye, but near M'Leod's castle, *Dr Walker.* Old walls near Inverleith; on an old wall at Coltbridge, and by the road-side between Collington and Dreghorn, *Maugh.*—This is introduced into Hull's *Brit. Flora* as a native of England; and it has an equal right to be considered a native of Scotland, being naturalized, though originally an inhabitant of Sardinia.

Radical leaflets broad and lobed. This has a monophyllous *general involucre* and minute *partial ones*, and Hoffman has made of it the genus *Petroselinum.*

69. ÆGOPODIUM.

1. Æ. *Podagraria* (*Gout-weed*). *Lightf. p.* 170. *E. B. t.* 940.

Hab. Gardens and waste places. *Fl.* June. ♃.

One or one foot and a half high. *Radical leaves* twice ternate, superior ones ternate; leaflets ovate, subacuminate, unequally serrated.

3. TRIGYNIA.

70. VIBURNUM.

1. V. *Lantana* (*mealy Guelder-rose*, or *way-faring Tree*), leaves elliptico-cordate serrate veined downy beneath. *Lightf. p.* 170. *E. B. t.* 331.

Hab. Woods and hedges. At Sir John Hall's, in Dunglass glen. *Fl.* June. ♄.

A large shrub much branched, young shoots very downy.

Flowers in large dense *cymes*, white. *Cal.* teeth very minute. *Berry* purplish black.

2. V. *Opulus* (*common Guelder-rose*, or *Water-Elder*), leaves glabrous three-lobed acuminate and serrate, petioles with glands. *Lightf. p.* 170. *E. B. t.* 332.

Hab. Moist woods and hedges, not uncommon. Auchindenny woods, &c., *Maugh.* Woods between Hamilton and Lanark, &c. Banks of the Ness and other streams near Inverness, *Mr. G. Anderson*, *Hopk.* *Fl.* June. ♄.

Small *tree*, very glabrous. *Leaves* large, subcordate, broad. *Cymes* large, with white flowers; the perfect ones small, resembling the last; abortive ones in the circumference, consisting of a very large, plane, 5-lobed petal without, either *stam.* or *pistil.* *Flowers* erect. *Berries* reddish purple, drooping.

71. SAMBUCUS.

1. S. *Ebulus* (*Dwarf Elder*), cymes with 3 principal branches, leaflets lanceolate, stipules foliaceous, stem herbaceous. *Lightf. p.* 171. *E. B. t.* 475.

Hab. Way-sides, but not common. Near Dumfries on the road towards Caerlavrock castle. At Dupplin near Perth, *Lightf.* Roadside between Kittochside and Carmunnock, *Ure.* Clyde iron-works, &c., *Hopk.* Hedges at Gask, Perthshire, and near Culloden, *Mr. Murray.* Near Inverkeithing, *Mr. Stewart.* Field by the road from Edinb. to Dalkeith, *Mr. J. T. Mackay.* S. bank of the water of Leith, &c., *Maugh.* *Fl.* July. ♃.

Stem two to three feet high, angular and furrowed. *Leaves* pinnate; *leaflets* serrated. *Cyme* large, terminal, purplish. *Anthers* large, purple. *Berries* spherical, black.

2. S. *nigra* (*common Elder*), cymes with 5 principal branches, leaflets ovate, stem a tree. *Lightf. p.* 171. *E. B. t.* 476.

Hab. Woods and hedges, frequent. *Fl.* June. ♄.

A small tree, stems and branches full of light pith. *Leaves* pinnated; *leaflets* serrate. *Cymes* terminal, large, cream coloured, smelling unpleasantly. *Anth.* small, yellow. *Berries* purple black.—The bark is used by country practitioners medicinally, and the fruit is employed for wines and preserves. A variety is found with laciniated leaves.

4. TETRAGYNIA.

72. PARNASSIA.

1. P. *palustris* (*Grass of Parnassus*). *Lightf. p.* 172. *E. B. t.* 82.

Hab. Bogs and wet pastures, frequent. *Fl.* Aug. ♃.

Leaves mostly radical, on long footstalks, cordate, entire, nerved, one on the stem below the middle, sessile. *Stem* angular, from 1 inch (as I have seen it in N. Ronaldsha, and Orkney, with perfect flowers) to 8 or 10 inches high, angular. *Flower* solitary, terminal, large, very handsome, yellowish white. *Petals* broadly obovate. *Nectaries*, each an obcordate scale, with white hairs along the margin, which are terminated by a yellow, pellucid, globular gland.

5. PENTAGYNIA.

73. STATICE.

1. S. *Armeria* (*Thrift*), leaves linear, scape simple bearing a round head of flowers. *Lightf. p.* 173. *E. B. t.* 226.

Hab. Common on the muddy shores of the sea, in salt marshes, and upon the tops of the highest mountains. *Fl.* July, Aug. ♃.

Heads of *flowers* rose coloured, intermixed with scales, and having besides a brown membranous three-leaved general involucrum, terminating below in a sheathing jagged covering to the upper part of the scape.

2. S. *Limonium* (*Sea-lavender*), scape panicled rounded branched, leaves glabrous ovato-lanceolate undulate obtuse nerveless tipped with a small point. *E. B. t.* 102.

Hab. Coast of Galloway, near Kirkcudbright, common, *Maugh.*

Leaves large, radical, thick, subcoriaceous. *Flowers* crowded, secund, accompanied with membranaceous scales, bright blue.

3. S. *reticulata* (*matted Sea-Lavender*), scape repeatedly dichotomous zigzag, the lower branches sterile, leaves spathulate acute glabrous. *E. B. t.* 328.

Hab. Mull of Galloway, *Mr. Goldie.* *Fl.* Aug. ♃.

Leaves small, spreading. *Flowers* somewhat spiked on the terminal branches of the scape, purplish. Whole plant not more than from 4 to 6 inches high.

74. LINUM.

1. L. *usitatissimum* (*common Flax*), leaves lanceolate alternate, cal. leaves acute 3-nerved, petals crenate, stem subsolitary. *Lightf. p.* 173.

Hab. Corn-fields. *Fl.* July. ☉.

One or one foot and a half high, slender, branched above. *Leaves* distant. *Flowers* large, purplish blue. From the stem *flax* is made, and from the seed a valuable *oil* is extracted.

2. L. *catharticum* (*purging Flax*), leaves opposite oblong, stem dichotomous above, petals acute. *Lightf. p.* 174. *E. B. t.* 382.

Hab. Common in dry pastures. *Fl.* June, July. ☉.

Stem slender, upright, 2—6 inches high. *Flowers* gracefully drooping before expansion, white, small.

75. SIBBALDIA.

1. S. *procumbens* (*procumbent Sibbaldia*), leaves ternate, leaflets wedge-shaped tridendate. *Lightf. p.* 175. *E. B. t.* 897.

Hab. Summits of the Highland mountains, common. *Fl.* July. ♃.
A small, glaucous, slightly hairy plant. *Flower* minute, yellow, sometimes without petals. *Stam.* 5—7. *Pistils* 5—8.

6. HEXAGYNIA.

76. DROSERA.

1. Dr. *rotundifolia* (*round-leaved Sun-dew*), leaves radical orbicular spreading upon rather a short footstalk, scape with a simple raceme. *Lightf. p.* 175. *E. B. t.* 867.

Hab. Bogs and moist heathy ground, frequent. *Fl.* July. ♃.
Leaves, as in the other species, covered with pedunculated viscid glands, which retain insects. *Petioles*, too, in this species, hairy. *Scape* 2—5 inches high, glabrous. *Flowers* subsecund, small.

2. Dr. *longifolia* (*long-leaved Sun-dew*), leaves radical obovate tapering below into a long footstalk erect, scape with a simple raceme. *Lightf. p.* 175. *E. B. t.* 868.

Hab. Bogs and wet heaths. Marsh between Glasg. and Paisley, *Hopk. Fl.* July.
Scape like the last. Number of parts of the flower from 5—6.

3. Dr. *anglica* (*greater Sun-dew*), leaves radical oblongo-spathulate tapering down into a long footstalk erect, scape with a simple raceme. *E. B. t.* 869.

Hab. Arran, very abundant, *Mr. Murray*. Kirkconnell moss, 6 m. from Dumfries, *Maugh. Fl.* July. ♃.
Number of parts of the flower varying from 5 or 6, as is most usual, to 8. Larger than the last, and always retaining the characters above given in the leaves. It is much more deserving the name of *longifolia* than the last.

77. MYOSURUS.

1. M. *minimus* (*Mouse-tail*). *Lightf. p.* 176. *E. B. t.* 435.

Hab. Corn-fields of a gravelly soil. *Fl.* May. ☉.
Small plant, 2—4 inches high. *Leaves* radical, erect, linear-spathulate, fleshy. *Scapes* slender, bearing a single flower, small, greenish. *Receptacle* of the numerous germens at length becoming an inch and half or two inches long, and resembling a mouse's tail.

VI. HEXANDRIA.

1. MONOGYNIA.

* *Flowers complete, having a Cal. and Cor.*

13. Berberis. *Cal.* of 6 leaves, inferior. *Cor.* of 6 petals. *Berry* 2-seeded.

14. Peplis. *Cal.* 12-cleft, campanulate; segments alternately smaller. *Pet.* 6 (often wanting). *Caps* superior, of 2 cells.

** *Flowers spathaceous.*

1. GALANTHUS. *Perianth* superior, of 6 leaves, the three interior ones shorter, emarginate.
2. NARCISSUS. *Perianth* superior, of 6 leaves. *Nectary* campanulate, petaliform, including the *stam.*
3. ALLIUM. *Perianth* inferior, of 6 petals; *petals* ovate, sessile (flowers umbellate).

*** *Flowers naked* (*Perianth single, petaloid, without a spatha*).

10. CONVALLARIA. *Perianth* inferior, 6-cleft. *Berry* 3-celled. *Stigma* 3-gonous.
6. HYACINTHUS. *Perianth* inferior, tubular, 6-cleft, or 6-partite, the extremities spreading. *Stam.* filiform. *Caps.* obtusely triangular.
9. ASPARAGUS. *Perianth* inferior, 6-partite. *Berry* 3-celled. *Stigmas* 3.
8. NARTHECIUM. *Perianth* inferior, of 6 patent leaves. *Seeds* appendiculate at each extremity. *Stam.* hairy.
5. ORNITHOGALUM. *Perianth* inferior, of 6 leaves. *Stam.* dilated at the base.
7. SCILLA. *Perianth* inferior, of 6 leaves, spreading, deciduous. *Stam.* filiform, glabrous. *Seeds* spherical.
4. TULIPA. *Perianth* inferior, campanulate, of 6 leaves. *Style* 0. *Seeds* plane.

**** *Flowers incomplete* (*Perianth single, more resembling a Calyx*[a]).

11. JUNCUS. *Perianth* of 6 leaves, glumaceous. *Caps.* superior, 3-celled, 3-valved; *valves* bearing the partitions down their middle, to which the numerous *seeds* are fixed. (*Leaves* rounded, rarely plane, glabrous.)
12. LUZULA. *Perianth* of 6 leaves, glumaceous. *Caps.* superior, 3-celled, 3-valved; *valves* without partitions, 1 *seed* in each cell, fixed to the bottom. (*Leaves* plane, generally pilose.) (*Peplis Portula*, DIV. *. Some *Polygona*, OCT. TRIG.)

2. DIGYNIA.

15. OXYRIA. *Perianth* single, of 4 leaves, two inner ones larger. *Nut* triquetrous, with a broad winged membranous margin. *Embryo* erect, inverted. *Hill, Syst. Veget.* 10. *p.* 24. *Decand. Syn. Fl. Gall. p.* 194 (*subgenus*). *Brown in App. to Ross's Voyage, ed.* 2. *v.* 2. *p.* 192. DONIA, *Br. in Ross's Voyage, ed.* 1. RHEUM, *Wahl. Lapp.*

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[a] According to the generally received idea of *Cal.* and *Cor.* (when the covering is single), it will be hard to say whether that of the *Juncı* should be one or the other.

3. TRIGYNIA.

19. Colchicum. *Perianth* single, tubular, very long, rising from a spatha; *limb* campanulate, 6-partite, petaloid. *Caps.* 3-celled; *cells* united at the base.

18. Triglochin. *Perianth* single, of 6 concave, deciduous leaves, the three inner ones inserted higher up. *Anthers* sessile, posterior. *Capsules* 3—6, united by a longitudinal receptacle.

16. Rumex. *Perianth* single, of 6 leaves. *Nut* triquetrous, covered by the three interior valviform leaves of the *Perianth.*

17. Tofieldia. *Perianth* single, 6-partite, petaloid, with a small tripartite *involucre.* *Caps.* 3—6-celled, *cells* united at the base, many-seeded.

4. POLYGYNIA.

20. Alisma. *Cal.* of 3 leaves. *Petals* 3. *Capsules* many clustered, but distinct, not opening, 1-seeded. *Embryo* much curved.

I. MONOGYNIA.

1. GALANTHUS.

1. G. *nivalis* (*Snowdrop*). *E. B. t.* 19.

Hab. Banks about Castlemilk, Glasg., abundant, *Hopk.* Arniston woods, Edinb. in the greatest abundance, covering whole acres of ground, *Maugh.* and *Mr. Shuter.* Naturalized as in England. *Fl.* Feb. ♃.

One of the earliest heralds of spring, and, as such, independently of its graceful form, a general favourite. *Bulb* ovate. *Leaves* 2, broadly linear, glaucous green. *Flower* drooping, large, solitary, white; inner segments of the perianth with green lines.

2. NARCISSUS.

1. N. *pseudo-Narcissus* (*common Daffodil*), spatha 1-flowered, nectary campanulate erect curled at the margin obsoletely 6-cleft as long as the ovate segments of the perianth. *E. B. t.* 17.

Hab. Meadows in the neighbourhood of Culross, *Maugh.* Wood at Dunoon, scarcely indigenous, *Mr. Murray.* *Fl.* Apr. ♃.

3. ALLIUM.

* *Cauline leaves plane. Stam. alternately tricuspidate.*

1. A. *arenarium* (*Sand Garlick*), umbels bearing bulbs compact spherical, leaves linear with cylindrical sheaths, spatha short obtuse, petals roughish on the keel. *Lightf. p.* 179. *E. B. t.* 1358.

Hab. Foot of mountains in sandy soils, but not common, *Lightf.* Dupplin, Perthshire, *Mr. Winch.* *Fl.* July. ♃.

Stem 2—3 f. high, leafy below, rounded, smooth. Head of purple *flowers* dense, small. *Spatha* of, generally, 3 very short, ovate, obtuse segments. Each alternate filament three-pointed, the middle point bearing the Anther.

** *Cauline Leaves plane. Stam. all simple.*

2. A. *carinatum* (*Mountain Garlick*), umbels bearing bulbs lax, leaves linear keeled, spatha very long unequal. *E. B. t.* 1658.

Hab. Mountainous situations. East of Arbroath and banks of the Isla, below Airly castle, *G. Don. Fl.* July. ♃.

Three feet high, rounded, smooth, leafy below. *Flowers* upon long flexuose stalks, pale brownish white.

*** *Cauline Leaves rounded. Stam. alternately tricuspidate.*

3. A. *vineale* (*Crow Garlick*), umbel bearing bulbs, leaves fistulose. *Lightf. p.* 179. *E. B. t.* 1974.

Hab. Dry pastures, but not very common. Under Salisbury craigs, *Lightf.* Daldowie woods, Glasg., *Dr. Brown.* Not uncommon about Edinb., *Mr. Arnott. Fl.* June. ♃.

Stem 1½ to 2 f. high. *Bulbs* numerous. *Spatha* of 2 rather small deciduous leaves. *Flowers* on longish footstalks, which are incrassated upward, few, erect. *Petals* reddish green at the keel, shorter than the *stam.*, whose filaments, as well as anthers, are considerably protruded.

**** *Cauline Leaves rounded. Stam. all simple.*

4. A. *oleraceum* (*streaked Field Garlick*), umbel bearing bulbs lax, leaves grooved above, spatha with 2 very long points. *E. B. t.* 488.

Hab. Near St. David's, *Mr. Stewart. Fl.* July. ♃.

One foot and a half high. *Bulbs* numerous. *Flowers* reddish, with a green line, upon long waved footstalks.

***** *Leaves all radical.*

5. A. *ursinum* (*broad-leaved Garlick* or *Ramsons*), umbel nearly plane, leaves ovato-lanceolate on footstalks, scape triangular. *Lightf. p.* 179. *E. B. t.* 122.

Hab. Moist woods by the sides of rivulets, not unfrequent. *Fl.* June. ♃.

Flowers white. *Umbels* without bulbs. *Spatha* of 2 ovato-lanceolate leaves.

6. A. *Schœnoprasum* (*Chive Garlick*), leaves rounded subulato-filiform, scape rounded as long as the leaves. *Lightf. p.* 180. *E. B. t.* 2441.

Hab. Fast castle on the borders of Berwickshire, and in Nether-lorn, Argyleshire, *Lightf. Fl.* July. ♃.

One f. high. *Heads* of *flowers* compact, purplish. *Stam.* simple. *Spatha* of two short ovate leaves. *Umbel* without bulbs.

4. TULIPA.

1. T. *sylvestris* (*wild Tulip*), stem 1-flowered somewhat droop-

ing, leaves of the perianth ovato-acuminate bearded at the extremity, stam. hairy at the base, stigma obtuse. *E. B. t.* 63.

Hab. Field near Hamilton, *Mr. Murray*. Near Brechin, *G. Don. Fl.* Apr. ♃.

Flowers yellow, fragrant. *Anthers* and *pollen* yellow. *Leaves* linear-lanceolate.

5. ORNITHOGALUM.

* *Flowers yellow.*

1. O. *luteum* (*yellow Star of Bethlehem*), stem angular bearing two leaves (immediately below the umbel), flower-stalks forming an umbel undivided glabrous, leaves of the perianth lanceolate. *Lightf. p.* 180. *E. B. t.* 21.

Hab. Woods, *Sibbald*. Side of a rivulet near Auchtertool, and in the Den of Forret, 4 m. from Cupar, Fifeshire, *Maugh*. Near Dupplin, *Mr. Shillinglaw*. Woods at Cortachy castle, N. of Forfar, in abundance, and truly wild, *D. Don*. *Fl.* March, Apr. ♃.

Plant scarcely exceeding 6 inches in height, with one long, radical, broadly linear, acuminate leaf, and two unequal but much smaller ones from the top of the stalk.

** *Flowers white or greenish.*

2. O. *umbellatum* (*common Star of Bethlehem*), flowers in a corymbus, peduncles longer than the bracteas, filaments subulate. *E. B. t.* 730.

Hab. Near Glasgow, *Mr. Stark*.—Introduced into Britain. *Fl.* Apr. May. ♃.

Eight to ten inches high. *Leaves* linear, acuminate, grooved. *Flowers* large, few, 6—9, lower stalks very long, so that their flowers are of the same height as the upper ones, thus forming a corymbus, each having at the base a membranous lanceolate bractea. Segments of the *perianth* green, with a white margin, and white within.

6. HYACINTHUS.

1. H. *non scriptus* (*wild Hyacinth* or *Hare-bell*), raceme cernuous, perianth sex-partite the extremities revolute. *Lightf. p.* 182. *E. B. t.* 377 (*Scilla nutans*).

Hab. Woods not unfrequent, as in Coryton woods, and on the S. side of the river opposite Logton wood, by Dalkeith, *Lightf.* Common about Glasg., *Hopk. white fl.* Banks of the Clyde opposite Daldowie, *Hopk.*. *Fl.* May. ♃.

Leaves long, linear, channelled, acuminate. *Scape* 1 f. high. *Flower* large, purple, with two bracteas at the base of each short pedicel. Mr. Hopkirk mentions a var. with many long green bracteas to each flower, found in Bothwell woods.—The habit is very much that of the true *Hyacinthus orientalis*, &c.; but the perianth is much more deeply divided.

7. SCILLA.

1. S. *verna* (*vernal Squill*), root solid, corymb hemispherical

few-flowered, bracteas lanceolate obtuse, leaves linear channelled. *Lightf. p.* 181 (*S. bifolia*). *E. B. t.* 23.

Hab. Rocks covered with a shallow soil, near the sea; in Iona and Staffa abundantly; Duncansby head, Caithness; Braes of Armidale and Durness Coast, Sutherland, *Mr. Borrer* and *Hook.* Orkney isles, abundantly; and Shetland, *Mr. Neill. Fl.* May. ♃.

Plant 4—5 inches high. *Leaves* few, nearly as long as the scape. *Flowers* deep blue, bracteas membranaceous.—This seems to be little known on the continent. Smith considers it to be the *S. bifolia* of *Fl. Dan.*; and it is probably confined to the more northern parts of Europe.

8. NARTHECIUM.

1. N. *ossifragum* (*Lancashire Asphodel*). *Lightf. p.* 181 (*Anthericum ossif.*). *E. B. t.* 535.

Hab. Common throughout Scotland, in moorish ground. *Fl.* July, Aug. ♃.

Six to eight inches high, decumbent at the base. *Root* ereeping. *Leaves* all radical, ensiform, equi nt, striated, about half as long as the scape. *Scape* with several lanceolate scales, rather than leaves, running into bracteas as they approach the flowers. *Spike* terminal solitary. *Flower* yellow; perianth persistent, shorter than the brown prismatic capsule.

9. ASPARAGUS.

1. A. *officinalis* (*common Asparagus*), unarmed, stem herbaceous erect rounded very much branched, leaves setaceous fasciculate flexible, peduncles jointed in the middle. *E. B. t.* 339.

Hab. Sandy places by the sea-side, rare. Links near Gosford, *Maugh.* and *Mr. E. J. Maughan. Fl.* Aug. ♃.

Root creeping, throwing up numerous scaly erect stems, which, when cultivated in their early state, form the *Asparagus* of our tables; rarely in a wild state exceeding a foot in height. *Flowers* drooping, greenish white. *Berries* bright scarlet.

10. CONVALLARIA.

* *Flowers campanulate.*

1. C. *majalis* (*Lily of the Valley*), scape semicylindrical, leaves ovato-lanceolate binous, flowers racemoso-spicate campanulate drooping on short footstalks. *Lightf. p.* 182. *E. B. t.* 1035.

Hab. Woods and coppices. Scotland-Wald and Methven wood, Perthshire, *Sibbald.* Arniston and Collington woods, Edinb., *Maugh.* Near the Falls of the Clyde, plentifully, *Hopk.* Den of Rechip, *Rev. Mr. M'Ritchie.* Cliesh, *Mr. Arnott.* In a small glen called the Clough, N. of Gask, Perthshire, *D. Don. Fl.* May. ♃.

Flowers very pure white and fragrant, segments curved back. *Berries* red, spherical.

** *Flowers cylindrical.*

2. C. *verticillata* (*narrow-leaved Solomon's Seal*), leaves lanceolate whorled. *E. B. t.* 128.

Hab. Woods, very rare. The only station in Britain is Den of Rechip, 4 m. N.E. of Dunkeld, where it is said, in *E. Bot.*, to have been discovered by *Arthur Bruce, Esq.* in 1792. *Fl.* June. ♃.

Two feet high. *Leaves* numerous, bright green, 3—4 in a whorl. *Flowers* solitary, or with branched footstalks, drooping.—In Lapland, Wahlenberg tells us, this plant inhabits spots so wild that they are scarcely to be approached by any creatures but the bears.

3. C. *multiflora* (*common Solomon's Seal*), leaves ovato-elliptical alternate half embracing the rounded stem, peduncles axillary 1- or many-flowered, filaments hairy, style flexuose. *Lightf. p.* 182. *E. B. t.* 279.

Hab. Woods, but not common. About Jibber castle, near Drumlanrig, in Nithsdale, *Lightf.* Ruins of Mugdoch castle, Glasg., *Hopk.* Woods at Bothwell, *Maugh.* *Fl.* May, June. ♃.

Two feet high, naked below. *Leaves* large, marked with longitudinal nerves, secund; and *flowers* drooping in the opposite direction, white, greenish at the tips.

11. JUNCUS[a].

* *Leaves none* (*flowers all lateral*).

1. J. *arcticus* (*northern hard Rush*), scapes smooth (soft), heads of flowers compact nearly sessile, leaves of the perianth ovato-lanceolate acute rigid rather shorter than the broadly obovate capsule. *Wahl. Lapp. p.* 79. *Fl. Dan. t.* 1035.

Hab. Sands of Barry, near Dundee, *Mr. Drummond.* *Fl.* July, Aug. ♃.

This highly interesting addition to our northern Flora was discovered in the greatest abundance, and communicated to my excellent friend Chas. Lyell, Esq. of Kinnordy, by *Mr. Drummond*, a most active and intelligent botanist, and zealous naturalist; and who is about to carry on the botanical establishment, should he meet with sufficient encouragement, of the late Mr. G. Don at Forfar.—The *root* is strong, creeping far in the mud, and throwing up scapes of from 8 inches to about 1 foot in height, which altogether want the striæ on the scapes of *J. glaucus*, and are less rigid. The great distinction, however, is in the inflorescence. There is one bractea about half an inch long, lanceolate, submembranous. *Heads* rather than panicle of *flowers*, few, sometimes quite sessile, but one or two not unfrequently on peduncles about half an inch long. *Partial* or *floral bracteas* very membranous, broad, large, acute, covering wholly the very short pedicels and nearly the flower. *Perianth* of 6 ovato-lanceolate leaflets, acute, thick, rigid, very dark shining brown, almost black, with a paler line down the middle. The colour indeed and compactness of the flowers at once distinguish this species. *Fruit* obovate with a mucro, dark brown, a little longer than the perianth.

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[a] For a most valuable history of the British species of *Juncus* I must refer to the paper of J. E. Bicheno, Esq., inserted in the 12th vol. of the Transactions of the Linnæan Society.

2. J. *glaucus* (*common hard Rush*), scape deeply striated (rigid), panicle very much branched erect, leaves of the perianth lanceolate subulate membranous longer than the elliptical capsule. *Lightf. p.* 183 (*J. inflexus*). *E. B. t.* 665. *Bich. in Linn. Trans. v.* 12. *p.* 300.

Hab. Wet pastures and road-sides, occasionally, *Hopk.* Not uncommon about Edinb., *Mr. Arnott.* Shores on the coast of Fife (?), *Lightf.* *Fl.* July, ♃.

Root creeping. *Scapes* 1 foot to 2 feet high, glaucous, rigid, at the base covered with deep purple brown membranaceous shining sheaths. *Panicle* lax, erect. *Flower* slender, pale brown, with a broad green line down the middle of each leaflet of the perianth. *Bracteas* also small and acuminate. *Stam.* 6 in my specimens.

3. J. *effusus* (*soft Rush*), scapes very faintly striated (soft), panicle loose very much branched spreading, leaflets of the perianth lanceolate acuminate, rather longer than the obovate obtuse capsule. *Lightf. p.* 183. *E. B. t.* 836. *Bich. in Linn. Trans. v.* 12. *p.* 303.

Hab. Wet and marshy grounds, common. *Fl.* July. ♃.

Distinguished from the last by its soft, pliable, almost smooth, green scapes, and spreading denser and shorter panicles, in which last particular it seems intermediate between that and the following.—Excellent for plaiting into mats, chair-bottoms, &c., and wicks of candles are made of the pith.

J. *conglomeratus* (*round-headed Rush*), scapes very faintly striated (soft), panicle much branched very dense globular, leaflets of the perianth lanceolate acute about as long as the broadly ovate very obtuse capsule, stam. 3. *Lightf. p.* 183. *E. B. t.* 1835. *Bich. in Linn. Trans. v.* 12. *p.* 302.

Hab. Wet and marshy ground, frequent. *Fl.* July. ♃.

Panicle very dense. *Scapes* much like the last, and employed for the same purposes.

J. *filiformis* (*slender Rush*), scapes filiform, panicle of very few flowers (from nearly the middle of the culm), capsules rotundato-ovate shorter than the perianth. *E. B. t.* 1175. *Bich. in Linn. Trans. v.* 12. *p.* 304.

Hab. Several parts of Scotland, *G. Don.* Its natural situation is the stony margins of lakes. *Fl.* July, Aug. ♃.

Root creeping, throwing up many slender culms, 6—10 inches high. *Panicle* of few flowers, pale green. *Leaflets* of the perianth lanceolate, subacuminate. There is a small lanceolate bractea tapering to a long and sharp point. The floral bracteas are few and small, obtuse, pale green as is the whole flower.

** *Leaves all radical* (*flowers terminal*).

J. *squarrosus* (*Heath Rush*), leaves setaceous (rigid) grooved, panicle terminal elongate compound, capsules elliptical ovate, *Lightf. p.* 184. *E. B. t.* 933.

Hab. Moorish heathy ground, common. *Fl.* July. ♃.

Whole plant very rigid, 6 inches to a foot high. *Leaves* sub-recurved, about half as long as the scape. *Bracteas* lanceolate, membranaceous. *Leaflets* of the perianth ovato-lanceolate, shining brown, with a pale line down the middle, and scariose at the edges. *Capsule*, as in almost all the genus, tipped with a short mucro, the remains of the style; palish brown.

7. J. *capitatus* (*capitate Rush*), leaves filiform (soft) plane or grooved above, heads of flowers sessile terminal shorter than the bractea, leaflets of the perianth acuminato-aristate. *Willd. Sp. Pl.* 209. *J. supinus*, *G. Don's Fasc. No.* 85. and *D. Don's MSS. ined.*; *Bich. in Linn. Trans. v.* 12. *p.* 317. *J. Ericetorum*, *Decand. Fl. Gall.*

Hab. The highest parts of Ben Lawers, *G. Don.* It does not appear, however, on the continent, to be at all an alpine species.

Whole plant only from 2—4 inches high, flaccid. *Leaves* entirely radical, about half its length, erect. *Heads* rather large, of from 3—6 flowers, sessile, occasionally proliferous, admirably distinguished by the setaceous inclined bractea, with its sheathing membranaceous base (which is larger than the heads of flowers), and by the acuminato-aristate *perianth*. It is a very distinct species, and well figured in Sturm's excellent little Flora of Germany.

8. J. *triglumis* (*three-flowered Rush*), leaves linear-subulate compressed, heads terminal erect of about 3 flowers sessile longer than the membranaceous involucre, leaflets of the perianth obtuse longer than the elliptical capsule. *Lightf. p.* 186. *t.* 9. *E. B. t.* 899. *Bich. in Linn. Trans. v.* 12. *p.* 319.

Hab. Highland mountains, very common, especially the more elevated, in boggy places. *Fl.* July, Aug. ♃.

Four to six inches high. *Leaves* short, with sheathing bases around the stem, but truly radical. *Involucres* two, broadly ovate, patent, deep brown, as well as the leaflets of the perianth, with paler edges.

9. J. *biglumis* (*two-flowered Rush*), leaves linear-subulate compressed, heads terminal a little leaning of 2 flowers one of them pedicellate shorter than the foliaceous involucre, leaves of the perianth obtuse longer than the turbinate emarginate capsule. *Lightf. p.* 1100. *E. B. t.* 898. *Bich. in Linn. Trans. v.* 12. *p.* 319.

Hab. Tops of the Highland mountains, rather rare. Mal-ghyrdy and Ben Teskerney, in Breadalbane, *Dr. Stuart.* Mountains of Breadalbane, Cairn-gorum, Clova, &c., *G.* and *D. Don.* Goat-hill in Arran, Ben Lomond, Ben Nevis, and on the Links of St. Fergus, *Mr. Murray.* *Fl.* Aug. ♃.

Generally smaller than the last; most distinct in the bracteas and capsules.

*** *Culms leafy.*

† *Leaves nearly plane, but grooved above.*

10. J. *castaneus* (*clustered alpine Rush*), leaves subulate grooved and laterally compressed, heads generally single sessile or pe-

duncnlate shorter than the bractea, capsules ovate, culm unifoliate. *E. B. t.* 900. *Bich. in Linn. Trans. v.* 12. *p.* 321.

Hab. Ben Challum, *Dr. Stuart* (*in Bich.*). Near the summit of Ben Lawers, *Mr. Dickson* and *Mr. J. Mackay*. Fion Glen, behind Craig Calliach, Breadalbane, *Mr. Borrer*.—Always growing in micaceous soil. *Fl.* July. ♃.

This interesting plant is, I believe, peculiar to Scotland, and, as far as I know, to the places above mentioned. It is quite unlike any other. *Root* throwing out runners. *Culm* 8—10 inches high, erect. *Leaves* all butone radical, with sheathing membranous bases; *that* one is sometimes, but by no means generally, near the summit. *Heads* of from 3—5 acute flowers, of a dark brown colour. *Capsules* almost black. Mr. Bicheno describes the leaves as jointed at the top; my specimens do not appear so. *Juncus Jacquini*, with which this has been confounded by some, is totally different, being more allied to *J. trifidus*, quite destitute of leaves below, with never more than one head, of remarkably acuminated flowers. The figure in *E. Bot.*, which my friend Mr. Bicheno finds fault with, admirably accords with my specimens of *castaneus*, and cannot be assimilated with *J. Jacquini*.

11. J. *trifidus* (*three-leaved Rush*), sheaths fringed those at the base of the culm leafless, bracteas foliaceous very long grooved, heads of about 3 flowers terminal, culm unifoliate. *Lightf.* *p.* 183. *t.* 9. *E. B. t.* 1482. *Bich. in Linn. Trans. v.* 12. *p.* 314.

Hab. Highland mountains, abundant. *Fl.* July, Aug. ♃.

ery unlike any other British *Juncus*. *Roots* creeping. *Lower sheaths* with, at most, a short awn, scarcely to be termed a leaf, and that only in the superior of the radical sheaths. A solitary leaf on the stem generally near the summit, 2 or 3 inches long, linear-setaceous. *Bracteas* 2 under each head of 1 or 3 flowers precisely similar to the leaf just described.

12. J. *bulbosus* (*round-fruited Rush*), culm simple leafy compressed, leaves linear-setaceous grooved, panicle terminal compound subcymose generally shorter than the bractea, capsules rotundato-ovate longer than the obtuse incurved leaflets of the perianth. *Lightf. p.* 184. *E. B. t.* 934. *Bich. in Linn. Trans. v.* 12. *p.* 307 (*J. compressus*).

cœnosus, panicle nearly simple few-flowered, longer than the bractea. *J. cœnosus*, *Bich. in Linn. Trans. v.* 12. *p.* 309.

Hab. Wet marshy pastures, common. *β*. Salt marshes, common, *D. Don. Fl.* Aug. ♃.

ght inches to a foot high. *Leaves* mostly radical, rather long. I have the *J. cœnosus*[a] from Mr. Bicheno himself, but I cannot find it to differ at all in the capsule from *J. bulbosus*. Both are perhaps a little narrower at the base than at the summit.

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[a] At first I took this plant for the *J. bothnicus*, and I am now by no means sure that the Lapland plant is really distinct, though it has narrower capsules.

13. J. *bufonius* (*Toad Rush*), culm dichotomous above panicled, leaves filiform setaceous grooved, flowers solitary unilateral mostly sessile, capsules ellipticol-ovate much shorter than the very acuminated leaflets of the perianth. *Lightf. p.* 185. *E. B. t.* 802. *Bich. in Linn. Trans. v.* 12. *p.* 311.

Hab. Moist and watery places, especially such as have been overflowed in the winter. *Fl.* Aug. ⊙.

From 4—6 inches high. *Leaves* few, slender, only one on the stem, generally near the middle. The divisions of the culm, as they are called, more properly, I think, belong to the panicle, at the base of which are foliaceous *bracteas*. Very pale. *Flower* green, with membranous white margins to the leaflets of the *perianth*. May not the var. β. of Smith, the *Juncus* No. 13 Dill. in *Ray Syn.* be the *J. Tanageja?* I strongly suspect it. If so, the capsules should be as long as the perianth, besides the other characters mentioned by Dill.

14. J. *tenuis* (*slender spreading Rush*), culm above shortly dichotomous panicled, leaves linear-setaceous grooved, flowers solitary but approximate mostly sessile, capsules nearly spherical shorter than the very acuminated leaflets of the perianth. *Pursh Fl. Am. v.* 1. *p.* 228. *J. gracilis*, *E. B. t.* 2174. *Bich. in Linn. Trans. v.* 12. *p.* 313. *D. Don*, *MSS. ined.*

Hab. Moist mountains of Clova, *D. Don.* *Fl.* Aug. ♃?

A foot or more high, approaching in many respects, as Smith observes, to *J. bufonius*, yet really distinct. *Radical leaves* several. *Culm* naked to the division near the top, where is *one leaf* immediately beneath the *foliaceous bracteas*. In the axils of the forks are 2 or 3 large nearly sessile flowers, and two or three unilateral ones on the branches. The *capsule* is certainly very different from that of *J. bufonius*, and Smith does not appear to have seen it in a perfect state. This plant precisely accords with specimens I have received from America, through my friend F. Boott, Esq., of the *J. tenuis* of Pursh.

15. J. *uliginosus* (*little bulbous Rush*), "leaves setaceous grooved, flowers three together sessile, capsule obtuse longer than the perianth, culm bulbous rooting," *Bich. E. B. t.* 801. *Bich. in Linn. Trans. v.* 12. *p.* 315.

Hab. Extremely common, *Mr. Arnott.* *Fl.* Aug. ♃.

"This plant has till lately been in a very unsettled state. It is not readily distinguishable in some states from other species; but its blunt capsule will enable the botanist to separate it from *J. lampocarpus* and *acutiflorus*, and, besides the diagnostic marks mentioned under *J. supinus* (*J. capitatus* of this work) and *J. subverticillatus*, the opaque chocolate-coloured cal. are very constant characters." —I give the character and some remarks from Mr. Bicheno's paper of this species, established by Sibthorpe, and said to be so common in Great Britain; but of which foreign botanists seem to be silent, and with which I confess myself to be very imperfectly acquainted.

†† *Leaves rounded or subcompressed* (*divided internally by transverse*

partitions, which often, in a dry state, give a jointed appearance to the leaves).

16. J. *subverticillatus* (*whorled Rush*), "cauline leaves subulate nodoso-articulate, panicle corymbose, heads of about 5 flowers fasciculato-verticillate, capsule obtuse as long as the striated perianth." *Bich. in Linn. Trans. v.* 12. *p.* 322.

Hab. Marshes N. of Glasg., *G. Don. Fl.* Aug. ♃.

Of this, likewise, I know but little, having no authentic specimen. There is a figure of the *J. subverticillatus* of Willd. in Host's splendid *Gram. Austr.*, but neither do Host or Willdenow speak of the jointed leaves; and the former considers it to be the *J. uligin.* of Sm.

17. J. *acutiflorus* (*sharp-flowered Rush*), leaves nodoso-articulate subcompressed, panicle terminal very compound, leaves of the perianth lanceolate nearly as long as the narrow ovate subacuminate capsule. *Lightf. p.* 184? and *E. B. t.* 238 (*J. articulatus*). *Bich. in Linn. Trans. v.* 12. *p.* 323.

Hab. Bogs, very common, *G. Don. Fl.* July, Aug. ♃.

One foot to two feet high, erect. *Leaves* 3—4 on a stem, very distinctly nodoso-articulate, when dry. *Panicle* diffuse, in fr. spreading. *Flowers* two or three together, greenish brown. General *bracteas* short, membranaceous, scarcely leafy.

18. J. *lampocarpus* (*shining-fruited Rush*), "leaves compressed, panicle terminal compound erect, 3 interior leaves of the perianth rather obtuse, capsule acute triquetrous shining," *Bich. E. B. t.* 2143. *Bich. in Linn. Trans. v.* 12. *p.* 325.

Hab. Bogs very common, *G. Don. Fl.* July, Aug. ♃.

"This plant in an advanced state is easily known from *J. acutiflorus* and *obtusiflorus* by its large shining dark capsules. While early in flower, the best marks are the more simple panicle and somewhat obtuse cal." In my specimens from Mr. Bicheno, I find no difference between the perianth of this and the *J. acutifl.*, and the shape of the capsule is ovate and subacuminate.

19. J. *obtusiflorus* (*blunt-flowered Rush*), leaves rounded nodoso-articulate, panicle very much compounded spreading, leaflets of the perianth very obtuse as long as the capsule. *E. B. t.* 2144. *Bich. in Linn. Trans. v.* 12. *p.* 327.

Hab. Marshes near Forfar, rare, *D. Don. Fl.* Aug. ♃.

Whatever doubt may be entertained as to *J. lampoc.* being distinct from *J. acutifl.*, there can be none about this. Its *panicles* are remarkably compound and branched, and the leaflets of the perianth are singularly obtuse and convex. My specimens do not possess ripe capsules. Bicheno describes them as oval and mucronate. Smith figures them as broadly obovate. All in this division have 3 longitudinal angles.

20. J. *polycephalus* (*many-headed Rush*), leaves subulate rounded articulate, panicle terminal erect di-trichotomous, branches nearly simple, heads of many flowers lateral and terminal nearly sessile, leaflets of the perianth lanceolate acute rather

shorter than the elliptical-ovate somewhat obtuse capsule. *D. Don, MSS. ined.*

Hab. Scotch Alps, *G. Don. Fl.* ——. ♃.

This has a very peculiar habit, and differs from all the other species of this division by the very simple ramifications of the panicle and the few but large heads containing from 5 to 8 spreading flowers, each upon a short pedicel.

12. LUZULA.

1. L. *maxima* (*great hairy Wood-rush*), leaves hairy, panicle subcymose doubly compound, peduncles elongate of about 3 flowers, leaflets of the perianth aristate as long as the capsule. *Lightf. p.* 186, and *E. B. t.* 737 (*Juncus sylvaticus*). *Bich. in Linn. Trans. v.* 12. *p.* 331 (*L. sylvatica*).

Hab. Woods and shady places. Banks of the river at Rosslyn, *Dr. Parsons. Fl.* May. ♃.

One to one foot and a half high. *Leaves* broad, shining, striated. Floral *bracteas* ciliated. *Caps.* with a very sharp point, deep brown. *Seeds* elliptical-ovate, with scarcely any crested appendage on the top.

2. L. *pilosa* (*small hairy Wood-rush*), leaves hairy, panicle subcymose, peduncles 1-flowered bent back, leaflets of the perianth acuminate rather shorter than the obtuse capsule. *Lightf. p.* 186, and *E. B. t.* 736 (*Juncus pil.*). *Bich. in Linn. Trans. v.* 12. *p.* 329.

Hab. In woods, frequent. *Fl.* Apr. May. ♃.

Much smaller than the last. *Flower* dark brown, single. *Peduncles* reflexed. *Seeds* with a curved appendage at the top.

3. L. *Forsteri* (*narrow-leaved hairy Wood-rush*), leaves hairy, panicle subcymose but little branched, peduncles 1-flowered erect, leaflets of the perianth narrow acuminate a little longer than the acute capsule. *E. B. t.* 1293 (*Juncus Forst.*). *Bich. in Linn. Trans. v.* 12. *p.* 330.

Hab. Fir-woods E. of Forfar, *G. Don. Fl.* Apr. May. ♃.

Much slenderer than the last in every part. *Peduncles* erect. *Caps.* acute, mucronated. *Seed* with a large oblong crested appendage on the top.

4. L. *campestris* (*small hairy Wood-rush*), leaves hairy, spikes sessile and pedunculated, leaflets of the perianth acuminate longer than obtuse capsule. *Lightf. p.* 186, and *E. B. t.* 672 (*Juncus camp.*). *Bich. in Linn. Trans. v.* 12. *p.* 334.

β. taller, with the spikes of flowers collected into one almost orbicular head. *J. erectus, Pers. Syn. fid. Bich. J. sudeticus, Willd.?*

Hab. Frequent in dry pastures. β. Not uncommon in moist moorish ground. *Fl.* Apr. ♃.

From 4 to 6 or 8 inches, or in β. a foot, high. *Flowers* collected into short ovate spikes, one of which is generally sessile, the rest pedunculate.

5. L. *spicata* (*spiked Wood-rush*), spike drooping compound, spikelets shorter than their subdiaphanous mucronated bracteas, leaflets of the perianth acuminato-aristate about as long as the rotundate capsule. *Lightf. p* 187, and *E. B. t.* 1176 (*Juncus spic.*). *Bich. in Linn. Trans. v.* 12. *p.* 337.

Hab. Highland mountains, common. *Fl.* July. ♃.

Six to eight inches high, slender. *Leaves* small, narrow, somewhat grooved, hairy only at the margins of the sheaths. *Spike* dark coloured, interrupted near the base. *Caps.* very dark shining brown, acute. Well distinguished by its drooping compound spike.

13. BERBERIS.

1. B. *vulgaris* (*common Berberry*), racemes pendulous, spines three-forked, leaves obovate ciliato-serrate. *Lightf. p.* 178. *E. B. t.* 49.

Hab. Hedges and bushy places. About Hamilton, *Dr. Parsons.* About Lanark, plentiful, *Hopk.* Glen Lyon; and Edenshead, near Auchtermuchty, *Mr. Arnott.* *Fl.* May, June. ♄.

Shrub with upright, twiggy stems. *Flowers* yellow. *Stamens* highly curious in their formation, and in their elastic property when touched. *Berries* oblong, a little curved, red, tipped with the black *stigma:* a pleasant acid, much used for preserves.

14. PEPLIS.

1. P. *Portula* (*Water Purslane*), flowers axillary solitary, leaves obovate. *Lightf. p.* 187. *E. B. t.* 1211.

Hab. Places that have been overflowed in the winter, not uncommon, *Lightf.* Banks of Huggenfield and Frankfield Lochs, Glasg., *Hopk.* Braid hill marshes, Edinb., *G. Don.* *Fl.* July, Aug. ⊙.

Plant 5—6 inches long, creeping, little branched. *Leaves* opposite, glabrous, tapering at the base. *Flowers* small, greenish red. *Petals* very minute, inserted on the *cal.*, often wanting.

2. DIGYNIA.

15. OXYRIA.

1. O. *reniformis* (*Kidney-shaped-leaved Oxyria*). *Lightf. p.* 190, and *E. B. t.* 910. *Rumex digynus.*

Hab. Alpine parts of Scotland, on moist rocks, abundant. *Fl.* July, Aug. ♃.

Stem 8—10 inches high, with rarely more than 1 leaf, often naked. *Radical leaves* numerous, all reniform, with an obtuse sinus on the top, on long footstalks, with membranaceous stipules at their base. *Racemes* and *peduncles* branched, with minute, ovate, membranous, bracteæ at the base of each ramification. *Pedicels* incrassated upwards. *Flowers* erect, small. *Stam.* 6, shorter than the divisions of the concave perianth. *Pistil* nearly orbicular, compressed, notched, with 2 spreading feathery styles. *Fruit* a *nut*, inclosed in an utricle, with a remarkably broad-winged border, tipped with the styles in a

rather deep notch, and having at the base the pointed perianth not at all enlarged.

This is remarkably different in leaves from *Rumex*. It is the *Donia sapida* of Brown, in the first ed. of *Ross's Voyage to the Arctic Regions*, but was previously named *Oxyria* by Decand. Wahlenberg considers it a *Rheum* (or Rhubarb) with one third of the parts of fructification removed.

3. TRIGYNIA.

16. RUMEX.

* *Flowers all perfect. Inner and enlarged valves of the Perianth with a tubercle* (*graniferous*). (*Lapatha* or *Docks*).

† *Valves entire.*

1. R. *aquaticus* (*great Water-dock*), valves ovate entire bearing small grains, leaves lanceolate acute, the lower ones cordate at the base. *Lightf. p.* 190. *E. B. t.* 2104.

Hab. Ditches and by river-sides. Banks of the Clyde at old Kilpatrick, *Hopk.* Side of the Tay, near Perth, *Mr. Brodie.* Ditches near Meikleour, Perthshire, *Mr. Murray.* *Fl.* July, Aug. ♃.

The largest of our Docks, 3—5 feet high. Some *leaves* a foot and a half long. *Root* large, very astringent.

2. R. *crispus* (*curled Dock*), valves very large cordate entire reticulated bearing grains, leaves lanceolate waved acute. *Lightf. p.* 188. *E. B. t.* 1998.

Hab. Way-sides and near houses, frequent. *Fl.* June, July. ♃.

Two or three feet high. Lower *leaves* broader; *all* crisped at the margin. *Whorls* of *flowers* very numerous and crowded. Distinguished readily by the large, broadly cordate, reticulated, green, membranous valves, some of which (not all, in my specimens) bear an ovate orange-coloured grain, or tubercle.

3. R. *sanguineus* (*bloody-veined Dock*), valves oblong (small) entire, one, at least, bearing a grain, leaves lanceolate somewhat heart-shaped. *E. B. t.* 1533.

Hab. Woods and waste places. King's park, Edinb., *Mr. P. Neill.* Abercorn woods, Edinb., *Maugh.* Bothwell woods, sparingly, *Hopk.* Dupplin, *Mr. Arnott* and *Mr. Greville.* *Fl.* July. ♃.

Two or three feet high, much branched. *Leaves* generally with red veins, sometimes green (*Sm.*). *Flowers* in small distant whorls, bare of leaves, except the lower ones.

†† *Valves toothed.*

4. R. *acutus* (*sharp Dock*), valves oblong somewhat toothed all bearing grains, leaves cordato-oblong acuminate, whorls leafy. *Lightf. p.* 188. *E. B. t.* 724.

Hab. Moist deep soils, under hedges and in pastures, frequent, *Lightf.* *Fl.* July. ♃.

Whorls small, distant, each subtended by a small leaf; valves subden-

tate, and each graniferous. Are these sufficient marks to distinguish it from *R. sanguineus?*

5. R. *pulcher* (*Fiddle Dock*), valves oblong toothed one of them principally bearing a grain, radical leaves panduriform, stem smooth diffuse. *Lightf. p.* 189. *E. B. t.* 1576.

Hab. Way-sides in dry places, *Sibbald. Fl.* July. ♃.

Stems very straggling. *Whorls* small, distant, leafy.

6. R. *obtusifolius* (*broad leaved Dock*), valves ovate toothed one principally bearing a grain, radical leaves ovato-cordate obtuse, stem roughish. *Lightf. p.* 189. *E. B. t.* 1999.

Hab. Way-sides and waste places, frequent. *Fl.* July. ♃.

Two to three feet high. *Whorls* rather close, somewhat leafy. Distinguished by its broad and large radical leaves, which are generally crisped at the margin. *Stem* scabrous between the elevated lines which form the striæ.

7. R. *maritimus* (*golden Dock*), valves deltoid fringed with setaceous teeth-bearing grains, leaves linear-lanceolate, whorls much crowded. *E. B. t.* 725.

Hab. Marshes principally near the sea. *Fl.* July, Aug. ♃.

Well distinguished from every preceding species by its narrow leaves, and singularly setaceo-spinous, excessively crowded, and bright coloured valves. Lightfoot's *R. maritimus* seems rather to belong to the next species.

8. R. *palustris* (*yellow Marsh Dock*), valves lanceolate with short setaceous teeth near the base bearing grains, leaves linear-lanceolate, whorls distant. *Lightf. p.* 188 (*R. maritimus*). *E. B. t.* 1932.

Hab. Marshes. Angus-shire, *G. Don. Fl.* July. ♃.

I fear that future observations will prove this to be but a var. of *R. maritimus*, with more distant whorls of fewer flowers, less bright coloured valves, with shorter setaceous teeth.

** *Flowers diœcious, inner enlarged valves of the perianth without any tubercle or grain.* (*Acetosæ* or *Sorrels.*)

9. R. *Acetosa* (*common Sorrel*), leaves oblongo-sagittate their segments bent towards the petiole. *Lightf. p.* 191. *E. B. t.* 127.

Hab. Meadows and pastures, common. *Fl.* June. ♃.

One foot to two feet high. *Valves* large, purplish, cordate, obtuse, membranous, reticulated with veins; without *grains* in my specimens.

10. R. *acetosella* (*Sheep's Sorrel*), leaves lanceolato-hastate their acute lobes spreading or even recurved. *Lightf. p.* 191. *E. B. t.* 1674.

Hab. Dry pastures, frequent. *Fl.* May—July. ♃.

Variable in size, which is from 2—10 inches, and in the *leaves;* for sometimes only the radical ones are of the shape above described, at other times many of the cauline ones are so too; the rest are

lanceolate, more or less petiolate, entire. Every part much smaller than in the last species.

17. TOFIELDIA.

1. T. *palustris* (*Scottish Asphodel*), spike ovate, stem glabrous filiform leafless, petals obovate obtuse, germen oblong 3-lobed, involucre at the base of the pedicel. *Lightf. p.* 181 (*Anthericum calyculatum*). *E. B. t.* 536.

Hab. Highland mountains, in rather elevated situations, not uncommon. *Fl.* July, Aug. ♃.

Scarcely a span high. *Leaves* all radical, 2 inches long, linear, ensiform, equitant. *Flowers* small, white.

18. TRIGLOCHIN.

1. Tr. *palustre* (*Marsh Arrow-grass*), fruit three-celled nearly linear. *Lightf. p.* 192. *E. B. t.* 366.

Hab. Wet meadows and by the sides of ditches in marshy situations, plentiful. *Fl.* Aug. ♃.

Leaves all radical, linear, fleshy, slightly grooved on the upper side, sheathing, membranous at the base. *Scape* 8—10 inches high, terminating in a lax simple *spike* or *raceme*. *Flowers* small, greenish. *Anthers* sessile, within each concave division of the *perianth*. *Capsules* 3, linear, united by a common receptacle so as to form one 3-celled fruit, each separating by the base, and suspended by the extremity, never opening.

2. Tr. *maritimum* (*Sea-side Arrow-grass*), fruit 6-celled ovate. *Lightf. p.* 192. *E. B. t.* 255.

Hab. Salt marshes, frequent. Banks of the Clyde, at Kilpatrick and Bowling Bay, *Hopk.* *Fl.* May—Aug. ♃.

Larger than the last and stouter, differing essentially in the fruit, which is formed of 6 distinct *capsules*, forming a broadly ovate fruit, and not separating from the base and suspended by the point as in the *T. palustre*. Even in flower the same distinction is observable in the germens as in the fruit.

19. COLCHICUM.

1. C. *autumnale* (*Meadow Saffron*), leaves plane broadly lanceolate erect. *Lightf. p.* 192. *E. B. t.* 133.

Hab. Low meadows, but not common. Alloa, the seat of Mr. Erskine, *Lightf.* *Fl.* Sept., Oct. ♃.

Bulb solid. *Flowers* appear in autumn, 2—3 in succession, springing from the bulb, with a very long narrow tube, surrounded at the base with a membranous sheath. *Stam.* inserted on the divisions of the pale purple *perianth*. *Germen* at the base of the bulb, its long styles running up the whole length of the tube. The *leaves* appear the following spring, and wither in the summer.

20. ALISMA.

1. A. *Plantago* (*great Water Plantain*), leaves ovate acute, fruit depressed, capsules obtusely trigonal. *Lightf. p.* 193. *E. B. t.* 837.

Hab. Banks of lakes and rivers, frequent. *Fl.* July. ♃.

Two to three feet high. *Leaves* all radical, on long footstalks. *Scape* branched upward, branches whorled, bracteated, compound. *Flowers* pale rose colour. *Embryo* singularly curved, like a horse-shoe, as in the whole genus.—A var. is mentioned by Mr. Hopkirk with lanceolate leaves.

2. A. *ranunculoides* (*lesser Water Plantain*), leaves linear-lanceolate, fruit globose squarrose, capsules acute. *Lightf. p.* 193. *E. B. t.* 326.

Hab. Ditches and bogs, but not common. Sides of lochs in Isla, *Lightf.* Marsh beyond Possil, Glasg., *Hopk.* N. side of Loch Leven and loch W. of Dunning, *Mr. Arnott.* Duddingston Loch, and Castle Loch, at Lochmabin, *Maugh.* In the Hunting Bog, near Edinb., *Mr. P. Neill.* Burntisland, *G. Don.* *Fl.* Aug. ♃.

Much smaller than the last, with flowers larger, paler coloured, in umbels, which are sometimes proliferous. But the most essential difference is to be found in the germens or fruits.

VII. HEPTANDRIA.

1. MONOGYNIA.

1. Trientalis. *Cal.* of 7 leaves. *Cor.* in 7 segments, regular and flat. *Berry* dry, of 1 cell, many seeds.

1. MONOGYNIA.

1. TRIENTALIS.

1. T. *europæa* (*Chick-weed Winter-green*). *Lightf. p.* 196. *E. B. t.* 15.

Hab. Sides of mountains and in woods, especially in the Highlands. On Ben Lomond, about 1 mile of the way up; and Duke of Athol's woods at Blair, abundantly, *Lightf.* Cliesh, *Mr. Arnott.* Blackhouse heights, Selkirkshire, *Mr. Stewart.* Aberfoyle, *Rev. Dr. Grahame.* Cluny, *Rev. Mr. M'Ritchie.* Woods, Dunkeld, especially Dungarthill; near Stanly, and field of Culloden; Loch Ransa, Arran; and woods, Dumblane, *Mr. Murray.* Strathbran, Perthshire, *Dr. Walker.* *Fl.* June. ♃.

Root creeping. *Stems* simple, 4—6 inches high, with 2 or 3 small distant leaves, and 4—7 terminal, whorled, large, obovato-lanceolate ones, from the centre of which arise 3—4 slender flowerstalks, about 1 inch long, each terminated by a rather large, white, at first drooping flower. *Leaflets* of *cal.* very narrow, almost subulate: the *segments* of *cor.* lanceolate. *Germ.* superior, roundish. *Capsule* white. *Pericarp* filmy. *Seeds* few, on a spongy central receptacle.

VIII. OCTANDRIA.

1. MONOGYNIA.

* *Flowers complete (cal. and cor.).*

6. Acer. *Cal.* 5-cleft, inferior. *Pet.* 5. *Germen* 2-lobed. *Capsules* (*Samaræ*) 2, united at the base, each with a long winged membrane, 1-celled, 1—2-seeded.

1. Epilobium. *Cal.* 4-partite, superior, deciduous. *Pet.* 4. *Caps.* elongated, obtusely 4-sided, 4-celled, 4-valved, many-seeded. *Seeds* comate.

2. Vaccinium. *Cal.* 4-dentate, superior. *Cor.* of 1 petal, campanulate, 4-fid. *Anthers* with two pores. *Berry* globose, 4-celled, many-seeded.

3. Erica. *Cal.* of 4 leaves. *Cor.* of 1 petal, limb 4-fid. *Anthers* before flowering connected by two lateral pores. *Caps.* 4-celled, 4-valved, dissepiments from the middle of the valves.

4. Calluna. *Cal.* double, 4-leaved, inner one coloured. *Caps.* with the dissepiments opposite the margins of the valves, and separating from them.—The rest as in *Erica*.

(*Monotropa*, Dec. Mon.)

** *Flowers incomplete.*

5. Daphne. *Perianth* single, resembling a corolla, inferior, 4-fid. *Berry* 1-seeded.

(Digynia.)

(*Polygona*, Ord. Dig. *Chrysosplenium* and *Scleranthus*, Dec. Dig.)

2. TRIGYNIA.

7. Polygonum. *Perianth* single, 5-partite, resembling a corolla, inferior. *Fruit* a 1-seeded *nut*.

3. TETRAGYNIA.

9. Adoxa. *Cal.* half inferior, 3-cleft. *Cor.* superior, 4—5-cleft. *Anth.* terminal, 1-celled. *Berry* 4—5-celled.

8. Paris. *Cal.* of 4 leaves. *Pet.* 4. *Cells* of the *Anth.* fixed, one on each side the middle of a subulate *filament*. *Berry* 4-celled, 4-seeded.

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1. MONOGYNIA.

1. EPILOBIUM.

* *Flowers irregular. Stam. bent down.*

1. E. *angustifolium* (*Rose-bay Willow-herb*), leaves scattered linear-lanceolate veined glabrous, flowers irregular subspicate, stam. declined. *Lightf. p.* 197. *E. B. t.* 1947.

Hab. Among rocks in woody places, not uncommon, especially in the Coryton woods and rocks to the E. of the Kirk of Shots, near Hamilton, *Dr. Parsons*. Near Loch Lutnaig, 20 m. W. of Sterling, by the road from Tyndrum, *Dr. Stuart*. Habbie's How, Pentland hills. In Collington and Abercorn woods, *Maugh*. Banks of the Clyde at Barncluith, *Hopk*. Fall of Fyers and woods by Lochness, *Mr. Murray*, &c. *Fl.* July. ♃.

Stems 4—5 feet high. Very handsome. *Pollen* blue.

** *Flowers regular. Stam. erect. Petals deeply notched.*

2. E. *hirsutum* (*great hairy Willow-herb*), leaves semiamplexicaul ovato-lanceolate dentato-serrate hairy, stem very much branched hairy, root creeping, stigma 4-cleft. *Lightf. p.* 197. *E. B. t.* 838.

Hab. Sides of ditches, rivers, and lakes. Near Daldowie, Glasg., *Dr. Brown*. About Edinb., Kinross-shire, and Perthshire, *Mr. Arnott*. *Fl.* July. ♃.

Almost equal in size to the last. *Root* perennial, creeping. *Flowers* corymbose, large.

3. E. *parviflorum* (*small-flowered hoary Willow-herb*), leaves sessile lanceolate slightly toothed downy on both sides, stem nearly simple very downy, root fibrous, stigma 4-cleft. *E. B. t.* 795.

Hab. Marshes and banks of lochs and rivers, frequent, *Hopk*. *Fl.* July. ♃.

The much smaller size of this, in all its parts, scarcely more than 1 or 1½ foot in height, besides the above characters, serves to distinguish it from the preceding, with which it has been confounded.

4. E. *palustre* (*narrow-leaved Marsh Willow-herb*), leaves narrow lanceolate sessile nearly entire and as well as the rounded erect stem subglabrous, stigma undivided. *Lightf. p.* 199. *E. B. t.* 346.

Hab. Bogs and the sides of lakes. *Fl.* July. ♃.

Stem about a foot high. *Flowers* small.

5. E. *tetragonum* (*square-stalked Willow-herb*), leaves lanceolate sessile glabrous denticulate, stem with 4 angles nearly glabrous, stigma undivided. *Lightf. p.* 198. *E. B. t.* 1948.

Hab. Sides of ditches and watery places, common. *Fl.* July. ♃.

6. E. *montanum* (*broad smooth-leaved Willow-herb*), leaves ovate-acute shortly petiolate glabrous all toothed, stem round pubescent as well as the fruit, stigma 4-cleft. *Lightf. p.* 198. *E. B. t.* 1177.

Hab. Stony places under hedges, &c. *Fl.* July. ♃.

Six inches to a foot high. Much like this is the *E. roseum*, which has not yet been detected in Scotland; but that has an entire *stigma*.

7. E. *alsinifolium* (*Chickweed-leaved Willow-herb*), leaves ovato-acuminate rather obtuse sessile glabrous lowermost ones entire the rest very slightly toothed, stem round glabrous as well as the fruit, stigma entire. *E. B. t.* 2000.

Hab. On many, probably most of the Highland mountains, *G.* and *D. Don* and *Mr. J. T. Mackay*. Ben Nevis, *Mr. Murray*. Side of a rivulet on Hart-fell, *Mr. Arnott*. *Fl.* July. ♃.

The above are the marks I find in my numerous specimens from the English and Scotch mountains, Switzerland, Savoy, and Iceland; and they appear to be permanent. Smith says, however, that the germen is downy. A very slight appearance, indeed, of pubescence is visible with a glass, which entirely disappears in the fruit. *Root* much creeping. The habit is altogether different from *E. montanum*, to which it approaches in character, wanting its rigidity and being much smaller, seldom more than 6—8 inches high. Wahlenberg considers it a var. of the following, to which I can by no means assent.

8. E. *alpinum* (*alpine Willow-herb*), leaves elliptical glabrous on short footstalks nearly entire, stem nearly glabrous, and fruit entirely so, stigma undivided. *Lightf. p.* 199. *t.* 10. *E. B. t.* 2001.

Hab. Wet places on all the Highland mountains. *Fl.* July. ♃.

Three to five inches high. *Root* creeping. *Stem* angular, with two lines of very obscure pubescence, procumbent at the base. *Flowers* seldom more than one or two from the summit of the stalk.

2. VACCINIUM.

* *Leaves deciduous.*

1. V. *Myrtillus* (*Bilberry* or *Whortle-berry*), peduncles 1-flowered, leaves serrate ovate deciduous, stem angular. *Lightf. p.* 200. *E. B. t.* 456.

Hab. Woods and heathy places, frequent. *Fl.* May. ♄.

Small *shrub* about 1 foot high. *Flowers* drooping, urceolate, very elegant, greenish, with a red tinge. *Stam.* 8 or 10. *Anthers* tubular, with a pore on the top and a horn behind. *Berries* black, glaucous, very agreeable to the taste.

2. V. *uliginosum* (*great Bilberry*), peduncles 1-flowered, leaves obovate entire veined deciduous, stems rounded. *Lightf. p.* 201. *E. B. t.* 581.

Hab. Highlands, not rare: in low moist grounds, as well as at the summits of the mountains. *Fl.* May. ♄.

Leaves glaucous, especially beneath. *Cor.* ovate, flesh-coloured, smaller than the last. *Anthers* the same. *Stam.* 8 or 10. *Berries* very inferior to the last in flavour.

** *Leaves persistent, evergreen.*

3. V. *Vitis Idæa* (*red Whortle-berry*), racemes terminal drooping, leaves evergreen obovate dotted beneath, their margins revolute nearly entire. *Lightf. p.* 202. *E. B. t.* 598.

Hab. Dry places on heaths, mountains, and in woods. *Fl.* May. ♄.

A low, somewhat straggling *shrub*, with leaves shaped like those of the box. *Flowers* pale flesh-coloured, campanulate. *Berries* red, acid, but not pleasant.—A dwarf variety, very bushy, with leaves much crowded, and only half the size of the common plant, but having

flowers full as large, is found by *Mr. Murray* on the Campsie hills, near Glasg., and on hills in Arran. This retains its characters in the gardens, where in England it has been long known under the name of *V. buxifolium*.

4. V. *Oxycoccos* (*Cranberry*), flower-stalks terminal single-flowered, leaves ovate evergreen glaucous beneath their margins revolute and entire, cor. 4-partite revolute, stem filiform. *Lightf. p.* 202. *E. B. t.* 319.

Hab. Peat-bogs in the Lowlands, frequent, but not so common in the Highlands, *Lightf. Fl.* June. ♄.

Very straggling, wiry, 8 or 10 inches long. *Leaves* small. *Flowers* bright rose colour. *Cor.* deeply divided; segments singularly revolute, on which account, as well as the hornless anthers, this is by many made a genus, *Oxycoccos*. *Fruit* very pleasant, making the best of tarts, far superior to the foreign *V. macrocarpum*, which is so largely imported to this country. At Longtown on the borders of Cumberland the fruit of the *V. Oxyc.* forms no inconsiderable article of trade.

3. ERICA.

1. E. *cinerea* (*fine-leaved Heath*), anthers with two serrated appendages at the base, style a little exserted, stigma capitate, leaves ternate. *Lightf. p.* 204. *E. B. t.* 1015.

Hab. Heaths, abundant. *Fl.* July, Aug. ♄.

Flowers, in rather long whorled racemes, drooping, reddish purple. *Leaves* nearly linear, glabrous. Varies with white flowers. Used for various œconomical purposes. See *Lightf. p.* 204.

2. E. *Tetralix* (*cross-leaved Heath*), anthers with two awns at the base, style as long as the ovate cor., leaves in fours ciliated, flowers capitate. *Lightf. p.* 205. *E. B. t.* 1014.

Hab. Moorish grounds, very frequent, sometimes with white flowers, *Hopk. Fl.* July, Aug. ♄.

This is the most beautiful of our two *Heaths*. *Flowers* large, delicate, rose colour, drooping.

4. CALLUNA.

1. C. *vulgaris* (*common Ling*). *Hull, Brit. Fl. ed.* 2. *p.* 114. *Lightf. p.* 203 and *E. B. t.* 1013 (*Erica vulg.*).

Hab. Heaths and moors, common, sometimes with white flowers. *Fl.* June—Aug. ♄.

A small, much branching, tufted *shrub*. *Leaves* small, opposite, pubescent, linear, closely imbricated in 4 rows, sometimes very hoary. *Flowers* small, reddish, drooping, nearly sessile, ovate. Differs in the flowers and in the capsule (see gen. char.) from *Erica*. Used much for brooms as well as for fuel; and makes an excellent edging to garden-borders instead of box.

5. DAPHNE.

1. D. *Laureola* (*Spurge Laurel*), racemes axillary of about 5 flowers, leaves lanceolate glabrous evergreen. *Lightf. p.* 205. *E. B. t.* 119.

Hab. Moist woods and hedges, rare. Banks of the river at Rosslyn, *Dr. Parsons.* Woods, Bothwell, *Hopk. Fl.* March. ♄.

Stem rather stout, 1—3 feet high, but little branched, naked below, leafy above, and hence bearing some resemblance to a Palm. *Flowers* yellowish green, each accompanied by an ovate concave bractea, drooping. *Perianth* infundibuliform, limb 4-cleft. *Stam.* included in 2 rows of 4 each, *filaments* very short. *Berry* ovate, blueish black.

6. ACER.

1. A. *pseudo-Platanus* (*Sycamore*), leaves 5-lobed unequally serrated, racemes pendulous subtomentose. *Lightf. p.* 639. *E. B. t.* 303.

Hab. Near houses and in gentlemen's plantations frequent, but scarcely indigenous, *Lightf. Fl.* May, June. ♄.

A large tree with spreading branches. *Flowers* greenish. *Germen* pubescent. *Fruit* with 2 long, membranaceous wings, which greatly aid its dispersion. The wood is used for bowls and trenchers, and other turnery-work; and the Highlanders are said to make a wine of the sap.

2. A. *campestre* (*common Maple*), lobes of the leaves mostly 5 inciso-crenate, racemes upright subtomentose. *Lightf. p.* 640. *E. B. t.* 304.

Hab. Woods, but not very common. *Fl.* May, June. ♄.

A small tree with rough bark full of deep fissures. *Leaves* small. Wood often beautifully veined, and then much valued.

2. TRIGYNIA.

7. POLYGONUM.

* *Leaves ovate or lanceolate.*

† *Spikes of flowers terminal, solitary. Nut triquetrous* (Bistorta).

1. P. *Bistorta* (*Bistort* or *Snakeweed*), stem simple bearing one spike, leaves ovate waved the radical ones running down into a footstalk. *Lightf. p.* 206. *E. B. t.* 509.

Hab. Moist meadows, but not common. About Inverary, *Lightf.* Marshy ground at Roseburn near Coltbridge, and banks of the North Esk, below Hevock mill, *Maugh.* Waste ground, Kilbride, *Ure.* Glen near Castlemilk; and banks of the Kelvin at Gairbraid, *Hopk.* Below Greenock, Bute and Arran, plentiful, *Mr. Murray. Fl.* June. ♃.

One or one foot and a half high. Upper *leaves* with long sheaths. *Spike* cylindrical, dense. *Flowers* flesh-coloured, on short footstalks, with small bracteas at the base. *Stam.* 8. *Styles* 3. *Root* large, tortuose, very astringent.

2. P. *viviparum* (*viviparous alpine Bistort*), stem simple bearing one spike, leaves linear-lanceolate the lower ones elliptical petiolate their margins revolute. *Lightf. p.* 206. *E. B. t.* 669.

Hab. Highland mountains, frequent in dry situations. *Fl.* June. ♃

From 4 to 8 inches high, slender. *Spike* linear; lower part of it generally with little viviparous bulbs of a fine red colour. *Stam.* 8. *Styles* 3. *Perianth* pale flesh-coloured, almost white.—This species increases much by the bulbs, and little if at all by seed, the triquetrous germen proving abortive.

†† *Flowers spiked, terminal or axillary. Nuts ovate.* (Persicaria.)

3. P. *amphibium* (*amphibious Persicaria*), flowers pentandrous, styles forked, spike oblongo-ovate, leaves petiolate cordato-lanceolate rough at the margins. *Lightf. p.* 207. *E. B. t.* 436.

α. *aquaticum*, leaves floating broadly lanceolate glabrous, spikes oblong.

β. *terrestre*, nearly erect, leaves narrow lanceolate rough with short rigid appressed hairs on both sides, spikes ovate.

Hab. Ponds, lakes, and ditches, or their margins, frequent. *Fl.* July, Aug. ♃.

Stem 2—3 feet long, scarcely branched when growing in the water. *Leaves* arising from long tubular sheaths or stipules, glabrous in β., but hispid in α. *Spikes* mostly solitary, terminal, bright rose colour. The only perennial species of the *Persicaria* family.

4. P. *Persicaria* (*spotted Persicaria*), flowers hexandrous, styles forked, leaves lanceolate (often spotted), spikes oblong erect their peduncle smooth, stipules fringed. *Lightf. p.* 207. *E. B. t.* 756.

Hab. Moist ground and waste places, frequent. *Fl.* Aug. ☉.

Stem erect, branched, 1 foot to 2 feet high. *Spikes* terminal and lateral, dense, greenish, the tips of the flowers rose-coloured. *Leaves* nearly sessile, glabrous; but there are said to be vars. with hoary leaves.

5. P. *lapathifolium* (*pale-flowered Persicaria*), flowers hexandrous with 2 distinct styles, leaves ovato-lanceolate shortly petiolate, spikes oblong erect their peduncle rough, stipules not fringed. *E. B. t.* 1382.

Hab. Fields and dunghills, frequent. *Fl.* Aug. ☉.

One foot or 1 foot and a half high. A very variable species; but the above characters, so ably pointed out by Mr. Curtis, are very constant. Sometimes the stem is spotted, and sometimes the underside of the leaf is hoary. The flowers are either a pale green, almost white, or of a reddish tint. *Spikes* dense, terminal and lateral.

6. P. *Hydropiper* (*biting Persicaria*), flowers hexandrous, styles forked, leaves lanceolate waved and spotless, spikes lax filiform drooping, stem erect. *Lightf. p.* 207. *E. B. t.* 989.

Hab. By the sides of ditches and lakes. *Fl.* Aug. Sept. ☉.

One foot to 3 feet high, erect. Remarkable for its slender, long, more or less drooping *spikes* of distant reddish flowers; they are lateral and terminal.

7. P. *minus* (*small creeping Persicaria*), flowers hexandrous, style undivided, leaves linear-lanceolate plane very shortly pe-

tiolate, spikes slender erect, stem rooting at the base. *E. B. t.* 1043.

Hab. Moist fields near Forfar, *G. Don.*

Very near *P. Hydropiper*, but much smaller, procumbent below; spikes upright, narrower leaves, and undivided stigma.

††† *Flowers axillary.* (Polygonum.)

8. P. *aviculare* (*Knot-grass*), flowers axillary, leaves elliptico-lanceolate rough at the margin, nerves of the stipules distant, stem procumbent herbaceous. *Lightf. p.* 208. *E. B. t.* 1252.

Hab. Way-sides, common. *Fl.* May—Sept. ⊙.

Varying much in size; and by the sea-side, as Lightfoot observes, is a large var. with fleshy leaves that comes near the *P. maritimum*, but is not perennial. The *flowers* are few, 2—4 or 5 from each axil on a short raceme, green with a reddish tinge. *Stam.* 8. *Stigmas* 3.

** *Leaves cordate.* (Fagopyrum.)

9. P. *Fagopyrum* (*Buck-wheat*), leaves cordato-sagittate, stem nearly upright without prickles, angles of the seeds even. *E. B. t.* 1044.

Hab. Dunghills and about cultivated land; but introduced by cultivation, as in England, it being excellent food for poultry. *Fl.* July, Aug. ⊙.

Stem nearly erect, waved, 1 foot high, branched. *Flowers* in spreading panicles terminal and lateral, pale reddish.

10. P. *Convolvulus* (*climbing Buck-wheat*), leaves cordato-sagittate, stem twining angular, segments of the perianth bluntly keeled. *Lightf. p.* 208. *E. B. t.* 941.

Hab. Corn-fields, frequent. *Fl.* July, Aug. ⊙.

Very long, climbing. *Spikes* of few whorled greenish flowers, lateral and leafy.

3. TETRAGYNIA.

8. PARIS.

1. P. *quadrifolia* (*Herb Paris*). *Lightf. p.* 209. *E. B. t.* 7.

Hab. Wet woods. Wood about a mile S. of Newbattle, near Dalkeith, *Dr. Parsons.* Den of Bethaick, 4 miles from Perth, *Lightf.* Banks a little above Calderwood, *Ure.* Banks of the Cart opposite the mill, *Dr. Brown*: and banks of the Kelvin opposite the second mill, Glasg., *Hopk.* Woods, Aberdeen, *Mr. Craigie.* Glen of Lenny N. of Loch Menteith, *Rev. Dr. Grahame.* Fifeshire, *Sibbald.* Banks of the Isla, near Airly Castle, *D. Don.* Woods of Lyndoch; banks of the Dee; sides of Loch Ness, and woods of Dumblane, *Mr. Murray.* *Fl.* May, June. ♃.

Root creeping. *Stem* 1 foot high, with 4 (rarely 5) whorled, large, ovate, acute leaves at the summit, the rest naked. *Flower* single, terminal, on a footstalk about 2 inches long. *Cal.* of 4 linear-lanceolate, green leaflets. *Petals* the same, but narrower and more

yellow. *Roots* purgative. *Berry* esteemed poisonous, but has been used for inflammations in the eyes.

9. ADOXA.

1. A. *moschatellina* (*tuberous Moschatell*). *Lightf. p.* 209. *E. B. t.* 453.

Hab. Woods and shady places in a light soil, but not common. In the hermitage, *Dr. Parsons*. Near the top of Craig-chailliach, Breadalbane, *Dr. Stuart*. Frequent about Glasg. in woods and about the roots of hedges, *Hopk.* Banks of the Kelvin, Glasg., *Mr. Murray*. *Fl.* Apr. May. ♃.

Root creeping, with tooth-like scales. *Stem* about a span high. *Leaves* 2 or 3, radical, on very long footstalks, triternate, lobed and cut, 2 cauline ones small and simply ternate. *Peduncle* single, terminal, with a head of 4 verticillate green flowers, and a fifth terminal one. *Stam.* united in pairs, or they may be considered as 4- or 5-forked *stam.*, each ramification terminated by a single cell of an anther, and all springing from a fleshy ring that surrounds the germen. The *flowers* have an evident musky smell in the evening or early in the morning, while the dew is on them: the lateral flowers have mostly their parts of fructification in fours, the terminal one in fives.

IX. ENNEANDRIA.

1. HEXAGYNIA.

1. Butomus. *Perianth* single, corolloid, 6-partite. *Caps.* 6, many-seeded.

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1. HEXAGYNIA.

1. BUTOMUS.

1. B. *umbellatus* (*flowering Rush*). *Lightf. p.* 211. *E. B. t.* 651.

Hab. Ditches and ponds, but not common, *Lightf.* Duddingston Loch, *Mr. J. Mackay*. Loch of Clunie, *Rev. Mr. M'Ritchie*. *Fl.* July. ♃.

Root white, tuberous. *Leaves* all radical, 2—3 feet long, linear, acuminate, acutely triquetrous, more or less spirally twisted at the extremity. *Scape* longer than the leaves, rounded. *Umbel* of many rose-coloured flowers on footstalks about 4 inches long, with scariose sheathing bracteas at their base; and these having a triphyllous membranous involucre beneath them. *Germens* ovate, compressed. *Style* about as long, with a cleft and recurved stigma. *Seeds* parietal or fixed to the inner surface of the pericarp, extremely small. —A highly ornamental plant.

X. DECANDRIA.

1. MONOGYNIA.

* *Flowers polypetalous.*

1. Monotropa. *Perianth* single, of 4—5 leaves, cucullate at the base. *Anth.* 1-celled, bilabiate. *Caps.* superior, 4—5-celled, 4—5-valved. *Seeds* numerous, invested with a long *arillus*.
5. Pyrola. *Cal.* 5-cleft. *Petals* 5. *Anthers* opening with two pores. *Caps.* superior, 5-celled. *Seeds* numerous, invested with a long *arillus*.

** *Flowers monopetalous.*

3. Menziesia. *Cal.* deeply 5-cleft. *Cor.* ovate. *Anth.* awnless. *Caps.* superior, 4—5-celled, the partitions formed by the inflexed margins of the valves (as in *Rhododendron*).
2. Andromeda. *Cal.* deeply 5-cleft. *Cor.* ovate. *Anth.* with 2 awns. *Caps.* superior, 4—5-celled, the partitions from the middle of the valves.
4. Arbutus. *Cal.* 5-cleft. *Cor.* ovate, its base pellucid. *Berry* superior, 5-celled.

(*Vaccinium Myrt.* and *ulig.*, Oct.)

2. DIGYNIA.

8. Scleranthus. *Cal.* monophyllous, 5-cleft. *Cor.* 0. *Stam.* inserted upon the *cal.*, 5 frequently abortive or wanting. *Caps.* 1-seeded, covered by the *cal.*
6. Chrysosplenium. *Cal.* 4—5-cleft, somewhat coloured, superior. *Cor.* 0. *Caps.* with two beaks, many-seeded.
7. Saxifraga. *Cal.* superior, or inferior, or half inferior, 5-partite. *Cor.* of 5 petals. *Caps.* with 2 beaks, 2-celled, many-seeded, opening between the beaks.
9. Saponaria. *Cal.* monophyllous, tubular, 5-toothed, destitute of scales at the base. *Pet.* 5-clawed. *Caps.* oblong, 1-celled.
10. Dianthus. *Cal.* monophyllous, tubular, 5-toothed, with about 4 imbricated opposite scales at its base. *Pet.* 5-clawed. *Caps.* cylindrical, 1-celled.

3. TRIGYNIA.

13. Arenaria. *Cal.* 5-leaved. *Petals* 5, undivided. *Caps.* 1-celled, many-seeded.
12. Stellaria. *Cal.* 5-leaved. *Petals* 5, deeply cloven. *Caps.* 1-celled, opening with 6 teeth, many-seeded.

4. CHERLERIA. *Cal.* of 5 leaves. *Pet.* 5, extremely minute, notched. *Caps.* 1-celled, opening with 3 valves, many-seeded, *Sm.* (3-celled, cells 2-seeded, *Decand.*).

1. SILENE. *Cal.* monophyllous, tubular, often ventricose, 5-toothed. *Pet.* 5-clawed, mostly crowned at the mouth, and the limb generally notched or bifid. *Caps.* 3-celled, 6-toothed, many-seeded.

4. PENTAGYNIA.

5. COTYLEDON. *Cal.* 5-cleft. *Cor.* monopetalous, tubular, 5-fid. *Caps.* 5, with a nectariferous scale at their base.

6. SEDUM. *Cal.* 4—7-cleft. *Pet.* 5. *Caps.* 5, with a nectariferous scale at their base.

7. OXALIS. *Cal.* 5-partite. *Pet.* 5. *Caps.* angular, 5-celled, cells 2- or many-seeded. *Seeds* with an elastic *arillus*.

9. LYCHNIS. *Cal.* monophyllous, tubular, 5-toothed. *Pet.* 5, clawed, crowned at the mouth, their limb divided. *Caps.* opening with 5 or more teeth, 1- or 5-celled.

18. AGROSTEMMA. *Cal.* monophyllous, tubular, coriaceous, 5-cleft. *Pet.* 5 (clawed), their limb undivided. *Caps.* opening with 5 teeth, 1-celled.

20. CERASTIUM. *Cal.* 5-leaved. *Pet.* 5, cloven. *Caps.* bursting at the top with 10 teeth (5 in *Cer. aquat.*).

21. SPERGULA. *Cal.* 5-leaved. *Pet.* 5, undivided. *Caps.* ovate, 5-celled, 5-valved.

(*Silene inflata*, Ord. TRIG.)

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1. MONOGYNIA.

1. MONOTROPA.

1. M. *Hypopitys* (*yellow Bird's Nest*), lateral flowers with eight, terminal one with 10 stamens. *Lightf. p.* 214. *E. B. t.* 69.

HAB. Beech- and fir-woods, where the ground is dry, but not common, *Lightf.* *Fl.* July. ♃.

Root fibrous, parasitic? *Stem* stout, erect, 6—9 inches high, simple or slightly branched; instead of *leaves* having numerous ovate scattered *scales* of the same dingy yellow colour as the stem. *Racemes* terminal, a continuation of the stem, at first drooping, then erect. *Flowers* on short scaly or bracteated peduncles, large, of the same colour as the rest of the plant. *Stam.* alternately smaller. *Germ.* 4—5-lobed, ovate. *Stigma* large, peltate. *Seeds* very minute, rarely perfected, enveloped in a reticulated *arillus*.

2. ANDROMEDA.

1. A. *polifolia* (*Marsh Andromeda*), leaves alternate lanceolate their margins revolute glaucous beneath, flowers on short racemes terminal. *Lightf. p.* 214. *E. B. t.* 713.

HAB. Peat Bogs in the Lowlands, not unfrequent; abundant on the Solway Moss, *Lightf.* Kirkconnel Moss, *Mr. Arnott.* Monteith

Mosses, *Rev. Dr. Grahame.* Paisley Moss, sparingly; and Blair Drummond Moss, plentifully, *Mr. Murray.* *Fl.* May and Sept. (*Lightf.*). ♄.

A small ever-green *shrub*, with beautiful urceolate rose-coloured drooping *flowers* a good deal concealed among the terminal leaves[a].

3. MENZIESIA.

1. M. *cærulea* (*Scottish Menziesia*), leaves scattered numerous linear toothed, flower-stalks terminal aggregate simple, flowers 5-cleft decandrous. *E. B. t.* 2469.

Hab. For this rare and charming plant Smith gives "Aviemore in Strathspey, and in the western isles of Shiant;" but no authority is given. My friend Mr. Maughan attributes its discovery to Messrs. Brown, late nurserymen of Perth; but he adds that he is not able to obtain its precise habitat. *Fl.* June, July. ♄.

A small *shrub*. *Stems* branched, woody and naked below. *Peduncles* 2 inches long, glandular, reddish. *Flowers* large, beautiful, purplish blue. *Cor.* urceolate. The Irish *M. Dabeoci* belongs to this genus, and has but 8 stam.; but our Scotch plant having 10 stam., its close affinity with *Andromeda* induces me to place the genus here.

4. ARBUTUS.

1. A. *alpina* (*black-berried alpine Arbutus*), stem procumbent, leaves rugose serrated. *Lightf. p.* 215. *t.* 11. *E. B. t.* 2030.

Hab. On many of the dry barren Highland mountains, especially to the S. of Little Loch Broom in Ross-shire, and between Loch Broom and Loch Mari; upon Ben-na-grion, in Skye, *Lightf.* On Ben-naish and hills in Coygach, Ross-shire, *Dr. Walker.* Hill of Hoy, Orkney, and most abundant on the moors about Cape Wrath in Sutherland, *Borrer* and *Hook.* *Fl.* May. ♄.

A trailing *shrub*, with obovate marcescent *leaves* which taper down into a short footstalk, and become in autumn of a fine red colour. There are a few hairs on the petioles and ciliated bracteas at the base of the flower-stalks. *Flowers* urceolate, very pale rose colour, almost white. *Berry* black.

2. A. *Uva Ursi* (*Bear-berries*), stems procumbent, leaves entire (evergreen). *Lightf. p.* 216. *E. B. t.* 714.

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[a] Those who have not the *Flora Lapponica* of Linnæus to refer to will with pleasure see the following extract, describing the author's reasons for calling this plant *Andromeda*. Comparing her with the plant in question, he says, "Virgo hæc lectissima pulcherrimaque collo superbit alto et vividissimo (*pedunculus*), cujus facies roseis labellis (*corolla*) vel optimum veneris fucum longe superat; juncea hæc in genera projecta pedibus alligata (*caulis inferior incumbens*), aqua (*vernali*) cincta, rupi (monticulo) adfixa, horridis Draconibus (*amphibiis*) exposita, terram versus inclinat mœstam faciem (*florem*), innocentissimaque brachia (*ramos*) cœlum versus erigit, meliori sede fatoque dignissima, donec gratissimus Perseus (æstas) monstris devectis, eam ex aqua eduxit e virgine factam fœcundam matrem, quæ tum faciem (*fructum*) erectam extollit. Si Ovidio fabulam de Andromeda conscribenti hæc ante oculos posita fuisset planta, vix melius quadrarent attributa, qui more poetico ex humili tumulo produxisset Olympum."

Hab. Abundant on dry, heathy, rocky places in the Highlands, and Western isles. *Fl.* May. ♄.

Stems very long and trailing; leaves obovate, stiff, rigid, smooth, their margins revolute. *Flowers* in a small clustered raceme, terminal, beautiful rose colour. *Berry* small, red, austere, mealy, but affording an excellent food for the moor game.

5. PYROLA.

* *Stalk with a single flower.*

1. P. *uniflora* (*single-flowered Winter-green*), stalk bearing a solitary flower, leaves suborbicular. *E. B. t.* 146.

Hab. Fir-wood, near Brodie House, by Forres, *Mr. Brodie* and *Mr. Hoy*. *Fl.* July. ♃.

I had once the pleasure of gathering this truly rare plant in company with its discoverer the Laird of Brodie. In Switzerland it is so abundant as to perfume the woods with its delightful smell. The *stem* is scarcely an inch high, with a few rather small and obscurely serrated petiolated leaves. *Peduncle* 2 inches long, with 1 bractea. *Flower* large, nearly white. *Style* short, straight. *Stigma* large, rayed.

** *Flowers racemed, secund.*

2. P. *secunda* (*serrated Winter-green*), flowers all leaning one way, leaves ovate serrated. *Lightf. p.* 219. *E. B. t.* 517.

Hab. Shady birch-woods among moss about Little Loch Broom and Loch Mari, Ross-shire, and in the birch-woods of Trosscraig; Craig-loisgt and Coille-mhor; about Loch Rannoch, Perthshire, *Lightf.* Gordon Castle woods, *Mr. Brown*. Culloden woods, near Inverness, *Mr. Murray*. Between Ballacheulish and Appin House in Upper Lorn, *Dr. Walker*. *Fl.* July. ♃.

Stems rather straggling, branched. *Flowerstalks* 4—5 inches high, with several oval scales or bracteas. *Flowers* white. *Style* long, straight. *Stigma* large.

*** *Flowers racemed, pointing in various directions.*

3. P. *rotundifolia* (*round-leaved Winter-green*), leaves obovato-rotundate slightly crenate, style bent down much longer than the ascending stam. *Lightf. p.* 218. *E. B. t.* 213.

Hab. Dry woods and sometimes upon heaths, not unfrequent. Woods at Auchindenny and on the banks of the Clyde about the Falls; woods at Blair Athol, and heaths about Dunkeld, *Lightf.* Peeblesshire, *Mr. Stewart*. Callender, *Mr. Arnott*. Culloden woods near Inverness, *Mr. Murray*. Rare in the Lowlands, *D. Don. Fl.* July, Sept. ♃.

The largest of the species, with white spreading flowers, well distinguished by the direction and relative length of the *stam.* and *style*. The latter is more than twice as long as the fully formed *caps.* and singularly curved downward at the base, upwards again towards the extremity. *Stigma* with 5 erect points.

4. P. *media* (*intermediate Winter-green*), leaves ovato-rotund

crenate, stam. erect much shorter than the straight or slightly decurved style, stigma with 5 erect points. *E. B. t.* 1945.

Hab. Woods near Forres, belonging to the Earl of Moray. *Fl.* July, Aug. ♃.

Style protruded beyond the flower.

5. P. *minor* (*lesser Winter-green*), leaves ovato-rotundate crenate, stam. erect as long as the very short straight style, stigma large with 5 divergent rays. *Lightf. p.* 219? *E. B. t.* 158 (*bad*), and 2543 (*P. rosea*).

Hab. Woods at the Falls of Clyde, and woods at Brodie-house, by Forres, *Hook. Fl.* July. ♃.

It is not that I think this and the last species of *Pyrola* at all confined to the stations given, that I confine myself to them; but because the two species have been so generally misunderstood and confounded, in consequence of imperfect descriptions and figures, that I fear we cannot put the strictest reliance on the stations that have been given. This is the smaller of the two, and essentially distinguished by the shortness of the *style*, and its large radiated *stigma*, quite included within the concave *corolla*. The plant under the name of *P. minor* in *E. B.*, is a very bad figure, with spreading flowers and acute petals. That of *P. rosea* is a good figure of the true *minor*. *Flowers* in both a pale rose-colour.

2. DIGYNIA.

6. CHRYSOSPLENIUM.

1. C. *alternifolium* (*alternate-leaved golden Saxifrage*), leaves alternate, lower ones subreniform upon very long footstalks. *Lightf. p.* 219. *E. B. t.* 54.

Hab. Boggy places among rocks and springs, not uncommon;—as Rosslyn woods, and by the side of Bilston Burn, Edinb., *Maugh.* St. Bernard's well, Edinb., *Mr. Stewart.* Glen Castlemilk and Beetle's Burn, near the Clyde iron-works, Glasg., *Hopk. Fl.* March, April. ♃.

Four to five inches high, branched near the summit. *Leaves* petiolate, crenate. *Flowers* in small umbels, deep yellow, mostly with 8 *stam.*

2. C. *oppositifolium* (*common golden Saxifrage*), leaves opposite cordato-rotundate. *Lightf. p.* 220. *E. B. t.* 490.

Hab. Sides of rivulets in shady places, common. *Fl.* May. ♃.

Generally more branched at the base than the last, paler colour in all its parts. *Stam.* usually 8.

7. SAXIFRAGA.

* *Leaves all radical, undivided.*

1. S. *stellaris* (*starry Saxifrage*), leaves oblongo-cuneiform angulato-serrate, scape branched, petals oblong acute, capsule superior. *Lightf. p.* 220. *E. B. t.* 167.

Hab. Sides of rivulets, and wet rocks in alpine and subalpine situa-

tions, common. Campsie hills and Dumbarton moors, *Hopk.* Goat-fell in Arran, *Mr. Murray.* *Fl.* June, July. ♃.

Slightly hairy. *Scapes* 2—5 inches high, with a minute bractea at each ramification of the small panicle. *Fl.* white, 2 yellow spots at the base of each petal. *Cal.* reflexed.

2. S. *nivalis* (*clustered alpine Saxifrage*), leaves obovate subpetiolate acutely crenate, scape (rarely branched) terminated by a dense cluster of flowers, capsule half inferior. *Lightf. Scot. p.* 221. *t.* 12. *E. B. t.* 440.

Hab. Summits of the Highland mountains, but not common. E. side of Craigalleach in Breadalbane, *Dr. Stuart.* Ben Lomond, *Smith, Mr. Murray.* Ben Lawers, *Maugh., Hook.* *Fl.* Aug. ♃.

A stouter plant than the last, but about the same height. *Leaves* subcoriaceous, glabrous above. *Scape* glanduloso-pubescent, sometimes a little branched. *Flowers* clustered. *Cal.* teeth always erect. *Petals* externally reddish.

3. S. *umbrosa* (*London Pride*), leaves obovate petiolate subretuse with cartilaginous acutely crenate margins, scape panicled, capsule superior. *E. B. t.* 663.

Hab. Woods Bothwell, and on the banks of the Cart, at Cartside, Glasgow, *Hopk.* Corstorphine hill, Edinb., *Maugh.* Auchindenny woods, *Mr. Sommerville* and *Mr. Kennedy.* *Fl.* June, July. ♃.

Leaves large, glabrous. *Scape* 6—10 inches high, slender, a good deal branched, pubescent upwards. *Flowers* small, pale rose colour, with purple spots. *Cal.* reflexed.

** *Stem leafy. Leaves undivided.*

4. S. *oppositifolia* (*purple Mountain Saxifrage*), leaves ovate opposite imbricated ciliated, flowers solitary terminal. *Lightf. p.* 222. *E. B. t.* 9.

Hab. Frequent on rocky places in the Highland mountains. Ben Lawers, Ben Lomond, &c. *Fl.* May. ♃.

Plant in small dense tufts. *Flowers* large, beautiful purplish red. *Capsule* half inferior.

5. S. *aizoides* (*yellow Mountain Saxifrage*), lower leaves numerous crowded, the rest scattered linear-lanceolate subciliate, stem ascending. *Lightf. p.* 222 (*S. autumnalis*). *E. B. t.* 39.

Hab. Abundant in alpine rills and springy places. *Fl.* July, Sept. ♃.

Five to seven inches high, branching below. *Flowers* panicled, subcorymbose, bright yellow; each *petal* beautifully spotted with orange. *Caps.* half inferior.

*** *Stem leafy. Leaves variously divided* (*especially the radical ones*).

6. S. *granulata* (*white Saxifrage*), radical leaves reniform on long footstalks obtusely lobed those of the upper part of the stem nearly sessile acutely lobed, stem panicled, root granulated. *Lightf. p.* 224. *E. B. t.* 500.

Hab. Dry banks. Salisbury Craigs and King's Park, Edinb. Banks of the Clyde, near Lanark, *Lightf.* Frequent near Glasg., especially by the Clyde, towards Bothwell, *Hopk.* *Fl.* June. ♃.

Root consisting of numerous, small, clustered tubers. *Stem* 8—12 inches high, glanduloso-pilose. *Leaves* mostly radical, glabrous; petioles glandular. *Flowers* large, white. *Germen* and *caps.* half inferior.

7. S. *cernua* (*drooping bulbous Saxifrage*), radical leaves reniform on long footstalks palmato-lobate superior ones nearly sessile subtrifid, stem simple bulbiferous with one terminal flower. *E. B. t.* 664.

Hab. Discovered by *Mr. Townson* on rocks on the summit of Ben Lawers, 1790. I am not aware that it has been detected any where else, but upon Craigalleach by *Mr. Borrer* and *Hook. Fl.* July, Aug. ♃.

From 3—4 or 5 inches, slender. *Leaves* glabrous, and the *stem*, which droops at the extremity, nearly so. In the axils of the small upper leaves, instead of flowers are clusters of minute reddish bulbs. *Flower* white, rather large. *Petals* retuse. In the *English Bot.* figure the radical leaves are much less deeply lobed than in my specimens.

8. S. *rivularis* (*alpine Brook Saxifrage*), leaves upon very long footstalks palmate floral one obovate, stem weak of about two flowers. *E. B. t.* 2275.

Hab. Discovered in 1790 by *Mr. Townson* near the summit of Ben Nevis, on the E. side of the mountain. It grows near the lake, on the ascent to B. Nevis; and on Ben Lawers, *Mr. Turner* and *Hook.* Loch Rannoch, *Mr. Sommerville. Fl.* Aug. Sept. ♃.

9. S. *tridactylites* (*Rue-leaved Saxifrage*), radical leaves spathulate entire and cuneiform trifid upper cauline ones undivided, stem panicled, petals entire a little longer than the cal. *Lightf. p.* 224. *E. B. t.* 501.

Hab. Rocks and walls, but rare, *Sibbald.* Top of a wall near Craig-Lockhart, *G. Don.* Links a little to the E. of Cockenzie; walls near Kirkcaldy, and links opposite Cromarty, *Maugh. Fl.* May, June. ☉.

Two to four inches high. Whole plant covered with viscid hairs. *Caps.* almost entirely inferior.

10. S. *muscoides* (*Moss-like Saxifrage*), radical leaves aggregate linear obtuse entire and trifid, stem nearly naked few-flowered, petals oblong obtuse (buff coloured) a little longer than the cal. *Sternb. Sax. t.* 11. *f.* 2. and *t.* 11. *b. f.* 1. *E. Bot. t.* 2314 (*S. moschata*).

Hab. "Cultivated in the Bot. Garden, Cambridge, from roots received from the Highlands of Scotland." *Sm.* in *E. B. Fl.* June, July. ♃.

Leaves densely tufted about the roots. *Stems* 2—3 inches high, with 2 or 3 small, simple or trifid leaves upon it, glabrous below, viscid with glandular hairs above, and on the *Cal. Caps.* inferior. I lament that I am not able to offer more sufficient authority for introducing this into a Scottish Flora. It seems to be rather a plant of the south of Europe. It is not a Linnæan species, nor is the *S. moschata*, for which I think Smith has mistaken this. Murray and Wulfen, who are the original authorities for the *moschata*, describe it as having the "leaves and whole stem hairy and viscid:" it is

twice the size of *S. muscoides;* but in other respects the two very similar. The *E. B.* figure represents that state of this variable plant which has all the leaves undivided.

11. S. *hypnoides* (*hypnoid Saxifrage*), radical leaves 3—5-cleft those of the long sterile shoots (mostly) linear-lanceolate acute all nearly glabrous, flowering stem panicled. *Lightf. p.* 224. *E. B. t.* 454.

β. petals larger with the superior leaves (only) on the procumbent shoots undivided. *S. platypetala, E. B. t.* 2276 (and *D. Don, MSS. ined.?*—This has all the leaves of the shoots trifid, and I do not see how it differs from some vars. of *S. hirta.*)

Hab. Highland mountains, very common, *Lightf., D. Don.* β. Clova mountains, *G. Don. Fl.* May, June. ♃.

Plants growing in crowded tufts, and throwing out long slender shoots, which have distant and mostly entire *leaves,* with clusters or buds of young leaves at the extremities, and frequently in the axils of the leaves themselves. The *leaves* nearest the root are 3- or 5-fid, varying much in size and breadth, glabrous or pilose about their bases. All the points are acute, in the upper ones frequently terminated by a short bristle. *Flowering stem* 3—6 inches long, branched and panicled, glabrous, a little viscid above: its *leaves* few, trifid below, the rest undivided. *Flowers* 6—10, rather large, especially in β. *Petals* obovate, 3 or 4 times as long as the cal., cream coloured. *Cal.* with acute segments, slightly viscid. *Germen* almost wholly inferior.—An extremely variable plant, and many of the varieties I possess border to closely upon the following species, that I cannot help expressing it as my opinion, that future observations upon individuals in their native soil, aided by others in a state of cultivation, will prove them to be one and the same species.

12. S. *cæspitosa* (*tufted Saxifrage*), radical leaves 3- or mostly 5-cleft those of the sterile shoots mostly 3-, rarely and only below, 5-cleft all more or less hairy, flowering stem subpubescent panicled. *Linn. Sp. Pl. p.* 578. *Gunn. Norv. t.* 7. *f.* 3, 4. *S. hirta, E. B. t.* 2291. *D. Don, MSS. ined. S. Sternbergii, Sternb. Sax. p.* 56. *t.* 24 (cult. plant). *S palmata, Sturm, Deutsch. Fl. no.* 27.

β. shoots long, leaves dark green ciliated only at the base. *S. læte-virens, D. Don, MSS. ined.*

γ. shoots rather short, leaves ciliated only, especially near the base, 1—3 flowers upon the stem. *S. elongella, E. B. t.* 2277. *D. Don, MSS. ined.*

δ. shoots very short, leaves dense ciliated only at the base, flowering stem short 1—2-flowered. *S. denudata, D. Don, MSS. ined.* and *S. condensata? ejusd.* (according to his descr.). The same as this var., only more hairy, is the *S. cæspitosa, E. B. t.* 794, and the *S. grœnlandica Linn.* and *Gunn. Norv. t.* 7. *f.* 1.

Hab. Rocks in the western Highlands, *G. Don.* β. Scotch Alps, *G.* and *D. Don.* γ. Banks of a rivulet not far from Airly Castle, Angus-shire, *G. Don.* δ. Highest mountains of Angus-shire, *G. Don. Fl.* June, July. ♃.

Varieties without end might be produced of this plant, which, as I have already intimated, I can find to differ in no essential point from the last species, if it be not in the always 3- or 5-fid leaves, and perhaps the somewhat greater length of their segments. Nothing is more variable than the pubescence on the stems and leaves, and the extent of the sterile shoots. The *flowers*, too, upon each stem vary in number, and the *petals* somewhat in shape. The *leaves* are, in all, more or less acute in the lower ones, and generally tipped with a short bristle in the upper ones, as in *S. hypnoides.* In none of these marks, therefore, can I see any thing to found specific characters upon, as Smith and Don have done. I am not even satisfied that the *S. palmata* of *E. B.* is distinct. It is certainly the *decipiens* of Ehrhr. and Sternberg; and an impartial examination of the beautiful figure by the last mentioned author (*Sax. t.* 23.), with the equally good one of his *S. Sternbergii* (our *hirta*), *t.* 24, will, I think, satisfy any one that *they* also are but slight varieties of the same plant. The former is the more hairy of the two[a].

13. S. *pedatifida* (*pedatifid Saxifrage*), lower leaves and those of the rather short sterile shoots upon very long foot-stalks, divided into 3 deep linear lanceolate acute spreading segments, the lateral ones bifid, the superior leaves of the much branched flowering stem linear undivided. *E. B. t.* 2278. *D. Don, MSS. ined. S. quinquefida, Haw. in Misc. Nat.* and *Donn Hort. Cant.*

Hab. Rocks near the head of Clova, *G. Don.* It is stated also to be found in the Highlands by *Mr. J. Mackay*, but without any particular station being given in *E. B. Fl.* May, June. ♃.

A very distinct species from any British one, nor does it appear to be noticed in Sternberg's fine work, though coming near to his *S. la-*

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[a] Since the above remarks were written upon this most intricate family of the Saxifrages, it was with much satisfaction that I saw, in the article *Saxifraga* in Rees's *Cyclopædia*, that Sir James Smith has, with that degree of candour which so often accompanies his writings, acknowledged that he considers *S. hirta* to be only a *var.* of the Linnæan *Cæspitosa.* A comparison with Linnæus's description, and especially with the admirable description and figures of Gunner in his *Fl. Norvegica*, will, I think, make it clearly appear that they are the *very* same. The figure of *S. cæsp.* in *E.B.* is however a dwarf and densely leaved var. the same as D. Don's *condensata*, only more pubescent, and precisely the *S. grœnlandica* of Linn. and Gunn. *Norv. t.* 7. *f.* 1.: under which *variety*, as Smith has himself considered the *grœnlandica* in the *Cyclop.* to be, he should have quoted the *E. B. cæspitosa.*

I must do Sir James Smith the further justice to state, that in the same work, he doubts if his *palmata* (*E. B. t.* 455.), the *decipiens* of Ehrhr., be truly distinct from *cæspitosa.* His *S. platypetala* he says is distinct from its allies, unless it be a variety of *hypnoides.* Of *S. elongella* he tells us that the greatest peculiarity is in its solitary 1-flowered peduncle. But some of my specimens from the discoverer himself, Mr. Don, have 2 and even 3 flowers upon the same stalk.

danifera and *S. pentadactylis*. Whole plant rigid. *Stems* reddish, glabrous. *Leaves* slightly pubescent and viscid. *Panicle* much branched, subfastigiate. *Flowers* rather small. *Petals* linear obovate, thrice as long as the cal. teeth. *Germen* inferior, oblongo-ovate; and the teeth of the calyx are longer than in any of this division. In *E. Bot.* Sir James Smith gives Ehrhart the merit of distinguishing this species from the *S. geranoides* of Linn.; but afterwards, in Rees's *Cyclopædia*, he inclines to think it a var. of that plant with more divided leaves. This may be the case; but without seeing intermediate states it would hardly be suspected: for each division of the leaves of the *geran.* is broadly wedge-shaped, and of a much thinner texture. The panicle, however, the flowers, calyx, and germen, are precisely of the same structure. I should have thought it the same with the *S. ladanifera* of La Peyrouse, but that *that* is described as being covered with little points from which an odoriferous gum exudes. *S. pentadactylis* has the segments of the leaves extremely narrow indeed and obtuse. Another species very closely allied to our plant is the *S. ceratophylla* of *Hort. Kew.* and *Bot. Mag. t.* 1651, of which I possess specimens through the liberality of Mr. Aiton himself. It is distinguished by a still more rigid habit, by the divisions of the lobes being bent back like a sickle, and by the calyx being covered with a resinous but not clammy varnish; and is a native of Spain, as *geranoides*, *ladanifera*, and *pentadactylis* are of the Pyrenées. May they not all be vars. of *geranoides?*

8. SCLERANTHUS.

1. S. *annuus* (*annual Knawel*), "cal. of the fruit spreading acute, stems patent" (*Sm.*). *Lightf. p.* 225. *E. B. t.* 351.

Hab. Corn-fields, frequent. *Fl.* July. ☉.

Stems many, much branched in a dichotomous manner, slender, subpubescent, straggling. *Leaves* linear subulate, keeled, membranous at the base. *Flowers* green, inconspicuous, in axillary leafy clusters. *Cal.* urceolate, ribbed, with 5 ovato-lanceolate teeth, white and membranaceous at the edge, spreading when in flower, and erect when in fruit It will be thus seen that the above specific char., taken from Smith, does not accord with my specimens, the fructified *cal.* of which is exactly as represented in *E. B. t.* 351, left hand fig.

2. S. *perennis* (*perennial Knawel*), "cal. of the fruit closed obtuse, stems procumbent" (*Sm.*). *Lightf. p.* 1134? (*S. polycarpos*). *E. B. t.* 352.

Hab. Sandy and gravelly places. Broomholm, near Langholm, in Eskdale? *Lightf.* Gravelly banks near Forfar, rare, *D. Don. Fl.* Oct., Nov. ♃. (*Sm.*)

In my specimens of this plant the *root* is stouter than the last, and may be perennial; the *stems* are shorter, more procumbent, the *leaves* closer; the *flowers* denser. But there is no difference in the *cal.* or *fruit*, or in any other part of the plant. Surely they cannot be distinct. I should say that *S. perennis* owed all its characters to flowering late in the season, or having, under favourable circumstances, survived a winter.

9. SAPONARIA.

1. S. *officinalis* (*Soapwort*), leaves ovato-lanceolate, calyces cylindrical glabrous. *E. B. t.* 1060.

Hab. Road-sides. Between Dean and Ravelston; near Rosslyn chapel; banks of the Esk, above Coalpits; and side of the Mill-Lead, opposite the old bridge at Musselburgh, *Maugh.* Cliesh woods, Kinross-shire, *Mr. Arnott.* *Fl.* July, Aug. ♃.

One to one foot and a half high, with rather a stout cylindrical stem. *Leaves* ribbed, opposite and connate. *Panicle* of numerous large rose-coloured flowers. *Limb* of the *cor.* obcordate.—Makes a lather with water, whence the name of *Soapwort.*

10. DIANTHUS[a].

* *Flowers clustered.*

1. D. *Armeria* (*Deptford Pink*), flowers clustered fascicled, calycine scales lanceolate downy as long as the tube. *E. B. t.* 317.

Hab. In fields near the seat of Charles Gray, Esq. of Carse, Angus-shire, but sparingly, *G. Don.* *Fl.* July, Aug. ☉.

One or one foot and a half high, branched upwards. *Leaves* linear, opposite and connate, slightly pubescent, upper ones acute. *Limb* of the petals rose colour, with white (not red as mentioned in *E. B.*) dots, crenate at the margin.

** *Flowers solitary, many on the same stem.*

2. D. *deltoides* (*Maiden Pink*), flowers solitary, calycine scales mostly 2 lanceolate acute, petals notched. *Lightf. p.* 225. *E. B. t.* 61.

β. cal. scales 4, flowers white. *D. glaucus*, *Lightf. p.* 225.

Hab. King's Park, Edinb., *Lightf.* both α. and β. Blackford and Pentland hills, *Maugh.* N. bank of the loch of Forfar, and other spots in Angus-shire, *G. Don.* Rocks near Newburgh, Fifeshire, *D. Don.* Sandy-know Craigs, *Mr. Borrer.* *Fl.* July. ♃.

A small plant from 6—9 inches high, glaucous. *Leaves* linear-lanceolate, slightly hairy. *Flowers* in α. rose colour, with a deeper circle in the middle.

3. TRIGYNIA.

11. SILENE.

* *Calyx glabrous.*

1. S. *inflata* (*Bladder Campion*), flowers panicled, cal. inflated glabrous reticulated with veins, leaves ovate.

α. *larger*, stems erect many-flowered, petals scarcely crowned. *S. infl.*, *Sm. Comp.* *Cucubalus Behen*, *Lightf. p.* 226. *E. B. t.* 164.

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[a] I fear the *D. barbatus*, of which 3 stations are given in the vicinity of Edinburgh by my friend Mr. Maughan in the *Wernerian Trans.*, can only be considered the outcast of gardens, and not of sufficiently general occurrence to be introduced into a Scottish Flora. The *D. arenarius* of Lightfoot, *p.* 226, that author suspects is only the *D. deltoides.*

β. *smaller*, stems procumbent few-flowered, petals crowned. *Silene amœna, Lightf. p.* 227. *S. maritima, E. B. t.* 957.

Hab. Pastures and road-sides, common. β. Common on the coast among small loose stones. *Fl.* June—Aug. ♃.

Whole plant glaucous, varying much from situation. Mr. Hopkirk mentions a var. with narrower leaves, and every where thickly covered with glandular hairs, as found on the banks of the Clyde at Old Kilpatrick, and at the ferry, Clyde Iron-works. I most willingly join with Wahlenberg in uniting the *S. maritima* with the *inflata*. The β. is occasionally found at a great elevation on the mountains; and then is the *S. uniflora* of Decand. In both, the flowers are large and white, more or less bifid in each petal. The *styles* are very variable in number.

2. S. *acaulis* (*Moss Campion*), cæspitose, leaves linear ciliated at the base, peduncles solitary single-flowered, petals slightly notched crowned. *Lightf. p.* 227. *t.* 12. *E. B. t.* 1081.

Hab. Abundant upon all the elevated mountains. *Fl.* June, July. ♃.

Stems short, 2 or 3 inches high, much branched and tufted. *Leaves* patent. *Flowers* beautiful purple.—One of the greatest ornaments of the Alps. *Mr. Murray* finds it with a white flower on Ben Lomond.

** *Calyx pubescent.*

3. S. *nutans* (*Nottingham Catch-fly*), flowers panicled secund cernuous, petals deeply bifid their segments linear, leaves (of the stem) lanceolate pubescent. *E. B. t.* 465.

Hab. Hills at N. Queen's-ferry, *Mr. Brown*. Rocks between Montrose and Arbroath, *G. Don*. *Fl.* July. ♃.

Stems 1 or 1½ f. high. *Radical leaves* obovate, acute, tapering into a long stalk. *Flowers* white, rather large, crowned.

S. *noctiflora* (*Night-flowering Catch-fly*), cal. with 10 angles veined, teeth nearly as long as the tube, stem dichotomous, petals bifid. *E. B. t.* 291.

Hab. Corn-fields, on the coast of Angus-shire, *G. Don*. *Fl.* July. ☉.

One foot or more high. *Leaves* much like the last, pubescent. Upper part of the stem frequently dichotomous, each branchlet terminated with a single flower, and a solitary flower in the axil of the fork. *Flowers* rather large, sweet-scented, pale reddish, almost white. *Peduncles* viscid.

12. STELLARIA.

1. S. *Nemorum* (*Wood Stitchwort*), leaves petiolate cordate upper ones ovate sessile, panicle dichotomous. *Lightf. p.* 228. *E. B. t.* 92.

Hab. Woods and shady places; frequent in the Lowlands, *Lightf.*: as banks of the N. and S. Esk, *Maugh*. Woods at Castlemilk, Woodhall, and Hamilton, *Hopk*. *Fl.* May, June. ♃.

One or one foot and a half tall. *Stems* weak, pubescent above. *Leaves* very large, glabrous but rough with extremely minute elevated dots, sometimes ciliated at the margin. *Cal.* leaves erect, white at the margin. *Petals* narrow, deeply bifid, pure white.

2. S. *media* (*common Chickweed*), leaves ovate, stems procum-

bent with an alternate line of hairs on one side, petals bipartite, stam. 5—10. *Lightf. p.* 172 (*Alsine media*). *E. B. t.* 537.

Hab. Road-sides and waste places, abundant. *Fl.* almost the whole year. ⊙.

Stems weak, with alternate lines of hairs between each pair of leaves, which so admirably distinguish the species. *Leaves* on footstalks, except the uppermost, smooth. *Flowers* small, white, on solitary, axillary and terminal stalks.—It is a good pot-herb, and small birds are very fond of the seed.

3. S. *holostea* (*greater Stitchwort*), stem nearly erect, leaves lanceolate much acuminated finely-serrulate, petals inversely heart-shaped bifid twice as long as the nerveless cal. *Lightf. p.* 229. *E. B. t.* 511.

Hab. Woods and hedges, common. *Fl.* May. ♃.

Plant 1 or 1½ foot high, rather rigid and brittle, somewhat glaucous. *Flowers* large, and with much broader petals than the two following, pure white. *Panicle* of few flowers, leafy.

4. S. *graminea* (*lesser Stitchwort*), stem nearly erect, leaves lanceolate acute entire, panicle much branched, petals very deeply cleft, segments linear scarcely longer than the three-nerved leaves of the cal. *Lightf. p.* 229. *E. B. t.* 803.

Hab. Dry pastures, fields and heaths, common. *Fl.* May. ♃.

One foot high, more slender than the last, and readily distinguishable by its much smaller flowers, large and branching panicle, three-nerved *cal.*, and entire leaves, which are moreover by no means so much acuminated.

5. S. *glauca* (*glaucous Marsh Stitchwort*), stems nearly erect, leaves linear lanceolate entire glaucous, flowers upon long solitary axillary footstalks, petals very deeply cleft their segments linear much longer than the 3-nerved cal. *E. B. t.* 825.

Hab. Wet marshy places. Lochend and Duddingston Loch, Edinb., *Maugh.* Ditch between Dalbeth and Tollcross; and bog beyond Possil, Glasg., *Hopk.* *Fl.* June, July. ♃.

Equally slender with the last, 1 foot high. *Flowers* next in size to *S. holostea.* Readily known from that and *glauca* by its narrower glaucous leaves, *solitary* axillary flowers, and the narrower cal. leaves, which, like the last, are 3-nerved.

6. S. *uliginosa* (*Bog Stitchwort*), stem decumbent ovato-lanceolate entire with a callous tip, flowers in dichotomous panicles, petals bipartite shorter than the cal. *Lightf. p.* 229 (*S. graminea* β.). *E. B. t.* 1074.

Hab. In ditches and rivulets, frequent. *Fl.* June. ⊙.

It is strange that this should have been confounded with *S. graminea.* Its much smaller size and minute *petals,* besides the shape of the *leaves,* will at all times serve to distinguish this common species.

7. S. *cerastoides* (*alpine Stitchwort*), stems decumbent with an alternate hairy line, leaves oblongo-spathulate, peduncles 2 or 3 mostly terminal as well as the cal., which is twice as long as the bifid cor. glanduloso-pilose.

α. leaves hairy. *S. cerastoides Linn. and Gunn. Fl. Norv. Cerastium nivale, G. Don, MSS.*

β. leaves glabrous. *S. cerastoides, E. B. t.* 911. *Wahl. Lapp. p.* 126.

Hab. Ben Nevis, *Mr. Dickson.* Mountains N. of Invercauld, *Mr. J. Mackay.* Ben-a-board and other mountains of Aberdeenshire, *D. Don.* Mountains above Killin, *Mr. Borrer.* Both vars. are found together. *Fl.* July, Aug. ♃.

Four to six inches long. Lower part of the *stem* naked and much branched. *Leaves* subsecund and subfalcate, as observed by Wahlenberg, their points callous. *Flowers* large, pure white. Smith says the *styles* are sometimes 4 and 5, and my capsules have decidedly 10 teeth, so that I have no doubt but future observations upon fresh specimens will induce us to remove it to the genus *Cerastium*, and the MS. name of Mr. G. Don may very well be retained to it. It is common in Iceland, Lapland, and Norway.

8. S. *scapigera* (*many-stalked Stitchwort*), stem shorter than the flowerstalks, leaves linear-lanceolate crowded pubescenti-scabrous at the margin, cal. 3-nerved as long as the petals. *E. B. t.* 1269 (leaves much too broad).

Hab. Hills to the North of Dunkeld, and about Loch Nevis, *G. Don. Fl.* June. ♃.

I possess only cultivated specimens of this remarkable plant, which was first described by Willdenow. He attributes to it single-flowered *peduncles*, but in my plants these peduncles, of which many arise from the extremity of the very short stems, are mostly branched in the middle, where they have 2 small ovate acute membranaceous *bracteas.*

13. ARENARIA.

* *Exstipulate. Leaves ovate.*

1. A. *peploides* (*Sea-side Sandwort*), leaves ovate acute fleshy, *Lightf. p.* 231. *E. B. t.* 189.

Hab. Sea-coast, in loose sandy soils, frequent, as on the shores by Leith, &c., *Lightf. Fl.* July. ♃.

Root long and creeping, slender. *Stems* decumbent at the base, branches erect. *Leaves* large, decussate, connate, fleshy, shining, a little recurved. *Flowers* solitary, or 2—3 together, in the axils of the upper leaves, nearly sessile. *Cal.* smooth. *Petals* white, small, scarcely longer than the cal., distant, broadly ovate, shortly clawed. *Caps.* large, roundish, with many black seeds.—A species with a very different habit from any other *Arenaria.*

2. A. *trinervis* (*three-nerved Sandwort*), leaves ovate acute petiolate 3- (rarely 5-) nerved ciliated, flowers solitary, calyces rough on the keel with 3 obscure ribs. *Lightf. p.* 230. *E. B. t.* 1483.

Hab. Shady woods, &c., as Mearis bank and Dunglass Den, *Dr. Parsons.* Collington and Rosslyn woods and hedges near Redhall, Edinb., *Maugh.* Moist woods and borders of fields about Glasgow, but not common, *Hopk. Fl.* May. ⊙.

Stems 1 f. high, slender, much branched, pubescent. *Upper leaves* sessile. *Flowerstalks* one inch or more long, from the forking of the extremities of the stem; in fruit spreading, the upper part deflexed. *Petals* oblongo-obovate, white, scarcely longer than the acute segments of the cal.

3. A. *serpyllifolia* (*Thyme-leaved Sandwort*), leaves ovate acute subscabrous sessile, calyx hairy its outer leaves 5-ribbed. *Lightf. p.* 230. *E. B. t.* 923.

Hab. Walls and dry waste places, frequent. *Fl.* June. ⊙.

Two to six inches high, erect or procumbent, much branched, pubescent. *Leaves* small, rather rigid. *Flowers* white, on short stalks from forkings of the upper part of the stem or the axils of the leaves. *Petals* as long as the *cal.*

** *Exstipulate. Leaves subulate.*

4. A. *verna* (*vernal Sandwort*), stems (numerous) panicled above, leaves subulate rather obtuse striated, petals obovate longer than the 3-nerved cal. *Lightf. p.* 231 (and *p.* 232 *A. laricifolia.*). *E. B. t.* 512.

Hab. Mountainous pastures, as Arthur's Seat, &c., *Lightf.* King's Park and Blackford hill, Edinb., plentiful, *Maugh. Fl.* May, June. ♃.

Stems 3—4 inches high, slightly hairy, as well as the ovato-acuminate *cal.* and *peduncles.*

5. A. *tenuifolia* (*fine-leaved Sandwort*), stem more or less branched, branches panicled at their extremities, leaves subulate acute, petals lanceolate much shorter than the lanceolate very acuminated 3-nerved cal. *Lightf. p.* 1102. *E. B. t.* 219.

Hab. Walls, rocks and stony barren soils, but rare; Cramond island in the Forth, *Mr. Yalden.* Near Pettycur harbour, *G. Don. Fl.* June, July. ⊙.

Stems 4—6 inches high, throughout remarkably slender, especially the peduncles; glabrous.

6. A. *fastigiata* (*level-topped Sandwort*), stem erect straight, leaves fascicled subulato-setaceous erect, flowers fascicled, cal. much acuminated (white) with 2 central (green) nerves twice as long as the ovate petals. *E. B. t.* 1744. *A. fasciculata Jacq. and Decand.; not Linn. according to Sm.*

Hab. Fifeshire; and rocks on the Angus-shire mountains, *G. Don. Fl.* June. ⊙. (♂ *Decand.*)

Four to six inches high, more or less branched. Very peculiar in its habit and characters, and unlike any other British species. "*Seeds* beautifully toothed, on long stalks." *Sm.*

*** *Stipules at the base of each pair of leaves.*

7. A. *rubra* (*purple Sandwort*), stems prostrate, leaves narrow linear acute plane somewhat fleshy tipped with a very minute bristle, stipules ovate cloven, capsule as long as the cal., seeds compressed angular roughish. *Lightf. p.* 230. *E. B. t.* 852.

Hab. Gravelly or sandy soils, frequent. *Fl.* June. ⊙.

Very much branched and spreading. *Stipules* a pair of ovate, acute,

cloven, white, membranous scales united at their base. *Flowers* numerous, in the axils of the upper leaves, solitary. *Cal.* nerveless, and, as well as the rather short peduncles, glandulose and viscid. *Petals* ovate, red, about as long as the *cal.* *Peduncles* after flowering slightly bent back. The *seeds* constitute the essential character by which this species is distinguished from the following.

8. A. *marina* (*Sea-side purple Sandwort*), stems prostrate, leaves semicylindrical fleshy awnless, stipules ovate cloven, capsule longer than the cal., seed compressed smooth with a broad membranous pellucid border. *Lightf.* (*A. rubra* β.). *E. B. t.* 958.

Hab. Common on the sea-coast. Banks of the Clyde at Helensburgh. *Fl.* June, July. ⊙ (*Sm.*) ♂ (*Hopk.*).

Much larger and stouter in all its parts than the last, besides the remarkable difference in the seeds. It is also less branched and the flowers are fewer. Do not these differences depend upon situation?

14. CHERLERIA.

1. Ch. *sedoides* (*dwarf Cherleria*). *Lightf. p.* 232. *E. B. t.* 1212.

Hab. Near the summits of the Highland mountains, not unfrequent. Ben Teskerney and Ben Challum in Breadalbane; on Baikeval in Rum, *Lightf.* On Mal-grea and Mal-nantarmonach, between Breadalbane and Glen Lyon; and on Ben Achalader in the Braes of Glenurchy, *Dr. Stuart.* Ben Lawers, *Maugh.* *Fl.* July, Aug. ♃.

Stems 2 or 3 inches high, excessively tufted as in *Silene acaulis*, or even more dense. *Leaves* crowded, linear-subulate, channelled above, slightly ciliated and glandular at the edge. *Flowers* solitary, terminal, on short footstalks. *Cal.* yellow green, membranous at the edge.

4. PENTAGYNIA.

15. COTYLEDON.

1. C. *Umbilicus* (*Wall Pennywort*), leaves peltate crenate depressed in the centre, stem spiked with the numerous racemes of pendulous flowers, upper bracteas minute entire. *Lightf.* *p.* 234. *E. B. t.* 325.

Hab. Rocks and old buildings, but very local. Drummadoon, W. side of the Isle of Arran, Craig of Ailsa and ruins of I-colm-kill, *Lightf.* Near Campbell-town, *Mr. Arnott.* By the light-house of the little Cumbraes on the Clyde, *Dr. Brown.* Common on rocks and old walls along the coast from Kelly to Largs; Arran, &c., *Mr. Murray.* *Fl.* June, July. ♃.

Stem from 6 inches to a foot high, rounded. Whole plant succulent. *Leaves* mostly radical. *Flowers* cylindrical, yellowish green.

16. SEDUM.

* *Leaves plane.*

1. S. *Telephium* (*Orpine*), leaves flattish serrated, corymbs leafy, stem erect. *Lightf. p.* 234. *E. B. t.* 1319.

Hab. Borders of fields, hedges and waste places. Upon a rock on the right-hand side of the road going from Dumbarton to Glasgow,

Lightf. Two m. E. of Dumbarton, under hedges, *Dr. Parsons.* Hedge-banks near Rosslyn, *Maugh.* Field between Whitevale and Camlachie, plentiful, *Hopk.* Near Leslie; Inverkeithing, *Mr. Arnott.* Traprair Law, *Mr. Walker.* Fields on Clyde side, a mile below the Bot. Garden, Glasg., *Mr. Murray.* *Fl.* July. ♃.

One to two feet high. *Stem* spotted. *Leaves* large. *Flowers* purple. —Very unlike any other British species.

** *Leaves rounded, fixed by their base.*

2. S. *dasyphyllum* (*thick-leaved Stone-crop*), leaves opposite (alternate on the flowering stems) cordato-ovate obtuse fleshy, stem weak, panicle glutinous. *E. B. t.* 657.

Hab. Rocks and walls, rare. Collington woods, *Mr. Arnott.* *Fl.* June. ♃.

Stems slender, creeping at the base, subviscid; those producing flowers erect, 2—3 inches high. *Leaves* singularly thick and fleshy, glaucous, with a red tinge and dotted. *Flowers* white, tinged with rose colour. *Petals* often 6, and *stam.* 12.

3. S. *album* (*white Stone-crop*), leaves scattered oblong cylindrical obtuse spreading, cyme much branched. *E. B. t.* 1578.

Hab. Walls and rocks, rare. House-tops at Forfar, Glamis, &c., *Mr. Arnott.* *Fl.* July. ♃.

Stems creeping below: flowering ones erect, 3—4 inches high, reddish. *Leaves* pale glaucous green, tinged frequently with red. *Cyme* crowded. *Flowers* white or only tinged with rose colour.

4. S. *villosum* (*hairy Stone-crop*), leaves scattered oblong plane above and as well as the peduncles and stems hairy and viscid. *Lightf. p.* 237. *E. B. t.* 394.

Hab. Bogs and moist rocks by the sides of mountains, abundant. Pentland-hills, *Dr. Parsons.* Hills above Castlemilk and Cathkin, &c., *Hopk.* *Fl.* June, July. ♃ (*Sm.*).

Stem erect, 3—5 inches high, reddish, as are the leaves, or purplish red. A few stolons sometimes are thrown out from the base, on which the leaves are cylindrical. *Flowers* few, alternate, on two or three terminal leafy branches, forming a lax corymb. *Cor.* whitish rose colour.

*** *Leaves rounded, produced below the point of insertion into a kind of spur, which is pressed to the stem.*

5. S. *anglicum* (*English Stone-crop*), leaves ovate gibbous fleshy produced at the base alternate, cyme bifid. *Lightf. p.* 235 (*S. rubens*). *E. B. t.* 171.

Hab. Walls and rocks, frequent; especially in dry exposed situations, as rock of Dumbarton Castle. *Fl.* June, July. ☉.

Two to three inches high, much branched, procumbent below. *Leaves* glaucous green, often with a reddish tinge. *Flowers* few, but very conspicuous from their white starlike appearance, and their purple anthers. *Petals* externally tinged with rose colour.

6. S. *acre* (*biting Stone-crop*), leaves ovate gibbous fleshy produced at the base alternate, cyme trifid leafy. *Lightf. p.* 235. *E. B. t.* 839.

Hab. Rocks, walls and stony places, not uncommon. *Fl.* June. ♃.

Hard as it may be to define, in the specific character, the marks that shall distinguish this from the last, no difficulty will arise when its larger size (3—4 inches in height) and its bright yellow flowers are taken into consideration. Very biting when chewed, and hence called *Wall-pepper*.

7. S. *reflexum* (*yellow Stone-crop*), leaves scattered subulate fleshy produced at the base, flowers subcymose. *Lightf. p.* 234. *E. B. t.* 695.

On walls, roofs of houses and thatched buildings, but rare. In a village going from Edinb. to Lord March's, *Dr. Parsons*. Walls about Craigcrook, Edinb., *Maugh*. Ruins of Craignethan castle, Glasg., *Hopk*. Wall at Corstorphine hill, Edinb., *Mr. Greville*. *Fl.* July. ♃.

Sterile branches with thickly placed leaves, often reflexed. Flowering stem 6—8 inches high. *Cyme* large, yellow. *Flowers* numerous, often of 6 *petals* and 12 *stam.*—Very similar to this plant are the three species of Smith, *S. glaucum, rupestre* and *Forsterianum*.

17. OXALIS.

1. O. *Acetosella* (*Wood-sorrel*), leaves all radical ternate inversely heart-shaped hairy, scape single-flowered, root squamose. *Lightf. p.* 237. *E. B. t.* 762.

Hab. Woods and hedge-banks, frequent. *Fl.* May. ♃.

Leaf-stalks long and slender, reddish. *Leaves* drooping at night. *Scape* with 2 scaly bracteas. *Flower* handsome, drooping, white, with purplish veins. The *leaves* have a very agreeable acid flavour.

2. O. *corniculata* (*yellow procumbent Wood-sorrel*), stem branched spreading, flowers single or subumbellate shorter than the petioles, leaves ternate obcordate pubescent. *E. B. t.* 1726.

Hab. Near Stirling, *Dr. Buchanan in E. B.* Old wall between the Avon and Barncluith, *Hopk*. *Fl.* the summer through. ☉.

Six to eight inches tall. *Flowers* small, yellow, single or two together upon pedicels, with two minute bracteas at their base. *Caps.* large, oblong. *Seeds* with a very elastic *arillus*.—This is a perfect weed in many gardens in Devonshire.

18. AGROSTEMMA.

1. A. *Githago* (*Corn Cockle*) hairy, cal. much longer than the cor., petals entire destitute of a crown. *Lightf. p.* 238. *E. B. t.* 741.

Hab. Corn-fields, too frequent. *Fl.* June, July. ☉.

Two feet high, branched, erect. *Leaves* linear-lanceolate. *Cal.* ribbed, its segments very long. *Flower* large, purple.

19. LYCHNIS.

1. L. *Flos Cuculi* (*Meadow Lychnis* or *ragged Robin*), flowers loosely panicled, petals 4-cleft, capsule roundish 1-celled. *Lightf. p.* 139. *E. B. t.* 573.

Hab. Moist meadows and pastures, frequent. *Fl.* June. ♃.

One to two feet high, reddish green, clammy above. *Leaves* lanceolate. *Cal.* and *flowerstalks* reddish purple. *Petals* rose coloured.

2. L. *Viscaria* (*red German Catchfly*), petals slightly notched at the extremity, capsule 5-celled, stem clammy at the joints. *Lightf. p.* 240. *E. B. t.* 788.

Hab. Rocks in Edinburgh Park, *Dr. Parsons.* Blackford hill near Edinb., *Maugh.* Dundas hill, near Kirkliston, *Mr. P. Neill.* Rocks facing the West a little to the E. of Newburgh, Fifeshire, *D. Don.*; and with a white flower on dry banks near Airly Castle, *G. Don.* Glen between Kinross and the bridge of Earn; and den of Balthayock, Perthshire, *Maugh.* *Fl.* June. ♃.

One foot high, glabrous. *Leaves* lanceolate, acuminate. *Flowers* in a dense panicle, large, rose coloured.

3. L. *alpina* (*red alpine Campion*), glabrous, petals bifid, flowers corymboso-capitate, capsule 1-celled. *E. B. t.* 2254. *D. Don, Descr. of rare Plants of Scotl. p.* 9.)

Hab. Rocks near the summit of the Clova mountains, *G. Don in E. Bot.* *Fl.* June, July. ♃.

Five to six inches high, by no means viscid. *Leaves* lanceolate. *Flowers* rather small, rose coloured.

4. L. *dioica* (*red Campion*), flowers diœcious, capsule 1-celled. *Lightf. p.* 240.

α. flowers red. *E. B. t.* 1579. *L. diurna, Sibth. Ox.*

β. flowers white. *E. B. t.* 1580. *L. vespertina, Sibth. Ox.*

Hab. Under hedges and in grass-fields, common. *Fl.* through the summer. ♃.

One to two feet high, panicled above. Pubescent, viscid in a slight degree about the joints of the stem. *Leaves* ovate, or ovato-lanceolate. *Cal.* in the anther-bearing flowers subcylindrical, in the fruit-bearing ones ovate. In α. the *petals* are rose coloured and are destitute of smell; in β. they are pure white, and towards evening afford an agreeable scent. The different appearances in these two vars. independently of colour, described by authors, are found not to be constant, and Smith does not agree with the continental botanists, who consider them distinct species. Indeed in England I have observed an intermediate state of a very pale rose colour.

20. CERASTIUM.

* *Petals not exceeding the calyx in length.*

1. C. *vulgatum* (*broad-leaved Mouse-ear Chickweed*), hairy viscid suberect, leaves ovate, flowers subcapitate longer than their pedicels. *Lightf. p.* 240. *E. B. t.* 789.

Hab. Fields, pastures and road-sides, common. *Fl.* Apr.—June. ☉.

Six to ten inches high, branched below, dichotomous above. *Petals* narrow, bifid at the extremity. *Caps.* cylindrical, as long again as the cal.

2. C. *viscosum* (*narrow-leaved Mouse-ear Chickweed*), hairy viscid spreading, leaves oblongo-lanceolate, flowers somewhat panicled shorter than their pedicels. *Lightf. p.* 240. *E. B. t.* 790.

Hab. Pastures and waste places, on walls, &c. *Fl.* the whole summer. ♃.

Much resembling the last, but a larger, coarser and spreading plant, with longer and narrower leaves and flowers, shorter than their footstalks in general, and especially in fruit. *Petals* bifid at the extremity.

3. C. *semidecandrum* (*small Mouse-ear Chickweed*), hairy viscid suberect, leaves oblongo-ovate, flowers somewhat panicled shorter than their pedicels, stam. 5, petals but slightly notched. *Lightf. p.* 241. *E. B. t.* 1630. *C. pumilum, Curt. Lond. ed.* 1.

Hab. Hills about Arthur's Seat, *Dr. Parsons.* Walls about the King's Park, Edinb., *Maugh. Fl.* May. ⊙.

No author seems to doubt this being a good species, yet I know not what character of importance can be found. All agree that the number of 5 stam. is not constant: and then, except in the less deeply notched and perhaps rather shorter petals, and its annual root, I do not see how it is to be distinguished from *C. viscosum.*

4. C. *tetrandrum* (*tetrandrous Chickweed*), "hairy subviscid, flowers quadrifid tetrandrous, petals bifid shorter than the cal." (*Sm.*) *E. B. t.* 166 (*Sagina cerastoides*).

Hab. Sandy shores and rocks about the Firth of Forth, *Dickson.* Wall tops, near Edinb., *Mr. Arnott.* Angus-shire coast, *G. Don.* Isle of May, abundant, *D. Don. Fl.* May, June. ⊙.

"*Stems* prostrate, dichotomous, hairy in the upper part. *Leaves* spathulate or obovate, recurved. *Flowers* solitary, on longish footstalks from each division of the stem, which footstalks as the fruit ripens become reflexed. *Petals* cloven, white. *Caps.* with 8 teeth." *Sm. in E. Bot.* "*Caps.* scarcely longer than the *cal.*" *Curtis*[a].

** *Petals longer than the calyx.*

5. C. *arvense* (*Field Chickweed*), leaves linear-lanceolate more or less pubescent especially at the base, petals twice as long as the cal. *Lightf. p.* 241. *E. B. t.* 93.

Hab. Dry gravelly pastures, but not common. Foot of walls near

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[a] The three individuals, *C. semidecandrum, C. pumilum* of Dicks. and Curt. and *C. tetrandrum*, are all met with in the vicinity of Yarmouth; and I find the following observations which were made some years ago by Mr. Turner and myself upon recent specimens. *C. semidecandrum* differs from *C. pumilum* almost solely in the larger size of the petals of the latter, in proportion to its calyx. In the seed-vessel and seeds there is no distinction. *C. tetrandrum* varies with 5 stam. and as many calycine leaves; and when this is the case, there is no means of distinguishing it from *C. semidec.*, but by its smaller size, more upright mode of growth and yellower colour; circumstances undoubtedly not much to be depended on. Sir James Smith's figure in *E. B.* agrees neither with our specimens, nor with Curtis's representation, nor with his own specimens preserved in Mr. Turner's Herbarium. The size of the petals in our plants is intermediate between *C. semidecandrum* and *pumilum*, and when it has 5 stam. and petals, it seems formed to unite the three individuals under consideration.

Wark, by Kelso, abundant, *Lightf.* Guillon Links, *Mr. Arnott.* Near Forfar, *D. Don. Fl.* June. ♃.

Stems branched and decumbent at the base, only a span high, slender. *Flowers* large, pure white, 2 or 3, on terminal stalks. *Caps.* scarcely longer than the *cal.*

6. C. *alpinum* (*hairy alpine Chickweed*), subglabrous or clothed with long white soft silky hairs, leaves elliptical ovate, flowers 1—3, capsule oblong curved. *Lightf. p.* 242. *t.* 9 (*C. latifolium*), a good fig. *E. B. t.* 472.

Hab. Highland mountains, not rare, Ben Lomond, Ben Lawers, Ben Nevis, &c. *Fl.* July. ♃.

Much branched below and creeping, then erect, 3—5 inches high. *Flowers* large, handsome, white. *Petals* bifid at the point.

7. C. *latifolium* (*pubescent alpine Chickweed*), clothed with short rigid yellowish pubescence, leaves elliptical ovate, flowers 1—2, "capsule ovate" (*Sm.*). *E. B. t.* 473.

Hab. Highland mountains, I suspect, rare. I have gathered it on Ben Nevis. Ben Lawers, *Maugh.* Ben Lomond, *Mr. Murray.* E. side of Ben Voirlich, *Mr. Arnott. Fl.* July. ♃.

Generally smaller than the last, and probably often confounded with it. The chief distinction is in the *caps.* There is also, as Sir James Smith observes, a considerable difference in the clothing of the stem and leaves, which in my specimens of *latif.* I find to be always yellowish. Lowermost *leaves* frequently glabrous. *Flowers* large, as in the last.

8. C. *aquaticum* (*Water Chickweed*), upper leaves cordato-ovate sessile, flowers solitary, fruit pendulous. *Lightf. p.* 242. *E. B. t.* 538.

Hab. Sides of rivers and ditches, occasionally. *Fl.* July. ♃.

Stem 1—2 feet long, branched and straggling. *Leaves* large, lower ones on footstalks, with short scattered hairs on the edges and margins, whilst those of *Stellaria Nemorum* (to which this is so closely allied), besides having 5 styles, is only ciliated on the margin, and appears on the surface, when seen under the microscope, very minutely dotted with raised points. *Stems* viscid upwards. The *caps.* opens with 5 teeth or valves. In this respect, too, agreeing best with *Stellaria*, where, indeed, Persoon has placed it.

21. SPERGULA.

1. S. *arvensis* (*Corn Spurrey*), leaves whorled with minute membranaceous stipules at the base, stalk of the fruit reflexed, seeds more or less margined. *Lightf. p.* 243. *E. B. t.* 1535, and *t.* 1536 (*S. pentandra*).

Hab. Corn-fields, frequent. *Fl.* Aug. ☉.

Stems 6—12 inches high, swelling at the joints. *Leaves* narrow, linear, rounded, glabrous or a little pubescent, of 2 bundles from each joint, spreading in a whorled manner. *Panicle* of many flowers. *Pet.* ovate, white, rather longer than the cal. *Stam.* often 5. *Seeds*

roundish, depressed, globose, dotted with raised points; varying extremely in the breadth of the margin. Such as is figured in the *S. pentandra* of Sm. is very common. I should even doubt if the foreign *pentandra* be distinct from this; though its margin is, as Wahlenberg says, "broad, membranaceous, pellucid, and striated in a radiated manner;" and differing from *S. arvensis*, as Smith justly observes, as *Arenaria marina* does from *A. rubra*. In the present case, however, intermediate states are common.

2. S. *nodosa* (*knotted Spurrey*), leaves subulate opposite glabrous connate the lower ones sheathing upper ones bearing clusters of young leaves, petals much longer than the cal. *Lightf. p.* 244. *E. B. t.* 694.

Hab. Wet sandy places, by the sides of lakes and marshes. Bog beyond Possil, plentiful, and banks of the Clyde at Bowling bay, *Hopk. Fl.* July, Aug. ♃.

Three to four inches high, branched and decumbent at the base, where the leaves are three quarters of an inch long, but gradually becoming smaller upwards. *Flowers* large, white, two or three on the terminal branches, peduncled. Whole plant glabrous. *Cal.* nerveless.

3. S. *subulata* (*awl-shaped Spurrey*), leaves subulate subciliated tipped with a bristly point, peduncles solitary very long, petals and capsule as long as the calyx. *Lightf. p.* 244 (*S. laricina*). *E. B. t.* 1082.

Hab. Dry pastures, gravelly and stony places. Pastures W. of Mugdoch castle, *Hopk.* Hills S. of Newburgh, Fifeshire; Craig Rossie, one of the Ochil hills, plentiful, *D. Don.* Near Forfar, *G. Don. Fl.* June, July. ♃.

Small plant, scarcely two inches high, branched and decumbent at the base; each branch terminating in a flowerstalk 1 inch long, with a small flower, which is erect when expanded, but generally drooping before and after. I fear the glandular hairs figured by Curtis, and upon which so much reliance is placed by Smith, will afford no character, as I have specimens (cultivated ones it is true) perfectly glabrous in every part. It approaches very near the following species; but is smaller, paler green, has a decided bristly point, and the *caps.* is much shorter.

4. S. *saginoides* (*Pearl-wort Spurrey*), glabrous, leaves subulate acute awnless, peduncles solitary very long, flowers drooping, petals as long as the cal., caps. twice as long. *E. B. t.* 2105.

Hab. Mountains. Upon Mael-ghyrdy, where I believe it was first discovered in Britain by *G. Don.* Clova and other Highland mountains, *D. Don. Fl.* June. ♃.

This, as well as the last, has much resemblance to *Sagina procumbens*. Wahlenberg says it is readily distinguished from *S. subulata* by its drooping flowers. But according to the *E. Bot.* figure this character does not seem to be constant.

XI. DODECANDRIA.

1. MONOGYNIA.

1. Asarum. *Perianth* single, 3-fid, superior. *Caps.* 6-celled.
2. Lythrum. *Cal.* inferior, with 12 teeth. *Petals* 6, inserted upon the cal. *Caps.* oblong, 2-celled.

2. DIGYNIA.

3. Agrimonia. *Cal.* 5-cleft, with a lobed appendage (*bractea*) at its base. *Petals* 5, inserted upon the *cal.* *Pericarps* 2 in the bottom of the cal.

3. TRIGYNIA.

4. Reseda. *Cal.* of 1 leaf, divided. *Petals* laciniated. *Caps.* of 1 cell, opening at the top.
5. Euphorbia. *Perianth* single, monophyllous, inferior. *Nectaries* (*petals* Linn.) 4—5 inserted upon the perianth. *Stam.* jointed. *Caps.* pedicellate, 3-lobed[a].

(TETRAGYNIA.)

(*Tormentilla officinalis*, Icos. Polyg.)

4. DODECAGYNIA.

6. Sempervivum. *Cal.* 12-cleft. *Petals* 12. *Caps.* 12.

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1. MONOGYNIA.

1. ASARUM.

1. A. *europæum* (*Asarabacca*), leaves binate reniform obtuse. *E. B. t.* 1083.

Hab. West Binny, near Linlithgow, *Miss Liston*. (Probably not really a native either of Scotland or of England.) *Fl.* May. ♃.

Stem scarcely any, two opposite petiolated leaves springing almost

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[a] This gives, it must be confessed, a very erroneous notion of the structure of the flowers in *Euphorbia*. Jussieu first, I believe, suggested the idea of what had been hitherto considered a single flower, being an *involucrum*, including 1 central *pistilliferous flower* without anthers, and several *anther-bearing* monandrous *ones*. Brown has proved this most satisfactorily; and further, that the support of the pistil has, at its summit, in some instances, a 3-lobed *cal.*; and that the joint in the supposed *filaments*, is in reality the termination of the flowerstalk, on which the stamen is seated, without a trace of a perianth. See Mr. Brown's learned Dissertation on the Botany of N. Holland, appended to Flinders' *Voyage*, and *Linn. Trans.* v. 12. p. 99.

immediately from the top of the root, shining. From the axils of these leaves springs a solitary, rather large, drooping *flower*, upon a short footstalk, of a greenish brown colour, and coriaceous *substance;* its segments incurved. *Filaments* produced beyond the *anthers*.

2. LYTHRUM.

1. L. *Salicaria* (*purple-spiked Loosestrife*), leaves opposite cordato-lanceolate, flowers spiked with 12 stam. *Lightf. p.* 247. *E. B. t.* 1061.

Hab. Banks of ditches and rivers in marshy places, frequent. *Fl.* July. ♃.

Two to three feet high, erect. *Stem* 4-sided. *Spikes* very long, of beautiful purple flowers, placed in whorls. *Cal.* tubular, striated, with alternate large and small teeth: between the larger ones in the inner margin, are inserted the oblongo-cuneiform petals. *Stam.* within the tube of the *Cal.*, 6 short and 6 long ones.

2. DIGYNIA.

3. AGRIMONIA.

1. A. *Eupatoria* (*Agrimony*), cauline leaves interruptedly pinnate, terminal leaflet on a footstalk, fruit hispid. *Lightf. p.* 247. *E. B. t.* 1335.

Hab. Borders of fields, and waste places by road-sides. *Fl.* July. ♃.

Two feet high. *Leaflets* deeply serrated, intermediate smaller ones from 3—5-cleft. *Flowers* yellow, on a long branched spike.—Belongs naturally to the Order *Rosaceæ* (*Icosandria*).

3. TRIGYNIA.

4. RESEDA.

1. R. *Luteola* (*Dyer's Weed*), leaves lanceolate entire plane, cal. 4-cleft. *Lightf. p.* 248. *E. B. t.* 320.

Hab. Waste places near villages, as about Dysart, Burntisland and Laswade, *Lightf.* Frequent about Glasgow, *Hopk.* Inverness, *Mr. G. Anderson.* *Fl.* July. ☉.

Two to three feet high, branched. *Spikes* long, of numerous yellowish *flowers*. *Stam.* numerous, hanging down. *Nectary* large, green, crenate on the upper side of the flower. Divisions of the *petals* linear. *Caps.* open at the top, even before it is ripe.—Used in dyeing woollen stuffs of a yellow colour.

2. R. *lutea* (*wild Mignonette*), leaves pinnated upper ones with three segments, cal. 6-cleft. *E. B. t.* 321.

Hab. Hills between Pettycur and Burntisland, *Mr. P. Neill.* Near Kirkcaldy, *Mr. Chalmers.* Between Arbroath and Montrose, *G. Don.* Near Raith, in the Carse of Gowrie, and to the S. W. of Newburgh, Fifeshire, *D. Don.* Road-side between Linlithgow and Falkirk, *Maugh.* *Fl.* July, Aug. ☉? *Sm.*

Deeper yellow than the last. Two of the *petals* with broad lobes.

5. EUPHORBIA[a].

1. E. *Peplus* (*petty Spurge*), umbel of 3-forked rays, partial involucres ovate and, as well as the obovate shortly petiolated leaves, entire, nectaries crescent-shaped horned. *Lightf.* p. 249. *E. B. t.* 959.

Hab. Waste places, corn-fields, and gardens. *Fl.* Aug. ☉.

Eight to ten inches high, branched. Milky juice very acrid; used to destroy warts.

2. E. *exigua* (*dwarf Spurge*), umbel of 3 forked rays, partial involucres lanceolate and, as well as the linear-lanceolate leaves, entire. *Lightf. p.* 250. *E. B. t.* 1336.

Hab. Corn-fields, in light soils and gravelly places. Burntisland, *Lightf.* Field at the marle-pit, near Muttonhole; near Crossgate-toll, and field near Musselburgh, *Maugh.* *Fl.* July—Sept. ☉.

Stem erect, nearly simple, 4—6 inches high. *Leaves* erect. *Nectaries* 4, roundish, with two horns.

3. E. *helioscopia* (*Sun Spurge*), umbel of 5 forked rays, partial involucres obovate and, as well as the wedge-shaped leaves, serrated. *Lightf. p.* 250. *E. B. t.* 883.

Hab. Corn-fields and gardens, frequent. *Fl.* Aug. ☉.

Stem slightly pubescent, 1 foot or more high, often branched at the base. *Nectaries* 4, roundish, entire.

4. E. *Esula* (*leafy-branched Spurge*), umbel of many forked rays, partial involucres somewhat heart-shaped and, as well as the linear-obovate leaves, entire. *E. B. t.* 1399.

Hab. Said to have been found on a bank by Lord Abercorn's house, *Lightf.* Wood near a rivulet at Abercorn, 13 m. from Edinb., *Mr. J. Mackay.* Near Gladsmuir Kirk, in a lane leading from the Haddington road to Elvington; and field near West Pilton, 7 m. N. W. of Edinb., *Maugh.* *Fl.* July. ♃.

One to two feet high, with small branches. *Nectaries* large, cordate, brown, with two horns.

5. E. *Cyparissias* (*Cypress Spurge*), umbel of many forked rays, partial involucres broadly heart-shaped and, as well as the linear mucronated leaves, entire. *E. B. t.* 840.

Hab. Collington woods, near Edinb., *Mr. Arnott.*

Stem 1 foot high, clothed with numerous narrow leaves, which are,

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[a] This genus, of which so few species are inhabitants of northern latitudes, is attended with many difficulties to the student. The number of stamens is by no means constant; nor do they all appear at once; a circumstance to be accounted for, now that we know that each *stamen* is in itself a distinct flower. The rays of the umbel too are variable, starved specimens having fewer than are attributed to them in the specific character. The shape of the *nectaries*, *leaves*, and *involucres*, is more to be depended upon.

however, broader than those of the small branches. *Nectaries* crescent-shaped, yellow[a].

4. DODECAGYNIA.

6. SEMPERVIVUM.

1. S. *Tectorum* (*Houseleek*), leaves ciliated, offsets spreading. *Lightf. p.* 251. *E. B. t.* 1320.

Hab. On house-tops and walls. *Fl.* July. ♃.

The *flowers* of this well known plant are no less beautiful than they are curious in their structure. The number of *stam.* is in reality 24, of which 12, inserted 1 at the base of each petal, are perfect, the rest alternating with the petals, small and abortive; *some* bearing *anthers*, open longitudinally and laterally, producing, instead of pollen, abortive *ovules*: *others* resembling a cuneiform poin ted *scale*, in the inside of which, upon a longitudinal receptacle, are likewise ranged abortive ovules as in the real *germen*;—thus exhibiting the most complete transition from stamens to germens in the same individual flower.

XII. ICOSANDRIA.

1. MONOGYNIA.

1. Prunus. *Cal.* inferior, 5-cleft. *Pet.* 5. *Nut* of the *Drupe* with slightly prominent seams.

(*Cratægus Oxyacantha*, Ord. Pentag.)

(Digynia, Trigynia, Tetragynia.)

(*Cratægus Oxyacantha*, *Pyrus Aucuparia* and *Aria*, Ord. Pentag.)

2. PENTAGYNIA[b].

2. Cratægus. *Cal.* superior, 5-cleft. *Pet.* 5. *Fruit* pulpy, closed[c], with from 2—5 2-seeded *Nuts*.

3. Pyrus. *Cal.* superior, 5-cleft. *Pet.* 5. *Apple* with from 2—5 cells; *cells* generally 2-seeded.

4. Spiræa. *Cal.* inferior, 5-cleft. *Pet.* 5. *Pericarps* 3—12, 1-celled, 2-valved. *Seeds* 1—3 in each cell.

3. POLYGYNIA.

5. Rosa. *Cal.* (5-cleft), the *tube* urceolate, fleshy, including many hairy *pericarps* (*Achenia*). *Receptacle* villous. *Lindl.*

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[a] I dare not introduce the *E. Lathyris* into the Scottish Flora, since the only station given by Mr. Hopkirk, in his *Fl. Glott.*, is a garden at Barncluith.

[b] The styles being very variable in this class, the Order Pentagynia is intended to include those genera which have from 2—5 *Styles*, as well as *Spiræa*, in which genus some species have many styles.

[c] In opposition to the open fruit of the true *Mespilus*, or *Medlar*.

6. Rubus. *Cal.* 5-cleft. *Fruit* superior, composed of many single-seeded, juicy *drupes*.
9. Tormentilla. *Cal.* 8-cleft; segments alternately smaller. *Pet.* 4. *Pericarps* roundish, fixed to a small dry *receptacle*.
11. Dryas. *Cal.* 8—10-cleft; segments equal. *Pet.* 5—8. *Pericarps* with long feathery *awns*.
7. Fragaria. *Cal.* 10-cleft; segments alternately smaller. *Pet.* 5. *Pericarps* inserted upon a large pulpy deciduous *receptacle*.
8. Potentilla. *Cal.* 10-cleft; segments alternately smaller. *Pet.* 5. *Pericarps* roundish, fixed to a small dry *receptacle*.
10. Geum. *Cal.* 10-cleft, alternate; segments minute. *Pet.* 5. *Pericarps* with a long geniculated *awn*. *Receptacle* oblong.
12. Comarum. *Cal.* 10-cleft; segments alternately smaller. *Pet.* 5, less than the cal. *Pericarps* inserted upon a large spongy villous permanent *receptacle*.

(*Spiræa Filipendula*, and *Ulmaria*. Ord. Pentag.)

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1. MONOGYNIA.

1. PRUNUS.

1. Pr. *Padus* (*Bird Cherry*), flowers in pendulous racemes, leaves obovate deciduous glabrous with two glands at the summit of the footstalk. *Lightf. p.* 253. *E. B. t.* 1383.

Hab. Woods, not unfrequent. Collington woods, &c. near Edinb., *Maugh.* Banks of the Clyde, Kelvin and Cart, Glasg., *Hopk.* About Inverness, *Mr. G. Anderson. Fl.* May. ♄.

Small tree. *Leaves* acute, doubly serrated. *Flowers* white. *Drupes* small, black. *Nut* rugose.

2. Pr. *Cerasus* (*wild Cherry*), flowers in nearly sessile umbels, leaves ovato-lanceolate subpubescent beneath. *Lightf. p.* 254 (*Pr. Avium*). *E. B. t.* 706.

Hab. Woods and hedges, not unfrequent about Glasg., *Hopk.* Woods opposite Melville castle, *Lightf.* Perhaps not indigenous. *Fl.* May. ♄.

Rather a large tree, with very smooth bark and straight branches. *Fruit* red or black.—The origin of the garden Cherry.

3. Pr. *domestica* (*wild Plum-tree*), peduncles solitary or two together, leaves ovato-lanceolate subpubescent beneath, branches without spines. *E. B. t.* 1783.

Hab. Woods and hedges about Glasg., *Hopk.*—Seeds perhaps carried by birds. *Fl.* Apr. ♄.

Fruit rather large, round, approaching to ovate, black, with a fine bloom. Smith in *E. B.* seems to consider this a var. of the following.

4. Pr. *insititia* (*wild Bullace-tree*), peduncles in pairs, leaves ovato-lanceolate pubescent beneath, branches ending in a spine. *Lightf. p.* 254. *E. B. t.* 841.

Hab. Hedges about the Abbey of Melrose, *Lightf.* Pentland Hills, *Mr. G. Don.* *Fl.* May. ♄.

Small tree, having black globular *fruit* with a blue bloom.

5. Pr. *spinosa* (*Black-thorn* or *Sloe-tree*), peduncles (mostly) solitary, leaves elliptico-lanceolate subpubescent beneath, branches very spinose. *Lightf. p.* 254. *E. B. t.* 842.

Hab. Hedges, frequent. *Fl.* Apr. May. ♄.

It is difficult, in a few words, to distinguish this well-known shrub from the last. It is much smaller in all its parts, and the branches are more crooked and spinose. In the former, the *leaves* are rather considerably advanced at the time of the blossoms appearing: in this the flowers are generally past before the leaves appear. *Fruit* small, very austere. Used to adulterate Port wine, as the leaves are to mix with tea.

2. PENTAGYNIA.

2. CRATÆGUS.

1. C. *Oxyacantha* (*Hawthorn* or *Whitethorn*), spiny, leaves glabrous cleft into three or five deep serrated segments the lower ones spreading, flowers corymbose, styles 1—2. *Lightf. p.* 255. *E. B. t.* 2504.

Hab. Woods and hedges, almost every where. *Fl.* June. ♄.

Variable in the form of the *leaves* and size and colour of the *petals*, which are often tinged with rose colour. The *cal.* too is more or less downy and acute. Few of our native plants can present a more beautiful sight than a well-grown bush of Hawthorn, with its dense masses of white flowers backed by the shining dark green leaves. Nor is it less desirable on account of its scent; though there are many individual plants perfectly destitute of it. It is excellent for fences, and bears clipping admirably. The fruit (or *haws*) affords a supply of food to innumerable birds in a season when scarcely any thing else is to be obtained.—The *C. monogyna* of Jacquin is but a var. of this.

3. PYRUS.

1. P. *Malus* (*Crab-Apple*), leaves ovate acute serrated, flowers in a sessile umbel. *Lightf.* 258. *E. B. t.* 179.

Hab. Woods and hedges. Frequent about Glasg., *Hopk.* *Fl.* May. ♄.

A good sized tree, the origin of our numerous varieties of garden Apple. *Flowers* large, tinged with rose colour on the outside. *Fruit* austere, of which Verjuice is made.

2. P. *aucuparia* (*Mountain Ash* or *Roan-tree*), leaves pinnated glabrous on both sides, flowers corymbose. *Lightf. p.* 256 (*Sorbus aucuparia*). *E. B. t.* 337.

Hab. Woods; abundant both in the Highlands and Lowlands. *Fl.* May, June. ♄.

A small handsome tree. *Leaflets* elliptico-lanceolate, serrated, entire at the base. *Flowers* small but numerous. *Fruit* red. The wood is much used and valued for its compactness, and the tree itself is possessed of many virtues, according to the superstitious notions of the Highlanders.

3. P. *Aria* (*white Beam-tree*), leaves ovate cut and serrated white and downy beneath, flowers corymbose. *Lightf. p.* 255 (*Cratægus Aria*). *E. B. t.* 1858.

Hab. Woods, but not common, *Sibbald.* Sea-rocks near Lismore, in the Isle of Bernera, *Dr. Walker.* Rocks in the King's Park, Edinb., *Maugh. Fl.* June. ♄.

Small tree, remarkable for the white mealiness or close down on the under-side of the *leaves, flowerstalks* and *cal.* Veins of the leaves very prominent beneath. *Fruit* scarlet.

4. SPIRÆA.

* *Shrubby.*

1. S. *salicifolia* (*willow-leaved Spiræa*), leaves ovato-lanceolate serrated glabrous, racemes terminal compound. *E. B. t.* 1468.

Hab. Woods. Wild in Scotland, *G. Don,* in *E. B.* Abundant in woods at Arniston, Craigie hall and Cramond Bridge, *Maugh.* Cliesh woods, *Mr. Arnott.* Banks of Cartlane Crags, Glasg., *Hopk. Fl.* July. ♄.

Small branching shrub. *Flowers* in crowded racemes, forming a dense sort of spike of a rose colour.

** *Herbaceous.*

2. S. *Filipendula* (*common Dropwort*), leaves interruptedly pinnate, all the leaflets uniform deeply cut or serrated paniculato-cymose. *Lightf. p.* 259. *E. B. t.* 284.

Hab. Mountain pastures. Hills to the S. W. of Arthur's Seat, *Lightf. Fl.* July. ♃.

Root with rather long *tubers. Stem* a foot high, panicled above, *Leaflets* small, lanceolate, intermediate ones not half their size. *Stipules* united, serrated. *Flowers* yellowish white, tipped with rose colour.

3. S. *Ulmaria* (*Meadow-sweet*), leaves interruptedly pinnate serrated downy beneath, terminal leaflet largest and lobed, flowers in compound (and as it were proliferous) cymes. *Lightf. p.* 259. *E. B. t.* 960.

Hab. Meadows and banks of ditches. *Fl.* July. ♃.

Stem 3—4 feet high, branched upward. *Leaflets* ovate, acuminate, very large, especially the terminal (generally) 3-lobed one; intermediate ones minute. *Flowers* yellowish white, numerous, sweet-scented.

3. POLYGYNIA.

5. ROSA[a].

* Pimpinellifoliæ. *Setigerous, with arms crowded, nearly uniform, or unarmed; mostly without bracteas. Leaflets ovate or oblong. Segments of the Cal. connivent, persistent. Disk scarcely any.*

1. R. *rubella* (*red-fruited dwarf Rose*), arms crowded equal, fruit elongate pendulous. *Lindl. p.* 40. *E. B. t.* 2521.

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[a] The Scottish Roses, imperfectly as they are now understood, would have been much more so were it not for the accurate investigation the

Hab. Banks of the Dee about Abergaldy, *Mr. Anderson,* in *Linn. Trans.* vol. xi. p. 244. *Fl.* July. ♄.

"*Branches* erect, reddish, 3—4 f. high, covered all over, as far as their extremities, with nearly equal weak bristles and prickles. *Stipules* dilated towards their extremities, eroded at the edge, fringed with glands, naked; *petioles* sparingly glandular, without hairs as are the *leaflets,* which are 7—11, almost flat, oval, pointed, simply serrated or nearly so, dark green above, paler beneath. *Flowers* solitary without bracteæ, pale or deep red; *peduncles* hispid; *tube of the calyx* less so; *segments of the calyx* erect, entire, rough, shorter than the *petals,* which are concave and emarginate; *disk* not thickened. *Fruit* pendulous, long, ovate, scarlet, crowned by the converging, shorter *segments of the calyx.*" L.—The stems and branches covered with bristles and a few prickles, together with the red pendulous fruit, distinguish this species from *R. spinosiss.* At the same time I must remark that Mr. Lindley's "*var.* β. *melanocarpa* fructu nigro fusco breviore" is, as he himself says, just intermediate between *R. rubella* and *spinosiss.*

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whole genus has been subjected to by my friends, Mr. Jos. Woods and Mr. Lindley, whose two valuable Monographs, the former of the *British species* in the *12th vol. of the Linn. Trans.*, the latter in a most excellent work entitled *Rosarum Monographia,* have set in a comparatively clear light what was before a mass of confusion. Doubts will still remain as to what are species and what are not. I must confess that I give the preference to the characters and arrangement of Mr. Lindley; and, conscious that I could offer no original remarks or descriptions of equal importance to his, I conceive that I am doing an acceptable service to the student of the Scottish Roses in giving all that relates to the genus in *Mr. Lindley's own words.*

It will be necessary to say a few words on the terms employed by Mr. Lindley, and the degree of importance he attaches to the different parts.

"*Arms* is a term used to express the presence of *bristles* and *prickles* indiscriminately.

Bristles (*setæ*) are little straight prickles, tipped with a gland, and known from real glands by their rigidity, greater length, and tendency to pass into prickles. They exist probably on all species upon the *rootshoots,* but are quickly changed into prickles by losing their gland. On their presence depend some of the most natural divisions. On the fruit and peduncles, however, they are found to be of little value; for in *R. rubiginosa* and *tomentosa* setigerous and naked fruit is borne even on the same bush. They vary too on the fruit and peduncles of *R. canina* and *spinosiss.*, but appear constant on *R. involuta, Sabini,* and *villosa.*

The form of the *prickles* (*aculei*) distinguishes the Div. *Caninæ* from *Villosæ*; and their inequality separates the *Rubiginosæ* from the former. They are variable and not to be depended upon on the petioles.

Glands are distinguishable by their scent, and are mostly attached to the underside of the leaf as in the Div. *Rubiginosæ.*

Pubescence on the branches, peduncles or tube of the *cal.* is considered by Mr. L. an invariable character; but it is of little or no consequence on the leaves.

The *tube of the calyx* and the fruit can in few instances be employed in forming distinguishing marks. All varieties of form may be found in *R. canina* and *tomentosa.*

All the *Roses* yet known are found between the 19th and 70th degrees of N. latitude." *L.*

2. R. *spinosissima* (*Burnet Rose*), arms unequal, leaflets plane without pubescence simply serrated. *Lindl. p.* 50. *Lightf. p.* 260. *E. B. t.* 187.

Hab. Dry mountain pastures, as sides of hills by Duddingston Loch, &c. *Lightf.* Links near Cockenzie, with petals red at the base[a], *Mr. Weatherhead* and *Maugh.* Back of Balnarty hill, Fifeshire, and elsewhere, Highlands, *Mr. Arnott. Fl.* June. ♄.

" A dwarf, compact, dark, (sometimes reddish,) green bush, with creeping roots. *Branches* short, stiff, much divided, beset by very dense, unequal *prickles* and *setæ*; some of the former being usually falcate. *Leaves* close together, quite free from pubescence; *stipules* either narrow or dilated, of nearly equal breadth; *petioles* setigerous and prickly; *leaflets* about 7, bright green, flat, simply serrated, orbicular or nearly so. *Flowers* solitary, without bracteas, cyathiform, blush coloured; *peduncles* naked, or rough with glands and setæ, as are the *calycine segments*, which are short and entire; *tube* ovate or nearly round, naked; *petals* emarginate, concave; *disk* not thickened; *styles* villous, distinct. *Fruit* ovate or nearly round, black or dark purple, crowned by the connivent or somewhat spreading *segments of the calyx*." *L.*

Mr. Lindley further observes, that this species varies wonderfully with regard to size, the form of the fruit, and the surface of the peduncles. The branches are sometimes unarmed, tortuose or straight, sometimes slender, and very prickly; the younger they are the more they are armed.

3. R. *involuta* (*prickly unexpanded Rose*), arms very unequal and crowded, leaflets doubly serrated, petals convolute, fruit bristly. *Lindl. p.* 56. *E. B. t.* 2068.

Hab. Scotch mountains, *Dr. Walker.* Glen Lyon, *Dr. Stuart.* Hebrides, *Mr. J. M'Kay.* Isle of Arran, *G. Don. Fl.* June. ♄.

Two or three feet high, compact, reddish grey. *Branches* not much divided, erect, with very strong, dense, unequal, straight *prickles* and *setæ*, and a cracked bark. *Leaves* close together, with a slight turpentine smell when bruised; *stipules* narrow, somewhat concave, acute, naked, but toothletted and fringed with glands; *petioles* hairy, glandular and setigerous, a few straight, longer prickles being interspersed; *leaflets* 5—7, concave, ovate, acute or obtuse, doubly serrated, naked above, or nearly so, and opaque, villous beneath with a few pale glands, scarcely distinguishable from the surface. *Flowers* solitary, without bracteas, red and white; *peduncle*, sphærical *tube of the calyx*, and simple *calycine segments* bristly all over with pungent *setæ*, and clammy glands; *petals* obcordate, involute; *disk* a very little elevated; unripe *fruit* crowned by the converging *segments of the calyx*.

" This comes nearest *R. Sabini*, which is however a tall plant, 5—10 feet high. When its prickles are mixed with bristles, the largest of the former are falcate; when there are no bristles they are straight,

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[a] *R. ciphiana*, Sibbald.

and the leaves are hairy on both sides, sometimes hoary. Peculiar to Scotland." *L.*

4. R. *Sabini* (*Sabine's Rose*), bristles few and prickles unequal distant, leaflets doubly serrated tomentose, segments of the calyx compound. *Lindl. p.* 59. *Woods in Linn. Trans. v.* 12. *p.* 188.

β. *Doniana*, bristles scarcely any, prickles nearly straight.

Hab. Found in Scotland by *Mr. G. Jackson.* Dunkeld, *Mr. Borr.* and *Hook.* β. Mountains of Clova, *G. Don*; and water of Leith, near Collington, *Mr. Borr.* Abundant in Orkney, *Dr. Gillies. Fl.* June. ♄.

" *Shrub* 8—10 feet high. *Branches* erect, stout, dark brown, armed with distant, falcate *prickles* and a few *setæ*. *Leaves* grey, distant; *stipules* narrow, fringed with glands; *petioles* downy, glandular, armed with little prickles; *leaflets* 5—7, oval, doubly serrate, flat, hairy on both sides, a little glandular beneath. *Flowers* usually solitary, sometimes in great bunches; *peduncles* and *calyx* very hispid; the *tube* round; *calycine segments* compound. *Fruit* round, scarlet, hispid with setæ." *L.*

Mr. Lindley doubts whether this may not be, after all, a production of *R. tomentosa*, var. *mollis*.

** Villosæ. *Root-shoots straight, prickles nearly so. Leaflets ovate or oblong, with their serratures spreading. Leaflets of the calyx connivent, persistent; disk of the calyx thickened, closing over the mouth.*

5. R. *villosa* (*Apple Rose*), leaflets elliptical obtuse, fruit very large with numerous rigid crowded bristles, segments of the calyx viscid hispid. *Lindl. p.* 74. *E. B. t.* 583. *R. gracilis, Woods.*

Hab. Killin, Breadalbane, and coast of Fife[a], *Lightf.* Woods at Crossbasket, near Glasg., scarcely wild, *Hook.* Common in some parts of Scotland, *Sm.* in *E. B. Fl.* June. ♄.

" The largest of the genus, sometimes forming a small tree, with a trunk as thick as a man's arm. *Branches* dull, very glaucous, frequently without any tinge of red, armed with strong, straight, or somewhat falcate, equal prickles, either scattered or under the *stipules*; *branchlets* with a few setæ or none. *Leaves* usually very large and gray, densely downy every where; *stipules* spreading, acute, finely serrated and fringed with glands; *petiole* glandular, with pale, falcate, unequal prickles; *leaflets* about 5, very unequal, elliptical, flat, rugose, with a turpentine smell when bruised, very coarsely and doubly serrated, the serratures diverging. *Flowers* in pairs, either blush coloured, or deep red, of a middling size; *bracteæ* large, ovate, concave, rugose, hoary, nearly smooth above; *peduncles* very short, they and the *calyx* protected by rigid unequal setæ, and clammy with glands; *tube* ovate, glaucous; *calycine segments* narrow, compound, spreading; *petals* obcordate, a little crenate at the edge; *disk* elevated, not very thick; *styles* hairy, di-

[a] These stations may belong to the following species, *R. tomentosa*, which has been often taken for the present one.

stinct, usually much shorter than the ripe fruit. *Fruit* either purple or deep red, round, with a thickened short peduncle, covered with stiff setæ, and crowned by the connivent, pale brown, clammy segments of the calyx.

" This Rose most nearly approaches *R. tomentosa*, but the fruit of the latter is never more than hispid, whilst that of the former has a considerable number of rigid bristles, and even prickles, scattered over its surface." *L.*

6. R. *tomentosa* (*downy-leaved Dog Rose*), leaflets ovate rather acute, fruit hispid or naked. *Lindl. p. 77.*

α. vera, shoots bent, segments of the calyx compound. *R. tomentosa*, *E. B. t.* 990, *et t.* 1896 (*R. scabriuscula*).

β. mollis, shoots straight, segments of the calyx subsimple. *R. mollis*, *E. B. t.* 2459. *R. villosa*, *R. heterophylla*, and *R. pulchella*, *Woods*.

Hab. *α.* Sea-side between Caroline Park and Crammond, *Mr. Grevil e.* *β.* Banks of the Dee, Strathaven, Bamffshire, and near Durness, Sutherland, *Mr. Anderson.* Scotland, *Mr. G. Jackson.* Between Ravelston wood and Edinb., *Mr. Borr.* and *Hook. Fl.* June. ♄.

" Seven or eight feet high, spreading, very gray. *Branches* somewhat glaucous, armed with straight (rarely falcate), equal, scattered prickles and without setæ. *Leaves* hoary with down; *stipules* concave, dilated, toothletted and fringed with glands; *petioles* slightly prickly and glandular; *leaflets* about 5, oblong or ovate, obtuse, doubly serrated; serratures diverging, rarely converging; soft and rugose, paler beneath, and sometimes slightly glandular; when bruised having a turpentine smell. *Flowers* one or more, reddish, cup-shaped, with short stalks; *bracteas* ovate or oblong, downy, longer or shorter than the peduncles, which are hispid with unequal setæ and glands; *tube of the calyx* ovate, oblong or round, usually hispid, sometimes nearly smooth; *segments of the calyx* compound, spreading, always hispid at the back; *petals* entire, obcordate, concave; *disk* thickened, flat; *styles* very hairy, distinct. *Fruit* somewhat purple, round or obovate, or depressed, usually hispid, crowned by the converging calycine segments, which sometimes however fall off immediately after the fruit is ripe.

" An extremely variable species, and closely allied to *R. canina*. The marks of difference are the straight prickles, diverging serratures, hispid fruit, calycine segments and peduncles, and soft leaves of the former, as contrasted with the hooked prickles, converging serratures, smooth calyx and its deciduous segments, and naked or harshly pubescent leaves of the latter." *L.*

***** Rubiginosæ. *Prickles unequal, sometimes setiform, rarely (if ever) none. Leaflets ovate or oblong, glandular, with the serratures divergent. Segments of the calyx persistent. Disk incrassated. Shoots bent.* (This division is remarkable for the numerous glands on the lower surface of the leaves. *R. tomentosa* has sometimes glandular leaves, and in such case the inequality of the prickles of the *Rubiginosæ*, and their red fruit, can alone distinguish them.)

7. R. *rubiginosa* (*Sweet-briar*), prickles hooked, leaflets rugose opaque, calyces and peduncles hispid. *Lindl. p.* 86.

α. *vulgaris*, prickles strong very unequal, styles hairy, fruit ovate or oblong. *Lightf. p.* 262 (*R. suavifolia*). *R. rubiginosa*, *E. B. t.* 991, *R. eglanteria*, *Woods.*

ϑ. *inodora*, prickles very much hooked nearly equal, leaflets less glandular, segments of the calyx deciduous before maturity. *R. dumetorum*, *E. B. t.* 2579 : *et R. Borreri*, *Woods.*

Hab. α. Hedges about Red Hall, *Dr. Parsons.* Sea-side between Caroline Park and Crammond, *Mr. Greville.* ϑ. Near Edinb., *Mr. Borrer.* *Fl.* June. ♄.

Much branched, 3 or 4 feet high, with a more compact habit than *R. canina*. *Branches* bright green, flexuose, armed with numerous, hooked, unequal, scattered, strong prickles; on the rootshoots sometimes very small, and tipped with a gland. *Leaves* dull, rugose, green, very sweetscented, covered beneath with numerous brown glands; *stipules* dilated, toothletted, hairy beneath; *petioles* with a few strong, unequal prickles; *leaflets* 5—7, roundish or ovate, pointed, doubly serrated, somewhat spoonshaped, usually naked above, covered with hairs, and very pale and rugose beneath. *Flowers* 1—3 together, concave, pale blush coloured; *bracteæ* pale, lanceolate, acute, concave, slightly hairy and glandular; *peduncles* and *calyx* hispid, with weak setæ; *tube* ovate; *calycine segments* reflexed, pinnate; *petals* obcordate; *disk* much thickened; *germens* 30—40; *styles* hoary, distinct. *Fruit* orange-red, roundish, oblong or obovate, hispid or smooth; crowned by the ascending segments of the calyx.

Of the 8 European vars. of this species mentioned by Mr. Lindley, besides the two abovem entioned, two others are given as natives of Britain (*R. micrantha* of Woods, and *umbellata* of Leers), to which a third (*R. sepium* of Thuill) has since been added by the Rev. Mr. Bree; but I am not aware that they have been found in Scotland.

"The more common appearance of this plant is a compact, much branched bush, with pale red flowers in threes, bristly scarlet fruit, and bright green but not shining leaves, which are powerfully and gratefully fragrant. All these characters are, however, liable to considerable variation, and have been the foundation of a multitude of supposed species. ϑ. is a very remarkable plant, and seems almost to unite *R. rubig.* with *R. can.*" *L.*

**** Caninæ. *Prickles equal, hooked. Leaflets ovate, without glands; serratures connivent. Segments of the calyx deciduous. Disk incrassated, closing over the mouth of the tube. The larger shoots bent.*

8. R. *canina* (*Dog Rose*), leaflets rigid ovate, germens 20—30. *Lindl. p.* 98. *Lightf. p.* 262. *E. B. t.* 992. *R. surculosa*, *sarmentacea*, *et nuda*, *Woods.*

ε. *dumetorum*, leaves hairy on both sides, segments of the cal. and peduncles smooth. *R. dumetorum*, *Woods.*

ζ. *cæsia*, leaflets cæsious hairy on both sides, tube of the calyx elliptical. *R. cæsia*, *E. B. t.* 2367. *Woods.*

Hab. Hedges, &c., common. ζ. Tay nuilt in Mid Lorn, Argyleshire, and in Strath Tay, between Dunkeld and Aberfeldie, *Mr. Borrer.* Side Loch Tay, *Mr. Anderson.* Banks of Clyde, above Clyde iron works, *Hopk.*—ε. Invercarrity, *C. Lyell, Esq. Fl.* June. ♄.

"A straggling briar, 6—7 feet high. The *branches* bright green, reddish brown on the sunny side; armed with strong, scattered, hooked, nearly equal prickles (rarely straight and then much closer together) and no setæ. *Leaves* distant, pale or dark green, frequently tinged with red in exposed situations, usually much blistered by the sun, quite free from pubescence; *stipules* rather dilated, a little reflexed, acute-pointed; *petiole* armed with a few, little, hooked prickles; *leaflets* 5—7, ovate or oblong, acute or rounded, sessile or subsessile, flat or concave, even or rugose, coarsely or finely, simply or doubly serrated, the serratures always acute, without glands, and converging. *Cymes* 1- or many-flowered; *bracteæ* ovato-lanceolate, appressed, acute, concave or flattish, finely toothed and glandular at the edge; *peduncles* and *calyx* smooth; *tube* ovate; *segments of the calyx* spreading, sharp-pointed, somewhat divided; *petals* obcordate, concave; *disk* very thick, elevated; *styles* nearly smooth, distinct, included or a little exserted. *Fruit* ovate or oblong, scarlet, shining without any bloom; *pericarps* large uneven.

"Surely it is not surprising that the most common species of the genus, whose fruit is scarcely ripe before it is devoured by small birds, and deposited by them in every variety of soil and situation, should frequently assume features considerably dissimilar to its original appearance; and yet, upon such differences, which in *less* variable genera would hardly have been trusted, have writers upon Roses attempted to establish their species. Much stress has been laid on the circumstance of pubescence; on its absence, presence and quantity *R. collina, dumetorum* and *canina* of authors, and *bractescens* of Woods, are divided from each other: yet a careful observer may trace them running into each other. The *var. cæsia* is a curious plant, first taken up in *E. B.* It is scarcely found out of the Highlands of Scotland, and even there very sparingly. Its very glaucous hue distinguishes it. There is a remarkable peculiarity in *R. can.*, that the further to the North any var. of it is found, the more villous are the styles; and the less so as it proceeds southwards; these organs being quite destitute of hair in Madeira.—In Tartary, Russia and Siberia, an esteemed drink is made from the twigs andleaves; and the flowers yield a spirit, and are preserved with honey and sugar by the inhabitants of the Volga and Ukraine." *L.*

***** Systylæ. *Styles cohering in a lengthened column. Stipules adnate. Habit much like that of the last division.*

9. R. *arvensis* (*white Field Rose*), shoots flagelliform, prickles unequal falcate, leaflets glaucous beneath. *Lindl. p.* 112. *Lightf. p.* 261. *E. B. t.* 188.

Hab. Hedges and borders of fields, occasionally. Frequent in the lowlands, *Dr. Burgess.* Bogle's hole, Glasg., *Hopk. Fl.* June, July. ♄.

Branches flagelliform, procumbent, slender, dull glaucous purple, armed with scattered, falcate, or straightish equal prickles, those of the

old shoots almost white, of the young ones smaller and red, sometimes none (in weak specimens). *Leaves* distant, dark green, or on a chalky soil yellowish; *stipules* narrow, flat, naked, fringed with glands, red in the middle; *petioles* pubescent, with scattered glands and little falcate dorsal prickles; *leaflets* 5—7, flat, ovate, somewhat waved, simply serrated, very glaucous beneath; the rib somewhat hairy. *Flowers* solitary on the branchlets, numerous on the rootshoots, white, with a yellow base, and a slight scent, at first cyathiform, afterwards more open; *peduncles* rough with glands and a very few setæ; *tube of the calyx* ovate, naked; *calycine segments* short, ovate, concave, a little divided, those which are so, rough with glands; *petals* obovate, emarginate; *stamens* persistent; *disk* elevated, fleshy; *germens* 15—25; *styles* united into a long smooth column. *Fruit* scarlet, round or oblong.

This is readily distinguished by the long smooth column of the styles from all the British species, except the *R. systyla*, which is known by its assurgent, not trailing shoots, which are of a bright green colour. *R. arvensis* is the Ayrshire Rose of the gardens, figured in *Bot. Mag.*: another, however, goes by that name, the *R. capreolata* of *Mr. Neill*, in the *Edin. Phil. Journ.*, which is *R. sempervirens.*

10. R. *systyla* (*long-styled Rose*), shoots assurgent, prickles very stout hooked. *Lindl. p.* 111. *Woods in Linn. Trans. v.* 12. *p.* 230. *E. B. t.* 1895 (*R. collina*).

Hab. Hills, Ridrie, and hills to the N. of Milngaire, *Hopk. Fl.* June. ♄.

A shrub with the habit, and for the most part with the characters of *R. can.*, but differing chiefly in having its styles united into a long smooth column, and more flowers in a cluster.

6. RUBUS.

1. R. *idæus* (*Rasp-berry*), leaves pinnate with 5 or 3 leaflets white and very downy beneath, footstalks channelled, stem nearly erect prickly. *Lightf. p.* 263. *E. B. t.* 2443.

Hab. Woods frequent, even in the Highlands. *Fl.* June. ♄.

Stems woody and prickly. *Leaflets* subovate, somewhat cut and serrated. *Flowers* pendulous. *Petals* small. *Fruit* scarlet in a wild state.

2. R. *suberectus* (*red-fruited Bramble*), leaves pinnate with five or seven ovate leaflets hairy beneath upper ones ternate, stems nearly erect, prickles minute nearly straight. *Anderson in Linn. Trans v.* 11. *p* 218. *t.* 16. *E. B. t.* 2572. *D. Don, MSS. ined.*

Hab. Near Loch Ness and the Highlands of Aberdeen and Perthshire, *Anderson.* Woods at Inverary; banks of Loch Duble, two miles from Inverary, road-side between Govan and Renfrew, *Maugh.* Hills of Angus-shire, *G. Don.* Banks of the burn that runs from Mugdoch Loch above the waterfall, and in the wood south of Mugdoch Castle, *Hopk.* Near Loch Lomond, abundant, *D. Don. Fl.* June. ♄.

Growing tolerably upright, without support. *Prickles* scattered. *Leaf-*

lets roundish, ovate, sharply serrated, smooth and even above. *Panicle* rather lax, racemose. *Petals* rather large, white, obovate. *Cal.* at length reflexed. *Fruit* of few perfect grains, deep red, agreeable in flavour, and somewhat resembling that of *R. idæus*. In habit resembling *R. corylifolius*, but more upright; leaves having often 7 leaflets (never the case with the other two) which are generally more acuminated and smoother on the upper surface, the undermost and upper pair sessile; the prickles more rare and shorter, the fruit dark red, not purple, *And.*

3. R. *cæsius* (*Dew-berry*), leaves ternate very pubescent or hairy beneath the lateral ones much lobed externally, stem prickly rounded prostrate glaucous, cal. embracing the fruit. *Lightf.* *p.* 264. *E. B. t.* 826.

Hab. Under hedges and waste places in the Lowlands, but not very common, *Lightf.* Between Dalkeith and Perth-head, 9 m. from Edinb., rare, *Maugh.* *Fl.* July. ♄.

Stems weak, glaucous-green, subherbaceous. *Leaflets* rotundato-ovate, cut, slightly lobed at the margin and serrated, the lateral ones with large lobes on the outside. *Pet.* white or reddish. *Fruit* rather large, of a few black *berries*, covered with a blue bloom, of an agreeable subacid flavour.

4. R. *corylifolius* (*hazel-leaved Bramble*), "leaves of about 5 ovate leaflets hairy beneath, stems rounded diffuse, with scattered nearly straight prickles." *And. in Linn. Trans. v.* 11. *p.* 219. *E. B. t.* 827.

Hab. Hedges and borders of fields, occasionally; banks of the Clyde about Carmyle, *Hopk.* Hedges and moors, common, *D. Don.* Rosslyn woods, &c., *Mr. Greville.* *Fl.* July. ♄.

Stems very long, trailing (18—20 feet, *And.*) fragile and spongy, reddish, rarely angled, every where having slender straightish prickles. *Leaflets* hairy, soft beneath. *Fruit* atroviolaceous, hemisphærical, of an agreeable acid; *berries* few, rather large, rounded. *Cal.* of the fruit reflexed. The only steady mark of distinction between the present plant and *R. fruticosus*, notwithstanding that their general appearance is so dissimilar, is that in *R. fruticosus* the prickles are constantly placed on the ridge of the angle or furrow of the stem, whereas those of *R. corylifolius*, besides being more slender, more numerous and of irregular size, are indiscriminately scattered all over the shoot, which is generally round, rarely angled and more spongy and brittle than *R. frutic. And.*

5. R. *fruticosus* (*common Bramble*), "leaves of about 5 petiolated leaflets hoary with pubescence beneath, prickly upon the angles of the stem, prickles hooked." *And. Linn. Trans. v.* 11. *p.* 221. *Lightf. p.* 264. *E. B. t.* 715.

Hab. Woods and hedges. Frequent about Glasg., *Hopk. Mr. Anderson* observes that it is seen in the N. of Britain, and that he never saw it in Aberdeenshire or Perthshire, where it gives place to *R. suberectus*. *Fl.* July. ♄.

Stems long and very stout, with large and mostly hooked prickles.

Leaflets narrower and more attenuated at the base than the last; generally hoary beneath; often with scattered hairs on both sides, when it becomes the *R. villosus* of D. Don's *MSS. ined.* Mr. Anderson again remarks, under this species, that the only constant mark of distinction between this and the *R. corylif.* is to be found in the situation of the prickles.

6. R. *saxatilis* (*Stone Bramble*), leaflets 3 slightly downy, runners creeping herbaceous, panicle of few flowers. *Lightf. p.* 265. *E. B. t.* 2233.

Hab. Stony mountainous places, especially in the Highlands. Rosslyn woods, *Maugh.* Pentland hills, near Collington, *Mr. Arnott.* Cleghorn wood; Boniton, near Lanark; among hazel bushes a little above Calderwood, and at Gourock plentifully, Glasg., *Hopk. Fl.* June. ♃.

This and the two following species are, happily, as easy to be distinguished as the four preceding ones are difficult. The present is erect, slender, 8—10 inches high, with a few weak, straight prickles. *Leaves* 2—3, leaflets ovate. *Petals* minute, narrow, greenish yellow. *Fruit* of a very few, red, large, clustered drupes.

7. R. *arcticus* (*arctic Bramble*), leaflets 3 glabrous obtusely serrated, stem without prickles bearing (mostly) 1 flower, petals roundish notched. *E. B. t.* 1585.

Hab. Rocky mountainous parts in the Isle of Mull, *Dr. Walker.* High regions of Ben-y-glo, Blair in Scotland, *Richard Cotton, Esq. Fl.* June. ♃.

I wish some botanist would confirm the stations above given in *E. Bot.* for this beautiful plant, whose fruit is so highly prized by Swedish epicures. It is impossible for any one in the least versed in plants to confound it with any thing else. *Stems* 4—6 inches high, slender, having 3 or 5 *leaves. Flower* deep rose colour, large, single. *Fruit* purplish red.

8. R. *Chamæmorus* (*Cloud-berry*), diœcious, leaves simple lobed, stem without prickles and having a single flower. *Lightf. p.* 266. *t.* 13. *E. B. t.* 716.

Hab. Abundant upon many of the mountains, especially in the Highlands, as Ben Lomond, &c. Top of the Eastern Cairn hill, one of the Pentlands, *Mr. Sommerville* and *E. J. Maughan.* Cleghorn and Boniton woods with the *R. saxatilis*, and on the Campsie hills, *Hopk. Fl.* July. ♃.

Root creeping and throwing up 2—3 slender, simple stems, about 8 or 10 inches high, with 2 or 3 leaves, which are plicate, lobed, and serrated. *Flower* solitary, large, white. *Cal.* of large ovate segments. *Petals* large, rotundato-ovate, white. Around the germens is a fleshy ring with short processes tipped with a gland (abortive stam. ?). *Fruit* of several, large, dull orange-coloured, aggregated drupes, of an agreable flavour; much used by the people of Norway and Lapland as food; and, being buried in the snow, they keep well through the winter.

7. FRAGARIA.

1. F. *vesca* (*Wood Strawberry*), root with creeping scyons, hairs of the pedicels appressed sericeous. *Lightf. p.* 267. *E. B. t.* 1524.

Hab. Woods, frequent. *Fl.* May—July. ♃.

Leaves ternate, silky beneath.

2. F. *elatior* (*Hautboy Strawberry*), "cal. of the fruit reflexed, hairs of the petioles and peduncles all very patent and subdeflexed." *E. B. t.* 2197.

Hab. Road-sides and borders of fields near houses, not indigenous, *Hopk.* Old walls at Branksome. *Fl.* June—Sept. ♃.

This is much larger than the last, and said by Smith to be essentially distinguished from it, by the hairs on the peduncles being very patent and even deflexed. My specimens, however, from Branksome, and those gathered by *Mr. Borrer* in Sussex (as mentioned in *E. B.*) have the hairs on the peduncles quite erect and appressed. The flowers are said to be diœcious. This is not always the case; my specimens having some perfect stamens and producing fruit plentifully. The fruit is deeper red, and has a peculiarly fine flavour. May not this be a var. of the last arising from cultivation, and the plants supposed indigenous be in every instance the outcast of gardens[a]?

8. POTENTILLA.

* *Leaves pinnate.*

1. P. *anserina* (*Silver-weed*), leaves interruptedly pinnate deeply serrated silky beneath, stem creeping, peduncles axillary single-flowered. *Lightf. p.* 268. *E. B. t.* 861.

Hab. Moist meadows and road-sides, abundant. *Fl.* June, July. ♃.

Plant varying much in the degree of silkiness; sometimes silky and white on both sides. *Flowers* large, yellow. *Leaflets* lanceolate.

** *Leaves digitate.*

2. P. *argentea* (*hoary Cinque-foil*), leaves quinate, leaflets cuneiform cut white and downy beneath their margins revolute, stem decumbent. *Lightf. p.* 270. *E. B. t.* 89.

Hab. Barren stony soils in pastures and road-sides, but not common. Den of Bethaick, near Perth, &c., *Lightf.* Blackford hill and Binny-craig, near Edinb., *Maugh.* Craig-end between Perth and bridge of Ern, *Mr. Murray.* Rocks, Seedlay hills, Angus-shire, common, *G. Don.* Near Newburgh, *D. Don.* *Fl.* June. ♃.

Stems 1 foot long. *Leaflets* varying in width and degree of incision. *Flowers* terminal, small, yellow, subcorymbose; *calyx* white, hoary.

3. P. *verna* (*Spring Cinque-foil*), radical leaves quinate, leaflets obovate green on both sides sharply serrated hairy beneath and at the edges, petals obcordate longer than the cal., stem decumbent. *Lightf. p.* 270. *E. B. t.* 37.

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[a] *F. sterilis* of most authors is here removed to *Potentilla.*

Hab. Rocky hilly pastures, and mountains. S. W. side of Arthur's seat, and near the top of Craig-calleach in Breadalbane, *Lightf.* King's Park, Edinb., and hills about N. Queensferry, common, *Maugh.* *Fl.* May, June. ♃.

This varies much in the alpine parts of the continent; but with us is a small woody recumbent plant of 4—5 inches in length, more or less hairy. *Leaflets* obtuse. *Flowers* at the end of weak leafy branches, 2 or 3 together on long footstalks, yellow.

4. P. *opaca* (*Saw-leaved hairy Cinque-foil*), radical leaves of 7 or 5 oblongo-cuneiform deeply serrated hairy leaflets, petals obcordate a little longer than the cal., stem filiform decumbent. *E. B. t.* 2449.

Hab. Received by the late Mr. Donn, of Cambridge, from Scotland. Hills of Clova, rare. Braes of Balquidder, Perthshire, *G. Don.* *Fl.* June. ♃.

Larger in all its parts than *P. verna*, and, as Mr. Nestler observes, in his excellent Monograph of the genus, very nearly indeed allied to it. It differs, he says, in the *stem* and *petioles* being of a reddish colour, and the whole plant of a more slender habit; the *radical leaves* are upon very long footstalks, and the *flowers*, when past perfection, become drooping, having *petals* of a golden yellow with a fulvous spot at their base.

5. P. *aurea* (*golden Cinque-foil*), radical leaves quinate those of the stem ternate, leaflets wedge-shaped their margins with silky hairs deeply serrated at the extremity, petals obcordate larger than the cal., stem decumbent. *E. B. t.* 561.

Hab. Ben Lawers and other mountains in Breadalbane, *Mr. J. Mackay* in *E. B.* Near the summit of Ben-y-cailleach in Breadalbane, *Dr. Walker.* Hills of Clova and Braes of Balquidder, *G. Don.* *Fl.* June, July. ♃.

"Very different from *P. verna*, not only in the silky fringe, but also in the form of the leaflets, which resemble those of *Alchemilla alpina*." *Nestl.*—For my own part I wish more decided marks could be found for distinguishing the 3 last species.

6. P. *reptans* (*common creeping Cinque-foil*), leaves quinate, leaflets obovato-cuneiform serrated, peduncles axillary single-flowered longer than the leaf, stem filiform creeping. *Lightf.* *p.* 271. *E. B. t.* 862.

Hab. Meadows and pastures, and by way-sides. Banks of the Clyde, near Dalbeth, *Hopk.* *Fl.* June—Aug. ♃.

Stems taking root at the joints, and throwing up at each joint a pair of *leaves*, which are a little hairy at the edges and nerves beneath, on long petioles. Smaller or exterior segments of the *cal.* as long as the rest, though narrower.

**** Leaves ternate.*

7. P. *tridentata* (*trifid-leaved Cinque-foil*), leaves ternate, leaflets oblongo-cuneiform three-toothed at the extremity gla-

brous above hairy beneath, petals ovate longer than the cal., stem ascending. *E. B. t.* 2389.

Hab. Werron hill and the East rocks of Clova, *G. Don. Fl.* May, June. ♃.

This is the second[a] instance I have to record of a plant which had heretofore been considered a native of N. America only, having been found upon the eastern side of Scotland by the late Mr. G. Don. It is totally unlike any other British species; does not exceed 4—5 inches in height, and is terminated by 3 or 4 rather large white flowers.

8. P. *Fragaria* (*barren Strawberry*), leaves ternate, leaflets obovate deeply serrated silky on both sides (especially beneath), petals obcordate as long as the cal., stems procumbent. *Poiret, Encycl. Lightf. p.* 268, and *E. B. t.* 1785 (*Fragaria sterilis*).

Hab. Woods, banks, and dry pastures. *Fl.* March, April. ♃.

Peduncles terminal, single or two together. *Flowers* white. This wants the essential character of *Fragaria,* and is rightly placed by the continental authors in the present genus. *Seeds,* or rather seed-vessels, rugose, not smooth as in *Fragaria,* according to Smith's definition of that genus.

9. TORMENTILLA.

1. T. *officinalis* (*common Tormentil*), leaves ternate all sessile, leaflets lanceolate inciso-serrate, stem nearly erect dichotomous. *Lightf. p.* 272 (*T. erecta*). *E. B. t.* 863.

Hab. Barren and heathy places, common. *Fl.* June, July. ♃.

Root large and woody, used medicinally, and by the Laplanders for staining leather of a red colour. *Stem* weak, 6—8 inches long. *Peduncles* axillary and terminal. *Flowers* rather small, yellow, drooping before expansion.

2. T. *reptans* (*trailing Tormentil*), leaves ternate on footstalks, leaflets obovato-cuneiform inciso-dentate, stem prostrate. *Lightf. p.* 273. *E. B. t.* 864.

Hab. Borders of fields and waste places, but not common, *Sibbald.* N. side of the canal, Possil marsh, below the bridge, *Hopk.* Road-side between Hamilton and Cambuslang, *Mr. Murray.* Near Kirkcaldy, *Mr. Stewart.* Near Ardvorlich, *Mr. Arnott.* Road-side between Glasgow and the village of Bowling; and near Moulinarn, Perthshire, *Maugh. Fl.* June, July. ♃.

Stems prostrate, but not rooting, varying much in length. *Flowers* twice the size of the last. This, as well as the last species, has sometimes 5 petals and 10 calycine segments; and then the plant becomes a perfect *Potentilla,* with which it accords entirely in habit. Many of the continental botanists, on these accounts, abolish the genus *Tormentilla:* and Scopoli has done so with the remark "Monoculum hominem ab humano genere quis separabit?"

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[a] The first was *Juncus tenuis.*

10. GEUM.

1. G. *urbanum* (*common Avens*), flowers erect, awns naked, cauline leaves ternate, radical ones lyrato-pinnate. *Lightf. p.* 273. *E. B. t.* 1400.

Hab. Woods and hedges, frequent. *Fl.* June. ♃.

Root with a sweet smell that has been compared to cloves. *Stems* erect, 1—2 feet high. *Leaves* very variable. *Radical* ones on long footstalks, with 2 or 4 small lateral pinnæ and a great terminal 3-lobed leaflet. *Stem* leaves sessile, ter- or quinate: the lower leaflets, as Sir James Smith observes, however, may rather be considered large *stipules*, ovate, the rest lanceolate; all of them inciso-serrate. *Flowers* small, yellow. *Petals* roundish, entire, patent, as well as the *cal.*

2. G. *rivale* (*Water Avens*), flowers drooping, awns feathery, cauline leaves ternate, radical ones interruptedly pinnato-lyrate. *Lightf. p.* 274. *E. B. t.* 106.

Hab. Marshes and wet moory grounds, frequent. *Fl.* June, July. ♃.

Shorter but stouter than the last, and less branched. *Flowers* much larger, with erect purplish calyces and erect dull orange-coloured petals, which are clawed and broadly obcordate. *Head* of *fruit* pedicellate. *Awns* hooked in both species.—There is a var. found in Collington woods by Mr. Maughan, which seems precisely intermediate between this and *G. urbanum*, and which Smith suggests may be a hybrid.

11. DRYAS.

1. Dr. *octopetala* (*Mountain Avens*), petals 8, leaves simple serrated. *Lightf. p.* 274. *E. B. t.* 451.

Hab. Highland mountains, in many places. Upon the micaceous mountains in Breadalbane; and on the limestone rocks in Skye; on a vast limestone tract called Creg-achnocaen, on the confines of Ross-shire and Sutherland, *Lightf.* Upon Carn-dearg, in Glen Creran, and near the top of Malmore, in Glenco, Argyleshire, *Dr. Stuart.* Braes of Inver Naver, and common along the coast of Sutherland, *Mr. Borrer* and *Hook. Fl.* June. ♃.

Stem short, procumbent, scaly from the withered bases of old leaves. *Leaves* ovato-elliptical, evergreen, glabrous and wrinkled above, white and downy beneath, margins revolute. *Petioles* longer than the leaves. *Peduncles* downy, the down mixed as on the underside of the leaves with purple glands or bristles, solitary. *Flowers* large, white.

12. COMARUM.

1. C. *palustre* (*Marsh Cinque-foil*). *Lightf. p.* 276. *E. B. t.* 172.

Hab. Peat-bogs and marshes, frequent. *Fl.* July. ♃.

Stems 6—8 inches long, ascendent. *Leaves* petiolate, with 7 lanceolate deeply serrated leaflets; upper ones quinate or ternate, sessile; with a pair of ovate entire or cut *stipules*. *Flower-stalk* branched. *Flowers* dingy purple, with a large, coloured, spreading *cal.* and very minute *petals*. Scarcely different in genus from *Potentilla*, where, indeed, Nestler places it.

XIII. POLYANDRIA.

1. MONOGYNIA.

* *Petals* 4.

4. Papaver. *Cal.* 2-leaved, caducous. *Pet.* 4. *Stigma* radiated. *Caps.* superior, discharging its seeds by pores under the permanent stigma.
2. Chelidonium. *Cal.* of 2 leaves, caducous. *Pet.* 4. *Stigma* 2-lobed. *Pod* superior, linear, 1-celled, of 2 valves. *Seeds* numerous, crested, free.
3. Glaucium. *Cal.* of 2 leaves, caducous. *Pet.* 4. *Stigma* 2-lobed. *Pod* superior, linear, 1-celled, of 2 valves. *Seeds* numerous, dotted, imbedded in a spongy substance, which fills the pod.
1. Actæa. *Cal.* of 4 leaves, caducous. *Pet.* 4. *Berry* 1-celled. *Seeds* numerous, plane.

** *Petals* 5.

8. Cistus. *Cal.* of 5 leaves, 2 smaller than the rest. *Pet.* 5. *Caps.* superior, with 3 *valves* and many *seeds*.
7. Tilia. *Cal.* 5-partite, deciduous. *Pet.* 5. *Pericarp* coriaceous (*Nut, Decand.*), 5-celled, without valves; cells 2-seeded (sometimes only 1 *cell* and 1 *seed*).

** *Petals numerous.*

5. Nymphæa. *Cal.* of 4—5 leaves. *Pet.* numerous, inserted upon the germen beneath the stamens. *Berry* many-celled, many-seeded. *Hort. Kew. ed.* 2.
6. Nuphar (*Sm.*). *Cal.* 5—6 leaves. *Pet.* numerous, inserted as well as the *stam.* upon the receptacle. *Berry* superior, many-celled, many-seeded. *Hort. Kew. ed.* 2.

2. PENTAGYNIA. (*Styles* 2—6.)

9. Aquilegia. *Cal.* (*Cor., Sm.*) of 5 leaves, deciduous, coloured. *Pet.* (*Nectaries, Sm.*) 5, terminating below in a horn-shaped *spur* or *nectary*.
10. Stratiotes. *Spatha* of 2 leaves. *Cal.* 3-cleft. *Cor.* of 3 petals. *Berry* inferior, angular, with 6 cells, many-seeded.

(*Reseda Luteola*, Dodec. Trig. *Helleborus*, Ord. Polyg.)

3. POLYGYNIA.

* *Pericarps indehiscent,* 1-*seeded.*

13. Thalictrum. *Cal.* (*Pet., Sm.*) of 4—5 leaves. *Pet.* none. *Pericarps* without awns (ecaudate).

12. Clematis. *Cal.* (*Pet.*, *Sm.*) of 4—6 leaves. *Pet.* none. *Pericarps* terminated by a long, mostly feathery awn (*caudate*).
11. Anemone. *Involucre* of 3 divided leaves, distant from the flower. *Cal.* (*Cor.*, *Sm.*) petaloid, of 5—9 leaves. *Pet.* none. *Pericarps* with or without awns.
14. Adonis. *Cal.* of 5 leaves. *Pet.* 5—10, without any nectary. *Pericarps* without awns.
15. Ranunculus. *Cal.* of 5 leaves. *Pet.* 5, with a nectariferous pore[a] at the base. *Pericarps* without awns. (In *R. Ficaria* there are 3 cal. leaves and many petals.)

** *Pericarps dehiscent, 1-celled, many-seeded.*

18. Caltha. *Cal.* (*Cor.*, *Sm.*) of 5 leaves, petaloid. *Pet.* none. *Pericarps* several, compressed, spreading, with many seeds.
16. Trollius. *Cal.* (*Cor.*, *Sm.*) of 5 or many leaves. *Pet.* (*Nect.*, *Sm.*) 5 or many, minute, tubular at the base. *Pericarps* cylindrical, many-seeded.
17. Helleborus. *Cal.* (*Cor.*, *Sm.*) of 5 petals, subcoriaceous, persistent. *Pet.* (*Nect.*, *Sm.*) 8—10, very small, tubular, somewhat two-lipped, nectariferous. *Pericarps* compressed, nearly erect, many-seeded.

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1. MONOGYNIA.

1. ACTÆA.

1. A. *spicata* (*Herb Christopher*), racemes ovate. *E. B. t.* 918.

Hab. Cliesh woods, *Mr. Arnott.* *Fl.* May. ♃.

One foot to two feet high, slightly branched, leafy. *Leaves* petiolate, thrice ternate; *leaflets* ovate, deeply serrated, the upper ones frequently lobed. *Raceme* on a long stalk, terminal. *Petals* smaller than the *cal.*, white.

2. CHELIDONIUM.

1. Ch. *majus* (*Celadine*). *Lightf. p.* 278. *E. B. t.* 1581.

Hab. Waste places, about towns and villages, but not common. *Fl.* May, June. ♃.

Stem about two feet high, rounded, slightly hairy, brittle, full of a fetid yellow juice. *Leaves* pinnated, with generally 5 leaflets, which are decurrent, broadly ovate, lobed, with the lobes again crenato-lobate. *Flowers* on long stalked umbels, yellow, rather small. *Pod* long, somewhat turgid.

3. GLAUCIUM.

1. Gl. *luteum* (*yellow-horned Poppy*), peduncles 1-flowered, leaves (of the stem) amplexicaul sinuate, stem glabrous. *Lightf. p.* 279 (*Chelidonium glaucium*). *E. B. t.* 8.

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[a] This nectariferous pore is analogous to the tubular petals (nectaries of Sm.) in *Trollius* and *Helleborus*, only in these last the broad expansion is wanting which forms the principal part of the petal in *Ranunculus*.

Hab. Sea-coasts. Near Queensferry and at Charlestown, *Lightf.* Sandy shores near Gosford and N. Queensferry, *Maugh.* Shores at Helensburgh, plentiful, *Hopk.* Arran, abundant, *Mr. Murray. Fl.* July, Aug. ⊙.

One foot to two feet high, every where glaucous. *Leaves* scabrous, especially on the upper side, lower ones pinnatifid, upper ones variously lobed. *Flowers* very large, beautiful, bright yellow, succeeded by *pods* of from 6—10 inches in length.

4. PAPAVER.

* *Capsules hispid.*

1. P. *Argemone* (*long-prickly-headed Poppy*), capsule clavate hispid, stem leafy many-flowered. *Lightf. p.* 279. *E. B. t.* 643.

Hab. Corn-fields, but not common, *Dr. Parsons. Fl.* June. ⊙.

Whole plant hairy, 1 foot or more high, mostly a good deal branched upwards. *Leaves* pinnate or bipinnate and cut, the segments narrow; lower *leaves* on long footstalks. *Flowers* small. *Petals* narrow, scarlet.

** *Capsules glabrous.*

2. P. *dubium* (*long-smooth-headed Poppy*), capsules glabrous oblong, stem many-flowered hairy, bristles of the flower-stalks appressed, leaves pinnatifid. *Lightf. p.* 280. *E. B. t.* 644.

Hab. Corn-fields, &c.; the most common kind in N. Britain, *Lightf. Fl.* July. ⊙.

Stems 1 foot to 2 feet high, hispid with spreading hairs. *Flowers* large. *Petals* broad, palish scarlet.

3. P. *Rhœas* (*common red Poppy*), capsules glabrous nearly globose, stem many-flowered bristly, bristles of the flowerstalks (as well as of the stem) spreading, leaves pinnatifid. *Lightf. p.* 279. *E. B. t.* 645.

Hab. Abundant amongst corn. *Fl.* June, July. ⊙.

Admirably distinguished from the last by its short capsule, and spreading hairs on the footstalks of the flowers. *Pet.* broad, deep scarlet.

4. P. *somniferum* (*white Poppy*), capsule globose glabrous, stem many-flowered and, as well as the glaucous amplexicaul leaves, glabrous. *E. B. t.* 2145.

Hab. Published as British in *E. B.* on the authority of specimens sent, by *Miss Watson*, from the neighbourhood of Delvine House, Angusshire, growing in newly-trenched ground, by road-sides, &c. *Fl.* July. ⊙.

Two to four feet high. *Leaves* subovate, erect and lobed. *Flowers* very large, generally white, with a purple eye; but varying extremely in colour. *Caps.* large, globose, with a spreading lobed *stigma*. From the unripe capsules *opium* is extracted: and on this account plants have been cultivated, the seeds of which have escaped into adjoining fields. Native of the S. of Europe.

5. P. *cambricum* (*yellow Poppy*), capsules glabrous oblong, stem many-flowered nearly glabrous, leaves pinnated, leaflets petiolate ovato-lanceolate cut. *E. B. t.* 66.

Hab. Banks of the water of Leith, near Woodhall, *Mr. Sommerville* and *Maugh.* Braid woods and Cliesh woods, *Mr. Arnott. Fl.* June —Aug. ♃.

Flowers yellow. *Stigma* small, upon rather a long style.

5. NYMPHÆA.

1. N. *alba* (*white Water Lily*), "leaves cordate, stigma of 16 ascending rays." *Hort. Kew. ed.* 2. *Lightf. p.* 283. *E. B. t.* 160.

Hab. Lakes and ditches, very frequent. Lochend, Edinb., *Maugh.* Near Glasg., not unfrequent, *Hopk.* and *Mr. Murray. Fl.* July. ♃.

This magnificent aquatic, although long retained in the same genus with the following, has many points of difference. Here the white *petals*, as large externally as the great calycine segments, internally diminish gradually into *stamens*. Salisbury calls the central globose point of the stigma a *nectary*. The *fruit* (or berry, as it is called) is soft and fleshy, scarred with the points of insertion of the *stam.* and *petals*, and decays without opening. *Seeds* small, extremely numerous.

6. NUPHAR.

1. N. *lutea* (*yellow Water-Lily* or *Nuphar*), leaves cordate their lobes approximate, cal. of 5 leaves, stigma expanded (entire) with from 14—20 rays. *Hort. Kew. ed.* 2. *Lightf. p.* 482 and *E. B. t.* 159 (*Nymphæa lut.*).

Hab. Lakes and ditches, but not very common, *Sibbald* and *Dr. Parsons.* Lochend, *Maugh.* Lakes, frequent, about Glasg., *Hopk.* In the Clyde 1 m. below the Bot. Garden, Glasg., *Mr. Murray. Fl.* July.

Flowers large, yellow, 2 inches in diameter. *Cal.* leaves large. *Pet.* numerous, very obtuse, thick and fleshy, deep orange, one row placed just below the stamens. Outer *stamens* the broadest and something resembling the petals. *Fruit* (berry) very large, flagon-shaped (whence, I apprehend, in conjunction with the smell, the application of the term *Brandy-bottle*), glabrous, fleshy. *Seeds* many, large.

2. N. *Kalmiana* (*least yellow Water-Lily* or *Nuphar*), leaves cordate their lobes subapproximate, stigma cut (*toothed, Sm.*) with from 8—12 rays. *Hort. Kew. ed.* 2. *p.* 294. *Curt. Bot. Mag. t.*1243. *E. B. t.* 2292 (*Nuphar minima*).

Hab. Discovered in 1809, by *Mr. Borrer*, in a pool near the farm of Corrie-Chastel, at the foot (not upon the summit) of Ben Cruachan; also in Loch Baladren. Loch of Monteith, Stirlingshire, between the islands and shore, *Mr. Arnott.* Loch Duble near Inverary, *Maugh. Fl.* July.

This plant agrees in every particular with the specimens of *N. Kalmiana* I have from N. America, and equally with the specific character given of that species in the 2d ed. of *Hort. Kew.* I cannot, therefore, hesitate about restoring the older name to it. The essential differences are noted in the specific character, to which I may

add that the plant is smaller in all its parts than the preceding, the *flower* not measuring an inch across when fully expanded. The *petioles* are two-edged in both species, and I fear but little reliance can be placed on the approximation of the lobes of the leaves. The flower represented in *Bot. Mag.* is smaller than in my American and my Scotch specimens, and the leaves rounder.

7. TILIA.

1. T. *europæa* (*Lime* or *Linden-tree*), flowers destitute of nectary, leaves cordate acuminate serrated, pericarp ribbed woody. *Lightf. p.* 280. *E. B. t.* 610.

Hab. In walks and avenues, as at Inverary, &c.; but probably not indigenous, *Lightf.* *Fl.* July. ♄.

A large and handsome tree. *Flowers* small, greenish, fragrant, on a stalked cyme, springing from the centre of a large, lanceolate, foliaceous *bractea*, which falls off with the fructified *cymes*. *Cal.* leaves and petals ovato-lanceolate. *Fruit* generally 1-celled and 1-seeded. *Pericarp* very thick, woody, in which respect it differs principally from the *parvifolia* of Ehrh. and Sm., the *microphylla* of Vent. and Decand.

8. CISTUS.

1. C. *Helianthemum* (*common Dwarf Cistus*), somewhat shrubby procumbent, leaves elliptical oblong somewhat hairy mostly white and pubescent beneath the margin slightly revolute, stipules lanceolate. *Lightf. p.* 280. *E. B. t.* 1321, and *t.* 2208 (*C. tomentosus*).

Hab. Dry pastures, but not very common; King's park, Edinb., and Island of Lismore, *Lightf.* Banks of the Mouse, at Cartlane crags; and pastures about Airdrie, *Hopk.* Frequent on Campsie and Cathkin hills; also on the banks of the Allan, near the bridge, and Moncrieff hill, *Mr. Murray.* Gravelly hills, Angus-shire, *G. Don* (under the name of *C. tomentosus.*) *Fl.* July, Aug. ♄.

Flowers yellow, showy, in loose terminal *racemes*. Pubescence branched or starry. Very variable in hairiness, and in the width and revolution of the margin of the leaves. I can find no character to distinguish the *C. tomentosus* of *E. B.* either as a species or well marked variety.

2. PENTAGYNIA.

9. AQUILEGIA.

1. A. *vulgaris* (*common Columbine*), spur of the petals incurved, capsules hairy, stem leafy many-flowered, leaves nearly glabrous, styles as long as the stam. *Lightf. t.* 284. *E. B. t.* 297.

Hab. Woods, not unfrequent, as in Collington woods, near Edinb., *Dr. Parsons.* Banks of the Clyde at Blantyre Priory, and at the falls; bottom of Cartlane crags and wood above Castlemilk, Glasg., *Hopk.* Daldowie, near Glasg., *Dr. Brown.* Bank below Stirling Castle, *Maugh.* *Fl.* June. ♃.

Two to three feet high. *Leaves* biternate; *leaflets* 3—5 lobed, radical ones on long footstalks, cauline ones sessile. *Flowers* large, drooping, mostly purple. Exterior *stam.* imperfect; but not forming a plaited lacerated membrane, as described and figured in *E. B.*, at least not in any specimens that I have examined.

10. STRATIOTES.

1. S. *aloides* (*Water-soldier*) leaves ensiform triangular aculeato-serrate. *E. B. t.* 379.

Hab. Ditches and lakes. Duddingston Loch, *Maugh.* Loch of Clunie, *Rev. Mr. M'Ritchie.* Forfar Loch, *Mr. Arnott.* *Fl.* July. ♃.

A most remarkable plant, with numerous radical *leaves* like those of an Aloe, 6—8 inches long; thrown up from creeping stolons, which run deep into the mud. *Scape* 4—6 inches long, compressed, two-edged. From the centre of a two-leaved compressed spatha arises one white *flower*. *Pet.* large, handsome. Sometimes the flowers are diœcious, and sometimes the *stam.* are on the same flower with the 5- or 6-cleft styles.

3. POLYGYNIA.

11. ANEMONE.

1. A *nemorosa* (*Wood Anemone*), leaves ternate lobed and cut, involucre the same petiolate, stem single-flowered, capsules without awns. *Lightf. p.* 284. *E. B. t.* 355.

Hab. Moist woods and pastures, and upon the high mountains. Frequent on Ben Lomond. *Fl.* Apr.—June. ♃.

Stem 4—8 inches high, simple. *Flowers* large, white, tinged with purple on the outside.—This is the only one of this beautiful genus of which Scotland can boast, and two out of the four attributed to England (*A. apennina* and *ranunculoides*) are but the outcasts of gardens.

12. CLEMATIS.

1. Cl. *Vitalba* (*Traveller's Joy*), stem sarmentose, leaves pinnate, leaflets cordato-ovate inciso-lobate, petioles scandent, peduncles rather shorter than the leaves. *E. B. t.* 612.

Hab. Collington woods, *Maugh.* Near Callander, *Mr. Arnott.* *Fl.* May, June. ♄.

Stem many feet long, climbing. *Petioles* acting as tendrils. *Flowers* greenish white, panicled. *Capsules* with long feathery tails, which have a beautiful appearance in the winter.—This plant is common in the S. of Britain, especially in chalky soils: in the N. gradually becoming scarcer. Are the plants truly wild in the places above-mentioned?

13. THALICTRUM.

1. Th. *alpinum* (*alpine Meadow-Rue*), stem simple nearly leafless, raceme simple terminal, flowers drooping, segments of the leaves glabrous. *Lightf. p.* 286. *E. B. t.* 262.

Hab. Pastures in the Highland mountains, plentiful. *Fl.* July. ♃.

Radical *leaves* upon long footstalks, biternate, leaflets roundish, crenate or lobed, dark green. *Stam.* 10—12. *Germen* 2—4. *Flowers* few.

2. Th. *minus* (*lesser Meadow-Rue*), leaves tripinnate, leaflets trifid glaucous, flowers panicled drooping. *Lightf. p.* 285. *E. B. t.* 11.

Hab. Hilly pastures, especially in stony ground. Kil-chomin, in Ila, and at Icolmkill, *Lightf.* Pastures about Loch Rannoch, in Perthshire, and many other places, *Dr. Stuart.* Links of Rattrey, Aberdeenshire, plentiful, *Mr. Murray.* N. coast of Sutherland and Sandside, Caithness, *Mr. Borrer* and *Hook.*

Stem about 1 foot high. *Leaves* small, glaucous, glabrous. *Panicle* much branched.

3. Th. *majus* (*greater Meadow-Rue*), "leaves tripinnate, leaflets lobed" (mostly trifid), "branches of the panicle subumbellate, flowers drooping," *Sm. E. B. t.* 611.

Hab. Hills about N. Queensferry, *Maugh. Fl.* July. ♃.

Twice or thrice the size of the former in all its parts. *Leaves* often with 5 unequal lobes. I gathered this plant at Queensferry some years ago, in company with my friend Mr. Maughan, and saw many specimens which appeared to me to be intermediate between it and *Th. minus.* It certainly affords no good specific character.

4. Th. *flavum* (*common Meadow-Rue*), stem erect branched furrowed, leaves bipinnate, leaflets wedge-shaped trifid, panicle much branched subcorymbose, flowers erect. *Lightf. p.* 284. *E. B. t.* 367.

Hab. Banks of rivers, but rare. At N. Queensferry, *Dr. Parsons;* but Mr. Arnott suspects the *Th. majus* has been mistaken for it. Banks of the Clyde, at Dalbeth and Bowling Bay, *Hopk.* Daldowie, and at Rutherglen bridge, Glasg., *Dr. Brown.* Carmyle woods, on the banks of the Clyde, *Mr. Murray.*

Two to three feet high. *Flowers* very yellow, from the numerous upright *stam.* It varies in the breadth of the lobes of the leaves.

14. ADONIS.

1. A. *autumnalis* (*Corn Adonis*, or *Pheasant's-eye*), petals concavo-connivent scarcely longer than the glabrous cal., pericarps reticulate collected into an ovate head, stem branched. *E. B. t.* 308.

Hab. Amongst corn, occasionally about Glasgow, *Hopk. Fl.* Sept. Oct. ☉.

Eight to twelve inches high. *Leaves* thrice compound; the segments linear. *Cor.* of about 8, remarkably concave, bright scarlet petals, which from their colour and globose form have given rise to the French name "*goutte de sang,*" and indeed to its classical generic one, the ancients having supposed it to have sprung from the blood of Adonis.

15. RANUNCULUS.

* *Pericarps transversely wrinkled. Petals white; claw yellow, with a nectariferous pore.* (*Decand.*)

1. R. *aquatilis* (*Water Crowfoot*), stem floating submersed, leaves capillaceo-multifid, floating ones tripartite their lobes cut, petals obovate larger than the cal., pericarps glabrous or hispid. *Lightf. p.* 295. *E. B. t.* 101.

β. all the leaves capillaceo-multifid. *R. pantothrix, Decand. Syst. Veg. v.* 1. *p.* 235.

Hab. Lakes, ditches, and rivers, abundant. *Fl.* May. ♃.

This varies in the size and shape of the lobes of the upper *leaves*, which are generally cuneate, and more or less deeply and obtusely cut and notched, sometimes peltate. The *pericarps* vary in hispidity. I have seen specimens which before the fruit was ripe had very apparent bristles, but were afterwards glabrous. These slight variations taken into consideration, together with a small difference in the size and shape of the petals, seem to have given rise to the *R. tripartitus* of Decand. and the *R. obtusiflorus* of *D. Don's MSS. ined.*; for I can find no other marks whatever.—In β. all the leaves are repeatedly divided in a di-trichotomous manner, yet gradations of specimens may be found where the one kind runs completely into the other. Sometimes the segments of the dichotomies are short and spreading, so as to form a nearly orbicular outline; at other times they are long and parallel to one another. Decandolle describes the fruit as glabrous, but Mr. G. Don finds the *pericarps* setoso-pilose, and hence he separates that appearance from *R. pantothrix* under the name of *R. circinnatus, MSS. ined.*—Species might thus be multiplied without end.

2. R. *hederaceus* (*Ivy-leaved Crowfoot*), stem creeping, leaves roundish kidney-shaped with 3—5 rounded entire lobes, petals small scarcely longer than the cal., stam. 5—10, pericarps glabrous. *Lightf. p.* 294. *E. B. t.* 2003.

Hab. Ditches and wet places, but not very common. Moist beds of the Clyde and the Kelvine, which are nearly dry in the summer, *Mr. Murray*. *Fl.* summer. ♃.

** *Pericarps smooth or echinated* (*not transversely wrinkled*). *Petals with a small scale at the base.* (*Decand.*)

† *Flowers white.*

3. R. *alpestris* (*alpine white Crowfoot*), leaves glabrous orbicular deeply 3-lobed, lobes at the extremity lobulato-crenate, stem mostly 1-flowered, petals obcordate. *E. B. t.* 2390.

Hab. Sides of rills on the Clova mountains, *G. Don*. *Fl.* May. ♃.

Four to five inches high. *Leaves* almost entirely radical, on rather short footstalks; one generally undivided lanceolate leaf upon the stem. *Flower* entirely white, large.

†† *Flowers yellow. Leaves undivided.*

4. R. *Lingua* (*great Spear-wort*), leaves lanceolate subserrated sessile semiamplexicaul, stem erect glabrous. *Lightf. p.* 286. *E. B. t.* 100.

Hab. Sides of lakes and deep muddy ditches, but not common. Dud-

dingston Loch, Edinb., *Dr. Parsons.* Pow Mill, Kinross-shire, *Mr. Arnott.* Marshes in Arran and near Glasg., *Mr. Murray.* *Fl.* July. ♃.

Stem 2—3 feet high. *Flowers* large.

5. R. *Flammula* (*lesser Spear-wort*), leaves linear-lanceolate nearly entire petiolate the lower ones ovato-lanceolate, stem declined rooting at the base. *Lightf. p.* 288. *E. B. t.* 387.

β. much smaller, stem creeping filiform. *R. reptans, Lightf. p.* 289. *fig. frontisp. v.* 1. *Decand. Syst. Veg. v.* 1. *p.* 248.

Hab. Sides of lakes and ditches, abundant. β. Margins of lakes, especially in the Highlands, common. *Fl.* July, Aug. ♃.

The decumbent or creeping stem, the narrower petiolated stem leaves and broader radical ones, together with the smaller size, are the marks by which this is best known from the preceding.

6. R. *Ficaria* (*Pile-wort*), leaves heart-shaped petiolate angular or crenate, cal. of 3 leaves, petals 9. *Lightf. p.* 289. *E. B. t.* 584. *Ficaria ranunculoides, Decand.*

Hab. Woods, meadows, and hedge banks, abundant. *Fl.* Apr. May. ♃.

Root of many long fasciculated *tubers*. *Leaves* petiolate, two or three on the 1-flowered stem. *Flowers* shining, yellow, very handsome.

††† *Flowers yellow. Leaves variously divided.*

+ *Root perennial. Pericarps smooth.*

7. R. *auricomus* (*Wood Crowfoot*), leaves glabrous radical ones reniform 3-partite and cut, stem-leaves divided to the base into linear subdentate segments, cal. pubescent shorter than the petals. *Lightf. p.* 290. *E. B. t.* 624.

Hab. Woods and hedge-banks. Banks of the river opposite Logton wood, near Dalkeith, *Dr. Parsons.* Kenmuir banks, Glasg., *Hopk.* Rosslyn woods; Habbies How and other places near Edinb.; also Caldron Linn and Castle Campbell, near Glasg., *Mr. Arnott.* Banks of the Kelvine, *Mr. Murray.* *Fl.* Apr. May. ♃.

One foot high, slender. *Flowers* large. Not acrid as most of the other Crowfoots.

8. R. *sceleratus* (*Celery-leaved Crowfoot*), leaves glabrous radical ones petiolate tripartite, lobes cut very obtuse upper ones in 3 linear incised segments, calyx glabrous, pericarps collected into an oblong spike. *Lightf. p.* 201. *E. B. t.* 681.

Hab. Sides of ditches and pools. *Fl.* June. ☿.

Stem stout, succulent, 1—2 feet high. *Lower leaves* very broad and glossy. *Flowers* extremely small, pale yellow. *Heads* of *pericarps* oblong.

9. R. *acris* (*upright Meadow Crowfoot*), cal. spreading, peduncles rounded (not furrowed), leaves tripartite their segments acute 3-fid and cut upper ones linear. *Lightf. p.* 293. *E. B. t.* 652.

β. *minor;* stem 1—2-flowered. *R. montanus, D. Don, MSS. ined.*

Hab. Meadows and pastures, very common. β. On the Highland mountains, frequent. *Fl.* June, July. ♃.

This varies extremely in size and pubescence. *Stem* erect. There is an alpine variety which I have met with abundantly on the Highland mountains, which I cannot distinguish otherwise from this, than by its smaller size and 1-flowered stem. Mr. D. Don finds, I think, the same thing, but there are sometimes two and even three flowers upon the stem, and the cal. is densely villous, which prevents it from being the *R. montanus* Willd., by which name he calls it in his MSS. His plant, however, is glabrous, and mine is very hairy. In this particular the *R. montanus* (as well as the *acris*) varies extremely, and appears to me a very doubtful species.

10. R. *repens* (*creeping Crowfoot*), calyx spreading, flowerstalks furrowed, scyons creeping, leaves cut into 3 petiolated leaflets which are 3-lobed or 3-partite and cut. *Lightf. p.* 292. *E. B. t.* 516.

Hab. Pasture lands, too common. *Fl.* June—Aug. ♃.

Best distinguished by its creeping scyons.

11. R. *bulbosus* (*bulbous Crowfoot*), calyx reflexed, peduncles furrowed, stem upright many-flowered, leaves cut into 3 petiolated leaflets, which are 3-lobed or 3-partite and cut, root bulbous. *Lightf. p.* 292. *E. B. t.* 515.

Hab. Meadows and pastures, frequent. *Fl.* May. ♃.

One foot high, hairy. Lobes of the lower *leaves* subovate; upper *leaves* cut into linear segments.

+ + Roots annual. Pericarps tuberculate or muricated.

12. R. *hirsutus* (*pale hairy Crowfoot*), cal. reflexed, stem erect many-flowered hairy, leaves 3-lobed or 3-partite, lobes obtuse cut, root fibrous, pericarps margined and tuberculated. *E. B. t.* 1504.

Hab. Road-sides and waste places. Side of a burn between Dalbeth and Tollcross, Glasg., *Hopk.* Pentland hills, *Mr. Arnott.* Appin, *Capt. Carmichael.* Road-side between Linlithgow and Falkirk, *Maugh.* Ditch-bank N. of Glasg., and corn-fields W. of Perth, *Mr. J. Mackay.* *Fl.* June—Oct. ⊙.

Varying extremely in size; from 3 inches (when it is the *R. parvulus* of Sm. *Fl. Brit.*) to 10 or 12 inches. Generally very hairy.

13. R. *arvensis* (*Corn Crowfoot*), cal. spreading, stem erect many-flowered, leaves three-cleft their segments generally again 3-cleft into linear entire or bi-tridentate segments, pericarps muricated. *Lightf. p.* 294. *E. B. t.* 135.

Hab. Corn-fields, but not common. Bogle's hole, Glasg., *Hopk.* Corn-field near Stockbridge, Edinb., *Maugh.* *Fl.* June. ⊙.

Pericarps very prickly and large. *Flowers* small, pale yellow.—Plant said to be extremely poisonous and injurious to cattle in some countries.

16. TROLLIUS.

1. Tr. *europæus* (*Globe-flower*), leaves of the cal. (*cor.*, *Sm.*)

15 concavo-connivent, petals (*nect. Sm.*) as long as the stam. *Lightf. p.* 295. *E. B. t.* 28.

Hab. Moist meadows and mountains, common. Banks of the Water of Leith, &c., Edinb., *Maugh.* Banks of the Clyde at Kenmuir, Daldowie, Bothwell and the falls, &c., *Hopk.* *Fl.* June, July. ♃.

Leaves cut into 5 deep segments, which are again cut and serrated. *Flowers* large, handsome, deep yellow. *Petals* almost filiform.—This is, according to Lightf., the *Lucken-Gowan* (*CabbageDaisy*) of the Scotch[a].

17. HELLEBORUS.

1. H. *viridis* (*green Hellebore*), stem few-flowered leafy, leaves digitate, cal. spreading. *Lightf. p.* 297. *E. B. t.* 200.

Hab. Pastures and woods. Dunglass glen, *Dr. Parsons.* Wall top near Laswade; scarcely indigenous, *Mr. Arnott.* *Fl.* April. ♃.

Stem 1 foot high. *Leaves* large, digitate, upon a broad leafy petiole, upper ones sessile; segments linear lanceolate, serrated at the extremity. *Cal.* of 5 large, greenish yellow leaves. *Cor.* of many minute tubular petals. *Styles* 3—4.

2. H. *fœtidus* (*stinking Hellebore*), stem many-flowered leafy, leaves pedate, cal. concavo-connivent. *E. B. t.* 613.

Hab. Pastures and thickets. Banks of the Clyde at Blantyre Priory, abundantly. Old walls, Barncluish, Glasg., *Hopk.* Between Arnstruther and Kepply, *Mr. Chalmers.* *Fl.* April. ♃.

Two feet or more high, bushy, fetid. *Leaves* evergreen, pedate, or digitate, with the lateral segments again divided, upon long, slender footstalks; upper ones or bracteas with a broad sub-membranous base; uppermost truly ovato-acuminate bracteas. *Flowers* globose; calyces tipped with a purple tinge. *Styles* and *caps.* 3—4.

18. CALTHA.

1. C. *palustris* (*Marsh Marigold*), leaves cordate crenate. *Lightf. p.* 298. *E. B. t.* 506.

β. stem creeping, leaves cordato-triangular. *C. radicans, E. B. t.* 2175.

γ. leaves cordate nearly entire. *C. montana, D. Don, MSS. ined.*

Hab. Marshy places, very common. β. Burn below the farm-house called the Haltown, near Forfar, *G. Don.* Pentland hills and Rosslyn woods, *Mr. Greville.* More common in some spots near Edinb. than α., *Mr. Arnott.* Marshes near Collace, Perthshire, *Maugh.*

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[a] "Soon as the clear goodman of day
Bends his morning draught of dew,
We 'll gae to some burn-side to play
And gather flowers to busk ye'r brow.
We 'll pou the daisies on the green,
The *Lucken-Gowans* frae the bog,
Between hands now and then we 'll lean,
And sport upon the velvet fog."

Allan Ramsay's *Young Laird and Edinburgh Katy* in *Lightf.*

γ. Springy places in the Grampian mountains, *G. Don. Fl.* May, June. ♃.

Plant varying extremely in size and direction. Sometimes 1—1½ foot high, and quite erect. Lower *leaves* on long footstalks, extremely variable in their shape and in the depth and distinctness of the crenatures. I apprehend the vars. β. and γ. may chiefly be attributed to a colder climate or poorer soil. The *flowers* are large, several from a stalk in α., almost solitary in the β. and γ.

XIV. DIDYNAMIA.

1. GYMNOSPERMIA[a]. (*Labiatæ, Juss.*)

* *Calyx 5- or 10-cleft, subregular.*

13. LEONORUS. *Cal.* with 5 angles. Upper *lip* very hairy above, entire; lower one reflexed, 3-partite. *Anthers* sprinkled with shining dots.

5. GLECHOMA. Upper *lip* of the *Cor.* bifid; lower one trifid, with the intermediate lobe emarginate. *Anthers* approaching each other in pairs and forming a cross.

4. MENTHA. *Cor.* nearly regular, 4-lobed; its broadest lobe notched. *Stam.* erect, distant.

2. TEUCRIUM. Upper *lip* of the *Cor.* abbreviated, bipartite; lower one 3-lobed, its middle lobe the largest. *Stam.* projecting through the cleft in the upper lip.

1. AJUGA. Upper *lip* of the *Cor.* very minute, notched; lower one 3-lobed, middle lobe the largest, obcordate. *Stam.* exserted. *Anthers* reniform, 1-celled.

9. BETONICA. *Cal.* teeth acuminate. Upper *lip* of the *Cor.* ascending; lower 3-cleft, its tube cylindrical.

6. LAMIUM. *Cal.* teeth acuminate, spreading. Upper *lip* of the *Cor.* vaulted, entire; lower 2-lobed, toothed on each side at the base. (*Anthers* hairy.)

7. GALEOPSIS. *Cal.* teeth acuminate. Upper *lip* of the *Cor.* vaulted, notched; lower *lip* with 3 unequal lobes, having 2 teeth on its upper side.

8. GALEOBDOLON. *Cal.* teeth unequal, acuminate. Upper *lip* of the *Cor.* vaulted, entire; lower one in 3 acute segments.

10. STACHYS. *Cal.* acuminate. Upper *lip* of the *Cor.* vaulted; lower one 3-lobed, with the 2 lateral lobes reflexed. *Stam.*, when old, bent downwards.

3. NEPETA. Upper *lip* of the *Cor.* notched; the lower one 3-

[a] With 4 pericarps, or apparently naked seeds, at the bottom of the *cal.* *Verbena*, placed in this order by Smith, I have removed to the following, because it has a distinct pericarp inclosing the 4 seeds.

lobed, its middle lobe the largest, crenate; lateral ones very short, reflexed.

11. Ballota. *Cal.* with 10 ribs and 5 teeth. Upper *lip* of the *Cor.* concave, notched; lower one trifid; middle lobe the largest, emarginate.

12. Marrubium. *Cal.* with 10 ribs and 5 or 10 spreading teeth. Upper *lip* of the *Cor.* cloven, linear, straight; lower one trifid; middle segment the largest, emarginate.

** *Calyx two-lipped.*

17. Scutellaria. *Lips* of the *Cal.* closing over the fruit; upper *lip* with a vaulted process.

16. Thymus. *Cal.* closed with hairs at the mouth. *Cor.* shortly 2-lipped; upper one notched; the lower one the largest, subemarginate.

18. Prunella. Upper *lip* of the *Cal.* with 3 very short teeth. *Filaments* forked at the extremity, one point bearing the *Anther*. *Stigma* bifid.

15. Origanum. *Calyces* collected, by imbricated *bracteas*, into a spicate, quadrangular cone. Upper *lip* of the *Cor.* straight, notched; the lower one in 3 nearly equal lobes.

14. Clinopodium. *Involucre* (bracteas) of many linear-acuminated leaflets placed under the *cal.* Upper *lip* of the *Cor.* erect, emarginate; lower one the largest, emarginate.

2. ANGIOSPERMIA.

* *Calyx 4-fid.*

23. Lathræa. *Cor.* tubular, 2-lipped. A depressed gland at the base of the suture of the *germen*. *Caps.* 1-celled.

19. Bartsia. *Cal.* mostly coloured. *Cor.* ringent, with a contracted orifice; upper *lip* concave, longer, entire; lower one in 3 equal reflexed lobes. *Caps.* ovate, compressed, with 2 cells and many angular seeds.

21. Rhinanthus. *Cal.* inflated, 4-toothed. Upper *lip* of the *Cor.* compressed; lower one plane, 3-lobed. *Caps.* of 2 cells, obtuse, compressed, and with many imbricated plane seeds.

22. Melampyrum. Upper *lip* of the *Cor.* compressed, turned back at the margin; lower lip trifid. *Caps.* oblong, 2-celled, oblique, opening on one side. *Cells* 1-seeded. *Seeds* gibbous at the base.

20. Euphrasia. *Cal.* tubular, 4-toothed. Upper *lip* of the *Cor.* divided; lower one of 3 notched lobes. *Anthers* with thin lobes mucronated at the base. *Caps.* ovato-oblong, 2-celled. *Seeds* striated.

** *Calyx 5-cleft.*

30. Limosella. *Cor.* shortly campanulate, 5-cleft, equal. *Caps.* semibilocular, 2-valved.

26. SCROPHULARIA. *Cor.* subglobose; *limb* contracted, shortly 2-lipped, upper lip 2-lobed (with a scale or abortive stam. frequently within), lower 3-lobed. *Caps.* 2-celled.

27. DIGITALIS. *Cal.* 5-partite. *Cor.* campanulate, inflated beneath; *limb* obliquely 5-lobed, unequal. *Caps.* ovate, of 2 cells and many seeds.

25. ANTIRRHINUM. *Cal.* 5-partite. *Cor.* personate, with a deflexed prominence or spur at the base. *Caps.* 2-celled, opening at the extremity with minute valves.

24. PEDICULARIS. *Cal.* inflated, (mostly) 5-cleft. Upper *lip* of the *Cor.* compressed, arched; lower one plane, 3-lobed. *Caps.* oblique, compressed, 2-celled. *Seeds* angular.

29. LINNÆA. *Cal.* 5-partite, superior. *Cor.* campanulate, 5-fid, equal. *Berry* dry, 3-celled, only one bearing a single perfect seed. *Involucre* of 2 leaves just below the germen.

28. VERBENA. *Cor.* infundibuliform, its limb 5-cleft, unequal. *Stam.* 2—4. *Seeds* 2—4, inclosed in a thin, evanescent *pericarp.*

**** Cal. of 2 leaves.*

31. OROBANCHE. *Cal.* of 2 (generally) lobed, lateral segments. *Cor.* ringent. *Caps.* 1-celled, 2-valved, with many *seeds.* A *gland* at the base of the *germen* beneath.

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1. GYMNOSPERMIA.

1. AJUGA.

** With creeping scyons.*

1. A. *reptans* (*common Bugle*), glabrous, stem solitary throwing out creeping scyons. *Lightf. p.* 302. *E. B. t.* 489.

HAB. Moist pastures and woods, abundant. *Fl.* May, June. ♃.

Leaves broadly ovate, more or less crenate, lower ones and those on the runners tapering into a footstalk. *Flowering stems* erect, with sessile leaves. *Flowers* blue, in whorls in the axils of the upper leaves or bracteas, which are often purplish.

*** Without creeping scyons.*

2. A. *pyramidalis* (*pyramidal Bugle*), hairy, whorls crowded into a pyramidal and tetragonal form, radical leaves very large obovate more or less crenate. *Lightf. p.* 302. *E. B. t.* 1270.

HAB. Mountain pastures. On Ben Nevis in Lochaber, and plentifully in the Burn of Killigower and on the Ord of Caithness, *Dr. Hope.* Upon Tor Aichaltie, a hill near Brahan Castle, Ross-shire, *Mr. Gibb.* Appin, *Capt. Carmichael.* *Fl.* June. ♃.

Four to six inches high. *Leaves* tapering gradually from the base upward.

3. A. *alpina* (*alpine Bugle*), leaves nearly glabrous unequally

toothed all nearly of a size, whorls of flowers rather distant. *E. B. t.* 477.

Hab. Mountains of Aberdeenshire, not uncommon, *D. Don. Fl.* July. ♃.

Of this I have never seen British specimens.

2. TEUCRIUM.

1. T. *Scorodonia* (*Wood-sage*), leaves cordate petiolate pubescent crenate, flowers in lateral and terminal racemes secund, stem erect. *Lightf. p.* 303. *E. B. t.* 1543.

Hab. Woods and dry stony places, frequent. *Fl.* July, Aug. ♃.

Stems 1—2 f. high. *Leaves* singularly rugose. *Flowers* yellowish white. *Stam.* much protruded, purplish red.—This plant is extremely bitter, and has, in some countries, been substituted for hops.

2. T. *Chamædrys* (*Wall-germander*), leaves ovate tapering into a footstalk inciso-serrate, flowers axillary in threes, stem subprocumbent rounded hairy. *E. B. t.* 680.

Hab. Old walls at Balgavis, 5 m. E. of Forfar, and at Kelly, 3 m. E. of Arbroath, in Angus-shire; but near houses (the same situations as in England), *G. Don. Fl.* July, Aug. ♃.

Flowers reddish purple. *Stems* 6—8 inches high.

3. NEPETA.

1. N. *cataria* (*Cat-mint*), flowers in spiked subpedunculated whorls, leaves petiolate cordate dentato-serrate. *Lightf. p.* 304. *E. B. t.* 137.

Hab. Hedges and waste places, rare. Hedges near Cragnethan Castle, Glasg., *Hopk.* Road-side between Culross and Kincardine, *Maugh. Fl.* July, Aug. ♃.

Stems 2—3 f. high, downy, as well as the *leaves*, and whitish. *Flowers* white, with a rose coloured tinge. *Anthers* reddish.

4. MENTHA.

1. M. *hirsuta* (*hairy Water-mint*), flowers capitate or whorled, leaves petiolate ovate serrated pubescent, cal. hairy, pedicels with reflexed hairs. *Lightf. p.* 1104, and *p.* 305 (*M. aquatica*). *E. B. t.* 447, and *t.* 448 (*M. sativa*).

Hab. Banks of rivers and marshes, frequent. *Fl.* Aug., Sept. ♃.

Very variable. Sometimes the flowers are capitate, sometimes whorled, and sometimes the whorls are placed so close on the extremity of the branches as to form a spike. Their colour is purplish. *Anthers* varying in length.

2. M. *rubra* (*tall red Mint*), flowers whorled, leaves petiolate ovate serrated subglabrous, "stem upright zigzag" (*Sm.*), pedicels and lower part of the cal. quite glabrous teeth hairy. *E. B. t.* 1413.

Hab. Ditches and on the banks of rivers, but rare. Banks of the Clyde at Hamilton, *Hopk.*, and ditto near Glasg., *D. Don.* Musselburgh, *Mr. Borrer. Fl.* Sept. ♃.

Four to five feet high. *Flowers* purplish red, with a linear subhispid *bractea* at the base.

3. M. *gentilis* (*bushy red Mint*), flowers whorled, leaves petiolate ovate serrated subglabrous, "stem much branched spreading" (*Sm.*), pedicels and lower part of the cal. glabrous teeth hairy. *Lightf. p.* 305. *E. B. t.* 2118.

Hab. Sides of rivers and waste places, but rare, *Dr. Parsons.* Bank of a rivulet running into Loch Ransa, in Arran, *Mr. Murray.* Banks of Moffat water, below Carrifrew, *Dr. Walker. Fl.* Sept. ♃.

"*Stem* 12—18 inches high, very bushy in consequence of the numerous, opposite, spreading branches:"—and this is all the character that has been discovered to distinguish it from *M. rubra.* Surely it is no permanent one? I would not willingly decide till I see plants in a growing state: but in my plants in the herbarium there is not a shadow of a difference.

4. M. *arvensis* (*Corn-mint*), flowers whorled, leaves ovate hairy serrated, calyx campanulate and clothed with spreading hairs. *Lightf. p.* 306. *E. B. t.* 2119.

Hab. Corn-fields, not uncommon. *Fl.* Aug., Sept.

The *Cal.* short and campanulate with spreading hairs distinguishes this species. The smell of the plant has been compared to that of the blue part of decayed cheese. *Flowers* reddish purple.—I think the *M. agrestis* of *E. B.* is not distinct from this.

5. M. *Pulegium* (*Penny-royal*), flowers whorled, leaves downy ovate obtuse subcrenate, stem prostrate, flowerstalks slightly, and calyx very, pubescent, teeth of the latter fringed. *Lightf. p.* 307. *E. B. t.* 1026.

Hab. Among rubbish thrown out of gardens, and scarcely indigenous; side of springs on the Pentland hills? *Lightf. Fl.* Aug., Sept. ♃.

The smallest of the genus, readily known by its prostrate stems and small frequently recurved leaves, which are both thickly covered with short hairs. *Flower* pale purplish.—Much employed in medicine, and has a powerful smell,

5. GLECHOMA.

1. G. *hederacea* (*Ground-ivy*), leaves reniform crenate. *Lightf. p.* 307. *E. B. t.* 853.

Hab. Under hedges and in waste places, frequent. *Fl.* Apr. May. ♃.

Plant much creeping. *Leaves* petiolate, pubescent. *Flowers* large, blue, in threes, axillary.

6. LAMIUM.

1. L. *album* (*white Dead-Nettle*), leaves cordato-acuminate deeply serrated petiolate, whorls of about 20 flowers. *Lightf. p.* 308. *E. B. t.* 768.

Hab. Borders of fields and waste places, abundant. *Fl.* June, July. ♃.

Flowers large, white, with a honied fluid at the base of the tube.

2. L. *maculatum* (*spotted Dead-Nettle*), leaves cordato-acuminate inciso-serrate petiolate, whorls of about 10 flowers. *E. B. t.* 2550.

Hab. Woods in Scotland, but rare, *G. Don.* *Fl.* May.
Flowers large, purple, 10 in a whorl:—in other respects very like the preceding; from which however Sir Jas. Smith says it is unquestionably distinct.

3. L. *purpureum* (*red Dead-Nettle*), leaves cordate obtuse crenato-serrate petiolate the uppermost crowded together, "cor. with the tube bearded within" (*Sm.*). *Lightf. p.* 309. *E. B. t.* 1933.

Hab. Borders of fields and in hedges, plentiful. *Fl.* May—Sept. ⊙.
Leaves, especially the upper ones, with a silky hairiness, and with a purplish tinge on the floral ones. *Flowers* purple.

4. L. *incisum* (*cut-leaved Dead-Nettle*), leaves broadly cordate obtuse inciso-crenate petiolate the uppermost crowded, "cor. with the tube glabrous within" (*Sm.*). *E. B. t.* 1953.

Hab. Occasionally with the preceding about Glasg., *Hopk.* Fields about Edinburgh, towards Newhaven, *Mr. Greville.* *Fl.* May. ⊙.
I should scarcely think this specifically different from the last, were it not that Smith attributes to the one (*L. purp.*) a *cor.* bearded within, and to the other (*L. incis.*) a perfectly glabrous one; characters which I have not myself had the opportunity of verifying.

5. L. *amplexicaule* (*Henbit Dead-Nettle*), leaves broadly cordate very obtuse deeply inciso-crenate petiolate the floral ones sessile embracing the stem. *Lightf. p.* 309. *E. B. t.* 770.

Hab. Dry and sandy fields and gardens, frequent. *Fl.* March—June. ⊙.
Flowers with very slender tubes, fine deep rose colour.

7. GALEOPSIS.

1. G. *Ladanum* (*red Hemp-Nettle*), stem not swollen below the joints, leaves lanceolate subserrate hairy, upper lip of the cor. slightly crenate. *E. B. t.* 884.

Hab. Dry limestone rubbish in Scotland, *A. Bruce, Esq.* in *E. B.* Road-side, near Oxenford Castle, and at Cross-gate toll, *Maugh.* *Fl.* Sept., Oct. ⊙.
Stem 10—12 inches high, with opposite branches. *Leaves* rather small, petiolate, hairy. *Flowers* purplish rose colour.

2. G. *Tetrahit* (*common Hemp-Nettle*), stem hispid incrassated below the joints, leaves ovate hispid serrated, cor. twice as long as the cal., upper lip nearly straight. *Lightf. p.* 310. *E. B. t.* 207.

Hab. Corn-fields and hedges, frequent. *Fl.* Aug. ⊙.
One foot to two feet high. *Flowers* white and purplish.

3. G. *versicolor* (*large-flowered Hemp-Nettle*), stem hispid incrassated below the joints, leaves ovate hispid serrated, cor. thrice as long as the cal., upper lip inflated. *Lightf. p.* 310 (*G. Tetrahit* β.). *E. B. t.* 667.

Hab. Corn-fields about Edinb. and Glasg., very common, *Maugh.* and *Hopk.*, as well as in other parts of Scotland. *Fl.* Aug., Sept. ⊙.

Much larger than the last in all its parts. *Cor.* yellow, with purple on the lower lip: very beautiful.

8. GALEOBDOLON.

1. G. *luteum* (*yellow Archangel*). *Lightf. p.* 310 (*Galeopsis Galeobdolon*). *E. B. t.* 787.

Hab. Woods and shady places in the Lowlands, but not common; by Haddington, near a garden wall, *Dr. Parsons. Fl.* May, June. ♃.

One foot or more high. *Leaves* ovato-acuminate, petiolate, deeply serrated. *Flowers* whorled, yellow; lower lip orange and spotted.

9. BETONICA.

1. B. *officinalis* (*Wood Betony*), spike interrupted, middle segment of the lower lip notched. *Lightf. p.* 311. *E. B. t.* 1142.

Hab. Woods and dry banks, but not common. Bank near Echlin above Queensferry in W. Lothian, &c., *Sibbald.* Collington and Auchindenny woods; road-side between Castle Douglas and Kirkcudbright, *Maugh.* Woods, not unfrequent about Glasg., *Hopk.* Near Dupplin, *Mr. Shillinglaw. Fl.* July, Aug. ♃.

Stem 1—2 feet high, hairy, with few leaves. Lowermost ones ovato-elliptical, on long footstalks; upper one oblong, sessile; all crenato-serrate. *Spikes* of purple flowers, oblongo-ovate.

10. STACHYS.

1. S. *sylvatica* (*Hedge Woundwort*), whorls of 6-flowers, leaves cordato-ovate acute petiolate, "stem solid" (*Sm.*). *Lightf. p.* 312. *E. B. t.* 416.

Hab. Woods and shady places. *Fl.* July, Aug. ♃.

Two to three feet high, hairy. *Leaves* truly cordate and tapering from below the middle to a point, in which respect it differs, I think, essentially from the following. *Flowers* purple; lower lip spotted.

2. S. *ambigua* (*ambiguous Woundwort*), whorls of 6 flowers, leaves oblongo-cordate acute petiolate, "stem hollow" (*Sm.*). *E. B. t.* 2089.

Hab. Fields and waste places. Hoy, Stronsa and other Orkney Islands; near Jane Town, Loch Carron, Ross-shire, *Mr. Borrer* and *Hook.* Near Habbie's How, Pentland Hills, *Mr. Weatherhead.* Banks of Loch Duble, near Inverary; and woods at Inverary, *Maugh. Fl.* Sept. ♃.

Hairy, with soft silky hairs, especially about the *stem.* Appears intermediate between the preceding and the following, but more approaching the latter. *Flowers* purple.

3. S. *palustris* (*Marsh Woundwort*), whorls of 6-flowers, leaves linear-lanceolate semiamplexicaul. *Lightf. p.* 313. *E. B. t.* 1075.

Hab. Rivers, banks and watery places. *Fl.* Aug. ♃.

4. S. *arvensis* (*Corn Woundwort*), whorls of 6-flowers, stem weak, leaves heart-shaped obtuse crenate slightly hairy, cor. scarcely longer than the cal. *Lightf. p.* 313. *E. B. t.* 1154.

Hab. Corn-fields, frequent, *Lightf.* *Fl.* Aug. ☉.

Distinguished by the small size, weak stems, small and obtuse, mostly petiolated, leaves, and the pale purplish *flowers* which scarcely exceed the *cal.* in length.

11. BALLOTA.

1. B. *nigra* (*black Horehound*), leaves ovate undivided serrated, calyces dilated upwards subtruncated, the teeth patent. (*Sm.*) *Lightf. p.* 314. *E. B. t.* 46.

Hab. Waste places near towns and villages, but not common, *Dr. Parsons* and *Sibbald.* About Cathcart Castle, Glasg., *Hopk.* About Edinb., and elsewhere, not uncommon, *Mr. Arnott.* *Fl.* July, Aug. ♃.

Two to three feet high. *Flowers* in whorls, purple. Whole herb fetid.

12. MARRUBIUM.

1. M. *vulgare* (*white Horehound*), stem erect, leaves roundish ovate toothed wrinkled, cal. with 10 setaceous hooked teeth. *Lightf. p.* 315. *E. B. t.* 410.

Hab. Waste places and way-sides, near towns and villages, but not common, as about Burntisland, &c., *Lightf.* Fisherrow and Guillon Links, and at Long Niddry, Edinb., *Maugh.* *Fl.* Aug. ♃.

One to one foot and a half high, bushy: every where hoary with a white thick pubescence or woolliness. *Flowers* small, almost white, in crowded whorls. Smell aromatic; flavour bitter.—The plant has been much employed in medicines for the asthma.

13. LEONURUS.

1. L. *Cardiaca* (*Motherwort*), leaves petiolate the lower ones crenato-lanceolate 3-lobed upper ones entire. *Lightf. p.* 216. *E. B. t.* 286.

Hab. Among rubbish and waste places. In a shady walk behind Fisherrow, and in Collington woods, Edinb., *Maugh.* About Cragnethan castle, Glasg., *Hopk.* *Fl.* Aug. ♃.

Stem three feet high, branched. *Flowers* in crowded whorls, white with a reddish tinge; upper lip of *Cor.* shaggy. *Cal.* with pungent spreading teeth.

14. CLINOPODIUM.

1. Cl. *vulgare* (*wild Basil*), leaves ovate obscurely serrated, whorls hairy, bracteas setaceous, pedicels branched. *Lightf. p.* 316. *E. B. t.* 1401.

Hab. Hills and bushy places, not uncommon. Salisbury Craigs, &c., *Mr. Arnott.* Sandy banks by the Clyde; woods, Hamilton and Kenmuir banks, &c., *Hopk.* and *Mr. Murray.* *Fl.* Aug. ♃.

One to one foot and a half high, with soft hairs. *Flowers* in crowded whorls, large, purple. Smell aromatic.

15. ORIGANUM.

1. O. *vulgare* (*wild Basil*), spikes roundish panicled conglome-

rate glabrous, bracteas ovate longer than the cal., leaves ovate entire. *Lightf. p.* 317. *E. B. t.* 1143.

Hab. Dry hilly and bushy places, not unfrequent. *Fl.* Aug. ♃.

Stems 1 foot high. *Flowers* purple, and the bracteas tinged with that colour. Fragrant and aromatic.

16. THYMUS.

1. Th. *Serpyllum* (*wild Thyme*), flowers capitate, stems branched decumbent, leaves plane ovate obtuse entire petiolate more or less ciliated at the base. *Lightf. p.* 318. *E. B. t.* 1514.

Hab. Hills and dry pastures, abundant. *Fl.* July, Aug. ♃.

Variable in the hairiness of the leaves,—which are sometimes all over hoary,—in the size of the plant, and in the scent of the foliage, which sometimes approaches to that of lemon. *Flowers* purple, lower lip with the middle lobe entire.

2. Th. *Acinos* (*Basil Thyme*), flowers on simple stalks about 6 in a whorl, stem ascending branched, leaves oblong shortly petiolate acute serrated, cal. gibbous at the base. *Lightf. p.* 319. *E. B. t.* 411.

Hab. Dry mountainous places and gravelly soils, but not common, *Lightf. Fl.* Aug. ☉.

Stem 6—8 inches long. *Leaves* sometimes almost entire. *Flowers* blueish purple. Lower lip of the *cor.* with the middle segments emarginate. Smell fragrant, aromatic.

17. SCUTELLARIA.

1. S. *galericulata* (*common Skull-cap*), leaves cordato-lanceolate crenate, flowers axillary in pairs. *Lightf. p.* 320. *E. B. t.* 523.

Hab. Banks of rivers and wet marshy places, frequent. *Fl* July, Aug. ♃.

Ten inches to 1 foot high. *Flowers* rather large, blue, pubescent.

2. S. *minor* (*lesser Skull-cap*), leaves cordato-ovate entire, flowers axillary in pairs. *Lightf. p.* 320. *E. B. t.* 524.

Hab. Sides of lakes and in boggy places, not unfrequent, *Lightf.* Banks of the Clyde at Rosebank, *Ure.* Beith, Ayrshire, *Miss Baird. Fl.* Aug. ♃.

Four to six inches high. Lower *leaves* with one or two teeth at the base, and subhastate; upper ones much narrower, entire. *Flowers* very pale, reddish, almost white; lower lip spotted.

18. PRUNELLA.

1. Pr. *vulgaris* (*Self-heal*), leaves petiolate oblongo-ovate somewhat toothed at the base. *Lightf. p.* 321. *E. B. t.* 961.

Hab. Moist and barren pastures, frequent. *Fl.* Aug. ♃.

Flowers very densely whorled, so as to form 1 imbricated oblong *spike*, with a pair of leaves at its base, and a pair of broad obcordate *bracteas* beneath each whorl. Upper lip of the *cal.* truncate, lower 2-toothed. *Cor.* violet blue, lower lip finely toothed.

2. ANGIOSPERMIA.

19. BARTSIA.

1. B. *alpina* (*simple alpine Bartsia*), leaves opposite cordato-ovate obtusely serrated, flowers subspicate, anthers hairy. *E. B. t.* 361.

Hab. Rocks to the East of Malghyrdy, *Mr. Dickson* and *Mr. Borrer*. Ben Lawers, *G. Don*. *Fl.* June, July. ♃.

Six inches high, simple. Upper *leaves*, or bracteas, fine purple. *Flowers* large, deep purplish blue, pubescent, forming a rather short and loose leafy spike.

2. B. *viscosa* (*yellow viscid Bartsia*), leaves lanceolate serrated the upper ones alternate, flowers lateral and distant, anthers hairy. *Lightf. p.* 321. *E. B. t.* 1045.

Hab. Bogs and marshes, but rare, as about Loch Goyl, near Loch Long, *Lightf.* Banks of the Clyde at Ardoch Cottage: abundantly behind the inn at Ardencaple, *Hopk.* Gairloch, below Helensburgh, *Dr. Brown*. Greenock battery, *Mr. M. Stark*. In a field opposite the hill of Dumbuck, near Dumbarton, *Maugh*. *Fl.* Aug. ⊙.

Stem erect, simple, 8—10 inches high. *Whole plant* pubescent and somewhat viscid, drying black. *Flowers* single, yellow, which Mr. Hopkirk remarks have an agreeable, faint, musky smell.

3. B. *Odontites* (*red Bartsia*), leaves lanceolate upper ones alternate, flowers racemed secund, anthers subglabrous, stem branched. *Lightf. p.* 324 (*Euphrasia Odont.*). *E. B. t.* 1415.

Hab. Corn-fields and waste places, by road-sides. *Fl.* Aug. Sept. ⊙.

Six to ten or twelve inches high, hairy. *Racemes* many, long, erect. *Flowers* reddish purple, with protruded *anthers*, having at their base narrow *bracteas* much smaller than the leaves.

20. EUPHRASIA.

1. E. *officinalis* (*Eye-bright*), leaves ovate deeply toothed, veins furrowed. *Lightf. p.* 323. *E. B. t.* 1416.

Hab. Pastures, abundant. *Fl.* July. ⊙.

Varying in size from 1 inch, in the Alps, to 6 inches, more or less branched. *Flowers* axillary, but crowded into a head, white or purplish, and marked with deeper lines.

21. RHINANTHUS.

1. Rh. *Crista-Galli* (*yellow Rattle*), upper lip of the cor. arched, calyx glabrous, leaves lanceolate serrated. *Lightf. p.* 322. *E. B. t.* 657.

Hab. Meadows and pastures, abundant. *Fl.* June. ⊙.

One foot high, glabrous. *Stem* often spotted with purple. *Leaves* veined. *Flowers* axillary, but somewhat crowded and spiked, yellow. *Cal.* becoming very large after flowering. When the fruit is ripe the seeds rattle in the husky capsule, and indicate to the Swedish peasantry the season for gathering in their hay. In England, as

Mr. Curtis observes, generally speaking, the hay-making begins when this plant is in full flower.

22. MELAMPYRUM.

1. M. *pratense* (*common yellow Cow-wheat*), flowers axillary secund, leaves in distant pairs, corolla 4 times as long as the cal. closed, the lower lip protruded, upper bracteas pinnate dentate. *Lightf. p.* 324. *E. B. t.* 113.

Hab. Groves and thickets, abundant. *Fl.* July. ⊙.

One or 1 foot and a half high, slender, branched. *Leaves* lanceolate, acuminated, entire. *Flowers* rather large, axillary, pale yellow.

2. M. *sylvaticum* (*small-flowered Cow-wheat*), flowers axillary secund, leaves in distant pairs, corolla half as long again as the cal. open, the lower lip equal in length to the upper one, bracteas entire. *Lightf. p.* 325. *E. B. t.* 804.

Hab. Highland woods, not uncommon. Near Taymouth, *Mr. Yalden.* Finlarig, by Loch Tay, *Dr. Stuart.* Falls of Acharn and Moness, Perthshire; woods of Black-hall, Kincardineshire, *Maugh.*[a] Den of Rechip, *Mr. Borrer* and *Hook.* S. side of Loch Earn, *Mr. Arnott.* Woods E. of Dunkeld, *Mr. Murray.* *Fl.* July. ⊙.

One foot high. Distinguished by the entire bracteas and much smaller and deep yellow *Corollas*, whose lower lip, divided into 3 nearly equal segments, is almost closely applied to the upper lip or palate and not protruded beyond it.

23. LATHRÆA.

1. L. *Squamaria* (*greater Toothwort*), stem simple, flowers pendulous their lower lip 3-cleft. *Lightf. p.* 326. *E. B. t.* 50.

Hab. Woods and shady places; parasitic on the roots of other plants? Mevis bank, near Laswade, *Dr. Parsons.* Morvern in the Sound of Mull, *Dr. Stuart.* Arniston woods, abundantly, *Mr. G. Don.* Woods between Auchindenny and Rosslyn, *Mr. E. J. Maughan.* Banks of the Esk at Kevock Mill, about 6 miles from Edinb., *Maugh.* Cart-side, near Glasg., *Mr. Campbell*; and above Cathcart castle, *Mr. Russell.* *Fl.* Apr., May. ♃.

Root (or rather perhaps lower part of the stem) with short branches and covered with imbricated fleshy scales. *Stem* succulent, rounded, 6—8 inches high, with a few broadly ovate *scales*, the uppermost of which may be considered *bracteas*, for from their axils spring the pedunculated secund flowers, forming altogether a rather long *raceme*. *Cal.* large, ventricose, succulent, 4-cleft. *Cor.* twice the length of the cal., purplish, tubular, two-lipped. Whole plant dingy white or pale brown, except the flowers, which have a purplish tinge.—Allied to *Orobanche.*

24. PEDICULARIS.

1. P. *palustris* (*Marsh Lousewort*), stem solitary branched, cal.

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[a] The stations given of this plant in the 1st vol. of the Wernerian Transactions, at Auchindenny and Rosslyn woods, belong to the *M. pratense*, Mr. Maughan.

ovate hairy ribbed two-lobed and crenate. *Lightf. p.*326. *E. B. t.*399.

Hab. Wet and marshes pastures, abundant. *Fl.* July. ⊙ ? (♃, *Sm.*)

Stem 1 foot high, with many small lateral branches. *Leaves* pinnate; pinnæ ovate, almost pinnatifid. *Flowers* solitary, axillary, rose coloured. *Cal.* broadly ovate.

2. P. *sylvatica* (*common dwarf Lousewort*), stems many from the same root spreading, cal. oblong angular glabrous in 5 unequally notched segments. *Lightf. p.* 326. *E. B. t.*399.

Hab. Moist pastures and heaths, common. *Fl.* July. ♃.

Stems 3—5 inches high. *Lower leaves* pinnatifid, the rest pinnate with deeply serrated pinnæ. *Flowers* large, handsome, rose coloured.

25. ANTIRRHINUM.

* *Cor. spurred. Leaves broad. Stems lax.*

1. A. *Cymbalaria* (*Ivy-leaved Toad flax*), leaves cordate five-lobed alternate glabrous, stems procumbent. *E. B. t.*502.

Hab. Old walls and rocks, but not indigenous. Bothwell castle, *Hopk.* Bank under Salisbury Craigs, *Mr. Greville.* Wall tops and barren places near Edinb., *Mr. Arnott. Fl.* summer and autumn. ♃.

Stems very long, filiform, trailing. *Leaves* often purple beneath, petiolate. *Flowers* small, pale blue or purplish. Whole plant glabrous.

** *Cor. spurred. Leaves narrow. Stems erect.*

2. A. *repens* (*creeping-rooted Toad-flax*), leaves linear whorled or scattered, stem panicled, cal. glabrous the length of the spur, cor. striated. *E. B. t.*1253.

Hab. Rocks facing the sea near Culzean, in the parish of Kirkoswald, Ayrshire, and also about 4 miles from that place, *Mr. Shankley.* Banks of the Esk above Musselburgh, *Miss Kerr. Fl.* July—Sept. ♃.

Stems 1—1½ foot high, slender, branched. *Leaves* somewhat whorled below, but there soon dying away. *Flowers* in panicled racemes, blueish; palate yellow. Mr. Hopkirk has observed the flowers of this species to assume the *Peloria* appearance.

3. A. *Linaria* (*yellow Toad-flax*), leaves linear-lanceolate scattered crowded, spikes terminal, flowers imbricated, cal. glabrous shorter than the spur. *Lightf. p.*328. *E. B. t.*658.

Hab. Borders of corn-fields, abundant. *Var. Peloria;* ruins of Melrose, *Mr. Arnott. Fl.* Aug. ♃.

One to two feet high, glaucous. *Flowers* large, yellow. A remarkable monstrosity of this is called *Peloria,* with 5 spurs, and 5, usually, imperfect stamens.

4. A. *minus* (*least Toad-flax*), leaves linear-lanceolate obtuse mostly alternate pubescent, stem much branched spreading, cal. longer than the spur. *E. B. t.*2014.

Hab. Sandy fields, rare. In the Barony glebe, *Dr. Brown.* About Dalbeth and old walls; Barncluith, near Hamilton, *Hopk. Fl.* June—Aug. ⊙.

Stems 4—6 inches high. *Flowers* solitary, axillary, upon rather long peduncle, small, purplish, with the lower lip yellow.

**** Corolla merely gibbous at the base.*

5. A. *majus* (*great Snapdragon*), leaves lanceolate alternate those of the branches opposite, flowers spiked, segments of the cal. ovate obtuse. *E. B. t.* 129.

Hab. On old walls, as Mugdoch castle, *Hopk.*—Introduced. *Fl.* July, Aug. ♃.

One to two feet high. *Flowers* very large, mostly purplish red, but often varying to white.

26. SCROPHULARIA.

1. S. *nodosa* (*knotty-rooted Figwort*), leaves cordate acute serrated glabrous, stem with 4 rather obtuse angles. *Lightf. p.* 329. *E. B. t.* 1544.

Hab. Woods and moist ground, not uncommon. *Fl.* July. ♃.

Root large, thick and knotty. *Stem* 2—3 feet high. *Flowers* in dichotomous axillary and terminal *panicles*, bracteated. *Cor.* greenish purple, with a scale in the upper lip.

2. S. *aquatica* (*Water Figwort*), leaves elliptical cordate at the base obtuse serrated glabrous decurrent, stem winged at the angles. *Lightf. p.* 329. *E. B. t.* 854.

Hab. Sides of rivulets and other wet places, *Dr. Parsons* and *Sibbald.* Rare about Glasg.; ditch in Carmyle wood, *Hopk.* *Fl.* July. ♃.

Three to four feet high. *Flowers* terminal, in dichotomous bracteated panicles, without leaves, greenish purple, with a scale in the upper lip.

3. S. *vernalis* (*yellow Figwort*), leaves broadly cordate doubly serrated pubescent acute, peduncles axillary solitary dichotomous leafy. *Lightf. p.* 330. *E. B. t.* 567.

Hab. Road-sides and waste places. Hoddam castle, Annandale, *Lightf.* Walls of Bothwell castle, *Dr. Walker.* Road-side near the hill of Moncrieff, in the greatest abundance; and old walls near Hatton, Edinb., *Maugh.* Perthshire, occasionally; old wall near Balmano castle, also in the village of Meithlie, Aberdeenshire, *Mr. Murray.* Road-side by the inn at Clunie, *Mr. Borrer* and *Hook.* *Fl.* May. ♂.

Stem 4, angular, sharp-edged. *Flowers* yellow, orifice very small, almost equally 5-cleft. No scale within the *cor.*

27. DIGITALIS.

1. D. *purpurea* (*purple Fox-glove*), segments of the cal. ovate acute, cor. obtuse its upper lip undivided, leaves ovate crenate downy. *Lightf. p.* 331. *E. B. t.* 1297.

Hab. Dry hilly places, abundant. *Fl.* July. ♂.

Three to four feet high. *Leaves* large, veined. *Spike* very showy, of large drooping purple (sometimes white) flowers, spotted within. —Affords a medicine of great value.

28. VERBENA.

1. V. *officinalis* (*common Vervain*), tetrandrous, spikes slender panicled, leaves much cut, stem erect solitary. *Lightf. p.* 78. *E. B. t.* 767.

Hab. Without the gates of Inverkeithing, *Dr. Parsons.* *Fl.* Aug. ♃.

Stem 1 foot or more high, slender, panicled above. *Leaves* deeply cut, ovate or lanceolate; the lower ones subpetiolate. *Flowers* small, tubular, 5-cleft; lobes spreading, somewhat equal, purplish, each with a small *bractea* at its base. *Pericarp* soon disappearing, leaving the 4 really naked seeds at the bottom of the *cal.*

29. LINNÆA.

1. L. *borealis* (*two-flowered Linnæa*). *E. B. t.* 1297.

Hab. Fir woods in very shady places. Fir wood at Mearns near Aberdeen, *Prof. James Beattie.* Hill of Kinnoul, near Perth, *Messrs. Brown.* Crebston, 5 miles from Aberdeen; and at Kemnay, 16 miles N. W. from Aberdeen, *Maugh.* Several woods in Aberdeenshire, *Mr. Craigie.* Lately discovered in a fir wood, called Drummond, 1 mile to the S. W. of Inverness, by *Mr. Urquhart,* and *Mr. G. Anderson* of that town. Only one large patch was found, and that producing no flowers. *Fl.* May, June. ♃.

Stems trailing, filiform, woody, with distant, ovato-rotundate, opposite, shortly petiolate, crenate, scarcely hairy *leaves.* *Peduncles* erect, 2—4 inches long, with two drooping pedicellate *flowers,* bracteated at the forking of the pedicels, and with 2 pair of distant, small *bracteas* upon the pedicels, uppermost pair or *involucre* glandular, placed just beneath the inferior *germen.* *Cal.* small. *Cor.* campanulate, white, with a rose coloured extremity, 5-cleft. *Fruit* enveloped by the glandular involucre, a dry *berry,* never ripening more than 1 seed, according to Wahl.; for I have never seen the fruit myself.

30. LIMOSELLA.

1. L. *aquatica* (*Mudwort*). *Lightf. p.* 331. *E. B. t.* 357.

Hab. Muddy places where water has stood, but not common. *Fl.* July, Aug. ☉.

A minute creeping *plant,* throwing up clusters of narrow, spathulate, glabrous *leaves,* 1 or 2 inches long. *Flowers* very small, axillary, peduncled, pale rose colour. *Stam.* almost equal, as well as the segments of the *cor.*

31. OROBANCHE.

1. O. *major* (*greater Broom-Rape*), stem simple, cor. tubular its upper lip undivided lower one in three nearly equal segments their lateral ones acute the terminal one largest obtuse, stam. glabrous, style downy. *Lightf. p.* 332.

Hab. Dry pastures, but rare; upon the Buck of Burntisland, *Sibbald.* Roots of trees, Logie Almond, Perthshire, *Mr. Murray.* Isle of Skye, *Dr. Walker.* Parasitic on the roots of plants, especially the diadelphous ones. *Fl.* June. July. ♃?

One to one foot and a half high, leafless. Whole plant dingy purplish brown, pubescent. *Stem* swelling at the base, and very scaly; scales more distant upwards; these become bracteas among the flowers, 1 at the base of each. *Flowers* in a long spike. *Cal.* of two, lateral, lanceolate leaves. *Cor.* large.

2. O. *rubra* (*red Broom-Rape*), stem simple, cor. tubular its upper lip 2-lobed lower one in 3 equal obtuse lobes, stam. partially glanduloso-pilose, style glabrous. *E. B. t.* 1786 (*bad fig.*): *Hook. in Fl. Lond. New Series, t.* 105.

Hab. Basaltic rocks, Staffa, *Messrs. Turner, Borrer* and *Hook.* Near Kirkcaldy (E. side of the hollow, near Seafield town, where it was long mistaken for the *O. major, Mr. Arnott* [a]), *Mr. Somerville* and *Mr. E. I. Maughan. Fl.* July. ♃?

Eight to ten inches high. Whole plant a fine purplish red, piloso-glandulose. *Cal.* of 2, entire, lanceolate leaves.—I know not the nature of the subsoil at Kirkcaldy, but every other station at present known for this plant, in Ireland as well as Scotland, is basaltic.

XV. TETRADYNAMIA.

1. SILICULOSA [b].

1. Cakile. *Pouch* of 2 single-seeded articulations; upper articulation with an erect sessile seed; the lower one with a pendulous seed (sometimes abortive). *Br.*
2. Crambe. *Pouch* with the upper articulation subglobose; its seed inverted, fixed to the base of the cell by its (long, curved) seedstalk; the lower articulation abortive, resembling a pedicel. *Br.*
3. Coronopus. *Pouch* 2-lobed, without valves, wingless; cells 1-seeded. *Cotyledons* incumbent, linear. *Br.*

[a] This gentleman informs me that I am mistaken in having given, in *Fl. Lond., Salisbury craigs* as a station for this plant.

[b] No one who has at all studied the genera of plants needs be told how difficult it was, nay, I may say impossible, to distinguish those of this very natural family by the characters that had been given of them prior to the publication of the 4th vol. of *Hortus Kewensis*; where Mr. Brown has given an entirely new arrangement of the family. His genera and characters I have adopted: but I still fear, from the minute part of the fructification (*the embryo*), which is here, with great propriety, brought forward, as affording important distinguishing marks, that the student may shrink from the task of investigation. The difficulty, however, is more in appearance than in reality. The *embryo* being surrounded by no *albumen*, offers itself to examination immediately upon breaking the external coat of the seed, and the distinction between *accumbent* and *incumbent cotyledons* will be apparent. In the *former* case the *back* of one of the *cotyledons* is applied to the curved *radicle*; in the *latter* the edges or margins of the *cotyledons* are applied to it.

4. Thlaspi. *Pouch* compressed, emarginate; the valves keel-shaped (often winged), many-seeded. *Filaments* without teeth distinct. *Cal.* unequal in its insertion, patent. *Br.*
5. Teesdalia. *Pouch* emarginate, the valves keel-shaped; cells 2-seeded. *Filaments* with a little scale on their inside.
6. Lepidium. *Pouch* with 1-seeded cells, their valves keel-shaped. *Petals* equal. *Br.*
7. Cochlearia. *Pouch* subovate, many-seeded, their valves turgid. *Seeds* not margined, their *cotyledons* accumbent. The shorter *filaments* without teeth. *Cal.* patent. *Br.*
8. Subularia. *Pouch* oval, pointless (*Silic. mutica, Br.*), many-seeded; valves turgid. *Cotyledons* incumbent, linear, bipartite[a] (*bicrures*). *Br.*
9. Draba. *Pouch* entire, oval; valves plane, or a little convex; cells many-seeded. *Seeds* not margined; cotyledons accumbent. *Filaments* without teeth. *Br.*
10. Camelina. *Pouch* subovate, many-seeded; their valves turgid. *Cotyledons* incumbent. *Filaments* without teeth. *Br.*

2. SILIQUOSA.

11. Cardamine. *Pod* linear, with the margins truncated; valves plane, nerveless (often bursting elastically), narrower than the dissepiment. *Br.*
12. Arabis. *Pod* linear, crowned with the nearly sessile stigma; valves veined or nerved. *Seeds* in one row. *Cotyledons* accumbent. *Cal.* erect. *Br.*
13. Turritis. *Pod* elongated, 2-edged; valves nerved and keeled. *Seeds* in two rows. *Cotyledons* accumbent. *Br.*
14. Barbarea. *Pod* 4-edged. *Cotyledons* accumbent. *Seeds* in one row. *Cal.* erect. Small *glands* placed between the shorter filaments. *Br.*
15. Nasturtium. *Pod* rounded (sometimes short); valves concave, nerveless, not carinated. *Cotyledons* accumbent. *Cal.* patent. *Br.*
16. Sisymbrium. *Pod* rounded or angular. *Cotyledons* incumbent (sometimes obliquely), plane. *Cal.* patent (sometimes nearly erect). *Br.*
17. Erysimum. *Pod* 4-sided. *Seeds* not margined. *Cotyledons* incumbent. *Stigma* capitate, sometimes notched, with the lobes patent. *Cal.* closed. *Br.*
18. Cheiranthus. *Pod* compressed or two-edged. *Cotyledons* accumbent. *Cal.* closed; opposite leaflets saccate at the base. *Stigma* placed upon a style, two-lobed, with the lobes patent or capitate. *Br.*

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[a] Some *cotyledons* in this class are tripartite, as in *Lepidium sativum*, and the genus *Heliophila*, according to Brown.

19. HESPERIS. *Pod* 4-sided or two-edged. *Stigma* nearly sessile, with the lobes connivent. *Cotyledons* incumbent, plane. *Cal.* closed. *Br.*
20. BRASSICA. *Pod* 2-valved (with an abortive or 1-seeded beak). *Cotyledons* conduplicate. *Cal.* closed. *Br.*
21. SINAPIS. *Pod* 2-valved (sometimes of 2 articulations, of which the upper one is valveless). *Cotyledons* conduplicate. *Cal.* patent. *Br.*
22. RAPHANUS. *Pod* valveless (torulose, *Sm.*). *Cotyledons* conduplicate. *Cal.* closed. *Br.*

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1. SILICULOSA.

1. CAKILE.

1. C. *maritima* (*Sea Rocket*), articulations of the pouch two-edged the upper one sagittate, leaves pinnatifid subd ntate fleshy. *Br. Lightf. p.* 363, and *E. B. t.* 231 (*Bunias Cakile*).

HAB. Sea-shores in sandy places; not uncommon. Leith sands, &c., *Lightf.* E. coast from Aberdeen to Fraserburgh, *Mr. Murray. Fl.* June, July. ⊙.

Plant bushy; branches very crooked, succulent. *Flowers*, as in all of this class, corymbose; the *corymbs* in fruit lengthening into racemes, purplish. *Pouch* thick, fleshy, at length somewhat woody.

2. CRAMBE.

1. Cr. *maritima* (*Sea Kale*), the four longer filaments forked, pouch pointless, leaves roundish sinuated waved toothed glaucous and as well as the stem glabrous. *Br. Lightf. p.* 364. *E. B. t.* 924.

HAB. Sea-coast in sandy or stony soils, but not common. Near Fast-castle, Berwickshire, *Lightf.* Isle of Isla, *Dr. Walker. Fl.* June. ♃.

Root thick, fleshy. *Leaves* large. *Flowers* white. Well known in a cultivated state; but rare, in Scotland, wild.

3. CORONOPUS.

1. C. *Ruellii* (*Swine's Cress*), pouch undivided crested with little sharp points. *Br. Lightf. p.* 345 (*Cochlearia Coronopus*). *E. B. t.* 1660.

HAB. Moist, clayey, exposed situations by road-sides, but not common, *Sibbald.* Road-side W. of Tobago-street, Edinb.; at Burnt-island, and at Seton Harbour, *Maugh.* Musselburgh, *Mr. Arnott. Fl.* Aug. ⊙.

A much-branched, spreading weed. *Leaves* bipinnate, the segments linear. *Flowers* very small, white, in lateral axillary *corymbs*. *Pouch* large in proportion to the flower, curiously crested.

4. THLASPI.

1. Th. *arvense* (*smooth Mithridate Mustard*, or *Penny-Cress*),

pouch orbicular, its wings dilated longitudinal, seeds concentrically striated, leaves oblong sagittate toothed glabrous. *Br. Lightf. p.* 340. *E. B. t.* 1659.

Hab. Fields and road-sides, but not common. Near Linton, in Tweed-dale, *Rev. Dr. Burgess* of Kirkmichael. Corn-fields about Edinb., *Maugh.* Figgot-whins and Burntisland, near Edinb., *Mr. Arnott.* Queen's-ferry, *Mr. D. Stewart.* *Fl.* June, July. ⊙.

One foot high, branched above. *Flowers* extremely small, white. *Pouches* very large, with broad wings.

2. Th. *Bursa-Pastoris* (*common Shepherd's Purse*), pouch obcordate without wings, radical leaves pinnatifid. *Br. Lightf. p.* 342. *E. B. t.* 1485.

Hab. Corn-fields and waste places, every where, most abundant. *Fl.* the whole summer. ⊙.

Very variable in size and in the form of the *leaves*; lower ones more or less pinnatifid; upper ones lanceolato-sagittate; all generally toothed, and rough with hairs. *Flowers* small. Well distinguished by the obcordate wingless *pouch.*

5. TEESDALIA.

1. T. *nudicaulis* (*naked-stalked Teesdalia*). *Br. Lightf. p.* 346, and *E. B. t.* 327 (*Iberis nudicaulis*).

Hab. Sandy and gravelly banks, but rare, *Sibbald.* Whin near New-Posso in a field belonging to Lord Advocate Montgomery, *Dr. Hope.* Sandy fields near Tollcross, Glasg., abundantly, *Hopk.* Links near Ayr, *Maugh.* Sandy hills at Peterhead, and Auchterarder, Perthshire, *Mr. Murray.* *Fl.* May, June. ⊙.

Leaves almost entirely radical, lyrato-pinnatifid. *Stems* 2—4 inches high, with sometimes 1—2 small, entire, or cut leaves. *Flowers* white, two of the petals longer than the other two[a].

6. LEPIDIUM.

1. L. *latifolium* (*broad-leaved Pepperwort*), leaves lanceolate undivided serrated or entire, pouch oval entire. *Br. Lightf. p.* 338. *E. B. t.* 182.

Hab. Near the sea-coast. By the castle of Weems, in Fifeshire, &c., *Lightf.* Upon the rock on which Bothwell-castle is built, *Dr. Walker.* *Fl.* July. ♃.

Two to three feet high, branched, erect. *Flowers* numerous, small, in many terminal clusters.

2. L. *ruderale* (*narrow-leaved Pepperwort*), flowers diandrous apetalous, radical leaves pinnatifid those of the branches linear entire, pouch emarginate patent. *Br. Lightf. p.* 340. *E. B. t.* 1595.

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[a] I fear there is some mistake in the information obtained by Lightfoot, that the *Iberis amara* grew in fields between Hamilton and Glasgow. Mr. Hopkirk observes that it is not to be found there; and in England it is confined to the southern parts.

Hab. Waste places near the sea, and among rubbish. *Fl.* June. ⊙.
Stem sometimes a foot high, much branched. *Seed-vessels* numerous.

3. L. *campestre* (*hoary Field Pepperwort*), pouch ovate emarginate winged rough with minute scales, style scarcely longer than the notch, cauline leaves sagittate toothed. *Lightf.* *p.* 341, and *E. B. t.* 1803 (*Thlaspi camp.*).

Hab. Corn-fields and dry gravelly soils, but not common, *Dr. Parsons.* Langside, Glasg., *Dr. Brown.* Abundantly on the road near Drumpellier, Glasg., *Hopk.* Common about Dumfries, *Mr. Arnott.* *Fl.* July. ⊙.

Ten to twelve inches high. *Stems* solitary, branched above. *Lower leaves* almost spathulate, all slightly pubescent, as well as the *racemes* and *pedicels.*

4. L. *hirtum* (*hairy Field Pepperwort*), pouch ovate emarginate winged glabrous, style nearly half as long as the pouch, cauline leaves sagittate toothed. *E. B. t.* 1803 (*Thlaspi hirtum*).

Hab. Margins of fields and hedges. Near Blantyre Priory, *Dr. Brown.* *Fl.* June. ♃. (♂, *Hopk.*)

Six to eight inches high. *Stems* many from one root. Much resembling the last, but whiter with the more abundant pubescence. *Stem* and *racemes* hairy. *Pod* with, *constantly*, a much longer style, and in all my specimens not only free from scales, but from hairiness too.

7. COCHLEARIA.

1. C. *officinalis* (*common Scurvy-grass*), pouch globose, radical leaves petiolate cordato-reniform entire or sinuated, cauline ones sessile oblong sinuated. *Lightf. p.* 342, and *p.* 344 (*C. grœnlandica*). *E. B. t.* 351, and *t.* 2403 (*C. grœnlandica*).

Hab. Rocks and muddy places by the sea-coast, as well as upon the elevated mountains. *Fl.* May. ⊙.

Varying in height from six inches to a foot or more, much branched, especially the base. *Leaves* succulent, more or less entire, those of the stem semiamplexicaul with their generally toothed base. *Flowers* white.—I can see no difference whatever in the *C. grœnlandica*; for the sinuated and toothed or entire leaves are extremely variable marks, and such as no reliance can be placed upon.

2. C. *anglica* (*English Scurvy-grass*), pouch elliptical, radical leaves petiolate cordate entire, cauline ones mostly sessile oblong more or less toothed near the base. *Lightf. p.* 344. *E. B. t.* 552.

Hab. Rocks of Inch Columb (Icolmkill), *Sibbald.* *Fl.* May. ⊙.

Smaller than the last and larger than the following, to which I think it approaches too near. In some of the lower cauline *leaves* the two teeth near the base form a complete delta; and the *pouch* is very similar.

3. C. *danica* (*Danish Scurvy-grass*), pouch ovato-elliptical, leaves all petiolate deltoid. *Lightf. p.* 343. *E. B. t.* 697.

Hab. Rocks and sandy or stony places on the sea-coast. Burntisland and Cramond island on the Firth of Forth, *Maugh.* Both on the E. and W. coast; sands at Peterhead; in Arran, &c., *Mr. Murray. Fl.* May. ⊙.

Stems 4—6 inches long, branched. *Leaves* sometimes lobed and sinuated, sometimes nearly entire. *Pouches* reticulated, at least in a dry state.

4. C. *Armoracia* (*Horse-radish*), pouch oblong, stigma dilated nearly sessile, radical leaves oblong (on long footstalks) crenate, cauline ones elongato-lanceolate serrate or entire. *Lightf. p.* 1136. *E. B. t.* 2323.

Hab. Mentioned as a native by *Sibbald.* Field near Craigcrook, *Maugh.* Waste ground about Glasg., occasionally, *Hopk.* Duddingston Loch, *Mr. Arnott. Fl.* May. ♃.

Roots long and running deep into the ground, well known at our tables, and admired for its pungent flavour. *Stems* 1½ foot to 2 feet high, branched, striated. *Leaves* much veined. *Flowers* white. *Fruit* seldom perfected, compressed.

8. SUBULARIA.

1. S. *aquatica* (*Awl-wort*). *Lightf. p.* 337. *E. B. t.* 732.

Hab. Margins of the Highland lakes, under the water, in a gravelly or sandy bottom, as in Loch Tay, &c., *Dr. Stuart.* Loch of Clunie, *Rev. Mr. M'Ritchie.* Loch Lomond, by Inch Tavannoch, *Mr. Borrer* and *Hook. Fl.* July. ♃.

Leaves few, radical, awl-shaped, an inch or more long, recurved at the extremity. *Scape* 2—3 inches high. *Flower* small, white, said to produce and to perfect the fruit entirely under water.

9. DRABA.

1. Dr. *verna* (*common Whitlow-grass*), scapes naked, petals bipartite, leaves lanceolate somewhat cut hairy. *Br. Lightf. p.* 337. *E. B. t.* 586.

Hab. Walls, rocks, and dry hills. *Fl.* March—May. ⊙.

Two to 4 inches high. *Pouches* ovate. *Flowers* white. *Hairs* of the *leaves* more or less forked, or stellated, as they are on all the British species of *Draba.*

2. Dr. *rupestris* (*Rock Whitlow-grass*), scapes naked or with one leaf, petals undivided, pouch lanceolate pubescent, leaves plane lanceolate hairy. *Br. E. B. t.* 1338 (*D. hirta*, but not of *Linn.* or *Fl. Dan.* according to Brown).

Hab. Nat. of Scotland, *Brown in Hort. Kew.* Ben Lawers, *Mr. Dickson. Fl.* July. ♃.

I am not acquainted with this species. Smith says that it is from one inch to three inches high, round, more or less hairy, naked, or with an occasional leaf at the bottom; that all the hairs are quite simple, in which particular it differs from *Dr. stellata* of Jacq.; and that the

pouch is clothed with minute, forked, divaricated white hairs. It cannot therefore be the same as the following[a].

3. Dr. *hirta* (*hairy alpine Whitlow-grass*), scape generally with one or two ovate dentate or entire leaves, petals undivided, pouch oblong and as well as the pedicels glabrous, leaves lanceolate plane hairy and stellato-pubescent.

β. *alpicola*, scape straight, pedicels shorter, leaves with stellated hairs. *Wahl. Lapp. p.* 175. *t.* 11. *f.* 1. *Dr. stellata, Jacq. Austr. t.* 432.

Hab. β. Rocks at the summit of Cairn-gorum, *Hook. Fl.* July. ♃.

I have specimens from Wahlenberg himself of this species which perfectly accord with my plants gathered on Cairn-gorum; and the figure and description leave me no reason to doubt that the *Draba stellata* in *Fl. Austr.* is also the same as mine. The α., Wahlenberg tells us, is the true *hirta* of Linn., and has very few stellated hairs on the *leaves*. β., besides being of a more rigid habit and more humble growth (from 2—4 inches high), has the foliage rather thickly covered with starry pubescence, besides having simple hairs, especially at the margin. The *scape* is stellato-pubescent too; but the *pedicels* as well as the *pouches* are glabrous; in which particular, as well as in the less downy leaves and the constant presence on them of simple hairs, it differs principally from the *Draba muricella* of Wahlenberg, the *D. hirta* of *Fl. Dan.* May not these and even the *D. rupestris* above described, be mere varieties of one species?

4. Dr. *incana* (*twisted podded Whitlow-grass*), cauline leaves numerous lanceolate dentate hoary with starry pubescence, pouch oblong somewhat twisted. *Lightf. p.* 338. *E. B. t.* 388 (bad fig. from a *cultivated* specimen).

Hab. Near the rocky summits of the Highland mountains, not unfrequent. In Isla, Skye, Assynt, &c., *Lightf.* Ben Lawers, *Maugh.* Craig-na-cailleach, *Dr. Walker.* Heaths on the E. coast of Sutherland, near Wilk-house Inn, *Mr. Borrer* and *Hook. Fl.* June, July. ♂.

Four to six or eight inches high, sometimes throwing out lateral branches, stout, very leafy. *Lower leaves* mostly entire; *upper ones* deeply toothed, almost cut, acute. *Pouches* erect, glabrous in my Scotch and Iceland specimens, pubescent in some from Switzerland, as they are also described to be *constantly* in Lapland. Small starved *vars.* of this plant come very near the *D. hirta.*

5. Dr. *muralis* (*Speedwell-leaved Whitlow-grass*), stem branched, leaves ovate obtuse amplexicaul dentate, pouch patent glabrous. *Br. E. B. t.* 912.

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[a] I have, since the above description was written, seen Mr. Don's specimens of the Ben Lawers plant. It has stellated hairs mixed with the simple, and the pouches are in some instances scarcely perceptibly pubescent; so that I have, more than ever, reason to believe the *D. rupestris* of Br. is but a slight *var.* of the *D. hirta.*

Hab. Reported to be found in Scotland, *Lightf.* About Forfar, *D. Don.* Field behind the Bot. Garden at Edinb. and Bellevue near the same city, *G. Don.* Scarcely indigenous. *Fl.* May. ⊙.

Six inches to 1 foot high. *Leaves* scabrous. *Pouch* elliptical.

10. CAMELINA.

1. C. *sativa* (*cultivated Camelina*, or *Gold of Pleasure*), pouch obovate marginated, stigma simple, leaves lanceolate sagittate. *Br. Lightf. p.* 336 (*Myagrum sat.*). *E. B. t.* 1254 (*Alyssum sat.*).

Hab. Fields. Among Flax, but probably imported, *Lightf.* Near Inverkeithing, *Mr. J. Stewart.* Appin, *Capt. Carmichael.* Field of flax, S. side of Frankfield Loch, Glasg., *Hopk. Fl.* June, July. ⊙.

Two to three feet high, panicled above. *Flowers* small, yellow. *Pouches* very large, on long footstalks.

2. SILIQUOSA.

11. CARDAMINE. (*Dentaria* and *Cardamine*, Sm.)

* *Leaves pinnated.*

1. C. *bulbifera* (*bulbiferous Toothwort*), stem quite simple, inferior ones pinnated, superior ones undivided. *Br. E. B. t.* 309 (*Dentaria bulbifera*).

Hab. Near Dupplin, *Mr. Shillinglaw. Fl.* Apr. May. ♃.

Root creeping, with thick fleshy scales or tooth-like processes. *Stem* 1—1½ foot high. *Leaflets* lanceolate, as are the upper *leaves* themselves, serrated, somewhat fleshy, often bearing a small bulb in their axils. *Flowers* rather large, purple.

2. C. *amara* (*bitter Lady's Smock*), leaves pinnated, radical leaflets roundish, cauline ones dentato-angulate, style oblique, stigma acute, stem rooting at the base. *Lightf. p.* 350. *E. B. t.* 1000.

Hab. Wet meadows, near rivulets. By the new well on the water of Leith, &c., *Lightf.* Near Bell's mills and Kevock Mill, Edinb., *Maugh.* Banks of rivers, frequent about Glasg., *Hopk., Dr. Brown, Mr. Murray*, &c. *Fl.* April—June. ♃.

One foot high. Well distinguished from the following by the broad angulato-dentate leaflets, in the upper *leaves*, and the white *flowers* which are larger and have purple anthers. The leaflets of the radical leaves are rounded and entire.

3. C. *pratensis* (*common Meadow Lady's Smock*), leaves pinnate, radical leaflets roundish dentate, cauline ones lanceolate nearly entire, style straight, stigma capitate. *Lightf. p.* 349. *E. B. t.* 776.

Hab. Moist meadows, abundant. *Fl.* May. ♃.

One foot to two feet high. *Flowers* large, blush-coloured; sometimes found double. This *var.* is known to propagate itself by the leaflets.

4. C. *impatiens* (*narrow-leaved Lady's Smock*), leaves pinnate,

leaflets lanceolate somewhat cut or entire, stipules ciliated, petals linear or none. *Br. Lightf. p.* 349. *E. B. t.* 80.

Hab. Foot of mountains and in shady places, but rare, *Lightf.* Rocks on the banks of the river above the falls of the Clyde, *Hopk. Fl.* May, June. ⊙.

One or one foot and a half high; well distinguished by the stipules at the base of each *leaf*. *Flowers* minute, white. It owes its specific name to the elastic force of the valves of the numerous pods; which thus burst and discharge the seeds.

5. C. *hirsuta* (*hairy Lady's Smock*), leaves all pinnated and without stipules, leaflets petiolate radical ones roundish, stam. (4—6) equal in length to the petals, stigma nearly sessile. *Br. Lightf. p.* 348, and *p.* 1104 (*C. parviflora*). *E. B. t.* 492.

Hab. Moist shady places, and among rocks and by the sides of rivulets, plentiful. *Fl.* May, June. ⊙.

Varying much in luxuriance according to soil and situation. From 4 inches to 1 foot or more high, more or less branched and straight; sometimes zigzag (the *C. flexuosa* of With. and Hopk.). *Leaflets* more or less angled or toothed, upper ones ovate: varying also extremely in the degree of hairiness, sometimes being quite smooth. *Flowers* small, white.

** *Leaves undivided.*

6. C. *bellidifolia* (*Daisy-leaved Lady's Smock*), leaves simple ovate entire upon rather long footstalks. *E. B. t.* 2355.

Hab. Gathered in Scotland by *Mr. Milne*, formerly curator of the Oxford Bot. Garden, *E. Bot. Fl.* Aug. ♃.

One inch to 3 inches high. *Leaves*, even the cauline ones, on rather long footstalks. *Flowers* few, small, white. Very near *C. alpina*.

12. ARABIS.

1. A. *hispida* (*short-podded Rock-Cress*), radical leaves sinuato-lyrate lengthened below into footstalks, cauline ones mostly undivided glabrous, fruit-bearing peduncles spreading half as long as the pods. *Br. Lightf. p.* 347. *t.* 15 (*Cardamine petræa*). *E. B. t.* 409 (*Cardamine hastulata*).

Hab. Moist rocks by the sides of rivulets, near the summits of the Highland mountains, as on Craig-Chailleach, in Breadalbane, Baike-val, in the Isle of Rum, abundantly, and Ben-na-Cailleach, in Strath in the Isle of Skye. Banks of the Dee, Aberdeenshire, *Anderson* and *Lightf.* Ben More, in Mull, *Maugh. Fl.* July. ♃.

Three to six inches high, slender, glabrous. *Radical leaves* numerous: cauline ones few, toothed or entire. *Flowers* small, whitish, or with a purplish tinge.

2. A. *thaliana* (*common Wall Cress*), leaves subdentate pilose, radical ones subpetiolate oblong, stam. as long as the petals, stem branched, pods ascending. *Lightf. p.* 358. *E. B. t.* 901.

Hab. Walls, dry banks, and gravelly soils, common. *Fl.* Apr. May. ⊙.

Six to ten inches long, slender, with few leaves, and those mostly radical.

3. A. *ciliata* (*alpine Tower-Mustard*) leaves subdentate oval glabrous ciliated, radical ones nearly sessile obtuse, cauline ones semiamplexicaul, stem simple. *Br.* *E. B. t.* 1746 (*Turritis alpina*).

Hab. Rocks near Loch Lea, in Glen Esk, *G. Don.* *Fl.* July. ♂.

Four to six inches high. *Radical leaves* several, oval or obovato-oblong, obtuse. Cauline ones small. *Pods* nearly erect.

4. A. *hirsuta* (*hairy Tower-Mustard*), leaves all hispid dentate, cauline ones semiamplexicaul, pods straight. *Br.* *Lightf.* *p.* 358, and *E. B. t.* 587 (*Turritis hirsuta*).

Hab. Dry rocks, frequent; as upon the rocks in the King's park, Edinb., *Lightf.* Habbies How and Pentland hills, *Maugh.* Bottom of Cartlane Crags, Glasg., plentiful, *Hopk.* *Fl.* June. ♂. (*Ɣ*, *Sm.*)

One foot or more high, very straight, stiff. *Stem* rough with spreading hairs, with many leaves. *Flowers* small, white. *Pods* nearly erect.

5. A. *Turrita* (*Tower Wall-Cress*), leaves amplexicaul, pods recurved flat and linear with the margins incrassated, bracteas foliaceous. *E. B. t.* 178.

Hab. Old walls, very rare. Castle of Cliesh, *Mr. Arnott.* *Fl.* May. ♂.

One foot or more high. *Leaves* many upon the stem, oblong, toothed, a little rough, with short pubescence, especially the lowermost, spathulate ones large, but gradually smaller upwards, and the uppermost ones become bracteas, each bearing in its axil a single *flower-stalk*. *Flowers* small, yellowish white. *Pods* very long, bent backward when ripe.

13. TURRITIS.

1. T. *glabra* (*long-podded Tower-Mustard*) radical leaves dentate hairy, cauline ones amplexicaul entire glabrous. *E. B. t.* 777.

Hab. Dry pastures, rare. In the wood opposite the inn at Bowling Bay, sparingly, *Hopk.* *Fl.* May, June. ⊙.

One to two feet high. *Leaves* oblongo-lanceolate, glaucous; radical ones toothed or sinuated at the base; cauline ones sagittate. *Flowers* yellowish white. *Pods* long, erect. Whole plant very erect, and traight.

14. BARBAREA.

1. B. *vulgaris* (*bitter Winter-Cress*), lower leaves lyrate the terminal lobe rounded the superior ones obovate toothed. *Lightf. p.* 355, and *E. B. t.* 443 (*Erysimum Barbarea*).

Hab. Banks of ditches and rivers, but not very common. By the side of the water of Leith, *Dr. Parsons.* Very frequent in hedges and waste ground, and banks of rivers, about Glasg., *Hopk.* *Fl.* May, Aug. *Ɣ*.

One to one foot and a half high. Stout, furrowed, and branched, glabrous. *Flowers* yellow.

2. B. *præcox* (*early Winter-Cress*), lower leaves lyrate upper ones pinnatifid their segments linear oblong and entire. *E. B. t.* 1129 (*Erysimum præcox*).

Hab. St. Bernard's well, Edinb., *Mr. Arnott.* *Fl.* summer months. ♂.

One to two feet high; slenderer than the last in every part. *Flowers* very small, yellow. *Pods* longer.

15. NASTURTIUM.

1. N. *officinale* (*Water-Cress*), leaves pinnate, leaflets ovate subcordate sinuato-dentate. *Lightf. p.* 350. *E. B. t.* 855 (*Sisymbrium Nasturtium*).

Hab. Brooks and rivulets, frequent. *Fl.* July. ♃.

A well known aquatic, and an excellent sallad. Lower *leaves* large, of 5—7 distant leaflets, the terminal one the largest and roundest; cauline leaflets subovate, all rather succulent, glabrous, more or less waved or toothed. *Flowers* white. *Pods* about 1 inch long, patent.

2. N. *sylvestre* (*creeping Nasturtium*), leaves pinnate, leaflets lanceolate incised those on the uppermost leaves nearly entire. *Lightf. p.* 351, and *E. B. t.* 2324 (*Sisymbrium sylv.*).

Hab. Water-sides and waste places, but not common, *Dr. Parsons* and *Sibbald.* In several wet places on the side of the water of Ea, below Kirkmichael house, *Lightf.* *Fl.* July, Aug. ♃.

Roots much creeping. *Stem* 1 foot high, angular, branched. *Flowers* yellow. *Pet.* much longer than the *cal.* *Pods* short, patent or curved a little upwards.

3. N. *terrestre* (*Marsh Nasturtium*), leaves lyrato-pinnatifid unequally toothed glabrous, root simply fibrous, petals not longer than the cal. *Lightf. p.* 352 (*Sisymbrium amphibium* α.). *E. B. t.* 1747 (*Sisymbrium terrestre*).

Hab. Watery places. Figget Whins, Edinb., *G. Don.* Edge of Kinghorn Loch, *Mr. P. Neill.* Banks of Frankfield Loch, Glasg., *Hopk.* N. bank of Loch Leven, *Mr. Arnott.* Appin, *Capt. Carmichael.* *Fl.* June, Sept. ☉.

One foot high, branched. Distinguished readily from the last by its pinnatifid, not pinnated, *leaves*, the minute (yellow) *petals* and the more turgid *pods*.

4. N. *amphibium* (*amphibious Nasturtium*), leaves oblong pinnatifid or serrated, root simply fibrous, petals longer than the cal. *Lightf. p.* 352 (*Sisymbrium amphibium* β). *E. B. t.* 1840 (*Sisymbrium amphibium*).

Hab. Watery places, occasionally. Duddingston Loch, *Mr. Yalden.* Banks of the Clyde, frequent; in the marsh beyond Possil; and Bardowie Loch, near the house, Glasg., *Hopk.*

Two to three feet high, branched. If any *leaves* grow under water, they are deeply pinnatifid; deeply serrated otherwise. *Flowers* yellow. *Pods* short, small, but turgid, erecto-patent.

16. SISYMBRIUM.

1. S. *officinale* (*common Hedge-Mustard*), pods subulate pubescent close pressed to the main stalk, leaves runcinate hairy, stem hispid. *Lightf. p.* 354, and *E. B. t.* 735 (*Erysimum off.*).

Hab. Waste places and by way-sides, plentiful. *Fl.* June, July. ⊙.

One to two feet high, branched. The deep and cut or serrated lobes are not always sufficiently decurved to be called runcinated; terminal lobe very large, rounded in the lower leaves, oblong in the upper ones. *Flowers* very small, pale yellow.

2. S. *Sophia* (*Flix-weed*), leaves doubly pinnate a little hairy, pinnules linear terminal one the longest, petals shorter than the cal. *Lightf. p.* 354. *E. B. t.* 963.

Hab. Waste places, among rubbish, common. *Fl.* Aug. ⊙.

Two feet high, branched. *Pods* linear, slender, erect, but not appressed, the *footstalk* being a little patent.

17. ERYSIMUM.

1. E. *cheiranthoides* (*Treacle Hedge-Mustard*), leaves lanceolate entire or slightly toothed with stellato-tripartite hairs, pods nearly erect their peduncles spreading, stigma undivided nearly sessile. *Br. Lightf. p.* 356. *E. B. t.* 942.

Hab. Corn-fields, but not common, *Sibbald.* At the head of Loch na Gaul, in Mull, *Dr. Walker.* *Fl.* July, Aug. ⊙.

One foot to two feet high, branched. *Flowers* small, yellow.

2. E. *Alliaria* (*Garlick-Hedge-Mustard*), leaves heart-shaped petiolate dentato-crenate. *Lightf. p.* 356. *E. B. t.* 796.

Hab. Hedge-banks and waste places. *Fl.* May, June. ♂.

Two to three feet high, branched. *Leaves* large, veined, well known for their garlick-like smell. *Flowers* white. *Pods* erecto-patent.

18. CHEIRANTHUS.

1. Ch. *fruticulosus* (*wild Wall-flower*), leaves lanceolate acute hoary beneath, pubescence all simple and close-pressed, stem somewhat shrubby, branches angular. *Sm. Lightf. p.* 357 (*Ch. Cheiri*). *E. B. t.* 1934.

Hab. Old walls and castles, frequent. *Fl.* May. ♃.

One foot high, bushy. *Leaves* yellow, somewhat rigid, in which particulars the principal distinction rests between it and *Ch. Cheiri.* Are they truly distinct?

19. HESPERIS.

1. H. *matronalis* (*Dame's Violet*), stem erect, leaves ovato-lanceolate toothed, limb of the petals obovate, pods erect torulose their margins simple (not incrassated). *E. B. t.* 731 (*H. inodora*).

Hab. Banks and bushy places. Side of a rivulet near Glen Corse, *Lightf.* Fields near Holytown, by Glasg., seemingly indigenous, *Hopk.* Collington and Auchindenny woods, *Maugh.* Bank below

Arthur's Seat, *Mr. Arnott.* Water of Leith, *Mr. D. Stuart.* *Fl.* May, June. ♂, or ♃.

One foot to two feet high, simple or a little branched, pubescent. *Flowers* very pale purplish, sweet-scented, especially towards evening. *Cal.* leaves cohering by their upper part. (*Sm.*)

20. BRASSICA.

1. Br. *Napus* (*wild Navew* or *Cole-seed*), root caulescent fusiform, leaves smooth, upper ones cordato-lanceolate amplexicaul, lower ones lyrate toothed. *Lightf. p.* 359. *E. B. t.* 2146.

Hab. Corn-fields, frequent, and on banks. Rocks behind Edinb. castle. *Fl.* June. ♂.

One foot to two feet high. Lobes of the lower *leaves* crenate; upper ones entire, subglaucous. *Petals* yellow, rather small. *Pods* torulose. —Cultivated for the oil produced by the seeds; and the seeds, by pressure, are formed into cakes, which, after the extraction of the oil, are useful for manure as well as for fattening cattle.

2. Br. *Rapa* (*Turnep*), root caulescent orbicular depressed fleshy, radical leaves lyrate scabrous those of the stem nearly entire smooth. *E. B. t.* 2176.

Hab. Borders of fields. *Fl.* Apr., May. ♂.

Varying exceedingly in height, according to the soil. *Upper leaves* amplexicaul, ovato-acuminate, subglaucous; all more or less toothed. *Flowers* yellow, rather large.

3. Br. *oleracea* (*Sea Cabbage*), root caulescent rounded fleshy, all the leaves glabrous glaucous waved and lobed. *E. B. t.* 637.

Hab. Rocks by the sea-side, Inchkeith, *G. Don.* Inch Colm, *Maugh.* *Fl.* May, June. ♂.

Various in height, 1 foot to 2 feet. *Leaves* thick, subcarnose, the uppermost undivided but toothed. *Flowers* large, yellow.—The origin of all our garden *Cabbages.*

4. Br. *Monensis* (*Isle of Man Cabbage*), leaves pinnatifid, stem nearly leafless glabrous, pods smooth, beak monospermous. *Br. Lightf. p.* 353. *t.* 15, and *E. B. t.* 962 (*Sisymbrium Mon.*).

Hab. Sea-shores in many places. Bute, S. of Mountstewart; on the W. side of Arran, and at Lamlash Bay; in Cantire on the western side, *Lightf.* Shores of the Solway Firth, abundant, *Maugh.* Mouth of the Clyde, about Largs, and on the coast thence to Ayr; also apposite the shores of Bute and Arran, frequent, *Mr. Murray.* —Confined, I believe, to the western shores. *Fl.* June, July. ♃.

Eight to ten inches high, slightly hispid. Segments of the leaves linear, more or less toothed. *Flowers* rather large, yellow.

5. Br. *campestris* (*Field Cabbage*), root and stem slender, leaves cordate acuminate amplexicaul lower ones lyrate dentate subhispid. *E. B. t.* 2234.

Hab. Corn-fields in Bute and Arran, *Lightf.* By the side of the

road leading from Leith to Queensferry, near Bangholm; and fields near Forfar, *G. Don.* Appin, *Captain Carmichael.* *Fl.* Aug. ⊙.
Root fusiform, but slender. *Stem* hispid, below. *Flowers* yellow. "*Pod* upright, cylindrical, or obscurely 4-angular, veiny, the seeds forming slight prominences; the beak awl-shaped, striated, square at its base." *Sm.*

21. SINAPIS.

1. S. *arvensis* (*wild Mustard* or *Charlock*), pods with many angles turgid and knotty longer than the two-edged beak, leaves ovate sublyrate. *Lightf. p.* 360. *E. B. t* 1748.

Hab. Corn-fields, too frequent. *Fl.* May, June. ⊙.
One to two feet high, rough. *Flowers* rather large, yellow.

2. S. *alba* (*white Mustard*), pods hispid turgid shorter than the ensiform beak, leaves pinnatifid. *Lightf. p.* 361. *E. B. t.* 1677.

Hab. Waste places, frequent. Corn-fields about Edinb., *Maugh. Fl.* July. ⊙.
Stem 1—1½ foot high, hairy. Lobes of the *leaves* variously cut and toothed or erose. *Flowers* large, yellow. Well distinguished by its long beak.—This plant it is, which, in a young state, is eaten under the name of *Mustard*, with *Cresses* (*Lepidium sativum*).

3. S. *nigra* (*common Mustard*), pods appressed glabrous tetragonous, style short subulate, upper leaves linear-lanceolate entire glabrous. *Lightf. p.* 362. *E. B. t.* 969.

Hab. Under hedges and waste places. *Fl.* June. ⊙.
Three to four feet high. Lower *leaves* large, lyrate, rough. *Flowers* yellow. *Pod* with a very short beak, or rather only the persistent style and stigma at its summit, quadrangular, its surface scarcely rugged.

4. S. *tenuifolia* (*fine-leaved Mustard*), pods linear glabrous shortly beaked erect, peduncles spreading, leaves lanceolate very acute pinnatifid or bipinnatifid, stem glabrous. *E. B. t.* 525 (*Sisymbrium tenuif.*).

Hab. Coast of Fife at St. David's, *Mr. P. Neill.* Coast of Fife, between Burntisland and Queensferry, *Mr. Greville.* *Fl.* July, Aug. ♃.
Root thick, woody. *Stem* one or one foot and a half high. *Leaves* with a very disagreeable smell. *Flowers* large, pale yellow.

22. RAPHANUS.

1. R. *Raphanistrum* (*wild Radish* or *jointed Charlock*), leaves simply lyrate, pods of one cell jointed striated. *Br. Lightf. p.* 62. *E. B. t.* 856.

Hab. Corn-fields, frequent. *Fl.* June, July. ⊙.
One to one foot and a half high. *Leaves* petiolate, rough. *Flowers* yellow, veined.

2. R. *maritimus* (*Sea Radish*), leaves interruptedly lyrate, pods of one cell jointed striated. *E. B. t.* 1613.

Hab. On the beach in the Isle of Bute, found in 1753 by *Dr. Walker*. Beach, 3 m. from the Mull of Galloway, *Mr. J. Mackay*. Sea-beach near Mountstewart in the Isle of Bute, *Maugh*. Various parts of the coast of Ayrshire, Galloway, &c., *G. Don*. *Fl.* June. ♂.
Three to four feet high. All the leaves rough and the lobes toothed. *Flowers* rather large, yellow.—Smith says it was long cultivated by Dr. Walker, who considered its root excellent, preferable to horse-radish, and who found cattle to be extremely fond of it.

XVI. MONADELPHIA.

1. PENTANDRIA.

1. Erodium. Monogynous. *Cal.* of 5 leaves. *Cor.* of 5 petals. Nectariferous *glands* 5. Imperfect *filaments* 5, alternating with the 5 perfect *stams*. *Fruit* beaked, separating into 5 1-seeded capsules, each with a long, spiral awn, bearded on the inside.

(*Linum*, Pent. Pentag. *Geranium pusillum*, Ord. Decand.)

2. DECANDRIA.

2. Geranium. Monogynous. *Cal.* of 5 leaves. *Cor.* of 5 regular petals. Nectariferous *glands* 5. *Fruit* beaked, separating into 5 monospermous capsules, each tipped with a long, naked, simple awn (neither spiral nor bearded).

(*Oxalis*, Decand. Pentag.)

3. POLYANDRIA.

5. Lavatera. Polygynous. *Cal.* double; *ext.* 3-cleft. *Capsules* numerous, circularly arranged, 1-seeded.
4. Malva. Polygynous. *Cal.* double; *ext.* of 3 leaves. *Capsules* numerous, circularly arranged, 1-seeded.
3. Althæa. Polygynous. *Cal.* double; *ext.* of 9 leaves. *Capsules* numerous, circularly arranged, 1-seeded.

1. PENTANDRIA.

1. ERODIUM.

1. E. *cicutarium* (*Hemlock-leaved Stork's-bill*), peduncles many-flowered, leaves pinnate, leaflets sessile pinnatifid and cut, petals longer than the cal., stem prostrate hairy. *Lightf.* *p.* 366 (*Geranium cicut.*). *E. B. t.* 1768.

Hab. Dry sandy pastures and waste grounds. *Fl.* summer months. ⊙.
Whole plant hairy. *Flowers* in small umbels, purplish, or sometimes white.

2. GERANIUM.

* *Peduncles* 1-*flowered.*

1. G. *sanguineum* (*bloody Crane's-bill*), peduncles 1-flowered, leaves nearly orbicular in 5—7 deep lobes each of which is trifid. *Lightf. p.* 372. *E. B. t.* 272.

Hab. Rocks and sandy grounds. Arthur's Seat, near Edinb.; and in the Island of Iona, *Lightf.* Sea-shore at Gosford Gate, near Aberlady, plentiful, *Maugh.* Common on both sides of the Firth of Forth, *Mr. Arnott.* About Inverness, *Mr. G. Anderson.* Banks of Loch Rannoch, *Anderson.* *Fl.* July. ♃.

One to one foot and a half high, swelling at the joints. *Flowerstalks* axillary, long. *Flowers* large, handsome, purple.

** *Peduncles* 2-*flowered. Roots perennial.*

2. G. *phæum* (*dusky Crane's-bill*), peduncles 2-flowered opposite the leaves, cal. slightly awned, petals waved, capsules keeled hairy below wrinkled above, stem erect. *E. B. t.* 322.

Hab. Collington woods, but rare, *Maugh.* Banks of the Clyde at Blantyre Priory, and banks of the Cart, above the mill near Glasg., rare, *Hopk.* Near Linlithgow, *Miss Liston.* Kankeelour, Fifeshire, *Mr. J. Young.* Woods in Scotland, frequent, *D. Don.* *Fl.* May, June. ♃.

Stem two feet or more high, dichotomously branched. *Leaves* 3—7-lobed; lobes acute, cut, and serrated. *Flowers* very dingy, purplish black.

3. G. *sylvaticum* (*Wood Crane's-bill*), peduncles 2-flowered, leaves subpeltate with 5 or 7 deep and acute lobes which are cut and serrated, stem erect corymbose, petals slightly notched, capsules keeled hairy (not wrinkled). *Lightf. p.* 367. *E. B. t.* 121.

Hab. Woods, thickets, sides of rivers, &c., common. *Fl.* June, July. ♃.

One foot to three feet high. *Flowers* purple, larger than those of *G. phæum*, but much smaller than in the following species.

4. G. *pratense* (*Crowfoot-leaved Crane's-bill*), peduncles two-flowered, leaves 5-partite, lobes multipartite all the segments acute, capsules hairy smooth (not wrinkled). *Lightf. p.* 368. *E. B. t.* 404.

Hab. Pastures and thickets, not uncommon, especially such as are moist; near cascades. *Fl.* July. ♃.

One foot to two feet high. Distinguished by its large purple *flowers* and multipartite *leaves.*

5. G. *pyrenaicum* (*Mountain Crane's-bill*), peduncles 2-flowered, leaves reniform 5—7-lobed, lobes oblong obtuse trifid and toothed at the extremity, stem erect branched, petals deeply notched twice as long as the cal. *Lightf. p.* 367. *E. B. t.* 405.

Hab. Mountainous pastures and waste places, but not common.

Near Edinburgh, *Dr. Parsons.* Near Bell's Mills and in the King's Park, Edinburgh, *Maugh.* Near Rothsay, Isle of Bute, *Mr. Murray.* Hill of Kinnoul, *Mr. Winch.* *Fl.* July. 4.

Two to three feet high, much branched. Well distinguished by the very obtuse segments of the lower leaves (for the upper ones are acute and less divided), and the rather small, numerous, purple *flowers,* whose petals are cleft.

*** *Peduncles 2-flowered. Root annual.*

6. G. *lucidum* (*shining Crane's-bill*), peduncles two-flowered, leaves roundish 5-lobed, lobes trifid and notched obtuse, calyces pyramidal angular dentato-tuberculate, capsules wrinkled. *Lightf. p.* 370. *E. B. t.* 75.

Hab. Rocks and walls. Under Arthur's Seat, Edinb., *Lightf.* Walls, Blantyre Priory, and by the road-side near Bowling Bay; rocks, Cartlane Crags, Glasg, *Hopk.* Very plentiful about Dunkeld, *Mr. Murray.* Near Inverness, *Mr. G. Anderson.* *Fl.* June. July. ⊙.

Stems spreading, shining (as are the leaves), brittle, swelling at the joints. *Leaves* small, lower ones often fine red. *Flowers* small, rose coloured.

7. G. *robertianum* (*stinking Crane's-bill,* or *Herb Robert*), peduncles 2-flowered, leaves ternate or quinate, leaflets pinnatifid, segments mucronate, cal. angular hairy, capsules wrinkled. *Lightf. p.* 369. *E. B. t.* 1486.

Hab. Woods, thickets, and stony places. *Fl.* summer months. ⊙.

Stem spreading, red, brittle. *Flowers* purple, sometimes white.

8. G. *molle* (*Dove's-foot Crane's-bill*), peduncles 2-flowered, leaves rounded or reniform lobed and cut downy, petals notched scarcely longer than the cal., capsules transversely wrinkled, "seeds smooth" (*Sm.*) *Lightf. p.* 370. *E. B. t.* 778.

Hab. Dry pastures and waste places, common. *Fl.* July. ⊙.

Stems spreading, procumbent, with long hairs. *Leaves* lobed; lobes broad, cut. *Flowers* small, purple, notched. *Seeds* smooth.

9. G. *rotundifolium* (*round-leaved Crane's-bill*), peduncles 2-flowered, leaves rounded or reniform lobed and cut downy, petals entire the length of the cal., capsules smooth (not wrinkled) hairy, seeds punctate. *Lightf. p.* 1106.

Hab. Waste places, rare? East side of Mason's garden, near North Marchiston, *Dr. Hope.* *Fl.* July. ⊙.

Distinguished from the former by the entire petals; and, according to Smith, the smooth capsules and punctated seeds. In my specimens, however, of this plant, the capsules are slightly rugose, and in those of *G. molle* the seeds are minutely dotted.

10. G. *pusillum* (*small-flowered Crane's-bill*), peduncles two-flowered, flowers pentandrous, petals notched, leaves rounded or reniform in 5—7 deep lobes, lobes trifid, capsules smooth carinated downy with erect appressed hairs, seeds smooth. *E. B. t.* 385.

Hab. Waste ground, and in gravelly fields occasionally; frequent

about Cambuslang, Glasg., *Hopk.* Fisherrow Links and Arthur's Seat, Edinb., *Maugh.* *Fl.* June—Sept. ⊙.

Stem weak, prostrate. *Leaves* deeply lobed. *Flowers* very small, blueish purple.

11. G. *dissectum* (*jagged-leaved Crane's-bill*), peduncles two-flowered, petals notched rather shorter than the much awned cal., leaves 5-partite, lobes trifid or laciniated linear, capsules smooth hairy, seeds punctate. *Lightf. p.* 371. *E. B. t.* 753.

Hab. Hedges and pastures. By the bridge in the meadows at Edinb., *Dr. Parsons.* Occasionally about Glasg. in waste ground and dry pastures. *Fl.* May—July. ⊙.

Stems spreading. Distinguished by the much divided *leaves*, and the short *footstalks* of the blossoms, which, as Curtis observes, thus appear sitting among the leaves.

12. G. *columbinum* (*long-stalked Crane's bill*), peduncles two-flowered shorter than the leaves which are 5-partite, the lobes divided into many acute segments, petals entire as long as the much awned cal., capsules smooth glabrous, seeds punctate. *Lightf. p.* 372. *E. B. t.* 259.

Hab. Dry pastures. Rocky place by the road-side going from Glasg. to Dumbarton, *Lightf.* Road-side near N. Queensferry, rare, *Maugh.* Near Glasgow, *Mr. M. Stark.* *Fl.* June, July. ⊙.

Stem very slender, procumbent; hairs upon the stem, as in *G. dissectum*, reflexed. *Capsules* quite glabrous.

3. POLYANDRIA.

3. ALTHÆA.

1. A. *officinalis* (*Marsh-Mallow*), leaves oblongo ovate slightly 3—5-lobed serrated. *Lightf. p.* 373. *E. B. t.* 147.

Hab. Marshes, rare. Near Ardbigland on the Solway Firth, *Dr. Burgess.* Marshy places on the Campsie hills, near Glasg., *Hopk.* *Fl.* Aug. ♃.

Two to three feet high, remarkable for the white, soft, starry pubescence on the whole plant. *Flowers* 3—4 together, axillary, on short footstalks, pale rose colour, large.—Affords a very mucilaginous juice.

4. MALVA.

1. M. *sylvestris* (*common Mallow*), stem erect herbaceous, leaves with 7 rather acute lobes, peduncles and petioles hairy. *Lightf. p.* 375. *E. B. t.* 671.

Hab. Waste places and by way-sides, common. *Fl.* June—Aug. ♃.

Stem 2—3 feet or more high, branched. *Flowers* large, purplish rose colour, with deeper veins, 3—4 together, axillary. *Petals* large, obcordate.

2. M. *rotundifolia* (*dwarf Mallow*), stem prostrate, leaves roundish cordate 5-lobed, fruitstalks bent down. *Lightf. p.* 374. *E. B. t.* 1092, and *t.* 241 (*M. pusilla*).

Hab. Waste places and by way-sides. *Fl.* June—Aug. ⊙.

Stems from 10 inches to 1 foot in length, branching only from the root. *Flowers* small, roundish.

3. M. *moschata* (*Musk Mallow*), stem erect, radical leaves reniform in 5 or 7 broad incised lobes, cauline ones 5-partite pinnato-multifid, segments linear, cal. hairy, leaflets of the ext. cal. linear. *Lightf. p.* 376. *E. B. t.* 754.

Hab. Meadows and pastures, not uncommon. Dumbarton castle, &c., *Hopk. Fl.* Aug. ♃.

Two to three feet high. *Flowers* large, beautiful, rose colour, 1—2 together from the axils of the terminal *leaves*. The leaves yield a faint musky smell if drawn through the hand.

5. LAVATERA.

1. L. *arborea* (*Sea-side Tree Mallow*), stem arborescent, leaves with about 7 angles downy plaited, peduncles axillary clustered single-flowered. *Lightf. p.* 374. *E. B. t.* 1841.

Hab. Rocks upon the sea-coast, as Inch-Garvey and Mykric-Inch, in the Firth of Forth, and in Basse island, *Sibbald. Fl.* July, Aug. ♂.

Three to five feet high. *Flowers* large, purple rose colour, shining, darker at the base of the *petals*.

XVII. DIADELPHIA.

1. HEXANDRIA.

1. Fumaria. *Cal.* small, of 2 leaves. *Pet.* 4, irregular, one of them gibbous at the base. *Filaments* 2, membranaceous, each bearing 3 *anthers*.

2. OCTANDRIA.

2. Polygala. *Cal.* of 5 leaves, 2 of them wing-shaped and coloured. *Caps.* compressed, obcordate.

3. DECANDRIA.

* *Stam. all connected or monadelphous, the tube often cleft above.*

3. Genista. *Cal.* 2-lipped, upper one with 2, lower one with 3, teeth. *Standard* bent backwards from the rest of the flower. (*Genista* and *Spartium* [a], *Sm.*)
4. Ulex. *Cal.* of 2 leaves, with a small scale at the base on each side. *Legume* turgid, scarcely longer than the *cal.*
6. Anthyllis. *Cal.* inflated, 5-toothed; inclosing the small, roundish, 1—3-seeded *legume*.

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[a] I cannot see a single character attributed to *Spartium* (in *S. scoparium*) which is not equally found in *Genista*. I therefore follow Jussieu and Decandolle, in uniting our only British species with *Genista*.

5. Ononis. *Cal.* 5-cleft, its divisions linear. *Standard* striated. *Legume* turgid, sessile. *Filaments* in one undivided set.

** *Stam. diadelphous, 9 united and 1 free.*

† *Style more or less pubescent beneath the stigma.*

7. Orobus. *Style* linear, cylindrical, downy above. *Cal.* obtuse at the base, its upper segments deeper and shorter.

8. Lathyrus. *Style* plane, downy above, broader upwards. *Cal.* with its two upper segments shortest.

9. Vicia. *Style* bearded beneath the *stigma*.

10. Ervum. *Stigma* capitate, hairy all over on the outside.

†† *Style glabrous.*

+ *Legume of 2 longitudinal cells, more or less complete.*

13. Astragalus. *Legume* 2-celled, more or less gibbous.

++ *Legume more or less jointed.*

11. Ornithopus. *Legume* jointed, curved, cylindrical.

12. Hippocrepis. *Legume* compressed submembranaceous, with many deep notches in one of its edges.

+++ *Legume of one cell, one- or many-seeded (not jointed).*

16. Medicago. *Legume* falcate or spirally twisted, compressed, membranaceous[a].

14 Trifolium. *Legume* (in general) shorter than the *cal.*, 1- or many-seeded, indehiscent, deciduous. *Flowers* more or less capitate (in *Tr. offic.* racemose).

15. Lotus. *Legume* cylindrical, straight. *Wings* of the *cor.* cohering by their upper edge. *Filaments* dilated upwards.

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1. HEXANDRIA.

1. FUMARIA.

* *Caps. sphærical, 1-seeded (Fumaria).*

1. F. *officinalis* (*common Fumitory*), spike lax, stem branched spreading, leaves bipinnate leaflets almost linear. *Lightf. p.* 379. *E. B. t.* 589.

Hab. Corn-fields and gardens, frequent. *Fl.* May—Aug. ⊙.

One foot high, rather glaucous. *Spikes* of flowers rose coloured, deeper at the extremity of the cor., inserted opposite the leaves.

2. F. *capreolata* (*ramping Fumitory*), spike lax, stem climbing by means of the tendril-like petioles, leaves triternate leaflets obovato-cuneiform cut and lobed. *Lightf. p.* 380. *E. B. t.* 943.

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[a] Sir James Smith places this in the previous division, "*Legumen subarticulatum*;" but I think it comes better in this.

Hab. Fields and hedges, generally among bushes. About Redhall, 4 miles from Edinb., and amongst rocks by the sea going from Corrie to Brodic, in the Isle of Arran, *Lightf.* Hedges about Hamilton, and in a field at the back of Kenmuir wood, Glasg., *Hopk. Fl.* summer months. ⊙.

Two to three feet long, more glaucous than the last; *leaflets* much broader, more regularly in threes, their *petioles* acting as *tendrils*; *flowers* paler coloured and larger.—The extremes of this and the last species appear different enough; but Mr. Murray and myself examined a *Fumaria*, which is a common weed in the Glasgow Bot. garden, which is so intermediate between the two, that it was difficult to say to which it should belong.

** *Caps. linear, 2- or more-seeded* (*Corydalis, Decand*).

3. F. *claviculata* (*climbing Fumitory*), spikes lax, stem climbing pinnate, leaflets 3—5-partite, lobes ovate acute, petioles ending in tendrils. *Lightf. p.* 380. *E. B. t.* 103.

Hab. Rocks, stony places, and roofs of houses, most abundant, especially in the Highlands. Inverness, *Mr. G. Anderson. Fl.* July, Aug. ⊙.

Stem long, very slender, and whole plant extremely delicate. *Flowers* pale yellow, small.

2. OCTANDRIA.

2. POLYGALA.

1. P. *vulgaris* (*Milkwort*), flowers in a terminal raceme crested, wings of the cal. nerved obtuse longer than the cor., stem herbaceous procumbent, leaves linear-lanceolate. *Lightf. p.* 381. *E. B. t.* 76.

Hab. Dry hilly pastures, abundant. *Fl.* June, July. ♃.

Stem 4—8 inches long, branched at the base. *Flowers* blue, purple, or white. *Cor.* beautifully crested at the extremity. *Cal.* leaves persistent, inclosing the *fruit*.

3. DECANDRIA.

3. GENISTA.

* *Branches unarmed.*

1. G. *scoparia* (*common Broom*), leaves ternate and solitary oblong, flowers axillary shortly pedicellate, legumes hairy at the margin, branches angular. *Lightf. p.* 382, and *E. B. t.* 1339 (*Spartium scop.*).

Hab. Dry hills and bushy places, plentiful. *Fl.* June. ♄.

Three to six feet or more high. *Branches* long, straight, green. *Flowers* large, bright yellow; *keel* broad; *stam.* and long twisted *style* much exposed by the spreading of the *petals*. *Legume* large, compressed, dark brown.

2. G. *tinctoria* (*Dyer's Greenweed*), leaves lanceolate glabrous,

branches rounded striated erect, flowers racemose, legumes glabrous. *Lightf. p.* 384. *E. B. t.* 44.

Hab. Gravelly hills and sides of rivers in the Lowlands, frequent, *Lightf.* *Fl.* July. ♄.

One foot to two feet high. *Leaves* rather distant, small, edges sometimes a little downy. *Flowers* rather small, pale yellow, almost sessile, a small floral leaf or *bractea* at its base.—Dyes yarn of a yellow colour.

** *Branches spinose.*

3. G. *anglica* (*Needle Furze*), leaves ovato-lanceolate glabrous, spines simple none on the flowering branches, flowers axillary subracemose, legumes glabrous. *Lightf. p.* 384. *E. B. t.* 132.

Hab. Heathy and moorish grounds, not unfrequent; as 1 mile above Dunkeld, *Lightf.* Pentland hills and hills near Kelso; common in Ross-shire, *Maugh.* Rare about Glasg.; moors on the Cathkin hills, *Hopk.* Campsie hills; and moors, Perthshire, *Mr. Murray.* Culloden; near Alary, Kinross-shire; Ochil hills, and N. of Forfar, *Mr. Arnott.* *Fl.* June. ♄.

Stems reclined, very thorny. *Leaves* very small. *Flowers* yellow.

4. ULEX.

1. U. *europæus* (*common Furze, Whins* or *Gorse*), cal. teeth obsolete connivent, bracteas ovate lax, branchlets erect. *Lightf. p.* 385. *E. B. t.* 742.

Hab. Heathy places in the Lowlands; rare in the Highlands. *Fl.* throughout the summer, but most abundantly in May. ♄.

Shrub of 3—4 feet in height, with innumerable green striated branches, clothed with acute branching spines, with a few leaves at their base of a lanceolate form and a little hairy, very minute. *Cal.* pubescent. *Cor.* bright yellow.

2. U. *nanus* (*Dwarf Furze*), "teeth of the cal. lanceolate spreading, bracteas minute close-pressed, branches reclining," *Sm. Lightf. p.* 385 (*U. europ.* β.). *E. B. t.* 743.

Hab. Dalguise, *Mr. D. Stewart.* Pentland Hills, *G. Don.* *Fl.* mostly in autumn. ♄.

Smaller than the last in all its parts. "The *flowers* afford certain specific characters:—the *bracteas* are very minute, brown, close-pressed to the *cal.*, often hardly visible. The *cal.* is more silky and yellow; its teeth deeply cut, spreading, and very evident: a circumstance which will always prevent its being confounded with the other species." *Sm.* Are these marks constant? A very acute botanical friend has suggested to me that probably all the marks in *Ulex nanus* are caused by *U. europæus* having been repeatedly cut down for fuel: the shoots are then more prostrate for a time and smaller.

5. ONONIS.

1. O. *arvensis* (*Rest-harrow*), stem hairy, branches at length

spinous, flowers mostly solitary, leaves ternate below, the rest simple serrated entire at their base. *Lightf. p.* 386, and *p.*387 (*O. repens*). *E. B. t.* 682.

Hab. Barren pastures and the borders of fields. *Fl.* June—Aug. ♃.

A very variable plant, erect or procumbent, more or less spiny; *leaves* ovate or wedge-shaped; *flowers* rather large, rose coloured.

6. ANTHYLLIS.

1. A. *vulneraria* (*Kidney Vetch*, or *Lady's Finger*), leaves pinnated unequal, heads of flowers in pairs. *Lightf. p.* 387. *E. B. t.* 104.

Hab. Dry pastures, not uncommon; King's Park, Edinb., *Lightf.*

Stems ascending. *Leaflets* 5—9, lanceolate, entire, hairy; terminal one the largest. *Flowers* in crowded heads, long, yellow, with hairy *calyces*, and digitate large *bracteas*.

7. OROBUS.

1. O. *tuberosus* (*tuberous Orobus*), leaves pinnated with 3 or 4 pairs of lanceolate leaflets glaucous beneath, stipules semisagittate, toothed at the base, stem simple erect. *Lightf. p.*388. *E. B. t.* 1153.

β. leaflets linear. *O. tenuifolius*, *Roth*, and *G. Don. Descr. of rare Scottish Plants, p.* 8.

Hab. Woods and hilly pastures, frequent, especially in the Highlands. β. Near Kinnaird, *G. Don. Fl.* June. ♃.

Roots tuberous, eaten by the Highlanders under the name of *Cormeille*, and said to repel hunger. *Stem* erect, 1 foot high, winged. *Flowers* in long stalked axillary clusters, purple, veined. *Legume* long, pendulous, cylindrical, black.

2. O. *sylvaticus* (*Wood Orobus* or *bitter Vetch*), leaves pinnate hairy with 7—10 pairs of ovato-oblong acute leaflets, stipules semisagittate, stem branched decumbent hairy. *Lightf. p.* 390. *t.* 16 (much too hairy). *E. B. t.* 518.

Hab. Rocky places and banks of rivers, but not common; falls of the Clyde near Lanark; Baikevall in the Isle of Rum, *Lightf.* Cartlane crags, near Glasg., N. side of the river, *Hopk.* Sanquhar, *Mr. Winch.* Bank to the S. W. of Newburgh, Fifeshire, *D. Don.* Bank near W. Linton, Peebles-shire, *Maugh.*, &c. *Fl.* July. ♃.

Flowers in secund *racemes*, purplish white.

8. LATHYRUS.

1. L. *pratensis* (*Meadow Vetchling*), peduncles 2—8-flowered, tendrils with two lanceolate 3-nerved leaflets, stipules sagittate as large as the leaves. *Lightf. p.* 391. *E. B. t.* 670.

Hab. Moist meadows and pastures. *Fl.* July, Aug. ♃.

Stems 2—3 feet long, climbing. *Flowers* yellow. Cattle are said to be very fond of this common plant.

2. L. *sylvestris* (*narrow-leaved Everlasting Pea*), peduncle

4—5-flowered, tendrils with two ensiform leaflets, stem winged. *Lightf. p.* 392. *E. B. t.* 805.

Hab. Dry rough shrubby places and wood-sides, but rare, *Sibbald.* Rocks near the Red Head promontory, on the E. coast of Angusshire, *G. Don. Fl.* July, Aug. ♃.

Stems 5—6 feet long, climbing, broadly winged. *Flowers* large, greenish, with purple veins.

3. L. *latifolius* (*broad-leaved Everlasting Pea*), peduncles many-flowered, tendrils with two ovato-elliptical mucronated leaflets, stem winged. *E. B. t.* 1108.

Hab. Among the *debris* of Salisbury craigs, *Miss Boswell.* Woods near Kirkcudbright, *Maugh.* In neither stations I fear is it really wild. *Fl.* July, Aug. ♃.

A well known climber and a great ornament of cottage gardens. Somewhat resembling the last, but *leaves* vastly broader; *flowers* larger and more purple.

4. L. *palustris* (*Marsh Everlasting Pea*), peduncles from 3—6-flowered, tendrils with 2—4 pairs of linear-lanceolate acute leaflets, stipules semisagittate lanceolate, stem winged. *Lightf. p.* 392. *E. B. t.* 169.

Hab. Sides of lakes and in marshy boggy ground, but rare. *Lightf. Fl.* July, Aug. ♃.

Mr. Lightfoot, who gives the above station for this plant under its description, afterwards says he suspects a var. of *Orobus tuberosus* was taken for it; so that it is a doubtful native. Its insertion here, however, may lead to its actual discovery; for it is by no means of rare occurrence, in England, in such situations as Lightfoot describes.

Stem 2—3 feet high, climbing. *Leaflets* about 2 inches long. *Flowers* blueish purple.

9. VICIA.

* *Peduncles lengthened, many-flowered.*

1. V. *sylvatica* (*Wood-Vetch*), peduncles many-flowered longer than the leaves, leaflets elliptico-oblong mucronate, stipules lunate deeply toothed at their base. *Lightf. p.* 393. *E. B. t.* 79.

Hab. Bushy mountainous places among rocks. Foot of Salisbury craigs; Cartland rocks near Lanark, &c., *Lightf.* Collington woods, *Maugh.* Near Inverness at the foot of Beinvochart, *Mr. G. Anderson.* Caldron Linn and other parts of the Devan, *Mr. Arnott.* Woods of Kippin Ross, near Dumblane, *Mr. J. Young.* Between Dunkeld and Blair Athol, *Mr. Murray.* Falls of Moness, *Mr. Borrer* and *Hook.* Kenmuir wood, by the side of the footpath, *Hopk. Fl.* July, Aug. ♃.

Stems 3—6 feet high, climbing with their branching tendrils. *Leaflets* 6—8 or 10 pairs. *Flowers* numerous, white, streaked with blueish veins.

2. V. *Cracca* (*tufted Vetch*), peduncles many-flowered longer

than the leaves, flowers imbricated, leaflets lanceolate slightly hairy, stipules semisagittate nearly entire. *Lightf. p.* 394. *E. B. t.* 1168.

Hab. Bushy places, frequent. *Fl.* July, Aug. ♃.

Two to three feet or more high, climbing. *Flowers* numerous, crowded, drooping and imbricated, fine blueish purple.

** *Flowers axillary, nearly sessile.*

3. V. *sativa* (*common Vetch*), flowers sessile subbinate, legumes nearly erect, lower leaves retuse stipules toothed impressed with a dark spot, seeds smooth. *Lightf. p.* 395. *E. B. t.* 334.

Hab. Corn-fields, frequent. *Fl.* June. ☉.

One foot high or more. *Leaflets* very variable in width and obtuseness, often truncate and mucronate, and in number also, from 2 to 6 pairs or more on a petiole. *Flowers* large, purple and blue, or red. *Legumes* more or less pubescent. The small vars. are often confounded with the following species.

4. V. *lathyroides* (*Spring Vetch*), flowers sessile solitary, legumes glabrous, leaves generally in 3 pairs lower ones retuse, stipules entire, seeds tuberculated. *Lightf. p.* 396. *E. B. t.* 30.

Hab. Dry pastures, especially of a gravelly soil. King's Park, Edinb., and Leith gravel-pit, *Dr. Parsons.* Blackford hill, *Maugh.* Dalmahoy hill, near Edinb., and hill of Kinnoul by Perth, *Mr. Borrer* and *Hook.* Burntisland, *Mr. Arnott.* Along the coast about Largs, &c. and Dumbarton-castle, *Mr. Murray.* *Fl.* May, June. ☉.

Three to five inches high, branched. *Stipules* without the dark impressed spots of the last species, and may be known from the small specimens of that, if *in blossom*, by the small, more purple, *flower*, scarcely so large as the leaflets, and with a less reflexed *keel*; if *in fruit*, by the rough or dotted *seeds*, as Sir James Smith has well observed. The foliage is very variable in both, but here there are fewer leaflets on a petiole and the tendril is small and simple.

5. V. *lutea* (*rough-podded yellow Vetch*), flowers sessile solitary, legumes reflexed hairy, stem diffuse, stipules coloured, standard glabrous. *E. B. t.* 481.

Hab. Hills at N. Queensferry[a]; and between Montrose and Arbroath, *G. Don.* *Fl.* June, July. ♃.

Stems 6—12 inches high, weak. *Leaflets* elliptical, lanceolate, hairy beneath, and at the edges, 6 to 9 pairs on a petiole. *Flowers* large, yellow. *Legumes* compressed. Distinguished from the *V. hybrida* by its glabrous, not pubescent, standard of the *flower*.

6. V. *sepium* (*Bush Vetch*), flowers mostly in fours subpetiolate, legumes upright glabrous, leaflets ovate obtuse gradually smaller upwards upon the petiole. *Lightf. p.* 397. *E. B. t.* 79.

Hab. Woods and shady places, frequent. *Fl.* June, July. ♃.

One foot to two feet high. *Leaflets* large. One or two of the four *flow-*

[a] Mr. Arnott has searched for it in vain in this situation.

ers which grow together, often imperfect; hence the character of "*Legumes quaternate*" tends to mislead. *Blossoms* purplish blue.

10. ERVUM.

1. E. *hirsutum* (*hairy Tare*), peduncles many-flowered, legumes hairy two-seeded, leaflets linear oblong truncate. *Lightf.* *p.* 398.

Hab. Corn-fields and pastures. *Fl.* June. ⊙.

Stems 2—3 feet long, weak, straggling, and climbing. *Leaflets* numerous. *Flowers* very insignificant, pale purplish blue.

2. E. *tetraspermum* (*smooth Tare*), peduncles 2-flowered, legumes glabrous 4-seeded, leaflets linear-oblong obtuse. *Lightf.* *p.* 397. *E. B.* *t.* 1223.

Hab. Corn-fields and bushy places. *Fl.* June. ⊙.

Smaller and slenderer than the last. *Leaflets* fewer.

11. ORNITHOPUS.

1. O. *perpusillus* (*common Bird's-foot*), leaves pinnated with 6—9 pairs of leaflets and a terminal one, flowers capitate bracteated, legumes curved upwards. *Lightf.* *p.* 399, *E. B.* *t.* 369.

Hab. Dry gravelly soils and sandy pastures. *Fl.* June. ⊙.

Stems from 2 to 6 inches high, much branched at the base and spreading. *Leaflets* oval. *Flowers* white, with red lines. The 4 or 5 long curved jointed *legumes*, resembling a bird's foot, have a remarkable appearance.

12. HIPPOCREPIS.

1. H. *comosa* (*tufted Horse-shoe Vetch*), legumes 5—8 clustered pedunculated curved scabrous sinuated at each margin. *E. B.* *t.* 31.

Hab. Chalky pastures, rare. Dundonald castle near Ayr, upon ground of a chalky nature, *Mr. Reid.* *Fl.* July. ♃.

Stems 4—6 inches high, much branched and woody at the base. *Leaflets* 4—6 pairs with an odd one, obovato-elliptical. *Peduncles* long. *Flowers* yellow, pale, much resembling those of *Lotus corniculatus*; but the *legume* very different and very remarkable.

13. ASTRAGALUS.

* *Keel of the cor. terminating in a straight point, upper suture of the legume with its margins introflexed.* (*Oxytropis, Decand.*)

1. A. *uralensis* (*hairy Mountain Milk Vetch*), silky, stem none, scape longer than the leaves, legumes erect ovato-cylindraceous inflated pubescent 2-celled, style persistent. *Lightf.* *p.* 401. *t.* 17. *E. B.* *t.* 466.

Hab. Dry mountains, rare. Upon Carn-dearg, one of the lower heads of Ben Sguilert, a high mountain of Glen Creran, in Upper Lorn, *Dr. Stuart.* Bay of Farr, on the eastern coast, and on a rocky soil at Cromarty, *Mr. Robertson.* Hills about N. Queensferry, and with white fl., *Maugh.* Armidale and Inver Naver, in Sutherland, *Mr. Borrer* and *Hook.* *Fl.* July. ♃.

This is a very charming plant, clothed with a beautiful silky pubescence, especially on the young *leaves*. *Leaflets* 8—12 pairs, with an odd one, narrow, ovate, acute. *Scape* 4 to 6 inches high when in fruit. *Flowers* capitate, large, bright purple.

2. A. *campestris* (*yellowish Mountain Milk Vetch*), somewhat silky stemless, scape about the same length as the leaves, legumes erect ovate inflated pubescent semibilocular. *E. B. t.* 2522.

Hab. On a rock on one of the mountains at the head of Clova, near the White Water, *G. Don*. *Fl.* July. ♃.

Leaflets elliptical-lanceolate. *Flowers* capitate, yellowish, tinged with purple.

** *Keel of the Cor. obtuse. Legume with the lower suture having its margins introflexed* (*Astragalus, Decand.*).

3. A. *hypoglottis* (*purple Mountain Milk-Vetch*), stem prostrate, leaflets slightly emarginate, legumes erect capitate hairy their cells 1-seeded. *Lightf. p.* 400 (*A. arenarius*). *E. B. t.* 274.

Hab. Hilly pastures. King's Park, Edinb.; Sands, Musselburgh; Hill of Moncrief, near Perth; and in dry ground near York Cascade, at the Duke of Athol's, Blair, *Lightf.* Coast near Granton, Edinb., plentifully, *Maugh.* Banks of the Tay, near Delvine, Perthshire; and Links of St. Fergus, *Mr. Murray*. Hill of Kinnoul, by Perth, *Mr. Borrer* and *Hook*. *Fl.* July. ♃.

Stem weak, a few inches in length. *Leaflets* elliptico-ovate, retuse, hairy. *Peduncles* longer than the leaves, curved upwards. *Heads* of *flowers* large, blueish purple. *Legumes* ovate, acuminate, hairy.

4. A. *glycyphyllos* (*sweet Milk-Vetch*), stem prostrate, legumes somewhat triangular curved sessile glabrous, leaves longer than the peduncles, leaflets oval. *Lightf. p.* 399. *E. B. t.* 203.

Hab. Woods, but not common. Coryton woods, near Edinb., *Dr. Parsons*. Banks of the Water of Leith, between Coltbridge and Saughtonhall; many places on the coast between Nether Cramond and Queensferry, *Maugh.* *Fl.* July. ♃.

Readily distinguished by its great size. *Stem* prostrate, 2—3 feet long. *Leaves* with large, ovate, acute stipules. *Flowers* dingy yellow. *Legumes* an inch or more long, curved.

14. TRIFOLIUM.

* *Flowers racemose* (*Melilotus, Decand.*).

1. Tr. *officinale* (*common Melilot*), legumes racemed naked 2-seeded rugged, stipules lanceolato-subulate undivided, leaflets obovato-oblong toothed, stem erect. *Lightf. p.* 402. *E. B. t.* 1340.

Hab. Bushy places and by way-sides. *Fl.* July. ☉.

Stem 2—3 feet high. *Flowers* in pedunculated, axillary racemes, secund, yellow.

** *Flowers more or less capitate.*

† *Legumes naked, many-seeded.*

2. Tr. *ornithopodioides* (*Bird's-foot Trefoil*), legumes naked subternate with about 8 seeds twice as long as the cal., leaflets obcordate toothed at the extremity, stems decumbent. *Lightf. p.* 403. *E. B. t.* 1047.

Hab. Dry sandy pastures, but rare. At Maitland Bridge, between Edinb. and Musselburgh, *Lightf.* Fisherrow and Musselburgh Links, *Maugh.* *Fl.* June. ⊙.

Stems spreading, 3—5 inches in length. *Flowers* small, rose coloured. *Legumes* long, and not according with the genus; hence it has been placed by Decandolle in the *Fl. Gall.*, and by my myself in the *Fl. Lond.*, with the *Trigonellæ*; but the *cor.* does not correspond with that genus.

†† *Legumes covered by the Cal., many-seeded.*

3. Tr. *repens* (*white Trefoil*, or *Dutch Clover*), heads umbellate, legumes with four seeds, cal. teeth unequal, leaflets obcordate serrulate, stem creeping. *Lightf. p.* 404. *E. B. t.* 1769.

Hab. Meadows and pastures, common. *Fl.* summer months. ♃.

Heads of *flowers* white; each flower on a footstalk, which becomes recurved after flowering, and then all the *legumes* are drooping and covered with the withered, brown *cor.* This is the *Dutch clover* of the agriculturists, and in great repute for pastures. The *leaflets* have a dark spot at the base, and a white line bordering it near the middle.

††† *Legumes covered by the Cal.,* 1*-seeded.*

← *Cal.* (*hairy*), *not inflated after flowering. Standard of the Cor. deciduous.*

4. Tr. *pratense* (*common purple Clover*), "heads dense ovate, lower tooth of the cal. shorter than the tube of the monopetalous unequal cor., leaflets oval nearly entire, stem ascending," *Willd. Lightf. p.* 405. *E. B. t.* 1770.

Hab. Meadows and pastures, frequent. *Fl.* summer months. ♃.

Flowers reddish purple. This is the common *clover*, so much cultivated for hay. The *leaflets* have often a white lunulate spot.

5. Tr. *medium* (*Zigzag Trefoil*), "heads lax somewhat globose solitary, lower tooth of the cor. as long as the tube of the monopetalous nearly equal cor., leaflets elliptical minutely serrated and striated with veins, stems branched zigzag," *Willd. Lightf. p.* 406 (*Tr. alpestre*). *E. B. t.* 190.

Hab. Moist and shady places at the foot of the Highland mountains, not unfrequent, *Lightf.* Sides of Glenhill Burn, near the church of Kirkmichael, *Dr. Burgess.*

Stem remarkably zigzag. *Heads* of *flowers* purple, larger than last, and more lax. *Leaflets* spotless.

6. Tr. *arvense* (*Hare's-foot Trefoil*), heads very hairy subcylin-

drical, cal. teeth setaceous longer than the cor., leaflets narrow-obovate. *Lightf. p.* 406. *E. B. t.* 944.

Hab. Corn-fields and dry pastures, not unfrequent. *Fl.* July, Aug. ⊙.

Stems 6—12 inches high, erect, branched. *Flowers* very minute. Remarkable for the many subcylindrical soft hairy heads or spikes.

7. Tr. *scabrum* (*rough Trefoil*), heads terminal and axillary sessile ovate, cal. teeth unequal narrow lanceolate rigid at length recurved, leaflets obcordate serrulate. *Lightf. p.* 407. *E. B. t.* 903.

Hab. Dry soils by the sea-shore, near Edinb., *Dr. Parsons*. Dry pastures at Dunbar, by the sea. *Mr. Borrer* and *Hook. Fl.* June. ⊙.

Very similar to *Tr. glomeratum*, which, like this, is a small, procumbent, spreading plant, of 3—8 inches in length, and has also the *cal.* segments recurved. Here, however, the *plant* is hairy, the *heads* are ovate, the *flowers* are white, the *leaves* are faintly toothed, and the *cal. segments* are narrow: in *Tr. glomeratum* the *plant* is glabrous, the *heads* are round, the *flowers* reddish, the *leaves* strongly toothed, the *cal. segments* broad. The flowers in both are very small: and they both, in England, grow in the same situation.

8. Tr. *striatum* (*soft knotted Trefoil*), heads terminal and axillary ovate subsolitary subsessile, cal. striated hairy with unequal straight teeth, leaflets obcordate nearly entire pubescent. *Lightf. p.* 408. *E. B. t.* 1843.

Hab. Dry pastures, as in Edinb. Park, abundantly, *Lightf. Fl.* June. ⊙.

From 4—8 or 10 inches long, more or less procumbent or reclined, pubescent. *Flowers* small, purplish red. *Cal.* deeply furrowed, swelling with 5 almost setaceous, straight, not recurved teeth.

++ *Cal. remarkably inflated after flowering. Standard of the Cor. deciduous.*

9. Tr. *fragiferum* (*Strawberry-headed Trefoil*), heads upon long stalks roundish, cal. after flowering inflated membranaceous pubescent two of the teeth setaceous reflexed, stems creeping, leaflets obcordate serrated. *E. B. t.* 1050.

Hab. Moist pastures. Links near Cockenzie, *Mr. C. Stewart*. Leith Links, *Mr. J. T. Mackay*. Links near Aberlady, and Links near St. Andrews, *Maugh. Fl.* July, Aug. ♃.

Flowers very small, purplish red. *Cal.* remarkably large after flowering, inflated, veined, and clustered, and often coloured, so as not inaptly to represent the fruit from which it derives its specific name. *Mouth* of the *Cal.* at this time singularly contracted.

+++ *Standard of the Cor. persistent, scariose, enveloping the fruit. (Flowers yellow.)*

10. Tr. *procumbens* (*Hop Trefoil*), "spikes oval imbricated, standard deflexed persistent sulcated, stems procumbent, leaflets obovate," *Sm. Lightf. p.* 409 (*Tr. agrarium*). *E. B. t.* 945.

Hab. Dry pastures and corn-fields, frequent. *Fl.* June, July. ⊙.
Stems spreading widely, "rendered conspicuous in their more advanced state by their permanent hop-like heads," *Sm.*

11. Tr. *minus* (*lesser yellow Trefoil*), "spikes capitate hemispherical, peduncles straight, standards smoothish, stems procumbent, petiole lengthened upwards," *Sm. Lightf. p.* 409 (*T. procumbens*). *E. B. t.* 1256.

Hab. Pastures, frequent. *Fl.* June, July. ⊙.
Stems much spreading. *Leaves* obovate, emarginate, toothed, "on a very short general footstalk; the central leaflet elevated on a much more considerable partial stalk than in *Tr. procumbens*, or in *Tr. filiforme*, which circumstance well characterises the species. *Flowers* very small, from 10—15 on a head." *Sm.*

12. Tr. *filiforme* (*slender yellow Trefoil*), "heads lax of few flowers, peduncles capillary flexuose, standards smooth, stems procumbent, leaflets subsessile," *Sm. Lightf. p.* 410. *E. B. t.* 1257.

Hab. Dry sandy soils, but not very frequent, *Lightf.* Sandy banks common about Glasg., *Hopk.* Not uncommon in the neighbourhood of Edinb. and Forfar, *Maugh. Fl.* June. ⊙.
"*Flowers* from 3—8 in a head. *Cal.* teeth less remarkably disproportioned than in *T. minus*." *Sm.*

15. LOTUS.

1. L. *corniculatus* (*common Bird's-foot Trefoil*), heads depressed, stems decumbent, legumes cylindrical patent. *Lightf. p.* 411. *E. B. t.* 2090.

β. *major*, larger stems nearly erect. *L. major*, *E. B. t.* 2091.
Hab. Pastures every where, abundant. β. Banks of the Clyde above Daldowie. Road-side to Bardowie Loch, plentiful, *Hopk.* Sides of Loch Lomond, along with and as common as α., *Mr. Murray* and *Hook. Fl.* summer months. ♃.
Varying much in size and direction of the stems. *Leaflets* obovate, entire, more or less hairy, with a pair of large ovate *stipules* at the base of the petiole. *Flowers* yellow. *Legumes* long, spreading out horizontally.

16. MEDICAGO.

1. M. *sativa* (*purple Medick*, or *Lucerne*), peduncles racemed, legumes smooth spirally twisted, stipules entire, leaflets long toothed, *Willd. E. B. t.* 1749.

Hab. Meadows and pastures, occasionally, about Glasg., *Hopk.*, but not indigenous. *Fl.* June, July. ♃.
Stem 1—2 feet high. *Leaflets* entire below. *Flowers* purple. Smith doubts if this be not a var. of *M. falcata.*

2. M. *lupulina* (*black Medick*, or *Nonsuch*), spikes oval, legumes reniform 1-seeded, stipules entire, leaflets obovate. *Lightf. p.* 412. *E. B. t.* 971.

A valuable plant in agriculture. *Stems* spreading. *Flowers* crowded, small, yellow. *Legumes* rugged, almost black.

XVIII. POLYADELPHIA.

1. POLYANDRIA.

1. HYPERICUM. *Cal.* 5-partite. *Pet.* 5. *Filaments* many, united at the base, in 3—5 bundles. *Caps.* many-seeded, superior.

1. POLYANDRIA.

1. HYPERICUM.

* *Styles* 5.

1. H. *calycinum* (*large-flowered St. John's-wort*), styles 5, flowers solitary, segments of the cal. unequal obovate obtuse, leaves oblong, stem shrubby branched square. *E. B. t.* 2017.

HAB. Woods above Largs, perfectly indigenous, *Hopk.* This is a native of Greece, not at all of the intermediate country, France; and I fear not really wild in any part of Britain. *Fl.* July—Sept. ♃.

Flowers very large, yellow. Bundles of *stam.* 5.—A common ornament in shrubberies.

* *Styles* 3.

† *Cal. segments entire at the margins.*

2. H. *Androsæmum* (*Tutsan*), styles 3, capsule pulpy, stem shrubby compressed, cal. leaflets unequal, leaves ovate sessile. *Lightf. p.* 415. *E. B. t.* 1225.

HAB. Woods, but not very common. At Inverary, and at Loch Ransa in the Isle of Arran, *Lightf.* It appears to be not uncommon on the western side of Scotland, though I have no stations indicated in the eastern parts. *Fl.* July. ♃.

Two feet high. *Leaves* large. *Cymes* of rather large, yellow *flowers*, terminal. *Berry* black.

3. H. *quadrangulum* (*square St. John's-wort*), styles 3, stem herbaceous 4-angular somewhat branched, leaves ovate with pellucid dots, cal. leaves lanceolate. *Lightf. p.* 416. *E. B. t.* 370.

HAB. Moist pastures, sides of ditches and rivulets. *Fl.* July. ♃.

One foot high. *Panicles* terminal.

4. H. *perforatum* (*perforated St. John's-wort*), styles 3, stem compressed, leaves elliptico-oblong obtuse with pellucid dots, cal. leaves lanceolate. *Lightf. p.* 416. *E. B. t.* 295.

HAB. Woods, thickets and hedges. *Fl.* July. ♃.

One foot to two feet or more high, branched. There are minute black glands on the tips of the calyx, corolla, and often in the leaves.

5. H. *dubium* (*imperforate St. John's-wort*), stem obsoletely quadrangular, leaves elliptical-ovate obtuse destitute of pellucid dots, cal. leaves elliptical. *E. B. t.* 296.

Hab. Rather mountainous woods, rare. In a wood two miles from Lanark, on the Hamilton road, *Hopk.* Woods of Kippen Ross near Dumblane, *Mr. Murray.* Woods, not rare, *D. Don. Fl* July. ♃.

Leaves more ovate than the last, and the *cal. leaves* especially. *Cor* frequently with small black glands.

6. H. *humifusum* (*trailing St. John's-wort*), styles 3, flowers terminal subcymose, stems compressed prostrate, leaves oblong obtuse glabrous. *Lightf. p.* 418. *E. B. t.* 1226.

Hab. Gravelly pastures, but not common, *Dr. Parsons* and *Sibbald* Banks of the Esk, at New-hall, and on the Pentland hills, *Maugh* Common about Glasg., &c. *Mr. Murray.*

Stems slender, prostrate, about a span long. *Cor.* with black glands as well as the *cal.*, on which they are frequently near the edge; but not so directly upon the margin as to form glandular serratures, in my specimens.

†† *Margins of the segments of the cal. fringed with glandular serratures.*

7. H. *montanum* (*Mountain St. John's-wort*), styles 3, flowers paniculato-corymbose, cal. with glandular serratures, stem erect rounded smooth, leaves ovate glabrous. *Lightf. p.* 418. *E. B. t.* 371.

Hab. Mountainous woods, but not common, *Sibbald. Fl.* July. ♃.

One foot and a half to two feet high. *Leaves* rather large, more or less perforated, distant, especially above; their margins with black glandular dots: those of the *cal.* and *bracteas* distinctly serrated with them. *Flowers* rather compact.

8. H. *barbatum* (*bearded St. John's-wort*), styles 3, corymbs terminal, cal. fringed with long pedunculated glands, stem erect rounded, leaves ovate with (black) scattered dots beneath. *E. B. t.* 1986.

Hab. Woods near Aberdalgy in Strath-Earn, Perthshire, *G. Don. Fl.* Sept., Oct. ♃.

One foot or more high. Very distinct in the long glandular hairs of the margin of the *cal.* The petals too are often toothed at the extremity.

9. H. *hirsutum* (*hairy St. John's-wort*), styles 3, cal. with (black) glandular serratures, stem erect rounded pubescent, leaves ovate slightly downy beneath. *Lightf. p.* 419. *E. B. t.* 116.

Hab. Woods and thickets, not very common. *Fl.* July. ♃.

Two feet high. *Leaves* rather large, more or less pubescent, especially beneath.

10. H. *pulchrum* (*small upright St. John's-wort*), styles 3, cal. with (black) glandular serratures, stem erect, leaves cordate glabrous amplexicaul. *Lightf. p.* 420. *E. B. t.* 1227.

Hab. Dry woods and heaths, but not very frequent. Isle of Lamlash, to the S. of Arran, *Lightf.* Pentland hills, Rosslyn woods, &c., *Maugh.* Appin, *Capt. Carmichael.* Frequent in clayey pastures, &c., about Glasg., *Hopk. Mr. Murray. Fl.* July. ♃.

One foot to two feet high, slender, erect, rigid, branched. *Flowers* in loose panicles, beautiful, yellow, tipped, before expansion, with red. *Anthers* red.

11. H. *elodes* (*Marsh St. John's-wort*), styles 3, cal. with (reddish) glandular serratures glabrous, leaves roundish pubescent, stem rounded creeping. *Lightf. p.* 419. *E. B. t.* 109.

Hab. Bogs, but not common. Islay, *Sir Joseph Banks*. Ditch by the road-side between Newton-Stewart and Glenluce, in Wigtonshire, about 6 miles from Glenluce, *Maugh*. At Loch Ransay, and along the valley to Brodic in Arran, *Mr. Murray*. *Fl.* July, Aug. ♃.

A span long. *Flowers* few, panicled, terminal, pale yellow.

XIX. SYNGENESIA.

1. POLYGAMIA ÆQUALIS.

* Semiflosculosi. *Corollas all ligulate.* (*Cichoraceæ, Juss.*)

10. Hypochæris. *Involucre* oblong, imbricated. *Receptacle* chaffy. *Pappus* feathery, stipitate, or sessile.

12. Cichorium. *Involucre* surrounded with scales or smaller leaflets. *Receptacle* naked or slightly hairy. *Pappus* sessile, scaly, shorter than the *pericarp*.

9. Crepis. *Involucre* surrounded with deciduous scales and at length swelling into protuberances. *Receptacle* roughish. *Pappus* sessile.

8. Hieracium. *Involucre* ovate, imbricated. *Receptacle* nearly naked, dotted. *Pappus* simple, sessile.

7. Apargia. *Involucre* imbricated, with scales at the base. *Receptacle* naked, dotted. *Pappus* feathery, sessile, unequal.

2. Picris. *Cal.* double, the inner equal, the outer lax. *Receptacle* naked. *Pappus* feathery. *Pericarps* transversely striated. (*Picris* and *Helminthia*, *Decand.*)

1. Tragopogon. *Involucre* simple, of many leaves. *Receptacle* naked. *Pappus* feathery, stipitate. *Pericarps* longitudinally striated.

6. Leontodon. *Involucre* imbricated with scales that are frequently lax and flaxid. *Receptacle* naked. *Pappus* simple, stipitate.

4. Lactuca. *Involucre* imbricated, cylindrical; its scales with a membranous margin. *Receptacle* naked. *Pappus* simple, stipitate.

5. Prenanthes. *Involucre* with scales at the base. *Receptacle* naked. *Pappus* simple, sessile. *Florets* few.

3. Sonchus. *Involucre* imbricated, swelling at the base. *Receptacle* naked. *Pappus* simple, sessile.

11. LAPSANA. *Involucre* with scales at the base. *Receptacle* naked (its inner leaves equal, channelled, *Sm.*). *Pericarps* destitute of *pappus* (deciduous.)

** CAPITATI. *Corollas all tubular and generally spreading so as to form an hemisphærical head.* (*Cynarocephalæ, Juss.*)

18. CARLINA. *Involucre* swelling, the *ext. scales* with numerous spines; the *inner ones* coloured, scariose. *Receptacle* chaffy. *Pappus* feathery.

13. ARCTIUM. *Involucre* globose, each of its scales with an incurved hook at the extremity. *Receptacle* chaffy. *Pappus* simple.

15. CARDUUS. *Involucre* swelling, imbricated with spinous scales. *Receptacle* hairy. *Pappus* deciduous, roughish.

16. CNICUS. *Involucre* swelling, imbricated with spinous scales. *Receptacle* hairy. *Pappus* deciduous, feathery.

17. ONOPORDUM. *Involucre* swelling; its scales spreading and spinous. *Receptacle* cellular. *Pappus* deciduous, rough.

14. SERRATULA. *Involucre* cylindrical, imbricated with *scales* that are not spinous. *Receptacle* chaffy. *Pappus* roughish or feathery, rigid, persistent.

(*Centaurea Jacea*, POLYG. FRUSTR.)

*** DISCOIDEI. *Corollas all tubular, erect, crowded, forming a nearly level top.* (*Corymbiferæ, Juss.*)

20. EUPATORIUM. *Involucre* imbricated, oblong. *Florets* few. *Receptacle* naked. *Pappus* rough.

19. BIDENS. *Involucre* of many leaves, with many foliaceous bracteas at the base. *Receptacle* plane, chaffy. *Cor.* sometimes radiant. *Pericarps* crowned with from 2—5 persistent awns, which are rough with minute deflexed bristles.

2. POLYGAMIA SUPERFLUA.

(*Corymbiferæ, Juss.*)

* DISCOIDEI. *The rays of the Corollas obsolete.*

21. TANACETUM. *Involucre* hemisphærical, imbricated. *Receptacle* naked. *Florets* of the ray trifid, obsolete, sometimes wanting. *Pericarps* crowned with a membranous margin or *Pappus.*

24. CONYZA. *Involucre* roundish, imbricated. *Receptacle* naked. *Florets* of the ray 3-cleft. *Pappus* rough.

23. GNAPHALIUM. *Involucre* imbricated, with (often) coloured membranous scales. *Receptacle* naked. *Florets* of the ray subulate; some of the disk occasionally abortive. *Pappus* rough.

22. ARTEMISIA. *Involucre* ovate or rounded, imbricated. *Re-*

ceptacle naked (or downy, *Sm.*). *Florets* of the ray subulate. *Pericarps* crowned with a membranaceous *pappus*.

(*Tussilago Farfara* and *hybrida*. Sect. **.)

** Radiati. *Corollas of the ray ligulate.*

32. Bellis. *Involucre* hemisphærical, its scales equal. *Receptacle* naked, conical. *Pappus* none.

35. Matricaria. *Involucre* hemisphærical or almost plane, imbricated with scales whose borders are membranous. *Receptacle* naked, almost cylindrical. *Pappus* none.

33. Chrysanthemum. *Involucre* hemisphærical, imbricated with scales whose borders are membranous. *Receptacle* naked. *Pappus* none.

34. Pyrethrum. *Receptacle* hemisphærical, imbricated with scales whose borders are membranous. *Receptacle* naked. *Pericarps* crowned with a membranous margin.

31. Doronicum. Scales of the *involucre* in two equal rows, longer than the disk. *Receptacle* naked. *Pericarps* of the disk crowned with a simple *pappus*, those of the ray without a *pappus*.

30. Inula. *Involucre* imbricated. *Receptacle* naked. *Florets* of the ray very numerous, linear. *Anthers* with 2 bristles at the base. *Pappus* sometimes simply composed of hairs, sometimes double; the *ext.* membranous.

25. Erigeron. *Involucre* imbricated. *Receptacle* naked. *Florets* of the ray numerous, very narrow (mostly of a different colour from the disk). *Pappus* simple.

29. Solidago. *Involucre* imbricated, its scales connivent. *Receptacle* naked. *Florets* of the ray (of the same colour as the disk) about 5. *Pappus* rough.

28. Aster. *Involucre* imbricated, its lowermost scales spreading (except in *A. tripolium*). *Receptacle* naked. *Florets* of the ray more than 10. *Pappus* simple.

27. Senecio. *Involucre* subcylindrical, equal, scaly below; the scales withered at the tip. *Receptacle* naked. *Pappus* simple.

26. Tussilago. *Involucre* simple, equal, submembranaceous, swelling. *Receptacle* naked. *Pappus* simple.

36. Anthemis. *Involucre* hemisphærical; its scales nearly equal, their margins scariose. *Receptacle* convex, chaffy. *Pericarps* crowned with a membranous border or *pappus*.

37. Achillæa. *Involucre* ovate, imbricated, unequal. *Receptacle* plane, chaffy. *Florets* of the ray 5—10, roundish-obcordate. *Pericarps* naked.

(*Bidens cernua*. Ord. I. Sect. ***.)

3. POLYGAMIA FRUSTRANEA.

(*Cynarocephalæ, Juss.*)

38. CENTAUREA. *Involucre* scaly. *Receptacle* bristly. *Corollas* of the ray infundibuliform, irregular, longer than those of the disk. *Pappus* simple.

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1. POLYGAMIA ÆQUALIS.

* *Semiflosculosi.*

1. TRAGOPOGON.

1. Tr. *pratensis* (*yellow Goat's-beard*), involucre about as long as the cor., leaves undivided glabrous acuminated channelled, peduncles cylindrical. *Lightf. p.* 420. *E. B. t.* 434.

HAB. Meadows and pastures, *Dr. Parsons.* Banks of the Clyde, at Clyde iron-works, *Hopk.* Daldowie, Glasg., *Dr. Brown. Fl.* June. ♂.

One foot to two feet high. *Flowers* yellow, showy; *head* of seed vessels very large. *Pappus* very feathery, elevated on long stalks.

2. Tr. *porrifolius* (*purple Goat's-beard*), involucre much longer than the cor., leaves undivided straight, peduncle thickened upwards. *E. B. t.* 638.

HAB. Moist meadows about Glasg., very rare, *Hopk. Fl.* May, June. ♃.

Three to four feet high. *Flowers* purple. The *root* was formerly cultivated for culinary purposes.

2. PICRIS.

1. P. *hieracioides* (*Hawkweed Ox-tongue*), exterior scales of the involucre short lax, leaves very rough lanceolate toothed, stem scabrous, pappus sessile. *E. B. t.* 196.

HAB. Road-sides and borders of fields, frequent. *Fl.* July, Aug. ♂.

Stem 2—3 feet high. *Flowers* yellow, corymbose; *peduncles* with foliaceous scales. The English *P. echioides* has very large outer scales or leaflets to the involucre.

3. SONCHUS.

1. S. *cæruleus* (*blue Sow-thistle*), "peduncles and involucre hispid racemose, leaves sublyrate, terminal lobe deltoid very large," *Sm. E. B. t.* 2425.

HAB. Paps of Loch-na-gore, Aberdeenshire, and on the Clova mountains, rare, *G. Don. Fl.* July, Aug. ♃.

Stem three feet high. *Racemes* long, of numerous blueish *flowers*. *Peduncles, involucre* and *bracteas* covered with reddish viscid bristles.

2. S. *arvensis* (*Corn Sow-thistle*), peduncles and involucre hispid subumbellate, leaves runcinate dentato-ciliate cordate at the base. *Lightf. p.* 427. *E. B. t.* 674.

HAB. Corn-fields, frequent. *Fl.* July. ♃.

Stems 3—4 feet high. *Flowers* large, yellow.

3. S. *oleraceus* (*common Sow-thistle*), peduncles subtomentose umbellate, involucre glabrous, leaves runcinate dentato-ciliate amplexicaul at the base. *Lightf. p.* 428. *E. B. t.* 843.

Hab. Waste places and cultivated ground, common. *Fl.* June, Aug. ⊙.

Two to three feet high. *Flowers* rather small, yellow, occasionally white, according to *Mr. Hopkirk.*

4. LACTUCA.

1. L. *virosa* (*strong-scented Lettuce*), leaves oblong toothed horizontal their keel prickly their apex obtuse. *Lightf. p.* 429. *E. B. t.* 1957.

Hab. Banks and way-sides, but rare. Foot of Arthur's Seat, Edinb., *Lightf.* Dunkeld, *Mr. Murray. Fl.* Aug. ♂.

Stem 3—4 feet high, erect, prickly, with distant leaves, panicled at the summit. *Leaves* finely toothed, embracing the stem; *radical* ones numerous, obovate.—Abounding with a milky and narcotic juice, which has been considered by some as a gentle and safe opiate. *Flowers* small, yellow.

5. PRENANTHES.

1. Pr. *muralis* (*Ivy-leaved Lettuce*), florets 5, leaves lyrato-pinnatifid and toothed, the terminal lobe with about 5 angles. *Lightf. p.* 431. *E. B. t.* 457.

Hab. On shady rocks and walls of old castles in the Lowlands, *Lightf. Fl.* July. ♃.

Stem two feet high, panicled at the top, with the branches spreading. *Flowers* small, yellow.

6. LEONTODON.

1. L. *Taraxacum* (*Dandelion*), outer scales of the involucre reflexed, leaves runcinate glabrous toothed. *Lightf. p.* 432. *E. B. t.* 510.

Hab. Meadows and pastures, abundant. *Fl.* in the summer. ♃.

Leaves all radical, their segments more or less deep. *Scape* with a large single flower.

2. L. *palustre* (*Marsh Dandelion*), outer scales of the involucre erect appressed, leaves sinuato-dentate nearly glabrous. *E. B. t.* 553.

Hab. Pentland hills, *Mr. Maughan.* Rosslyn woods, also bogs near Edinb., *Mr. Greville.* Marshes, Angus-shire, *Mr. G. Don.* Wet moors about Glasg., not uncommon, *Hopkirk. Fl.* June, July. ♃.

Very nearly allied to the preceding, and was for a long time, perhaps justly, considered as merely a var. of it.

7. APARGIA.

1. A. *hispida* (*rough Apargia*), scape single-flowered, leaves dentate scabrous, "florets hairy at their orifice glandular at the

tip," *Sm. Lightf. p.* 433 (*Leontodon hispidum*). *E. B. t.* 554 (*Hedypnois hispida*).

Hab. Meadows and pastures, frequent, *Lightf. Fl.* June. ♃.

Leaves radical, oblong, lanceolate, more or less deeply toothed, sometimes almost pinnatifid, clothed with forked hairs. *Flowers* solitary, upon a hairy scape, large, yellow, drooping before expansion. *Involucre* hairy.—Sir J. E. Smith says that the hairs at the orifice of each floret distinguish this plant from *A. hirta*, as well as from every other species of the genus.

2. A. *hirta* (*deficient Apargia*), scape single-flowered, leaves dentate scabrous, involucre nearly glabrous, outer pericarps with a scaly pappus. *E. B. t.* 555.

Hab. Gravelly pastures and moors about Glasg., occasionally; moors about Airdrie, *Hopkirk*. North Queensferry, *Maughan*. *Fl.* July, Aug. ♃.

This species was by Lightf. and many of the older botanists confounded with the last, but is in reality very distinct from it:—the flowers are much smaller, reddish beneath, and there is a great peculiarity in the outer seedvessels, they not having a pappus composed of hair-like processes, but of small membranous scales.

3. A. *Taraxaci* (*alpine Apargia*), scape single-flowered thickened upwards, leaves glabrous runcinato-dentate, involucre very hairy. *Lightf. p.* 435 (*Hieracium Taraxaci*). *E. B. t.* 1109 (*Hedypnois Tarax.*).

Hab. Wet ground on the sides of the Highland mountains; as on Ben-na-Caillich in Strath-Swardle. *Fl.* July, Aug. ♃.

Remarkable for its *scape*, which is thickened upwards, and having there, like the involucre, blackish hairs. *Flowers* rather large, yellow.

4. A. *autumnalis* (*atumnal Apargia*), scape branched scaly upwards, leaves lanceolate toothed or pinnatifid subglabrous, peduncles swelling beneath the involucre. *Lightf. p.* 433 (*Leontodon autumnale*). *E. B. t.* 830 (*Hedypnois autumn.*).

Hab. Meadows and pastures, frequent. *Fl.* Aug. ♃.

Involucre cylindrical, and tapering down gradually into the scape. *Flowers* rather large, yellow.

8. HIERACIUM.

* *Scape naked* (*or rarely with one leaf*), *single-flowered.*

1. H. *alpinum* (*alpine Hawkweed*), scape 1-flowered leaflets hairy, as well as the oblongo-lanceolate entire leaves, involucre thickly clothed all over with long silky hairs. *Lightf. p.* 434. *t.* 18. *E. B. t.* 1110.

Hab. Dry soil near the summits of the Highland mountains, as in Breadalbane and Glenco, *Dr. Stuart*. In Ross-shire and in Skye, *Lightf.* On Ben Arthur, opposite Arroquhar, *Mr. Borrer* and *Hook*. *Fl.* July, Aug. ♃.

Four to six inches high. *Leaves* with numerous whitish hairs, especially at the base, which is lengthened into a petiole. Hairs on the upper part of the stem black at the base, and often mixed

with minute black glandular hairs. *Involucre* thickly clothed all over with dingy coloured or fulvous long silky hairs, which admirably distinguishes this species. *Flowers* always solitary, large, deep yellow.

2. H. *Halleri* (*Hallerian Hawkweed*), scape 1-flowered with one or rarely two leaves hairy, as well as the spathulato-lanceolate toothed leaves, involucre with rather long silky hairs principally near the margins of the scales. *Decand. Fl. Gall. p.* 258. *H. pumilum, Willd.* (*according to Seringe*). *H. villosum, E. B. t.* 2379 (garden specimen), but surely not of *Linn.*

Hab. Clova Mountains and Ben Lawers, *G. Don.* Ben-y-More near Killin, *Mr. Turner* and *Hook. Fl.* Aug. ♃.

Much like the last, for which I mistook it myself when I gathered it on Ben-y-More; but on comparing numerous specimens of the two I am disposed to keep them distinct. The present is rather the taller of the two, and stouter; there is always one leaf at least upon the scape; the *leaves* are toothed, and the *involucre* has the back of the scales almost entirely destitute of those long, beautiful, silky hairs which are so characteristic of *H. alp.*—I have never seen either of these two species with more than one flower. Both are abundant in Switzerland, and retain the characters above given to them.

3. H. *Pilosella* (*Mouse-ear Hawkweed*), scape one-flowered naked, leaves entire elliptico-lanceolate hairy downy beneath, scions creeping. *Lightf. p.* 436. *E. B. t.* 1093.

Hab. Banks and dry pastures, common. *Fl.* June. ♃.

Distinguished at all times by the creeping scions; the *leaves*, which are downy beneath, and scattered all over, especially at the margin, with long rather rigid hairs; and the pale yellow colour of the *flowers*. *Scape* more or less downy, and with glandular scattered hairs.

** *Scape naked* (*or rarely with a single leaf*), *many-flowered.*

4. H. *dubium* (*branching Mouse-ear Hawkweed*), scape many-flowered naked (or with one small leaf), leaves entire elliptico-lanceolate with only a few scattered hairs, scions creeping. *E. B. t.* 2332.

Hab. Scotland, *Mr. G. Don*, and received from that country at the Cambridge Bot. Garden. *Sm. in E. B. Fl.* July, Aug. ♃.

Taller and slenderer than the last, with smaller flowers, from 3—5, at the extremity of the scape, on longish footstalks, which as well as the upper part of the scape are pubescent and subglandular. *Leaves* sometimes almost glabrous, often hairy, especially towards the base and on the edges. Can the *H. Auricula* of Smith be a var. of this?

5. H. *aurantiacum* (*orange-coloured Hawkweed*), scape nearly naked simple hairy bearing a corymb of many flowers, leaves obovato-lanceolate entire rough with longish hairs. *E. B. t.* 1469.

Hab. Several woods in Bamffshire; and at Craigston in the neighbourhood of Turref, *G. Don in E. B.* Coalston woods, E. Lothian,

Mr. Walker. Woods to the eastward of Kenmore, *Maugh. Fl.* July. ♃.

One foot high, throwing out creeping scions from the root. *Leaves* more or less hairy, with usually fulvous hairs. *Scape* very hairy; hairs, in the upper part, black at the base, as they are upon the *involucre*, sometimes all black. *Flowers* very deep orange colour, in a more or less crowded corymb.

*** *Stem with few* (1—2) *leaves, many-flowered.*

6. H. *Lawsoni* (*glaucous hairy Hawkweed*), stem more or less branched upwards where it is the most hairy and the hairs mixed with black glands having 1—2 sessile leaves, radical leaves ovato-lanceolate petiolate entire or toothed towards the base hairy especially on the petioles, involucres with hairs which are black at the base mixed with black pedunculated glands.

α. leaves lanceolate shortly petiolate nearly entire with 3—5 flowers. *H. Lawsoni, E. B. t.* 2083.

β. leaves broadly ovato-lanceolate nearly entire upon long petioles, 2—4 flowers. *H. saxatile, Decand. Fl. Gall. p.* 259.

γ. leaves broadly ovato-lanceolate deeply toothed towards the base, flower solitary.

Hab. α. Foot of Ben Cruachan, *Mr. Borrer* and *Hook.* Rock in Corrie Cruachan, *Mr. Borrer.*—β. Dry rocks on the ascent to Ben Lomond from Tarbet, about half way up, *Hook.*—γ. Rocks on Ben Lawers and the Clova mountains, *G. Don. Fl.* Aug. ♃.

My specimens, gathered at Ben Cruachan, precisely accord with the figure in *E. Bot.*, allowing for *that* being taken from a cultivated specimen. *Leaves* sometimes spotted with purple, very villous with long white hairs on the petioles. *Stem* rarely bearing one flower (and then coming very near *H. Halleri*), mostly divided above the middle into 3—4 branches, 6—10 inches high, very hairy, the upper part with rigid whitish hairs black at the base and mixed with black glandular bristles. *Involucre* hairy in the same way. *Flower* rather large, yellow.

7. H. *murorum* (*Wall Hawkweed*), stem branched upwards subcorymbose downy especially beneath the involucre where are a few black glands having 1 petiolated leaf, radical leaves ovate or lanceolate entire or dentate at the base hairy, as well as the longish petioles, involucre downy.

α. leaves broadly ovate toothed at the base. *H. murorum, Lightf. p.* 437. *E. B. t.* 2082.

β. leaves lanceolate more or less toothed often spotted or clouded with purple. *H. pulmonarium, E. B. t.* 2307 ?

Hab. α. In woods, on walls, and on rocks, common.—β. Rocks in the Highlands; half way up Ben Lomond from Tarbet, along with *H. Lawsoni* β., *Hook.* Glen Nevis, near the bridge ? *Mr. Borrer.* Highland mountains, not uncommon, *D. Don. Fl.* Aug. ♃.

It is very difficult to draw the line between this species and the neighbouring one (*H. muror.*); which may indeed be said of almost every individual in the genus. The present is from 4 or 6 inches, in poor soils, to 2 feet in height. The *stem* wants the long whitish hairs of the last species and is only closely pubescent at the extremity, where there are sometimes a few black glandular bristles. The *involucre* has that same short pubescence. The *leaves* vary wonderfully in breadth and in denticulation as well as in hairiness, though they are always less hairy than those of *H. Lawsoni*, especially about the petioles. There is one rather large and more or less petiolated leaf on the stalk, rarely one or two small ones above.

**** *Stem with many leaves, many-flowered.*

8. H. *sylvaticum* (*Wood Hawkweed*), stem many-leaved branched upwards and subcorymbose slightly hairy and more or less downy beneath the involucre, leaves ovato-lanceolate or lanceolate toothed with the sharp teeth pointing upward somewhat hairy, involucre with very short pubescence.

α. leaves ovato-lanceolate green with small teeth. *H. sylvaticum*, *E. B. t.* 2031.

β. leaves ovato-lanceolate green deeply toothed at the base. *H. ramosum*, *Waldst.* and *Kit. Fl. Hung. D. Don, MSS. ined.*

γ. leaves ovato-lanceolate spotted with dark purple with large teeth. *H. maculatum*, *E. B. t.* 2121.

δ. leaves lanceolate spotted and clouded with purple. *H. pictum*, *Schleicher.*

Hab. α. Mountainous woods, frequent; about Lanark, *Hopk.* Walls, rocks, and dry woods, not rare, *D. Don.* Woods near Lismahago and Strathaven, *Mr. Murray.* β. Brought many years ago from Scotland by *Mr. Dickson*, and cultivated by *Mr. E. Forster.* Bushy places in Scotland, *D.* and *G. Don.* γ. Fir wood E. of Forfar, *G. Don.* δ. Woods near Forfar, *G. Don.* Luss River, *Dickson.* Fall of the Aray 2 m. above Inver Aray, and at Inver Moriston, *Mr. Borrer.* *Fl.* Aug. ♃.

One foot to two feet high, scarcely hairy on the stem, though in the var. β. found by Mr. Dickson the lower parts of the stem and of the petioles of the leaves have long hairs, whilst that var. (β.) found by Mr. Don is very nearly glabrous. The *leaves* are usually numerous; yet I have seen some starved vars. which had so few that it was difficult to recognise them as distinct from *H. murorum.*

9. H. *denticulatum* (*small-toothed Hawkweed*), "stem erect many-flowered solid, leaves sessile elliptic-lanceolate finely toothed smoothish glaucous beneath, flowerstalks glandular and cottony," *Sm. E. B. t.* 2122.

Hab. Loch Rannoch, Perthshire, and among bushes on the banks of the Earn, *G. Don.* Banks of the Clyde at Daldowie with *H. sabaudum*, *Hopk.* *Fl.* Aug. ♃.

" *Stem* 3 feet high, erect, round, striated, roughish, spongy, and solid, scarcely fistulose within" (*Sm.*). I have never seen a specimen of this, and therefore quote Smith's characters. It is the *H. prænanthoides* of *Fl. Brit.*; not of *Compendium, ed.* 3. *p.* 119.

10. H. *molle* (*soft-leaved Hawkweed*), stem panicled fistulose, leaves lanceolate obsoletely toothed semiamplexicaul, lower ones petiolate very obtuse. *E. B. t.* 2210. *H. succisæfolium*, *Decand.* and *Seringe.*

Hab. Woods in the south of Scotland, *Dickson.* Among bushes in meadows N. of Forfar, *G. Don.* Lower fall of the Tummel, Glen Luss, *Mr. Borrer.* *Fl.* July, Aug. ♃.

I have never seen British specimens of this; but my Swiss ones precisely accord with the figure in *E. B.* The plant is about one foot high, remarkable for the obtuse radical *leaves*, which taper gradually into a long footstalk. *Scales* of the *involucre* with a few black glandular hairs.

11. H. *paludosum* (*Succory-leaved Hawkweed*), glabrous, stem panicled fistulose, leaves ovato-oblong acute toothed embracing the stem with their heart-shaped base, scales of the involucre with black hairs or bristles. *Lightf. p.* 538. *E. B. t.* 1094.

Hab. Sides of rivers and in wet and rocky places, abundant. *Fl.* Aug. ♃.

One foot to two feet high. Readily known by the absence of all pubescence, the very amplexicaul leaves, and their spreading or deflexed teeth, together with the *cal.*, which has longish, quite black hairs.

12. *H. cerinthoides* (*Honey-wort-leaved Hawkweed*), stem corymbose hairy above, leaves hairy very slightly toothed radical ones oblongo-obovate petiolate cauline ones oblong semiamplexicaul, involucre hairy. *E. B. t.* 2378.

Hab. Rocks near the head of Clova, *G. Don.*

One to one foot and a half high, rather stout.

13. H. *amplexicaule* (*amplexicaul Hawkweed*), glandulosopilose, stem corymbose, leaves toothed, radical ones oblongo-ovate petiolate, cauline ones cordate at the base amplexicaul. *Willd. Sp. Pl. p.* 1582. *All. Ped.*

Hab. Walls of the castle of Cleish, Kinross-shire, *Mr. Arnott.* Mr. Borrer possesses specimens from G. Don, gathered on the Clova mountains. *Fl.* Aug. ♃.

This interesting addition to the British Flora has many points in common with the last species, but is every where covered with brownish glandular hairs, most thickly on the peduncles and involucre. The lower cauline leaves are more or less oblong, the upper ones truly cordate.

14. H. *prænanthoides* (*rough-bordered Hawkweed*), " stem erect many-flowered, leaves amplexicaul somewhat toothed rough at the margin lower ones oblong, peduncles downy," *Sm. E. B. t.* 2235.

Hab. Brought from Scotland by *Mr. Dickson*. Banks of the Esk, near the farm called the Cairn, near Forfar, *G. Don*. Near Pitmain, *Mr. M'Kay*. *Fl.* Aug. ♃.

" Differs from *H. denticulatum*, with which it was confounded in *Fl. Brit.*, in having the leaves embrace the stem by their rounded dilated base, and in their roughness near the edge, which there forms a bristly border. These marks are enough to distinguish them." *Sm.* in *E. B.*

15. H. *sabaudum* (*shrubby Hawkweed*), " stem erect many-flowered, leaves ovato-lanceolate dentato-serrate half embracing the stem hairy beneath, the lower ones elliptico-lanceolate," *Sm. Lightf. p.* 439. *E. B. t.* 349.

Hab. Woods and rough stony places, *Lightf.* Sides of rivers, frequent, about Glasg., *Hopk.* *Fl.* Aug., Sept. ♃.

" Two to three feet high, somewhat shrubby, rough, rigid." *Sm.*

16. H. *umbellatum* (*narrow-leaved Hawkweed*), stem erect simple very leafy, leaves linear lanceolate subglabrous slightly toothed, flowers subumbellate, peduncles downy, involucres glabrous. *Lightf. p.* 439. *E. B. t.* 1771.

Hab. Rough stony places, but not very common. King's Seat at Dunkeld, *Lightf.* *Fl.* Aug., Sept. ♃.

The most decidedly marked perhaps of any individual in this most difficult genus.—Scotland produces every British species, except the doubtful *H. auricula:* it is then to the botanists of this country, who live, as it were among them, that a more satisfactory history of these plants should be looked for.

9. CREPIS.

1. C. *pulchra* (*small-flowered Hawk's-beard*), " leaves pubescent toothed those on the stem subsagittate, stem panicled corymbose, involucre pyramidal glabrous," *Sm. E. B. t.* 2325. *Prenanthes pulch., Decand.*

Hab. Crumbling rocks on the hill of Turin, near Forfar, *Mr. G. Don.* *Fl.* June, Sept. ⊙.

Radical leaves obovate, toothed, tapering downward; *cauline* ones very few, small, clasping the stem with their toothed bases.—Sir J. E. Smith observes that the scales of the involucre are not deciduous, nor does the involucre itself satisfactorily accord with the genus. Hence Decandolle has placed it in that of *Prenanthes.*

2. C. *tectorum* (*smooth Hawk's-beard*), leaves glabrous runcinate, the upper ones linear-sagittate amplexicaul, stem glabrous, panicle subcorymbose, involucre pubescent. *Lightf. p.* 440. *E. B. t.* 1111.

Hab. Meadows, pastures, and upon turfed and thatched cottages. *Fl.* July, Aug. ⊙.

Stems 1—3 feet high. *Radical leaves* more or less pinnatifid or runcinate; their teeth or segments often horizontal, sometimes curved upwards. *Flowers* small, yellow.

10. HYPOCHÆRIS.

1. H. *maculata* (*spotted Cat's-ear*), stem almost leafless solitary, leaves ovato-oblong undivided toothed (spotted above). *E. B. t.* 225.

Hab. Dry woods E. of Forfar, *G. Don.* *Fl.* July. ♃.

Leaves almost all radical, scabrous. *Stem* or *scape* with 2—3 lanceolate scales or bracteas, and, as well as the involucre, slightly hispid. *Flowers* solitary, large, deep yellow.

2. H. *glabra* (*smooth Cat's-ear*), nearly glabrous, involucre oblong imbricated, stem branched somewhat leafy, radical leaves dentato-sinuate. *Lightf. p.* 442. *E. B. t.* 575.

Hab. Mountainous pastures and gravelly soils, but not common, *Lightf.* *Fl.* July, Aug. ☉.

A foot or more in height. *Leaves* oblong, slightly hairy. *Flowers* small, yellow. *Pappus* of the central florets stipitate, that of the circumference sessile.

3. H. *radicata* (*long-rooted Cat's-ear*), stem branched leafless glabrous, peduncles with small scales, leaves runcinate obtuse scabrous. *Lightf. p.* 443. *E. B. t.* 831.

Hab. Meadows and pastures, common. *Fl.* July. ♃.

Leaves all radical, spreading. *Stem* a foot or more high. *Peduncles* a little thickened upwards. *Flowers* rather large, yellow. *Pappus* stipitate.

11. LAPSANA.

1. L. *communis* (*Nipple-wort*), involucre of the fruit angular, stem panicled, peduncles slender, leaves ovate petiolate angulato-dentate. *Lightf. p.* 444. *E. B. t.* 844.

Hab. Waste and cultivated ground, common. *Fl.* July, Aug. ☉.

Stem 2—4 feet high. *Leaves* soft and thin, slightly hairy, the radical ones more or less lyrate. *Flowers* small, yellow.

2. L. *minima* (*least Nipple-wort*), scape branched very thick and fistulose upwards, leaves obovato-oblong toothed. *Decand. Fl. Gall. p.* 256. *Lightf. p.* 442, and *E. B. t.* 95 (*Hyoseris minima*). *Lapsana pusilla, Willd.*, and *Sm. Compend. Fl. Brit. ed.* 3. *p.* 119.

Hab. Corn-fields in a gravelly or sandy soil, but rare, *Sibbald.* *Fl.* June, July. ☉.

Scapes 6—8 inches high, more or less branched, remarkable for their clavate and fistulose extremities. *Flowers* small, yellow.

12. CICHORIUM.

1. C. *Intybus* (*wild Succory*), flowers sessile axillary in pairs, leaves runcinate. *E. B. t.* 539.

Hab. Borders of fields and waste places, but rare. In a field near Foxhall, Edinb., *Maugh.* Borders of corn-fields in several parts of the Mearns, *Prof. Beattie.* Field near Belvidere and one near Toll-cross, Glasg., *Hopk.* Fields in Kinross-shire, *Mr. Greville.* Scattered about the country, *Mr. Arnott.* *Fl.* July, Aug. ♃.

Stem 1 foot to 3 feet high, erect, branched. *Flowers* numerous, large, bright, but pale blue. Not the *Endive* or *Succory* of the gardens, which is *Cich. Endivia*, supposed to be a native of India.

** *Capitati.*

13. ARCTIUM.

1. A. *Lappa* (*common Burdock*), leaves cordate petiolate. *Lightf. p.* 445.

α. cal. glabrous. *E. B. t.* 1228 (*Arctium Lappa*).

β. cal. with a cobweb-like down. *E. B. t.* 2478 (*Arctium Bardana*).

Hab. Waste places and way-sides, frequent. *Fl.* July, Aug. ♂.

Two to three feet or more high. Radical *leaves* very large, often slightly toothed. *Cal.* globose, with spinous, hooked scales, which stick most pertinaciously to clothes and the coats of animals. These scales are sometimes glabrous, and sometimes have a more or less abundant cottony substance interwoven with them; whence two species have been established by some authors. *Flowers* purple.

14. SERRATULA.

1. S. *tinctoria* (*common Saw-wort*), leaves sharply serrated glabrous pinnatifid the terminal lobe the largest, flowers in a small clustered umbel. *Lightf. p.* 447. *E. B. t.* 38.

Hab. Woods and wet pastures, but not common, *Lightf.* Banks of the Clyde between Daldowie and Bothwell, *Hopk.* Sea-shore, near the mouth of the Dee, Galloway, and between the Nunnery and Senwick, in the parish of Borgue, *Dr. Walker.* *Fl.* Aug. ♃.

Two to three feet high, branched, stiff. *Flowers* purple. Dyes cloth of a yellow colour.

2. S. *alpina* (*alpine Saw-wort*), leaves ovato-lanceolate attenuated at the base undivided toothed cottony beneath, involucre hairy, flowers in a clustered umbel. *Lightf. p.* 448. *t.* 19. *E. B. t.* 599.

Hab. Sides of the Highland mountains, among rocks; in Breadalbane, Glen Lyon, Glenorchy, and in Skye; also near Moffat, in Annandale, *Lightf.* Ben Arthur, by Arroquhar, *Mr. Borrer* and *Hook.* Mountains in the Isle of Rum; and in a deep gulley at the foot of White Coom Edge, Annandale, *Dr. Walker.* *Fl.* Aug. ♃.

Stem 8—12 inches high, erect, simple, woolly. *Leaves* few upon the stem. *Flowers* larger than in the last-mentioned species, purple.

15. CARDUUS.

* *Leaves decurrent.*

1. C. *nutans* (*Musk-thistle*), leaves decurrent spinous, flowers drooping, scales of the involucre lanceolate cottony, outer ones spreading. *Lightf. p.* 450. *E. B. t.* 1112.

Hab. Waste places near towns, and in dry pastures and rough stony soils. *Fl.* July, Aug. ♂. (⊙, *Sm.*)

Two to three feet high, not much branched, cottony, interruptedly

winged. *Leaves* oblong, deeply sinuated. *Flowers* solitary, large, handsome, purple; said to smell powerfully of musk in warm weather: most so in the evening according to Lightf.

2. C. *acanthoides* (*welted Thistle*), leaves decurrent sinuated spinous, involucre globose nearly sessile its scales linear slightly recurved. *Lightf. p.* 452 (*C. crispus*). *E. B. t.* 973.

Hab. Way-sides and waste places; varying with white flowers. *Fl.* June, July. ⊙.

Three to four feet high, uninterruptedly winged, branched. *Flowers* clustered at the ends of the branches, deep purple.

3. C. *tenuiflorus* (*slender-flowered Thistle*), leaves decurrent sinuated spinous somewhat cottony beneath, involucres nearly cylindrical clustered sessile their scales lanceolate erect. *Lightf. p.* 452 (*C. tenuiflorus*). *E. B. t.* 412.

Hab. Waste places near towns, especially by the sea-coast. Abundant about Edinb., *Maugh.* About Balvie, near Glasg., *Hopk. Fl.* June, July. ⊙.

Two to four feet high, winged the whole way up the stem with the decurrent bases of the leaves. *Flowers* small, pale purple.

** *Leaves sessile.*

4. C. *marianus* (*Milk-thistle*), leaves amplexicaul waved spinous, the radical ones pinnatifid, scales of the involucre subfoliaceous recurved spinous at the margin. *Lightf. p.* 454. *E. B. t.* 976.

Hab. Banks and waste places about towns and villages. Castle rock at Edinb., *Dr. Parsons.* King's Park, Edinb., *Maugh.* Rock of Dumbarton castle, *Hopk.*, &c. *Fl.* July. ⊙.

Three to five feet high. Distinguishable at once by the milky veins on the leaves and the great recurved scales of the involucre.

16. CNICUS.

* *Leaves decurrent.*

1. Cn. *lanceolatus* (*Spear-thistle*), leaves decurrent hispid pinnatifid their segments generally two-lobed spreading spinous, involucres ovate tomentose their scales lanceolate spreading. *Lightf. p.* 450, and *E. B. t.* 107 (*Carduus lanc.*).

Hab. Way-sides, frequent. *Fl.* July, Aug. ♂.

Three to four feet high. *Leaves* downy beneath; point long, very sharp. *Flowers* standing singly, large.

2. Cn. *palustris* (*Marsh-thistle*), leaves decurrent scabrous pinnatifid spinous, involucres ovate clustered their scales ovato-lanceolate mucronate appressed. *Lightf. p.* 452, and *E. B. t.* 974 (*Carduus pal.*).

Hab. Moist meadows and shady places, frequent. *Fl.* July. ♂.

Four to six feet high, very full of rather short spines, very erect. Remarkable for its clustered *heads* of *flowers*, whose involucres have the scales broad, appressed, keeled, and mucronated.

** *Leaves sessile.*

3. Cn. *arvensis* (*creeping Thistle*), leaves sessile pinnatifid spinous, stem panicled, involucre ovate, scales appressed mucronated. *Lightf. p.* 449 (*Serratula arv.*). *E. B. t.* 975 (*Carduus arv.*).

Hab. Fields and by way-sides, too abundant. *Fl.* July. ♃.

One foot to three feet high. *Stems* angular, but not winged.

4. Cn. *eriophorus* (*woolly-headed Thistle*), leaves sessile pinnatifid every other segment pointing upwards spinous scabrous, involucres sphærical woolly. *Lightf. p.* 454, and *E. B. t.* 386 (*Carduus erioph.*).

Hab. Road-sides, &c., but rare. Sea-side between Blackness and the Queensferry? *Sibbald.* Road-side near Oxenford Castle and Chesterhall, 9 m. from Edinb., *Maugh.* Dumbarton Castle? *Mr. Murray.* Appin, *Capt. Carmichael.* *Fl.* July. ♂.

Stems much branched, 3 feet high, the stoutest of the genus furrowed. *Leaves* acuminated, white, and downy beneath; the lobes alternately pointing upwards and downwards, and terminated with sharp spines. *Involucre* very large; its scales linear, mucronate, very much interwoven with a woolly substance.

5. Cn. *heterophyllus* (*melancholy Thistle*), leaves amplexicaul lanceolate ciliato-dentate undivided or laciniated white and downy beneath, flowers mostly solitary. *Lightf. p.* 456 (*Carduus heterophyllus*), and *p.* 467 (*Carduus helenioides*). *E. B. t.* 675 (*Carduus heteroph.*).

Hab. Marshy places and on wet hills, especially in the Highlands. Rosslyn and Auchindenny woods, *Maugh.* Daldowie, near Glasg., *Dr. Brown.* *Fl.* July. ♃.

Two to three feet high. *Stems* striated, and, as well as the underside of the leaves, covered with a white, cottony down. *Leaves* mostly radical, and these petiolated. *Involucre* oblong, dark green; its scales lanceolate, acuminate, but not spiny.

6. Cn. *pratensis* (*Meadow Thistle*), leaves sessile lanceolate waved at the edge and unequally spinous pubescent cottony beneath, flowers mostly solitary. *E. B. t.* 177.

Hab. Moist pastures in Loch-na-daal, Isla, *Dr. Walker.* I think *Mr. Murray* brought an indifferent specimen of it from Arran. *Fl.* July. ♃.

About 1 f. high. *Leaves* waved, toothed and spiny. *Flower* solitary; scales of the *involucre* with short spines, lanceolate, closely imbricated.

7. Cn. *acaulis* (*dwarf Thistle*), stemless, involucre glabrous. *Lightf. p.* 458, and *E. B. t.* 161 (*Carduus acaulis*).

Hab. Dry pastures, but not common. *Fl.* July. ♃.

Leaves spreading, close to the ground, oblong, pinnatifid; the segments lobed and spinous, glabrous. From the centre of these leaves arises 1 sessile, deep purple flower. *Involucre* obovato-cylindrical, imbricated with closely placed, appressed, lanceolate, acute, greenish scales, not spinous.

17. ONOPORDUM.

1. O. *Acanthium* (*Cotton Thistle*), scales of the involucre spreading subulate, leaves ovato-oblong sinuated and spinous decurrent woolly on both sides. *Lightf. p.* 458. *E. B. t.* 977.

Hab. Waste places near towns and villages, as at Weems on the coast of Fife and half a mile beyond Preston Pans, &c. *Lightf.* Field close by the village of Cockenzie; near Melrose; and Links at Port Seton, *Maugh.* Near Musselburgh, *Mr. Arnott.* *Fl.* Aug. ♂.

Four to six feet high, branched and winged to the summit. *Wings* very spinous. *Involucre* globose. *Flowers* purple.

18. CARLINA.

1. C. *vulgaris* (*common Carline*), stem many-flowered corymbose pubescent, leaves lanceolate unequally spinous and sinuated downy beneath. *Lightf. p.* 460. *E. B. t.* 1144.

Hab. Dry hilly pastures, but not very common, *Lightf.* Near Arbroath, *Mr. D. Stewart.* Coast of Angus-shire, *Mr. D. Don.* Coast of Galloway, near Glenluce; and heughs of St. Cyrus, near Montrose, *Maugh.* *Fl.* June. ♂.

One foot high. Very spinous, but the spines generally short. *Exterior scales* or leaflets of the involucre much resembling the leaves, but smaller; inner ones linear membranous, yellow, entire, forming a horizontal ray round the florets. *Flowers* purplish. *Anthers* with 2 bristles at the base.

**** Discoidei.*

19. BIDENS.

1. B. *cernua* (*nodding Bur-Marigold*), flowers drooping, bracteas lanceolate entire (longer than the involucre), leaves lanceolate serrated undivided, bristles of the pericarp about 4 erect. *Lightf. p.* 461. *E. B. t.* 1114.

Hab. Sides of rivulets, ditches, and lakes, frequent. *Fl.* June—Aug. ⊙.

One to two feet and more high, branched, slightly hispid. *Leaves* glabrous, deeply serrated. *Flowers* large, greenish yellow.

2. B. *tripartita* (*trifid Bur-Marigold*), leaves tripartite, leaflets lanceolate deeply serrated, bristles of the pericarp 2—3. *Lightf. p.* 462. *E. B. t.* 1113.

Hab Marshy places and sides of lakes, *Dr. Parsons.* Kinross-shire, *Mr. Arnott.* Rare about Glasg.; edge of a loch near New Kilpatrick, N. side, *Hopk.* *Fl.* July. ⊙.

Readily distinguished by its tri- and sometimes quinque-partite *leaves.* The *flowers,* which are slightly drooping, are also smaller than those of *B. cernua.*

20. EUPATORIUM.

1. E. *cannabinum* (*Hemp-Agrimony*), leaves opposite sub-petiolate tri-quinque-partite their segments lanceolate deeply serrated. *Lightf. p.* 464. *E. B. t.* 428.

Hab. Banks of rivers and lakes, not unfrequent. In Clifton-ings and among rocks below Kinghorne, *Dr. Parsons.* Laswade, *Mr. D. Stewart.* Appin, *Capt. Carmichael.* Rare about Glasg.; marshy place in Carmyle wood, abundant, *Hopk.* *Fl.* Aug. ⊙.

Stems 3—4 feet high, branched. *Leaves* pubescent, their middle lobe the longest. *Flowers* very numerous, thickly crowded in terminal corymbs of a pale reddish purple. *Style* longer than the *cor.*, deeply cleft. *Plant* slightly aromatic.

2. POLYGAMIA SUPERFLUA.

21. TANACETUM.

* Discoidei. *Corollas of the ray obsolete.*

1. T. *vulgare* (*common Tansy*), leaves bipinnatifid inciso-serrate. *Lightf. p.* 465. *E. B. t.* 1229.

Hab. Borders of fields and road-sides, not uncommon, especially about Glasg. *Fl.* Aug. ♃.

Stems 1—3 feet high, erect, slightly branched. *Flowers* yellow, in a terminal corymb. *Florets* of the *ray* very few, ligulate, tridentate. *Whole plant* very bitter and aromatic. It has been much used for medicine, and also in domestic economy as an ingredient of puddings.

22. ARTEMISIA.

1. A. *maritima* (*drooping-flowered Sea Wormwood*), "leaves downy pinnated the uppermost undivided, racemes drooping, receptacle naked, flowers oblong sessile," *Sm. Lightf. p.* 466. *E. B. t.* 1706.

Hab. Sea-shore, but not very common: as upon the coast by Guillon Loch, *Dr. Parsons.* Banks of the Peffer burn, near Aberlady, and on the coast of Galloway at St. Mary's isle, *Maugh.* *Fl.* Sept. ♃.

One foot high, clothed with soft, white, cottony down. *Leaflets* 3-cleft, their segments linear. *Flowers* small; *involucre* woolly. *Flowers* of the ray very few, sometimes 0.

2. A. *gallica* (*upright-flowered Sea Wormwood*), "leaves downy pinnated radical ones capillary upper ones undivided, racemes erect, receptacle naked, flowers oblong," *Sm.* *E. B. t.* 1001 (*A. maritima*).

Hab. At Peffer burn and at St. Mary's isle, with the preceding, *Maugh.* Rocks on the coast near Arbroath, *Mr. D. Don.* *Fl.* Sept. ♃.

"Distinguished by having its flowers drooping, which character seems constant; and accompanied by differences in the general habit of the plant." *Sm.*

3. A. *Absinthium* (*common Wormwood*), leaves bi-tripinnatifid clothed with short silky down, segments lanceolate, flowers hemisphærical drooping receptacle hairy. *Lightf. p.* 467. *E. B. t.* 1230.

Hab. Waste places and way-sides, as about Aberlady and Queensferry, &c., *Dr. Parsons.* *Fl.* Aug. ♃.

One to one foot and a half, or more, in height, striated, branched.

Panicles of *flowers* erect, leafy. Floral *leaves* undivided. *Florets* dingy yellow, those of the ray very short. Very aromatic and bitter; it has been much employed in medicine, but should be used with caution.

4. A. *vulgaris* (*Mugwort*), leaves pinnatifid their segments cut downy beneath, flowers somewhat racemed ovate, receptacle naked. *Lightf. p.* 468. *E. B. t.* 978.

Hab. Under hedges and in waste places, common. *Fl.* Aug. ♃.

Stem 3—4 feet high, furrowed. *Segments* of the *leaves* acute, and sharply cut. *Involucres* downy. *Florets* few, purplish. It seems to possess, though in a slight degree, the properties of the last species.

23. GNAPHALIUM.

* *Flowers diœcious.*

1. Gn. *dioicum* (*Mountain Cudweed*), shoots procumbent, stems simple, corymbs crowded, radical leaves spathulate, flowers diœcious, inner scales of the involucre elongated obtuse coloured. *Lightf. p.* 470. *t.* 20. *E. B. t.* 267.

Hab. Mountainous and alpine heathy ground, abundant. Hills about Arthur's Seat, *Lightf.* Cathkin and Balvie, Glasg., *Hopk. Fl.* June, July. ♃.

Stems 3—4 inches high. *Leaves* greenish above, white and hoary beneath. Inner scales of the *involucre* often rose coloured, especially in the fertile flowers.

** *Flowers perfect.*

2. Gn. *sylvaticum* (*Highland Cudweed*), stem simple nearly erect downy, flowers axillary forming a distant leafy spike, leaves linear lanceolate downy.

α. leaves woolly on both sides. *G. sylv., Lightf. p.* 471. *E. B. t.* 913.

β. leaves nearly glabrous above, spike longer more interrupted. *G. rectum*, *E. B. t.* 124.

Hab. Dry pastures in the Highlands, frequent; as also in woods and thickets, *Lightf.* β. Possil marsh, Glasg., in dry spots, *Hopk.* and *D. Don.* Augus-shire, not rare, *G. Don. Fl.* Aug. ♃.

I can perceive no specific difference between the 2 vars. here mentioned. They are both nearly erect, a span or more high, leafy. In the axils of the long upper leaves are placed 2—3 ovate sessile *flowers*, forming together a more or less interrupted spike. *Scales* of the *involucre* oblong, shining with a broad, brown border.

2. Gn. *supinum* (*dwarf Cudweed*), stem decumbent branching only from the base, flowering stems erect, flowers solitary or racemed, leaves linear downy on both sides. *Lightf. p.* 470 (*G. alpinum*). *E. B. t.* 1193.

Hab. Near the summits of the Highland mountains, plentiful; as upon the top of Ben Lomond. *Fl.* July, Aug. ♃.

Whole plant rarely exceeding 2—3 inches in height, clothed all over

the stems and leaves with a white cottony pubescence. *Flowers* large in proportion to the size of the plant, solitary, or 2—3 in a leafy raceme. *Scales* of the *involucre* oblong with a brown shining membranous edge.—May it not be an alpine var. of the last?

3. G. *uliginosum* (*Marsh Cudweed*), stem very much branched diffuse woolly, leaves linear lanceolate downy, flowers in terminal crowded clusters which are shorter than the leaves. *Lightf. p.* 473. *E. B. t.* 1194.

Hab. Sandy and wet places, especially where inundated in winter, frequent. *Fl.* Aug. Sept. ⊙.

Stem a span high, very much branched. *Flowers* 2—3 together in the closely placed upper leaves, small, sessile, forming oblong clusters at the extremity of the branches. *Scales* of the *involucre* yellowish brown, shining, glabrous.

4. G. *gallicum* (*narrow-leaved Cudweed*), stem erect dichotomous, leaves linear acuminate downy, flowers crowded axillary and terminal, clusters much shorter than the leaves. *E. B. t.* 2369.

Hab. Dry banks near Forfar; also near Newburgh, Fifeshire, *D. Don. Fl.* July, Aug. ⊙.

Stems about a span high, slender, leafy. *Flowers* small, oblong, in rather distant leafy clusters.

5. G. *minimum* (*least Cudweed*), stem erect branched, branches spreading, leaves lanceolate acute cottony, flowers conical clustered lateral and terminal, clusters longer than the leaves. *Lightf. p.* 502 (*Filago montana*). *E. B. t.* 1157.

Hab. Dry and gravelly places, common. Sandy hills, Tollcross, Glasg., plentiful, *Hopk.* King's Park, Edinb., and race-ground, Musselburgh, *Mr. Greville. Fl.* July, Aug. ⊙.

Stems 4—6 inches high, slender, branched above in a dichotomous manner. *Involucres* downy, broad at the base. *Florets* yellowish.

6. G. *germanicum* (*common Cudweed*), stem erect proliferous at the summit, leaves lanceolate downy acute, flowers capitate in the axils of the branches and terminal. *Lightf. p.* 501 (*Filago germ.*). *E. B. t.* 1946.

Hab. Sandy places and dry pastures, common, *D. Don.* King's Park, Edinb., *Mr. Greville.* Occasionally about Glasg.; as gravel pits at Bothwell, *Hopk. Fl.* June, July. ⊙.

Stem 6—8 inches high, erect, with numerous leaves, terminated by a globular head of small ovate *flowers*, from beneath which spring 2—3 or more horizontal branches, in a proliferous manner, each terminated by a similar head of flowers. This curious mode of ramification occasioned the term of *Herba impia* to be applied by the old botanists to this plant, as if the offspring were undutifully exalting itself above the parent. *Scales* of the involucre yellowish, shining, very acute, submucronate.

24. CONYZA.

1. C. *squarrosa* (*Plowman's Spikenard*), leaves pubescent ova-

to-lanceolate serrated the upper ones entire, stem herbaceous corymbose, scales of the involucre recurved leafy. *Lightf.* *p.* 473. *E. B. t.* 1195.

Hab. Dry gravelly soils, but rare. Near Blair, in Athol? *Dr. Parsons* v. *Lightf.* *Fl.* Sept. Oct. ♂.

Stem 2—3 feet high. *Panicle* leafy, with the leaves entire. Lower *leaves* petiolate. *Flowers* yellow. *Florets* of the ray very small, ligulate.

** *Radiati.*

25. ERIGERON.

1. E. *acre* (*blue Flea-bane*), peduncles alternate (scarcely racemose) single flowered, pappus as long as the florets of the ray, leaves lanceolate obtuse. *Lightf. p.* 474. *E. B. t.* 1158.

Hab. Dry mountainous pastures, frequent. *Fl.* Aug. ♃.

One foot to two feet high; whole plant scabrous, hispid, erect, panicled above, and leafy; *flowers* pedunculate from the axils of their *leaves*, and terminal. *Leaves* below tapering into a footstalk. *Scales* of the *involucre* linear-lanceolate, hispid. *Florets* of the disk yellow: of the ray ligulate, purplish. *Pappus* very long and awny.

2. E. *alpinum* (*alpine Flea-bane*), stems with usually only one flower, pappus much shorter than the florets of the ray, leaves lanceolate. *E. B. t.* 464, and *t.* 2416 (*E. uniflorum*).

Hab. Rocks on Ben Lawers, *Mr. Dickson.* Banks of the Almond, above the bridge, *G. Don.* *Fl.* July. ♃.

Hairy or hispid like the last; but with much longer *leaves* in proportion; 3—5 inches high, simple, with rarely more than one *flower* at the summit, which is yellow in the centre usually, and purple in the ray. Smith gives to the *E. uniflorum* the character of "florets of the ray erect;" so they are frequently in *E. alpinum;* and as I can see no other mark either in Smith's figure or in the specimens that I have received from the dicoverer Mr. G. Don, I feel little hesitation in uniting the two.

26. TUSSILAGO.

* *Flowers rayed. Scape single-flowered.*

1. T. *Farfara* (*Colt's-foot*), scape single-flowered imbricated with scales, leaves cordate angular toothed downy beneath. *Lightf. p.* 475. *E. B. t.* 429.

Hab. Moist and clayey soils, frequent, and very injurious to ploughed lands. *Fl.* March, April. ♃.

Root thick, excessively creeping. *Leaves* radical, appearing after the bright yellow flowers, white and downy beneath. *Scapes* very downy. This down of the stems and leaves makes good tinder. The leaves themselves have been used medicinally as an infusion, or smoked like tobacco to relieve pulmonary disorders.

** *Flowers all tubular. Scapes many-flowered.*

2. T. *Petasites* (*common Butter-bur*), thyrsus ovato-oblong, leaves cordate unequally toothed with the lobes approximate

downy beneath. *Lightf. p.* 477, and 476 (*T. hybrida*). *E. B. t.* 431, and 430 (*T. hybrida*).

Hab. River-sides, common. *Fl.* April, May. ♃.

Root much creeping. *Leaves*, which come after the flowers, excessively large, all radical on long footstalks. *Scape* a span high, thick and scaly, with lanceolate spreading bracteas. *Flowers* purplish. *Some* plants have all the *florets* with perfect *germens*, in which case the stigma is deeply cleft and linear, and the anthers are imperfect and not united; *others* have imperfect germens, when the *stigma* is very much incrassated and ovate, tuberculated, and very slightly notched, whilst at the same time the anthers are perfect, united or syngenesious, purple, with white *pollen*. The *former*, with the perfect germens, producing *no seed*, have almost universally gone by the name of *T. hybrida*; and to the latter the name of *T. Petasites* has usually been confined. As these plants frequently grow separate, the fruit is rare; but nature has made ample amends, and by the long creeping roots this species is multiplied, and proves very destructive to pasture lands.—The early flowering of this plant induces the Swedish farmers to plant it near the bee-hives. Thus we see in our gardens the bees collected on its affinities, *Tuss. alba* and *fragrans*, at a season when scarcely any other flowers are expanded.

27. SENECIO.

* *Florets all tubular.*

1. S. *vulgaris* (*common Groundsel*), leaves semiamplexicaul pinnatifid toothed, flowers in clustered corymbs destitute of a ray. *Lightf. p.* 478. *E. B. t.* 747.

Hab. Waste grounds, fields, and hedges, abundant. *Fl.* the summer through. ☉.

A span to a foot high. *Flowers* small, yellow. Used as cataplasms by the Highlanders, *Lightf.* Birds are very fond of the buds and young leaves.

** *Flowers rayed, with the ray rolled back.*

2. S. *viscosus* (*stinking Groundsel*), ray revolute, leaves pinnatifid and viscid, scales of the involucre lax hairy. *Lightf. p.* 478. *E. B. t.* 32.

Hab. Waste places, hedge banks, &c. At Leven, on the coast of Fife, near the salt works; at Dysart, by the Pier, and at Charlestown, Lord Elgin's Lime-works, *Lightf.* King's Park and Figget Whins, *Maugh.* Rawhead, by Glasg., *Ure. Fl.* July, Aug. ☉.

Stem 1—2 feet high, much branched and diffuse, remarkable for its viscid hairs and fetid smell.

3. S. *lividus* (*green-scaled Groundsel*), "ray revolute, leaves amplexicaul lanceolate pinnatifid and toothed, ovate scales of the involucre very short acute not discoloured," *Sm. E. B. t.* 2515.

Hab. Hill of Ten-haven, Angus-shire, abundant, *G. Don. Fl.* Sept. ☉.

Leaves embracing the stem with their broad-eared base. "Habit of the following. *Flowers* deep yellow, small," *Sm.*

4. S. *sylvaticus* (*Mountain Groundsel*), ray revolute, leaves sessile pinnatifid lobed and toothed, scales of the involucre very short glabrous, stem erect straight corymbose. *Lightf.* *p.* 480. *E. B. t.* 748.

Hab. Dry upland soils, banks and mounds of earth, &c., *Lightf.* About Tollcross, Glasg., *Hopk.* *Fl.* July. ⊙.

One foot high. *Leaves* finely divided. *Plant* with a disagreeable smell, but not so powerful as in *S. viscosus.*

*** *Flowers rayed, with the ray patent. Leaves pinnatifid.*

5. S. *Jacobæa* (*common Ragwort*), ray spreading, leaves lyrate bipinnatifid divaricated toothed glabrous, stem erect, pericarps hairy. *Lightf. p.* 480. *E. B. t.* 1130.

Hab. Way-sides and neglected upland pastures, too abundant. *Fl.* July, Aug. ♃.

Stem 2—3 feet high, striated, branched. *Flowers* large, golden yellow, in corymbs. *Pericarps* of the *circumference* hairy, those of the *disk* glabrous.

6. S. *aquaticus* (*Marsh Ragwort*), ray spreading, leaves lyrate serrated glabrous, the lowermost obovate and undivided, involucre hemisphærical, pericarps glabrous. *Lightf. p.* 485 (*S. Jacobæa* γ.). *E. B. t.* 1131.

Hab. Wet places, and by the sides of lakes. *Fl.* July, Aug. ♃.

Flowers larger than the last.

**** *Flowers rayed. Leaves undivided.*

7. S. *saracenicus* (*broad-leaved Groundsel*), ray spreading, leaves lanceolate sharply serrated nearly glabrous, corymbs of rather few flowers. *E. B. t.* 2211.

Hab. Moist meadows and pastures, rare. In a small island on the Clyde a little below Bothwell-bridge, *Dr. Brown.* Border of a field near Mugdoch Castle, Glasg., *Hopk.* Bank of Eningtur, a stream flowing into the Don, *Anderson.* Between Castle Douglas and near New Galloway, *Maugh.* *Fl.* July, Aug. ♃.

Three to five feet high. *Ray* of the *flower* with very broad ligulate florets.

28. ASTER.

1. A. *Tripolium* (*Sea Star-wort*), stem glabrous corymbose, leaves linear-lanceolate fleshy obscurely 3-nerved, scales of the involucre lanceolate membranous obtuse imbricated. *Lightf.* *p.* 482. *E. B. t.* 87.

Hab. Salt marshes on the sea-coasts, plentiful. *Fl.* Aug., Sept. ♃.

One foot to two feet high. *Flowers* with the disk yellow; the ray blueish purple, but this latter is often wanting.

29. SOLIDAGO.

1. S. *Virgaurea* (*common Golden-rod*), cauline leaves lanceo-

late the lower ones elliptical, racemes panicled erect crowded. *Lightf. p.* 482. *E. B. t.* 301.

Hab. Mountainous pastures and woods, plentiful.

Six inches to 2—3 feet high. Lower *leaves* petiolate, broad; upper ones sessile, recurved, all more or less downy. A var. is found in elevated situations with broader radical leaves and fewer flowers upon a very short stem. This has been made a species by some authors. Has been used as a vulnerary and diuretic.

30. INULA.

1. I. *Helenium* (*Elecampane*), leaves amplexicaul somewhat toothed ovate rugged downy beneath, scales of the involucre downy. *Lightf. p.* 484. *E. B. t.* 1546.

Hab. Lowlands, near houses and gardens, *Dr. Parsons;* who did not believe it to be really a native. Ruins of Mugdoch Castle, *Hopk.* Castle of Inverugie; also at St. Fergus, Aberdeenshire, *Mr. Murray.* Near Aros, in Mull, *Mr. Turner* and *Hook. Fl.* July, Aug. ♃.

Three to five feet high, branching upwards. *Flowers* large, terminal, solitary, deep yellow. *Scales* of the *involucre* broad and leafy, spreading.

2. I. *dysenterica* (*common Flea-bane*), leaves oblongo-cordate amplexicaul rugged downy, stem woolly panicled, scales of the involucre setaceous. *E. B. t.* 1115.

Hab. Moist and watery places, rare. Near the Mull-head of Galloway, *Maugh. Fl.* Aug. ♃.

One foot high. *Flowers* rather large, yellow, with longish rays.

3. I. *crithmoides* (*Samphire-leaved Flea-bane*), leaves linear fleshy generally 3-pointed. *Lightf. p.* 1107. *E. B. t.* 68.

Hab. Sea-shore, rare. Ardbigland, in the county of Galloway, *Dr. Burgess.* Near the Mull-head of Galloway, with *I. dysenterica, Maugh. Fl.* Aug. ♃.

One foot high, a little branched at the summit, each branch bearing a solitary yellow *flower.*

31. DORONICUM.

1. D. *Pardalianches* (*great Leopard's-bane*), leaves cordate repando-dentate radical ones petiolate cauline ones amplexicaul. *Lightf. p.* 485. *E. B. t.* 630.

Hab. Several places in the Lowlands, as about Hoddam Castle, in Annandale, &c., but always near houses, *Lightf.* Fields and hedges about Hamilton, *Hopk.* Woods near Culross, Den of Dupplin and Rosslyn, *Maugh.* Collington, *G. Don.*—Scarcely indigenous. *Fl.* June, July. ♃.

Two to three feet high, every where pubescent. *Radical leaves* very large, in simple long petioles, more or less decidedly cordate; lower cauline ones with the *petiole* winged and eared at the base; upper ones cordate or oblong. When oblong it seems to be the *D. scorpiodes* of Decand. and Willd.; nor do I see from the description how *D. plantagineum* differs specifically. *Flowers* large, bright yellow.

32. BELLIS.

1. B. *perennis* (*common Daisy*), scape naked single-flowered, leaves obovate crenate. *Lightf. p.* 487. *E. B. t.* 424.

Hab. Pastures, frequent. *Fl.* from the early spring till the end of autumn. ♃.

33. CHRYSANTHEMUM.

1. Ch. *Leucanthemum* (*great white Ox-eye*), leaves amplexicaul oblong obtuse cut pinnatifid at the base radical ones obovate petiolate, stem erect branched. *Lightf. p.* 488. *E. B. t.* 601.

Hab. Dry pastures, abundant. *Fl.* June, July. ♃.

Stem 1—2 f. high, furrowed. *Flowers* large; their disk yellow; the ray white.

2. Ch. *segetum* (*Corn Marigold*), leaves amplexicaul glaucous inciso-serrate above toothed at the base. *Lightf. p.* 489. *E. B. t.* 540.

Hab. Corn-fields, frequent. Very rare about Edinb., much too common elsewhere, *Mr. Arnott.* *Fl.* Aug. ☉.

One foot or more high. *Flowers* large, deep yellow.

34. PYRETHRUM.

1. P. *Parthenium* (*common Feverfew*), leaves petiolate flat bipinnate the segments ovate cut, peduncles branched corymbose, stem erect, involucre hemisphærical pubescent. *Lightf. p.* 490 (*Matricaria Parth.*). *E. B. t.* 1231.

Hab. Waste places near houses, and on rocks. *Fl.* July. ♃.

One foot to two feet high, branched. *Disk* of the *flowers* yellow, the ray very short, white.

2. P. *inodorum* (*scentless Feverfew*), leaves sessile bipinnatifid with the segments capillary, stem branched spreading, pappus entire. *Lightf. p.* 488 (*Chrysanth. inod.*). *E. B. t.* 676.

Hab. Fields and way-sides, common. *Fl.* Aug., Oct. ☉.

Stem about one foot high. *Flowers* large, upon long naked peduncles; disk very convex, yellow; ray large, pure white.

3. P. *maritimum* (*Seaside Feverfew*), leaves bipinnatifid the segments linear fleshy awnless, stem diffuse branched, pappus lobed. *Lightf. p.* 491 (*Matricaria marit.*). *E. B. t.* 971.

Hab. Sea-coast in sandy soil. Isle of Bute and W. side of Cantyre, between Machrianish and Barr, *Lightf.* Sea-shore about Aberdeen, *Anderson.* Appin, *Capt. Carmichael.* Side of West Tarbet Loch, and near Ballachoolish, *Mr. Murray.* Near M'Duff, Bamffshire, *Mr. Gibb.* Brig-Housebay, Galloway, *Dr. Walker.* *Fl.* July. ♃.

From a span to a foot high, spreading, thickly clothed with fleshy shining leaves. *Flowers* much smaller than those of *P. inod.*, and the ray shorter in proportion.

35. MATRICARIA.

1. M. *Chamomilla* (*wild Chamomile*), leaves glabrous bipinna-

tifid the segments capillary, involucre nearly plane its scales obtuse. *Lightf. p.* 491. *E. B. t.* 1232.

Hab. Corn-fields and waste ground. *Fl.* Aug. ☉.

Stem about a foot high, erect and branched. *Flowers* with a very conical disk, yellow; the rays white, very obtuse, truncate, and toothed. This has a bitter taste, a faint but weak smell, not unlike that of the common Chamomile (*Anthemis nobilis*).

36. ANTHEMIS.

1. A. *nobilis* (*common Chamomile*), leaves bipinnate the segments linear subulate a little downy, scales of the receptacle membranous scarcely longer than the disk. *Lightf. p.* 493. *E. B. t.* 980.

Hab. Amongst rubbish near gardens, scarcely indig., *Dr. Burgess.* *Fl.* Aug. ♃.

Stems about a foot long, procumbent, and much branched, each branch terminated by a single *flower*, whose disk is yellow, at length conical, and ray white. The whole plant intensely bitter, highly aromatic, and much used medicinally. Its principal virtues are supposed to exist in the involucre, which contains an essential oil.

2. A. *arvensis* (*Corn Chamomile*), leaves bipinnatifid their segments linear lanceolate pubescent, receptacle conical its scales lanceolate, pericarps crowned with an entire pappus. *Lightf. p.* 494. *E. B. t.* 602.

Hab. Corn-fields and way-sides in gravelly soils. Lanes about Lasswade, and on the N. side of Linlithgow, *Dr. Parsons.* Rosslyn woods, *Mr. Stewart.* *Fl.* July. ♂.

Stem upright, much branched, and, as well as the *leaves*, hoary with pubescence, each branch terminated with a large *flower*, whose disk is yellow, the ray broad and white.

3. A. *Cotula* (*stinking Chamomile*), leaves bipinnatifid glabrous their segments subulate, receptacle conical its scales setaceous, pappus 0. *Lightf. p.* 495. *E. B. t.* 1772.

Hab. Waste places, corn-fields, and by road-sides. *Fl.* July, Aug. ☉.

Stem a foot or more high, glabrous. *Flowers* solitary, terminal, their disk convex, pale yellow; ray rather large, white. The whole plant has a fetid smell, and is said to blister the hands of those who gather it. If it be examined with a microscope it will be found to be sprinkled all over with little glands, in which the acrid matter is probably lodged.

4. A. *tinctoria* (*Ox-eye Chamomile*), leaves bipinnatifid serrated downy beneath, stem erect branched subcorymbose. *E. B. t.* 1472.

Hab. Road-side N. of Forfar, *G.* and *D. Don.* *Fl.* July, Aug. ♃.

Stem a foot or more in height, cottony, as are the *scales* of the *involucre*. *Flowers* solitary, large, entirely yellow.

37. ACHILLEA.

* *Flowers white, or rarely reddish.*

1. A. *Ptarmica* (*Sneeze-wort*), leaves linear lanceolate acuminate sharply serrated. *Lightf. p.* 495. *E. B. t.* 757.

Hab. Moist meadows and pastures, frequent. *Fl.* July, Aug. ♃.

Stem 1—3 feet high, erect, terminating in a rather large *corymb*, whose disk, as well as ray, is white. When dried and pulverized has been used to excite sneezing.

2. *Millefolium* (*common Yarrow*), leaves bipinnate slightly hairy their segments linear toothed acute, stems furrowed. *Lightf. p.* 496. *E. B. t.* 758.

Hab. Pastures and way-sides, frequent. *Fl.* the summer through. ♃.

Stem erect, about a foot high, terminating in a *corymb* of *flowers* which are smaller than those of the last species, white, or sometimes tinged with rose colour. The quality of the plant is highly astringent, and the Highlanders are said to make an ointment of it which dries and heals up wounds.

** *Flowers yellow.*

3. A. *tomentosa* (*woolly Yarrow*), leaves bipinnatifid woolly the segments crowded linear acute, corymbs repeatedly compound. *E. B. t.* 2532.

Hab. Dry hilly pastures exposed to the sun, rare. On Spittle Hill, to the N. W. of Balvie, Dumbartonshire, and on the hills near Paisley: discovered by *Mr. Hugh Ross*. *Fl.* Aug. ♃.

A span or rather more in height. Readily recognised by its downy leaves, and much branched corymbs of yellow flowers.

3. POLYGAMIA FRUSTRANEA.

(*Cynarocephalæ, Juss.*)

38. CENTAUREA.

1. C. *Jacea* (*brown Knapweed*), scales of the involucre scariose torn the lower ones pinnatifid, leaves linear lanceolate the lower ones broader and toothed. *E. B. t.* 1678.

Hab. Discovered in a young plantation in Newbigging Muir, near Belmont castle, 1811, by *Mr. Young*. Seen near Newtyle, Angus-shire, by *D. Don:* but I doubt whether it may not be the same station as the first. Invercarrity by Kinnordy, Kerriemuir, *C. Lyell, Esq.* *Fl.* Aug., Sept. ♃.

Lower leaves obovato-lanceolate, petiolate, toothed; *upper* ones entire, sessile. *Scales* of the *involucre* pale brown, shining; the outer ones deeply pinnatifid; the inner or uppermost ones torn, in which respect it differs greatly from *C. nigra*. *Florets* not very numerous, spreading, purple.

2. C. *nigra* (*black Knapweed*), scales of the involucre ovate ciliated with capillary teeth, lower leaves angulato-lyrate, upper ones ovate. *Lightf. p.* 498. *E. B. t.* 278.

Hab. Meadows and pastures, frequent, sometimes found with white flowers. *Fl.* July, Aug. ♃.

Stem 2—3 feet high. *Leaves* scabrous. *Scales* of the *involucre* almost black, the teeth brown. *Florets* purple, numerous.

3. C. *Cyanus* (*Corn Blue-bottle*), scales of the involucre serrated, leaves linear entire the lowermost toothed. *Lightf. p.* 498. *E. B. t.* 277.

Hab. Corn-fields, frequent. *Fl.* July. ☉.

Two to three feet high, covered with a loose cottony down, especially on the stems, and on the undersides of the leaves. *Florets* of the disk small, purple; those of the ray few, large, bright blue, spreading. *Scales* of the *involucre* greenish, the margin brown.

4. C. *Scabiosa* (*greater Knapweed*), scales of the involucre ciliated ovate pubescent, leaves pinnatifid roughish the segments lanceolate acute. *Lightf. p.* 500. *E. B. t.* 56.

Hab. Barren pastures and corn-fields, but not very common. Amongst corn in the Carse of Gowrie, *Lightf.* Foot of a wall near the quarry by Port Dundas, *Dr. Brown.* Banks of the Calder, near the bridge, *Hopk.* Near Aberlady, *Mr. Arnott.* With white flowers; near Dundee, *D. Don.* Road-side between Guillon and Dirleton, E. Lothian, and corn-fields to the W. of Largo, Fifeshire, *Maugh.* *Fl.* July, Aug. ♃.

Three feet high, erect, much branched. *Involucres* globose, very large, their scales cottony, almost black, the ciliæ whitish.—A var. of this is found by *Mr. D. Don* in Scotland, with the leaves less deeply divided, and the radical ones very large, which he considers to be, and probably with justice, the *C. coriacea* of *Willd.*

XX. GYNANDRIA[a].

1. MONANDRIA.

* *Anther adnate, nearly terminal, persistent. Pollen mass, composed of angular granules elastically cohering, fixed by its base. Br.*

1. Orchis. *Cor.* ringent. *Lip* spurred on the under side at the base. *Glands* of the stalks of the *pollen mass* (1—2) contained in one common little pouch. *Br.*

2. Gymnadenia. *Cor.* ringent. *Lip* spurred at the base beneath. *Glands* of the stalks of the *pollen mass* naked, approximate. *Br.*

3. Habenaria. *Cor.* ringent. *Lip* spurred on the under side at the base beneath. *Glands* of the stalks of the *pollen mass* naked, distinct, with the cells of the footstalks adnate or separated. *Br.* (This character seems too near that of the last genus.)

[a] I follow, in this class, entirely the new arrangements of Orchideous plants, published by *Mr. Brown* in the second ed. of *Hortus Kewensis.*

** *Anther parallel with the stigma. Pollen mass farinaceous, or composed of angular granules, fixed to the stigma by its extremity. Br.*

4. GOODYERA. *Cor.* ringent, with the 2 exterior or lateral segments of the perianth placed beneath the *lip*, which is gibbous at the base, and undivided at the extremity. *Column* free. *Pollen* angular. *Br.*
5. LISTERA. *Cor.* irregular. *Lip* 2-lobed. *Column* wingless. *Anther* fixed by its base. *Pollen* farinaceous. *Br.*

*** *Anther terminal, inserted, persistent. Mass of pollen, either pulverulent or composed of angular granules, fixed by its base or below the extremity. Br.*

6. EPIPACTIS. *Lip* ventricose below; the extremity either undivided or 3-lobed, the middle lobe the largest, connected, as it were, by a joint. *Pollen* farinaceous. *Br.*

**** *Anther terminal, moveable, deciduous. Mass of pollen at length becoming waxy. Br.*

7. MALAXIS. *Lip* plane, undivided, sessile, (often exterior,) 5 segments of the perianth narrower, spreading or deflexed. *Masses* of *pollen* 4, parallel with each other, fixed to the stigma by their extremities. *Br.*
8. CORALLORRHIZA. *Lip* produced behind, adnate with the spur or free. *Column* free. *Masses* of *pollen* 4, oblique ɔt parallel). *Br.*

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1. MONANDRIA.

1. ORCHIS.

* *Tubers two, undivided.*

1. O. *Morio* (*Meadow Orchis*), lip 3-lobed, the lobes crenate obtuse middle one emarginate, segments of the perianth ascending obtuse, spur conical ascending shorter than the germen. *Lightf. p.* 514. *E. B. t.* 2059. *Hook. in Curt. Fl. Lond. ed.* 2, *with a fig.*

HAB. Pastures and moist woods, frequent [a]. *Fl.* June. ♃.

Stem from a span to 1 foot high. *Flowers* few, in an ovate, lax spike. *Bractea* about as long as the germen. The 5 *segments* of the *perianth* close together and form the helmet, purplish green. *Lip* purple, whitish in the middle, with purple spots.

2. O. *mascula* (*early spotted Orchis*), lip 3-lobed crenulate obtuse, the middle lobe cleft, segments of the perianth cleft the exterior one reflexed, spur linear ascending compressed at the extremity rather longer than the germen. *Lightf. p.* 515. *E. B. t.* 631. *Hook. in Curt. Fl. Lond. ed.* 2, *with a fig.*

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[a] Not in *Flora Glottiana.*

HAB. Woods and pastures, frequent; varying sometimes with white flowers. *Fl.* June. ♃.

Stem 1 foot high. *Leaves* generally marked with dark purple spots. *Flowers* disposed in a lax oblong spike, purple, the centre of the lip whitish at the base and spotted.

O. *pyramidalis* (*pyramidal Orchis*), lip 3-cleft the lobes equal entire with 2 longitudinal appendages on the upper side near the base, segments of the perianth lanceolate the 2 outer ones spreading, spur filiform longer than the germen. *Lightf. p.* 514. *E. B. t.* 110. *Hook. in Curt. Fl. Lond. ed.* 2, *with a fig.*

HAB. Dry pastures, rare, as near Thiloran, in the isle of Colonsay, *Lightf. Fl.* July. ♃.

Stem one foot high, slender. *Flowers* of a vivid purplish rose colour, spirally arranged in a dense pyramidal spike, remarkable for the two processes at the base of the lip, and the great length of the spur.

** *Tubers* 2, *palmate.*

O. *latifolia* (*Marsh Orchis*), lip slightly 3-lobed the sides reflexed, 3 inner segments of the perianth connivent, the spur cylindrical shorter than the germen, bracteas longer than the flowers. *Lightf. p.* 516. *E. B. t.* 2308. *Hook. in Curt. Fl. Lond. ed.* 2, *with a fig.*

HAB. Marshes and moist meadows, common. *Fl.* June. ♃.

Flowers varying from a pale rose colour to deep purple, the lip dotted and marked with darker lines. This species, which is about a foot in height, may always be known by its slightly lobed lip, its broad, nearly erect, and acuminated leaves, and especially by the bracteas, which are leafy and longer than the germens.

O. *maculata* (*spotted palmate Orchis*), lip plane 3-lobed crenate, the 3 inner segments of the perianth connivent the lateral ones patent, spur cylindrical shorter than the germen, bracteas as long as the germen. *Lightf. p.* 517. *E. B. t.* 632. *Hook. in Curt. Fl. Lond. with a fig.*

HAB. Pastures and heaths, very common. *Fl.* June, July. ♃.

1 foot high, straight, slender. *Leaves* distant, spotted with purple, keeled. *Spike* ovato-oblong, dense. *Flowers* white, or pale purple, more or less spotted, streaked, especially on the lip. Its deeply lobed lip, having the central lobe generally the longest and ovate, together with the small, subulate bracteas, are in themselves sufficient marks of distinction between this and *O. latif.*

2. GYMNADENIA.

G. *conopsea* (*fragrant Gymnadenia*). *Brown in Hort. Kew. ed.* 2. *v.* 5. *p.* 191. *Lightf. p.* 518, and *E. B. t.* 10 (*Orchis conop.*).

HAB. Pastures and heathy places, not unfrequent; sometimes varying with a white flower. *Fl.* June—Aug. ♃.

Stem nearly 1 foot high. *Tubers* palmate. *Leaves* linear-lanceolate,

keeled. *Flowers* in an oblong rather dense spike, purple. *Lip* lobed, the lobes equal, entire, not spotted. The 2 lateral or ext rior *segments* of the *perianth* spreading, their margins rolled bac the 3 superior ones broadly ovate, connivent. *Spur* filiform, twi as long as the germen. The 2 *cells* of the *anthers* are perforated the base, through which the naked, large, and oblong glands of t stalks of the pollen mass appear. *Granules* of *pollen* green, l *Bracteas* longer than the germen.—This plant exhales a most d lightful fragrance. The structure of the *anther* is very curious, a different from that of *Orchis*; and the long flexuose spur gives t plant a remarkable appearance.

3. HABENARIA.

1. H. *viridis* (*green Habenaria*), spur very short somewhat lobed, lip linear tridentate, middle tooth very small, bracte much longer than the flower, tubers palmate. *Brown Hort. Kew. ed.* 2. *v.* 5. *p.* 192. *Hook. in Curt. Fl. Lon ed.* 2. *with a fig. Lightf. p.* 519, and *E. B. t.* 94 (*Satyriu viride*).

Hab. Dry hilly pastures, not uncommon. Pastures near Caroli Park, and Cramond Island, Edinb., &c., *Maugh.* Daldowie wooc *Dr. Brown*; and at Dougaldston, Glasg., *Hopk.*

Stem 6—8 inches high; lower leaves nearly ovate, obtuse; segmer of the perianth connivent, and forming a helmet, green. *Lip* sho small, brownish.

2. H. *albida* (*small white Habenaria*), spur obtuse much short than the germen, lip 3-cleft, lobes acute middle one longe *Brown in Hort. Kew. ed.* 2. *v.* 5. *p.* 193. *Hook. in Fl. Lon with a fig. Lightf. p.* 519, and *E. B. t.* 505 (*Satyrium al dum*).

Hab. Mountainous pastures, not rare, especially in the Highlands a Western Isles. Campsie Hills, &c., *Mr. Murray.* Appin, *Ca Carmichael.* Near Inverness, *Anderson*; also many other plac *Fl.* July, Aug. ♃.

About a span high. *Leaves* oblong, striated; lower ones obtuse. *Flo ers* white, small, fragrant. *Segments* of the *perianth* slightly sprea ing. *Lip* a little deflexed, short.

3. H. *bifolia* (*Butterfly Habenaria*), spur filiform twice as lo as the germen, lip linear entire, radical leaves binous oblong obovate, attenuated at the base. *Brown in Hort. Kew. ed. v.* 5. *p.* 193. *Hook. in Curt. Fl. Lond. ed.* 2. *with a f Lightf. p.* 412, and *E. B. t.* 22 (*Orchis bifolia*).

Hab. Moist meadows and marshy places in the mountains, freque *Fl.* May, June. ♃.

Tubers undivided, tapering. *Stem* 1—1½ foot high, with two large dical leaves and 3—4 very small cauline ones. *Spike* long, of n merous large, yellowish-white, very fragrant *flowers*. The bases the cells of the anther very distant from each other.

4. GOODYERA.

G. *repens* (*creeping Goodyera*), "radical leaves ovate, lip and petals lanceolate." *Brown in Hort Kew. ed.*2. *v.* 5. *p.* 198. *Lightf. p.* 520. *t.* 22, and *E. B. t.* 289 (*Satyrium repens*).

HAB. Old mossy woods, but rare. In a wood called Cadue at Dundonald by Little Loch Brom, *Lightf.* Wood near Moy Hall, on the road to Inverness, *Dr. Hope.* Near Dupplin, *Mr. Shillinglaw.* Woods at Brodie House, *Hook.* Wood of Culloden near Inverness, sparingly; also Gordon Castle woods, and woods of Scone, *Mr. Murray.* *Fl.* Aug. ♃.

Root creeping. *Stem* a span in height. *Leaves* mostly from near the root, ovate, petiolated veined, spreading; a few on the stem small, lanceolate, erect. *Bracteas* longer than the greenish flowers with a reddish tinge, which are secund or a little spiral.

5. LISTERA.

L. *ovata* (*common Twayblade*), stem with only a pair of ovato-elliptical opposite leaves, column of fructification having an appendage in which the anther is placed. *Brown in Hort. Kew. ed.* 2. *v.* 5. *p.* 201. *Lightf. p.* 523, and *E. B. t.* 1548 (*Ophrys ovata*).

HAB. Woods and moist pastures, not uncommon. *Fl.* June. ♃.

Stem one foot high. *Leaves* striated. *Flowers* distant upon the spike, yellowish green. The three outer *segments* of the *perianth* ovate, spreading; two inner ones linear, oblong. *Lip* long, bifid, without any teeth at the base. *Bracteas* very short.

L. *cordata* (*heart-leaved Twayblade*), stem with only 2 cordate opposite leaves, column without any appendage behind, lip with 2 teeth at the base. *Brown in Hort. Kew. ed.* 2. *v.* 5. *p.* 201. *Lightf. p.* 524, and *E. B. t.* 358 (*Ophrys cordata*).

HAB. Sides of mountains, not uncommon, particularly in the Western Highlands. Firwood between Woodhouselie and the Bush: Peat-bog near Revelrig Toll, and on the Pentland Hills, Edinb., *Mr. Somerville* and *E. J. Maughan.* Plentiful on the N. E. side of Barrone Hill, Bute: and woods of Lintrose, Perthshire, *Mr. Murray.* Ben Lomond, *Mr. Young.* *Fl.* July, Aug. ♃.

Root a few long, rather fleshy, fibres. *Stem* 3—4 inches high. *Flowers* few, very small, distant upon the spike, greenish brown. *Bracteas* extremely minute. *Segments* of the perianth somewhat spreading, ovate, 2 inner ones the narrowest. *Lip* rather long, furnished with 2 teeth at the base, and cleft halfway down into 2 slightly spreading, acuminated segments.

L. *Nidus Avis* (*Bird's-nest Listera*), stem with sheathing scales leafless. *Hook. in Fl. Lond. with a figure.* *Lightf.* p. 522, and *E. B. t.* 48 (*Ophrys Nidus Avis*). *Epipactis, Swartz. Neottia, Richard.*

HAB. Shady spots in thick old woods, but not common: as in Auchindenny woods, Edinb., *Dr. Parsons.* Woods at Fionlarig, near

Loch Tay, *Dr. Stuart.* Woods at Dalhousie, Edinb., and hills Craigie barns, Dunkeld, *Maugh.* Woods of Methven Castle, Perthshire, *Mr. Murray.* Appin, *Capt. Carmichael.* Coalston wood *Mr. Walker.* Falls of Moness, *Mr. Borrer* and *Hook.*; and Kipperrait Glen, *Mr. Young.* *Fl.* May, June. ♃.

Roots of numerous, short, thick, very densely crowded fibres. *Stem* 1 foot in height. *Flowers* in a lax spike and of the same dingy brown colour as the whole plant. *Segments* of the *perianth* connivent, ovate; *lip* oblong, bifid at the extremity, the lobes spreading. *Column* of *fructification* without any appendage on the back.

6. EPIPACTIS.

1. E. *latifolia* (*broad-leaved Helleborine*), leaves ovate amplexicaul, lower bracteas longer than the flowers, flowers drooping, lip entire acuminated shorter than the petals. *Brown in Hort. Kew. ed.* 2. *v.* 5. *p.* 202. *Hook. in Fl. Lond. with a figure. Lightf. p.* 526, and *E. B. t.* 269 (*Serapias latifolia*).

Hab. Woods and pastures, not unfrequent. Dalhousie and Tynninghame woods, *Maugh.* Woods at Bothwell, Hamilton, and Woodhall, and pastures, Dalbeth, *Hopk.* Kelvin, *Mr. Young.* *Fl.* July, Aug. ♃.

Root creeping, throwing out long fibres, as does that of the 3 following species. *Stem* 1—2 feet high. *Lower leaves* broadly ovate, *upper* ones gradually narrowing. *Flowers* in long lax spikes, greenish purple, varying extremely in intensity of colour. *Lip* as well as the segments of the perianth connivent, never spreading.

2. E. *palustris* (*Marsh Helleborine*), leaves lanceolate amplexicaul, bracteas shorter than the flower, flowers slightly drooping, lip crenate obtuse rather longer than the perianth. *Brown in Hort. Kew. ed.* 2. *v.* 5. *p.* 202. *Hook. in Fl. Lond. with a figure. Lightf. p.* 527, and *E. B. t.* 270 (*Serapias palustris*).

Hab. Rough boggy pastures and marshes, but far from common. Bo near Duntulm, *Lightf.* In a field 1 mile E. of Anstruther, *M. Chalmers.* Marsh near Dunbar, *G. Don.* *Fl.* July. ♃.

Stem 1 foot high, purplish above. *Flowers* distant, forming an oblong spike. *Perianth* and *lip* spreading, the 3 outer segments of the former deep greenish purple, 2 inner ones and the lip pure white, with rose coloured streaks at the base. *Germen* much longer than in the last species, and the plants extremely distinct, though by some botanists they have been confounded together.

3. E. *pallens* (*white Helleborine*), leaves ovato-lanceolate sessile, bracteas longer than the flower, lip obtuse shorter than the perianth. *Brown in Hort. Kew. ed.* 2. *v.* 5. *p.* 202. *Hook. in Fl. Lond. with a figure. Lightf. p.* 528, and *E. B. t.* 2 (*Serapias grandiflora*).

Hab. Woods, rare. At Loch Ransa in the Isle of Arran, *Lightf.* Appin, *Capt. Carmichael.* Woods of Methven Castle, rare, *D. Do* *Fl.* June. ♃.

Stem a foot or more high. *Bracteas* large, scarcely differing from t

leaves. *Segments* of the perianth large, acute, white, connivent, including the *lip*, which is also white externally, but yellow within. *Column of fructification* in this and the following species very long, whereas in the 2 preceding ones it is remarkably short.

4. E. *ensifolia* (*narrow-leaved Helleborine*), leaves lanceolate much acuminated subdistichous, bracteas very minute subulate, flowers erect, lip obtuse much shorter than the perianth. *Brown in Hort. Kew. ed.* 2. *v.* 5. *p.* 202. *Hook. in Fl. Lond. with a figure. E. B. t.* 494 (*Serapias ensifolia*).

Hab. Woods of Methven, Perthshire, *Mr. T. Bishop. Fl.* June. ♃.

Stems a foot and more in height. *Flowers* large, white. *Segments* of the *perianth* acuminated; *lip* white, yellow at the extremity in the inside.

7. MALAXIS.

1. M. *paludosa* (*Marsh Malaxis*), leaves about 4 at the base of the stem scabrous at the extremity, scape pentagonal, lip concave acute. *Brown in Hort. Kew. ed.* 2. *v.* 5. *p.* 208. *E. B. t.* 72. *Lightf. p.* 525 (*Ophrys paludosa*).

Hab. Marshes near St. Andrews, *mentioned in Lightf.* Rills near the foot of Dun Glow, Kinross-shire, *Mr. D. Stewart.* A little to the E. of Ben Voirlich, and a little above the house of Ardvorlich, *Mr. Arnott.* Mull of Galloway, *Mr. Winch. Fl.* Aug., Sept. ♃.

Stem 3—5 inches high. *Leaves* arising from a round bulb. *Spike* long, slender, of several small greenish flowers. *Lip* much resembling the other segments of the perianth.

8. CORALLORRHIZA.

1. C. *innata* (*spurless Coral-root*), spur abbreviated adnate. *Br. in Hort. Kew. ed.* 2. *v.* 5. *p.* 209. *Lightf. p.* 513. *t.* 23, and *E. B. t.* 1547 (*Ophrys corallorrhiza*).

Hab. Marshy woods, rare. Moist hanging wood on the S. side near the head of little Loch Broom, Ross-shire, *Lightf.* W. side of a peat bog near Revelrig Toll, Edinb., among Salices, *Mr. E. J. Maughan.* Woods of Methven Castle, Perthshire (since destroyed), *Mr. T. Bishop. Fl.* July. ♃.

Root remarkable for its thick, fleshy, much branched and divaricating fibres. *Stem* from 6—12 inches high, greenish, with 2—3 sheathing, lanceolate acute scales rather than leaves. *Flowers* 6—8 in a lax, short spike, pale yellowish green. *Bracteas* very minute. *Segments of the perianth* lanceolate, spreading, acute; *lip* ovate, entire.

XXI. MONŒCIA.

1. MONANDRIA.

1. Zannichellia. *Barren Fl. Perianth* none.

Fertile Fl. Perianth single, of 1 leaf. *Germens* 4 or more. *Style* 1. *Stigma* peltate. *Capsules* sessile.

2. Callitriche. *Barren Fl. Perianth* single, of 2 leaves. *Anther* of 1 cell.

Fertile Fl. Germen 4-lobed. *Styles* 2. *Pericarp* of 4 deep, compressed lobes, indehiscent, 4-celled; *cells* 1-seeded.

3. Zostera. *Stamens* and *pistils* inserted in 2 rows upon one side of a spadix. *Spatha* foliaceous.

Barren Fl. Anthers ovate, sessile, alternating with the germens.

Fertile Fl. Germen ovate. *Style* bifid. *Drupe* with 1 seed.

(*Chara*, Cryptogamia.)

2. TRIANDRIA.

5. Sparganium. *Flowers* in sphærical dense heads.

Barren Fl. Perianth single, of 3 leaves.

Fertile Fl. Perianth single, of 3 leaves. *Drupe* dry, with 1 seed.

6. Carex. *Flowers* collected into an imbricated catkin.

Barren Fl. Calyx of 1 scale, glumaceous. *Cor.* 0.

Fertile Fl. Calyx of 1 scale, glumaceous. *Cor.* of 1 leaf, urceolate, ventricose. *Stigmas* 2—3. *Nut* triquetrous, included within the persistent *cor.*

4. Typha. *Flowers* collected into cylindrical dense spikes or catkins.

Barren Fl. Perianth 0. *Stam.* 3 together, upon a chaffy or hairy receptacle, united below into 1 filament.

Fertile Fl. Perianth 0. *Pericarp* pedicellate, surrounded at the base with hairs resembling a pappus.

3. TETRANDRIA.

7. Eriocaulon. *Flowers* collected into a compact, scaly head.

Barren Fl. in the disk. *Perianth* single, 4-cleft, the 2 inner segments united nearly to their summit. *Stam.* 4—6.

Fertile Fl. in the circumference. *Perianth* single, deeply 4-partite. *Style* 1. *Stigmas* 2—3. *Capsule* 2—3-lobed, 2—3-celled. *Cells* 1-seeded.

8. Littorella. *Barren Fl. Calyx* of 4 leaves. *Cor.* 4-fid. *Stam.* very long.

Fertile Fl. Calyx 0. *Cor.* unequally 3-cleft. *Style* very long. *Nut* 1-seeded.

10. Urtica. *Barren Fl. Perianth* single, of 4 leaves, containing the cup-shaped rudiment of a germen.

Fertile Fl. Perianth single, of 2 leaves. *Pericarp* 1-seeded, shining.

9. Alnus. *Flowers* collected into imbricated catkins.

Barren Fl. Scale of the catkin 3-lobed, with 3 flowers. *Perianth* single, 4-partite.

Fertile Fl. Scale of the catkin subtrifid, with 2 flowers. *Perianth* 0. *Styles* 2. *Fruit* compressed.

(*Myrica.* Monœc.)

4. PENTANDRIA.

11. Bryonia. *Barren Fl. Calyx* 5-dentate. *Cor.* 5-cleft. *Filaments* 3. *Anthers* 5.

Fertile Fl. Calyx 5-dentate. *Cor.* 5-cleft. *Style* trifid. *Berry* inferior, globose, many-seeded.

(*Fagus sylvat. Quercus.* Ord. Polyand.
Atriplex portulacoides. Polygam.)

(HEXANDRIA.)

(*Quercus.* Ord. Polyand.)

5. POLYANDRIA.

13. Myriophyllum. *Barren Fl. Calyx* of 4 leaves. *Petals* 4. *Stam.* 8.

Fertile Fl. Calyx of 4 leaves. *Petals* 4. *Stigmas* 4, sessile. *Nuts* 4, subglobose, 1-seeded.

15. Poterium. *Barren Fl. Cal.* of 4 leaves. *Cor.* 4-partite. *Stam.* 30—40.

Fertile Fl. Cal. of 4 leaves. *Cor.* 4-partite. *Germens* 2. *Fruit* 2-celled, invested with the *cal.*

12. Ceratophyllum. *Barren Fl. Cal.* multipartite. *Cor.* 0. *Stam.* 16—20.

Fertile Fl. Cal. multipartite. *Cor.* 0. *Stigma* nearly sessile, oblique. *Nut* 1-seeded.

18. Fagus. *Barren Fl.* in a globose catkin. *Perianth* single, of 1 leaf, campanulate, 6-cleft. *Stam.* 5—12.

Fertile Fl. 2, within a 4-lobed prickly *involucre. Perianth* single, urceolate with 4—5 minute lobes. *Germen* incorporated with the *perianth*, 3-celled, 2 of them becoming abortive. *Styles* 3. *Nuts* 1-seeded, invested with the enlarged *involucre.*

17. Castanea. *Barren Fl.* in a very long cylindrical catkin. *Perianth* single, of 1 leaf, 6-cleft. *Stam.* 5—20.

Fertile Fl. 3, within a 4-lobed, thickly muricated *involucre. Perianth* single, urceolate, 5—6-lobed, having the rudiments of 12 *stam. Germen* incorporated with the perianth, 6-celled, with the cells 2-seeded, 5 of them mostly abortive. *Styles* 6. *Nut*, 1—2-seeded, invested with the enlarged *involucre.*

16. Quercus. *Barren Fl.* in a lax catkin. *Perianth* single, somewhat 5-cleft. *Stam.* 5—10.

Fertile Fl. Involucre cup-shaped, scaly. *Perianth* single, incorporated with the germen, 6-lobed. *Germen* 3-celled, 2

of them abortive. *Style* 1. *Stigmas* 3. *Nut* (acorn) 1-celled, 1-seeded, surrounded at the base by the enlarged, cup-shaped *involucre*.

21. Corylus. *Barren Fl.* in a cylindrical catkin, its scales 3-cleft. *Perianth* 0. *Stam.* 8. *Anthers* 1-celled.

Fertile Fl. Perianth obsolete. *Germens* several, surrounded by a scaly involucre. *Stigmas* 2. *Nut* 1-seeded, surrounded at the base with the enlarged, united, coriaceous scales of the *involucre*.

20. Carpinus. *Barren Fl.* in a cylindrical catkin; its scales roundish, ciliated at the base. *Stam.* 8—20.

Fertile Fl. in a lax catkin; its scales large, foliaceous, 3-lobed, 1-flowered. *Involucre* 0. *Perianth* of 1 leaf, urceolate, 6-dentate, incorporated with the 2-celled *germen*, of which 1 cell is abortive. *Styles* 2. *Nut* ovate, striated, 1-seeded.

19. Betula. *Barren Fl.* in a cylindrical catkin, its scales 3-flowered. *Perianth* 0. *Stam.* 10—12.

Fertile Fl. Scale of the catkin imperfectly 3-lobed, 3-flowered. *Perianth* 0. *Styles* 2. *Germens* compressed, 2-celled, 1 abortive. *Nuts* compressed, with a membranaceous margin, 1-seeded.

14. Arum. *Spatha* of 1 leaf, convolute at the base. *Perianth* 0. *Spadix* with germens at the base. *Stam.* (sessile) near the middle of the spadix, which is naked above. *Berry* 1-celled, 1-seeded.

6. MONADELPHIA.

22. Pinus. *Barren Fl.* in crowded racemose catkins; its scales peltate, bearing 2 1-celled, sessile *anthers*. *Perianth* 0.

Fertile Fl. in an ovate catkin; its scales closely imbricated, 2-flowered. *Perianth* 0. *Pericarp* 1-seeded, terminated by a long winged appendage, and covered by the imbricated scales forming a *cone* (*strobilus*).

(*Typha*. Ord. Triandr.)

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1. MONANDRIA.

1. ZANNICHELLIA.

1. *Z. palustris* (*horned Pondweed*), anthers 4-celled, stigmas entire, pericarps toothed on the back. *Lightf. p.* 534. *E. B. t.* 1844.

Hab. Ditches and stagnant waters. *Fl.* Aug. ⊙.

Floating. *Stems* long, filiform, branched. *Leaves* opposite, linear, entire. *Flowers* axillary, from a membranaceous *bractea*. *Fertile fl.* upon a very short stalk, from the base of which arises a single naked *anther*, upon a long white *filament*.

2. CALLITRICHE.

2. C. *aquatica* (*Water Starwort*). *Lightf. p.* 70 (*C. verna* and *C. autumnalis*). *E. B. t.* 722.

Hab. Ditches, pools, and slow streams, abundant. *Fl.* Apr.—Oct. ⊙ ?

Stem filiform, branched, varying much in length according to the depth of the water, and almost equally so in the form of the *leaves*. Generally the superior leaves, which float on the surface, are spathulate and crowded; the lower linear, all opposite. From the axils of the upper ones appear the, mostly, monœcious *flowers*. *Perianth* single, of 2, lanceolate, concavo-carinate, incurved, white, membranous leaflets. *Sterile fl.* with only one long filament, terminated by a nearly spherical, yellow *anther*, opening vertically. *Fertile fl.* with a small *germen*, terminated by two, long, curved *styles*.

3. ZOSTERA.

3. Z. *marina* (*common Grass-wrack*), leaves entire somewhat 3-nerved, stem roundish. *Lightf. p.* 530. *E. B. t.* 467. *Hook. in Fl. Lond. with a figure.*

Hab. Marine ditches, and thrown up by the tide on the sea-shore, common. *Fl.* Aug. (*Lightf.*). (Apr. and May in England.) ♃.

Stems very various in length, as are the long linear, obtuse, more or less faintly 3-nerved leaves, which have long sheathing bases. *Spadix* linear, arising from a sheathing portion of the leaf, which thus forms the *spatha*. *Flowers* all on one side of the spadix, quite destitute of perianth, in two rows. *Pistils* and *anthers* alternate, generally two *anthers* and then 1 *pistil*; both ovate, or oblongo-ovate, the former tipped with a bipartite, long, filiform style. Both are green. *Anthers* bursting irregularly.—Used in some northern parts of Europe for bedding, and said to be excellent for packing glass-bottles and other brittle ware.

2. TRIANDRIA.

4. TYPHA.

1. T. *latifolia* (*great Cat's-tail* or *Reed-Mace*), leaves linear nearly plane, sterile and fertile catkins close together. *Lightf. p.* 538. *E. B. t.* 1455.

Hab. Borders of ponds and lakes in several places. Loch-end, near Edinb. Bog on the banks of the Clyde 2 m. from Hamilton, *Hopk. Fl.* July. ♃.

Culms 3—6 f. high. *Leaves* very long, sometimes an inch broad. *Catkins* very long, close together; *fertile* one greenish brown; *sterile* ones yellow, with 1 or 2 largish membranous *bracteas*.

2. T. *angustifolia* (*lesser Cat's-tail* or *Reed-Mace*,) leaves linear convex below, sterile and fertile catkins a little distant from each other. *E. B. t.* 1456.

Hab. Loch of Lindore, Fifeshire, abundantly, *D. Don. Fl.* July. ♃.

Smaller than the last, with much narrower *leaves* and *catkins*. Sterile flowers, according to Smith, (which in *T. latif.* have hairs on the receptacle,) mixed with chaffy scales.

5. SPARGANIUM.

1. S. *ramosum* (*branched Bur-reed*), leaves triangular at the base their sides concave, common flower-stalk branched, stigma linear. *Lightf. p.* 539 (*S. erectum*). *E. B. t.* 744.

Hab. Banks of lakes and stagnant waters, not uncommon. *Fl.* July. ♃.

Two feet and more high, with a few sword-shaped *leaves* or *bracteas* with broad membranous sheathing bases on the upper or branching part of the culm. Radical *leaves* very long, linear-ensiform, triangular at the base, their sides concave. *Sterile flowers* in spherical heads, distantly placed on the upper part of the branches of the culm; *fertile* ones below.

2. S. *simplex* (*unbranched upright Bur-reed*), leaves triangular at the base their sides plane, common flower-stalk simple, stigma linear. *Lightf. p.* 540 (*var. of S. ramosum*). *E. B. t.* 745.

Hab. Lightfoot considers this the most common of the two. Ditch near Corstorphine, *Maugh.* Bog, Robroyston, Glasg., *Hopk.* Bute, plentiful, *Mr. Murray.* Appin, *Capt. Carmichael.* Lakes near Forfar, &c. *G.* and *D. Don. Fl.* July. ♃.

Much smaller than the last. *Culm* rarely at all branched, though the lower heads of *flowers* are pedunculate. The sides of the *leaves* are plane, not concave or grooved. The *flowers* pale yellow.

3. S. *natans* (*floating Bur-reed*), leaves floating plane, common flower-stalk simple, stigma ovate very short, head of sterile flowers mostly solitary. *Lightf. p.* 541. *E. B. t.* 273.

Hab. Lakes, ditches, and stagnant waters, not unfrequent, especially in the Highlands. Loch on Dunearn hill, *Mr. P. Neill,* and peat-pits S. side of Dalmahoy hill, Edinb., *Maugh.* Frankfield and Mugdoch Lochs, &c. about Glasg., abundantly, *Hopk. Fl.* July. ♃.

Leaves very long, linear, pellucid.

6. CAREX.

* *Spike simple, solitary, the upper part formed of sterile, and the lower part of fertile flowers* (*except in* C. dioica *and* C. Davalliana, *which are diœcious*).

1. C. *dioica* (*upright-fruited diœcious Carex*), spike simple diœcious, fruit ascending ovate shortly acuminated striated rough at the margin upwards. *Lightf. p.* 541. *E. B. t.* 543.

Hab. Boggy places, especially in the Highlands, common. Pentland-hills and Revelrig-toll, plentiful, *Mr. Greville.* Not very frequent about Glasg., *Hopk. Fl.* May, June. ♃.

Root stoloniferous. *Culms* a span high, smoothish. *Stigmas* 2.

2. C. *Davalliana* (*recurved-fruited diœcious Carex*), spike simple diœcious, fruit ovate much acuminated recurvato-deflexed smoothish at the margin. *E. B. t.* 2123.

Hab. Subalpine bogs, Mearns-shire, *Prof. J. Beattie.* Bog near Crossgate-toll; and by the side of Guillon Loch, Edinb., *Maugh. Fl.* June. ♃.

Root fibrous. *Culms* a span to a foot high, rough. *Fruit* much browner than the last, shining. *Stigmas* 2.—Wahlenberg is surely wrong in making this a var. of the preceding.

3. C. *pulicaris* (*Flea Carex*), spike simple androgynous, flowers few, fruit distant oblongo-lanceolate acuminate reflexed, stigmas 2. *Lightf. p.* 543. *E. B. t.* 1051.

Hab. Bogs, frequent. *Fl.* May, June. ♃.

A span high. *Culms* smooth. *Leaves,* as in all of this division, setaceous or filiform. *Fruit* dark brown, smooth.

4. C. *pauciflora* (*few-flowered Carex*), spike simple androgynous of very few flowers, fruit distant lanceolato-subulate patenti-reflexed, stigmas 3. *Lightf. p.* 543. *t.* 6. *f.* 2. *E. B. t.* 2041.

Hab. Discovered by *Mr. Lightfoot* in bogs half way up the mountain Goatfell, in Arran, in the ascent from Brodick castle. Wet moors in the Highlands, *Dickson.* Near Glasgow, *Huds.* Middle of Ben Lomond, *Dr. Walker.* N. of Blair, *Mr. Winch.* Merlentugal, the ascent to Ben Nevis, *Mr. Borrer* and *Hook. Fl.* June. ♃.

Readily known from the last, if any other character were wanting, by the very pale yellowish colour of the *fruit,* which is also striated.

** *Culm divided upwards into several spikes, which are sessile, androgynous, with a subamplexicaul bractea at the base, and flowers with 2 stigmas.*

† *Spikelets sterile at their extremity* (*except in* C. arenaria *and* C. intermedia).

5. C. *incurva* (*curved Carex*), spikelets sterile at their extremity collected into a roundish head, fruit broadly rotundato-ovate shortly acuminated swelling on both sides nearly entire at the point, culm obtusely angular, leaves channelled. *Lightf. p.* 544. *t.* 24. *f.* 1. *E. B. t.* 927.

Hab. Discovered by the late *Dr. Hope* at the mouth of the water of Naver, and near Skelherry, in Durrsness, Shetland. Near Aberdeen, *Prof. Beattie.* Links of St. Andrew's, *Maugh.* Coast of Moray, *James Brodie, Esq.* Sands between the Brora and Helmsdale rivers, Sutherland; and Keis Bay, Caithness, *Mr. Borrer* and *Hook. Fl.* June. ♃.

Root very creeping. *Culms* 2—4 inches high, curved. *Head* large, broadly rotundo-ovate. *Cal. glumes* with a broad membranous border.

6. C. *arenaria* (*Sea-side Carex*), lower spikelets fertile upper ones sterile all crowded, fruit with a membranous margin, bracteas membranaceous the lower ones subfoliaceous, culm triangular, leaves plane. *Lightf. p.* 545. *E. B. t.* 928.

Hab. Sandy sea-shores, frequent, where it is of the greatest service in binding the loose sands. *Fl.* June. ♃.

Roots excessively long and creeping. *Culms* rough, 8 inches to 1 foot high. *Spikelets* ovate, collected into an interrupted spike.

7. C. *intermedia* (*soft brown Carex*), inferior and terminal spikelets fertile, the intermediate ones sterile, fruit acutely margined, culms triangular. *Lightf. p.* 546 (*C. distycha*). *E. B. t.* 2042.

Hab. Bogs and marshy grounds. Guillon Links and Forfar Loch, *Mr. Arnott.* Braid and Pentland hills, and King's Park, Edinb., *Mr. Greville.* *Fl.* June. ♃.

One to one foot and a half high. *Bractea* membranaceous, small.

8. C. *divisa* (*bracteated Marsh Carex*), spikelets sterile at their extremity crowded into a somewhat ovate head the lower ones simple or compound with a leafy erect bractea at their base, fruit roundish ovate convex on one side slightly concave on the other acutely angular cloven at the point. *E. B. t.* 1096.

Hab. Marsh near Montrose and sea-coast of Angus-shire, chiefly in marshy places, *G. Don.* *Fl.* May, June. ♃.

Culms about 1 foot high. Lower *bractea* long, leaf-like.

9. C. *muricata* (*muricated Carex*), spikelets sterile at their extremities subcompounded collected into a rather long more or less interrupted spike, fruit convexo-plane ovato-acuminate acutangular divergent rough at the margin upward. *Lightf. p.* 548 (*C. spicata*). *E. B. t.* 1097.

β. spike elongated with distant spikelets. *C. divulsa*, *E. B. t.* 629.

Hab. Marshes and shady places. β. in similar situations. Rock below Cathcart castle, Glasg., *D. Don.* *Fl.* June. ♃.

One foot to two feet high. *Spikelets* more or less crowded; and this is all the difference I can find between *C. muricata* and *C. divulsa*. The acute Wahlenberg unites them. *Fruit* pale coloured. *Bracteas* small, lanceolate, subsetaceous.

10. C. *vulpina* (*great Carex*), spikelets sterile at their extremities thrice compounded collected into a cylindrical crowded spike, fruit ovate acuminated convexo-plane acutangular divergent, stem very acutely triangular, leaves rather broad. *Lightf. p.* 547. *E. B. t.* 507.

Hab. Wet shady places by the sides of water. *Fl.* June. ♃.

Two feet or more high, stout. *Bracteas* small, setaceous. *Spike* large, greenish. *Fruit* pale, rough at the margin of the lengthened extremity, and bifid at the point.

11. C. *paniculata* (*great panicled Carex*), spikelets sterile at their extremity thrice compounded and collected into a panicled spike, fruit broadly ovate acuminated gibbous on both sides with a somewhat membranaceous margin towards the extremity. *E. B. t.* 1064.

β. smaller, spike very compact. *C. teretiuscula*, *E. B. t.* 1065.

Hab. Marshy places, occasionally; Bog Daldowie and at Kenmuir; Banks of the Clyde near New Kilpatrick. Revelrig-toll, *Mr. Greville*. Forfar Loch, *Mr. Arnott*. Appin, *Capt. Carmichael*. β. N. Queensferry, *Mr. T. Mackay*. Marsh at the foot of Dundas hill, Edinb., *Mr. P. Neill*. Banks of the Clyde, 2 miles beyond Hamilton, *Hopk*. Marsh of Restenat, near Forfar and Pentland hills, *G. Don*. *Fl.* June. ♃.

Two to three feet high. *Culms* triangular, striated. *Spike* very brown, shining. *Bracteas* small, subsetaceous.—Future observations may teach me otherwise; but after a careful examination of numerous specimens of *C. panic.* and *C. teret.*, I can find no other difference than what I have noticed above, and heartily concur with Wahlenberg in uniting them; sensible that science suffers instead of gaining by multiplying species on such slight grounds.

†† *Spikelets sterile at their base.*

12. C. *stellulata* (*small stellated Carex*), spikelets sterile at their base 3 or 4 distant, fruit ovate much attenuated convexo-plane acutangular divaricated rough at the margins. *Lightf.* *p.* 549 (*C. muricata*). *E. B. t.* 806.

Hab. Marshes in heathy places, frequent. *Fl.* May, June. ♃.

A span or a foot high. *Leaves* nearly as long as the culm. Distinguished by the few much beaked capsules, in small distant rounded spikelets, which spread when ripe in every direction.

13. C. *curta* (*white Carex*), spikelets sterile at their base about 5 rather distant elliptical, bracteas very minute (except the lower one), capsules broadly ovate acute convex on one side and nearly plane on the other subobtusangular with 2 teeth at the extremity. *Lightf. p.* 550 (*C. canescens*[a]). *E. B. t.* 1386.

Hab. Bogs, but not common. In Isla, 2 miles from the sound, *Lightf.* N. Queensferry; near Habbies How, Pentland hills; and Ravelrig Bog, *Maugh.*, &c. *Fl.* June. ♃.

One foot high. Distinguished by its pale elliptical *spikes*, and imbricating *capsules*.

14. C. *ovalis* (*oval-spiked Carex*), spikelets sterile at the base oval about 5 approximate, fruit as long as the cal. ovato-acuminate convex on one side concave on the other with a membranaceous margin bifid at the point. *Lightf. p.* 547 (*C. leporina*). *E. B. t.* 306.

Hab. Bogs and marshy places, not unfrequent. *Fl.* June. ♃.

Culms 1 foot high, triangular. *Spike* brownish green, shining. *Cal. glumes* concealing the fruit. *Bracteas* small, uppermost ones resembling the glumes.

15. C. *remota* (*remote Carex*), spikelets sterile at the base distant, fruit longer than the cal. oblongo-ovate acuminate convexo-plane subacutangular obtuse at the margins the point

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[a] *C. canescens* of *Linn. Fl. Succ.*, according to Wahlenberg.

bifid, bracteas very narrow reaching beyond the culm. *Lightf. p.* 549. *E. B. t.* 832.

Hab. Woods and shady moist places. *Fl.* June. ♃.

One foot or more high. *Leaves* very slender. *Spikelets* small, ovate, very distant.

*** *Sterile and fertile flowers upon distinct spikes on the same culm.*

† *Sterile spikes mostly single.*

+ *Stigmas* 3.

16. C. *pendula* (*great pendulous Carex*), sheaths elongated nearly equal to the flowerstalks, fertile spikes cylindrical very long and drooping, fruit ovate shortly acuminate bifid at the extremity closely imbricated, leaves broad. *Lightf. p.* 564. *E. B. t.* 2315.

Hab. Shady moist places, but not common. Breadalbane, *Dr. Stuart.* Rosslyn woods and Duke of Buccleugh's park at Dalkeith, *Maugh.* Woods, Bothwell; and a little to the S. of Blantyre Priory, *Hopk.* *Fl.* June, July. ♃.

Culms 3—4 feet high.—This may always be distinguished by its long, pendulous, cylindrical *spikes.*

17. C. *strigosa* (*loose pendulous Carex*), sheaths elongated equal to the flowerstalks, fertile spikes slender filiform nearly erect, fruit ovato-lanceolate nerved slightly recurved loosely imbricated, leaves rather broad. *E. B. t.* 994.

Hab. Arnistone woods, Edinb., *Maugh.* *Fl.* May, June. ♃.

One foot and a half to two feet high. *Cal. glumes* a little shorter than the fruit.

18. C. *sylvatica* (*pendulous Wood Carex*), sheaths half as long as the flowerstalks, fertile spikes filiform rather slender slightly drooping, fruit broadly ovate much acuminated cleft at the point, leaves narrow. *Lightf. p.* 562. *E. B. t.* 995.

Hab. Woods, not unfrequent. *Fl.* June. ♃.

In general habit much like the last, but the *spikes* are shorter and broader, and the *fruit* very different, being glabrous, and so acuminated as to terminate in a long beak. The *cal. glumes* also are longer in proportion. Linnæus tells us that this plant is used by the Laplanders, when carded and dressed, as a wadding to protect them from the cold.

19. C. *depauperata* (*starved Wood Carex*), sheaths much shorter than the flowerstalks, fertile spikes erect remote very few-flowered, fruit large nearly globose inflated terminating in a long beak bifid at the point. *E. B. t.* 1098.

Hab. Woods near Forfar, rare, *G. Don.* *Fl.* June. ♃.

One or one foot and a half high. *Spikes* very distant; their few *flowers,* and large inflated beaked *fruit,* decidedly marking the species.

20. C. *Mielichoferi* (*loose-spiked Rock Carex*), sheaths about half as long as the flowerstalks, fertile spikes 1—3 somewhat

drooping, fruit scarcely longer than the cal. lax especially the lower ones ovate with a short beak bifid at the point. *Schkuhr. Car. t. Mmmm.* f. 198. *E. B. t.* 2293. *C. nivicola, D. Don, MSS. ined.*

Hab. Rocky places on Craig-na-Chailleach in Breadalbane, *Mr. Borrer.* Summit of Cairn Gorum, *G. Don.* Mountains of Clova and Aberdeenshire, *D. Don. Fl.* June, July. ♃.

Stems 8—12 inches high. *Leaves* dark green, linear. *Glumes* ovate, ferruginous with a green nerve. *Capsule* green, till it is fully ripe. The fig. in *E. B.* is very characteristic.

21. C. *capillaris* (*capillary Carex*), common sheath half the length of the flowerstalks, fertile spikes few-flowered lax drooping, fruit as long as the ovate membranaceous deciduous cal. oblongo-ovate acuminate. *Lightf. p.* 557. *E. B. t.* 2069.

Hab. Highland mountains, as Ben Teskerny, Craig-nu-liet, and Mael Ghyrdy, Breadalbane, *Dr. Stuart.* Ben Lawers, *Maugh. Fl.* June, July. ♃.

Two to four inches high. *Leaves* mostly radical, scarcely half the length of the stem. One single *bractea* includes the lower part of all the peduncles with its sheathing base. *Sterile spike* 1, frequently below the fertile ones. *Fruit* dark brown, shining.

22. C. *limosa* (*Mud Carex*), sheaths extremely short scarcely any, fertile spikes oblongo-ovate pendulous, bracteas subsetaceous, cal. acute as long as the fruit, fruit elliptico-rotundate striated shortly mucronated. *Lightf. p.* 556. *E. B. t.* 2043.

Hab. Bogs and marshes, as at Tullybanchar, half a mile W. of Comrie; near Crieff, &c., *Dr. Stuart.* Marsh near Forfar, plentiful, *D. Don.* Appin, *Capt. Carmichael.* Marshes on mountains between Lochs Earn and Tay, *G. Don. Fl.* June. ♃.

Root very much creeping. *Stems* 8—10 inches high. *Leaves* very narrow. *Fertile spikelets* 2; *cal. glumes* dark brown, subapiculate. *Fruit* greenish brown.

23. C. *rariflora* (*loose-flowered alpine Carex*), sheaths very short almost none, fertile spikes narrow oblong very few-flowered lax pendulous, bracteas subsetaceous, cal. acute longer and broader than the fruit, fruit ovate somewhat acute striated. *E. B. t.* 2516.

Hab. Mountain at the head of the Glen of Doll, Angus-shire mountains. *Fl.* June. ♃.

Root creeping, as in the last sp. *Culms* about 6 inches in height. *Leaves* half their length, but broader than in the last. *Cal. glumes* very deep brown. *Fruit* ovate. Very near *C. limosa,* and united with it by Wahlenberg. My specimens, however, appear distinct.

24. C. *Pseudo-cyperus* (*Cyperus-like Carex*), sheath scarcely any (except sometimes to the lowermost bractea), fertile spikes upon long footstalks cylindrical pendulous, bracteas very leafy, cal. setaceous, fruit oblong very much acuminate cloven at the tips striated. *Lightf. p.* 559. *E. B. t.* 242.

Hab. Boggy places by the sides of lakes, but not common, as in Isla, &c., *Lightf.* *Fl.* July. ♃.

Culms 2—3 feet high, acutely triangular. *Leaves* half an inch wide. One of the best marked and most beautiful sp. in the genus.

25. C. *ustulata* (*scorched alpine Carex*), sheaths elongated shorter than the flowerstalks, fertile spikes pendulous, bracteas nearly leafless, fruit elliptical ovate beaked (black) bifid at the point. *E. B. t.* 2404.

Hab. Mountains of Clova and Ben Lawers, *G. Don.* *Fl.* July. ♃.

Culms about a span high, leafy at the base, with short, rather broad, *leaves*. *Fertile spikes* 2, remarkable for their blackened hue.

26. C. *atrata* (*black Carex*), sheaths scarcely any, fertile spikes pedunculated ovate pendulous, the terminal one with sterile flowers at the base, bracteas subfoliaceous, fruit roundish ovate depressed with a short beak bifid at the point. *Lightf. p.* 555. *E. B. t.* 2044.

Hab. Highland mountains, frequent, as upon Benteskerny, Mael-Ghyrdy, Mael-nan-tarmonach, &c., in Breadalbane, *Lightf.* *Fl.* June. ♃.

About 1 foot high. *Leaves* unusually broad for the size of the plant. *Glumes* exceedingly dark brown, opaque. *Fruit* pale yellowish brown.—This differs from the other species of this division, in having no distinct sterile spike, only a few antheriferous glumes in the lower part of the terminal fertile spike, although in general habit it perfectly agrees with the remainder of the division.

27. C. *pallescens* (*pale Carex*), sheaths scarcely any, fertile spikes pedunculated oblongo-cylindrical subpendulous, bracteas subfoliaceous, fruit ovato-elliptical tumid obtuse glabrous. *Lightf. p.* 558. *E. B. t.* 2185.

Hab. Marshy places, not unfrequent. *Fl.* June. ♃.

A foot or more high. *Leaves* slightly pubescent. *Spikes* obtuse, pale green. *Fruit* very obtuse.

28. C. *flava* (*yellow Carex*), sheaths short about equal to the flowerstalks, bracteas long foliaceous, fertile spikes roundish oval, fruit obovate with a long recurved beak bifid at the point. *Lightf. p.* 551. *E. B. t.* 1294.

β. *smaller, fruit less recurved.* C. *Œderi*, *E. B. t.* 1773.

Hab. Bogs, not uncommon, both α. and β.

Culms 6—8 inches high, triangular, nearly glabrous. *Bracteas* very leafy. *Spikes*, and indeed the whole plant, of a yellowish hue. *Leaves* rather broad, acuminate.

29. C. *fulva* (*tawny Carex*), sheaths elongated shorter than the flowerstalks, bracteas foliaceous, spikes oblongo-ovate distant rotundo-ovate inflated rostrate bifid at the point, culm scabrous. *E. B. t.* 1295.

Hab. Road-side between Montrose and the N. Esk river, *G. Don.* Clova mountains and elsewhere in the Highlands, not rare, *D. Don.* *Fl.* June. ♃.

Very near *C. distans*, but distinct in the fruit, which is more suddenly beaked, and greatly broader and rounder.

30. C. *extensa* (*long-bracteated Carex*), sheaths very short scarcely any with extremely long foliaceous bracteas, fertile spikes subsessile oblong, fruit ovate scarcely beaked striated bifid at the point, leaves very narrow, culm glabrous. *E. B. t.* 833.

Hab. Sea-coast between Sterley-burn and Aberdour; and on the coast 2 m. E. of St. Andrews, *Mr. Chalmers*. *Fl.* June. ♃.

Culms about a foot high.—Very distinct from *C. flava*, with which it has been confounded, in its very narrow, convolute *leaves*, besides the want of a long beak to the fruit.

31. C. *distans* (*distantly-spiked Carex*), sheaths elongated about equal to the flowerstalks, bearing foliaceous bracteas, fertile spikes oblong erect, cal. mucronate, fruit ovate somewhat inflated subtriquetrous depressed with rather a short beak bifid at the point. *Lightf. p.* 561. *E. B. t.* 1234, and 1235 (*C. binervis*).

Hab. Marshes and wet pastures, not unfrequent. *Fl.* June. ♃.

Culms 1—1½ foot high, slender. *Spikes* very distantly placed, their rather long peduncles entirely concealed by the sheathing bases of the *bracteas*.—I can discover no difference between *C. distans* and *C. binervis* of Smith; the 2 principal ribs upon the fruit which he describes, and which give the name to the latter sp., being nothing more than the margined angles which are common to many other individuals of this genus. The fruit, indeed, is more highly coloured.

32. C. *præcox* (*vernal Carex*), sheaths short scarcely any equal to the flowerstalks, fertile spikes oblong approximate, cal. elliptico-oblong, fruit obovate subtriquetrous acute pubescent. *E. B. t.* 1099. *Lightf. p.* 551 (*C. montana*).

Hab. Dry pastures and heaths, frequent. *Fl.* April, May. ♃.

Root creeping. *Culms* 3 inches to a foot in height. *Leaves* short, rather broad. *Lower bracteas* small, but foliaceous; upper ones very minute. *Fruit* tomentose.

33. C. *pilulifera* (*round-fruited Carex*), sheaths none, bracteas small subfoliaceous, fertile spikes sessile roundish approximate, cal. mucronate, fruit obovato-globose acute pubescent, culms weak scabrous. *Lightf. p.* 554. *E. B. t.* 885.

Hab. Moorish ground, frequent. *Fl.* June. ♃.

Culms varying much in height, from 6—12 inches; slender. Readily distinguished by the pubescent, almost spherical, *capsules*, which give name to the species.

34. C. *panicea* (*pink-leaved Carex*), sheaths elongated shorter than the flowerstalks, fertile spikes subcylindrical with distant flowers, bracteas foliaceous, fruit subglobose somewhat inflated obtuse glabrous entire at the point. *Lightf. p.* 558. *E. B. t.* 1505.

Hab. Marshy places and bogs, common. *Fl.* June. ♃.

Stem 1—1½ foot high. *Leaves* rather broad, very glaucous, and roug at the edges. *Cal. glumes* dark-brown, their keel green. *Fru* greenish brown.

35. C. *recurva* (*glaucous Heath Carex*), sheaths short scarcel any, bracteas subfoliaceous, fertile spikes subcylindrical droop ing, fruit obovato-globose obtuse rather downy entire at th point. *E. B. t.* 1506.

Hab. Moist meadows and moors. In the S. of Scotland, *Dicks.* Abou Glasg., *Hopk.* Appin, *Capt. Carmichael.* *Fl.* June. ♃.

Leaves mostly radical, short, broadish. *Culms* about 1 foot high. *Fe tile spikes* 2. *Fruit* closely placed, brownish.

++ *Stigmas* 2.

36. C. *pulla* (*russet Carex*), sheaths none, bracteas foliaceou fertile spikes ovate the lower one pedunculated, cal. oblong fruit subglobose apiculate with a short bifid beak. *E. B. t.* 2045.

Hab. Ben Lawers, *Mr. J. Mackay* in *E. B.* Banks of the Tilt, Perth shire, *Anderson.* *Fl.* June. ♃.

Six to eight inches high. *Leaves* rather broad. *Glumes* dark brow *Fruit* brownish.

37. C. *cæspitosa* (*tufted Bog Carex*), sheaths none, bractea foliaceous auricled at the base, spikes sessile oblong or subcy lindrical obtuse, fruit broadly elliptical. *Lightf. p.* 560. *E. B. t.* 1507.

Hab. Marshes and wet pastures, frequent. *Fl.* June. ♃.

α. leaves narrow erect somewhat flaccid, spikes subcylindrica cal. generally shorter than the fruit. *C. cæspitosa*, *Light p.* 560. *E. B. t.* 1507.

β. leaves broader recurved rigid, spikes oblong, cal. generally long as the fruit. *C. rigida*, *E. B. t.* 2047. *C. saxatilis Wahl. Lapp.*

Hab. α. Marshes and wet pastures, frequent. β. Summits of th Highland mountains, plentiful. *Fl.* June, July. ♃.

It is no wonder that foreign botanists should be at a loss to know ov *C. rigida*; for there is in reality no specific mark to distinguish from *C. cæspitosa*, nor any difference which is not accounted for b its different place of growth.—It is the alpine state of it.

One foot and a half high. *Leaves* rather long, erect, flaccid.

38. C. *stricta* (*straight-leaved Carex*), sheaths none, bractea with small auricles at the base short subfoliaceous, ferti spikes nearly sessile cylindrical-filiform acuminate, fruit ova somewhat acute plane above on each side, culm acutely angu lar straight. *Lightf. p.* 561 (*C. cæspitosa* β.). *E. B. t.* 91

Hab. Marshy places by the side of water. Banks of the water Leith, above Currie, Edinb., *Maugh.* Bog Kenmuir, and near Da dowie, *Hopk.* Bogs, not unfrequent, *D. Don.* *Fl.* May. ♃.

Two feet and more high. *Leaves* rough, filamentous near the base. *Spikes* very long, erect. *Cal. glumes* lanceolate, dark brown.

†† *Sterile spikes several on a culm* (*in* C. lævigata *mostly solitary*).

* *Stigmas 2.*

39. C. *acuta* (*slender-spiked Carex*), sheaths none, bracteas long foliaceous, fertile spikes long cylindrical acuminate slender erect when in fr., fruit oval swelling subacuminate entire at the point, culm acutely angular scabrous. *E. B. t.* 580.

Hab. Moist meadows and watery places, frequent. *Fl.* May. ♃.

Two to three feet high. *Leaves* broad, scarcely glaucous, rough.

** *Stigmas 3.*

40. C. *paludosa* (*lesser common Carex*), sheaths none, bracteas very long foliaceous, cal. of the sterile spike obtuse, fertile spikes cylindrical obtuse, fruit oblongo-ovate acute bifid at the point striated. *Lightf. p.* 566 (*C. riparia* β.). *E. B. t.* 807.

Hab. Banks of rivers and ditches, common. *Fl.* May. ♃.

Two feet or more high. *Leaves* very broad, keeled, rough.

41. C. *riparia* (*great common Carex*), sheaths none, bracteas very long foliaceous, cal. of the sterile spike acuminate, fertile spikes scarcely pedunculated broadly cylindrical acute, fruit ovate subacuminated bifid at the point. *Lightf. p.* 565 (*C. acuta*). *E. B. t.* 579.

Hab. Sides of ditches and rivers, common. *Fl.* May. ♃.

Larger than the last, with much broader *leaves* and *spikes;* and well distinguished by the acuminated *cal. scales* of the *sterile spike.*

42. C. *lævigata* (*smooth-stalked beaked Carex*), sheaths elongated shorter than the flowerstalks, bracteas foliaceous, fertile spikes drooping cylindrical, all the cal. acuminated or mucronate, fruit ovate triangular with rather a long acuminated beak bifid at the point. *E. B. t.* 1387.

Hab. Marshes in Angus-shire, *G. Don.* Cardenden, 4 m. N. W. from Kirkcaldy, *Mr. Chalmers.* Marshes N. of Milngaire and wet woods E. of Mugdoch-castle, *Hopk. Fl.* June. ♃.

One foot and a half high. *Leaves* broad, but rather short. It has rarely more than 1 *sterile spike;* but its similarity to the following species induces me, as Smith has done, to place it in this division. Besides the difference in the fruit, the want of a sheathing base to the bracteas will always distinguish *C. vesicaria* from this species.

43. C. *vesicaria* (*large-fruited Bladder Carex*), sheaths none, bracteas foliaceous long, fertile spikes cylindrical slightly drooping, cal. lanceolate, fruit broadly ovate inflated subulato-rostrate deeply bifid at the point. *Lightf. p.* 567 (*C. inflata*). *E. B. t.* 779.

Hab. Bogs and marshes. *Fl.* June. ♃.

One foot and a half high. *Leaves* rather broad. *Culms* acute, angular. *Fruit* tawny, very large, shining, much inflated.

44. C. *ampullacea* (*small-fruited Bladder Carex*), sheath none, bracteas foliaceous, fertile spikes cylindrical long nearly erect, cal. lanceolate, fruit crowded subglobose inflated setaceo-rostrate slightly bifid at the point. *Lightf. p.* 56 (*C. vesicaria*).

Hab. Bogs and marshes, frequent. *Fl.* June. ♃.

Differs from the last in the longer, slenderer *spikes*, with much more numerous *flowers*. *Fruit* brownish, not half so large, and of a different shape.

45. C *hirta* (*hairy Carex*), hairy, sheaths elongated nearly equal to the flowerstalks, bracteas long foliaceous, fertile spikes short cylindrical distant their cal. cuspidate, fruit ovate with a long beak hairy. *Lightf. p.* 568. *E. B. t.* 685.

Hab. Wet pastures and woods, frequent. *Fl.* June. ♃.

One foot to two feet high. More or less hairy in every part.

46. C. *filiformis* (*slender-leaved Carex*), glabrous, sheaths scarcely any, bracteas long very narrow, fertile spikes shortly pedunculate oblongo-cylindrical their cal. subcuspidate, fruit ovate shortly beaked bifid at the point very pubescent. *Lightf. p.* 553.(*C. tomentosa*). *E. B. t.* 904.

Hab. Marshes. Ravelrig-toll, *Mr. Greville.* Restenat Moss, Forfar, *G. Don.* Bog near Aviemore, *Mr. Borrer.* *Fl.* June. ♃.

One to one foot and a half high. *Leaves* slender; their margins involute, filamentous at their base near the root.

3. TETRANDRIA.

7. ERIOCAULON.

1. E. *septangulare* (*seven-angled Pipewort*), scape striated longer than the cellular compressed ensiform glabrous leaves, head of flowers globose its ext. scales without flowers glabrous the interior ones as well as the perianths ciliato-pilose at the extremity, stam. 4. *Lightf. p.* 569 (*E. decangulare*). *E. B. t.* 733. *Hook. in Fl. Lond., with a fig.*

Hab. Said to be discovered in 1768[a] by *Mr. Robinson*, a pupil of Dr. Hope's, in the Isle of Skye. *Lightfoot* afterwards gathered it, in company with Mr. Pennant, in two or three small fresh water lakes, about a mile west of Loch Sligachan, in the Isle of Skye, but particularly in a small lake called Loch-na-Caiplich, close to the road-side between Sligachan and Drynoch. *Fl.* Sept. ♃.

Plant forming great tufts, which often float. *Roots* fibrous, white, articulated. *Leaves* pellucid, beautifully cellular. *Scape* about 1 foot high. *Head* of *flowers* small, round, whitish purple.

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[a] Mr. Maughan has communicated the following note to me, which he found in the Herbarium of the late Dr. Walker of Edinb., attached to specimens of *Erioc. septangulare*, in that gentleman's handwriting. "In a small lake by the road-side leading from Sconsar to Giesto, in Skye, 11th Sept., 1764. Sir John Macpherson, who indeed first noticed it, leaped from his horse, waded into the lake and brought it out."

8. LITTORELLA.

1. L. *lacustris* (*Plantain Shoreweed*). *Lightf. p.* 571. *E. B. t.* 468.

Hab. Common in most of the Scotch lochs, near the margins. *Fl.* July, Aug.

Plant growing in thick tufts. *Leaves* entirely radical, linear, fleshy, semicylindrical, about 2 inches long. *Scapes* several. *Sterile flowers* upon scapes of 2—3 inches long. *Calyx* of 4 equal segments. *Cor.* with the tube inflated, limb 4-cleft. *Filaments* thrice the length of the *cor.* *Anthers* yellow. *Fertile flowers* sessile, 2, sometimes 3, together, among the bases of the leaves, without any *cal.* *Cor.* 3-partite, closely embracing the *germen*, which is terminated by a long, filiform *style*.

9. ALNUS.

1. A. *glutinosa* (*common Alder*), leaves roundish cuneiform obtuse lobed at the margin and serrated somewhat glutinous downy in the axils of the leaves beneath. *Lightf. p.* 576, and *E. B. t.* 1508 (*Betula Alnus*).

Hab. Wet and boggy grounds, frequent. *Fl.* May. ♄.

A well known tree, whose wood is much employed for various purposes, and is particularly valuable for the piles of bridges, &c., as its property is to remain undecayed under water for a considerable length of time. The bark and leaves are employed in dyeing and tanning leather, and the former for staining fishermen's nets; its astringent quality adapting it to this use. *Sterile catkins* long, large, and cylindrical, pendent, their footstalks branched. *Fertile catkins* small, ovate, with deep red scales. Lightfoot mentions a var. which has hoary *leaves*, more acute and less viscid.

10. URTICA.

1. U. *urens* (*small Nettle*), leaves opposite elliptical with about 5 ribs, clusters of flowers nearly simple. *Lightf. p.* 578. *E. B. t.* 1236.

Hab. Waste places, dunghills, &c. *Fl.* July—Sept. ☉.

Stems about 1 foot high.—This is by far the most annoying of the 2 Scotch nettles.

2. U. *dioica* (*great Nettle*), leaves ovate acuminate cordate at the base, clusters of flowers much branched in pairs mostly dicœcious. *Lightf. p.* 578. *E. B. t.* 1750.

Hab. Waste places and hedge banks, abundant. *Fl.* July, Aug. ♃.

The *roots*, boiled with alum, dye yarn of a yellow colour. Of the fibres of the *stalk* a kind of hemp has been manufactured. The young tops of nettles are frequently boiled and eaten by the common people; and in Arran, and others of the Western islands, a rennet is made of a strong decoction of nettles. According to Lightf., a quart of salt is put to 3 pints of the decoction, which is then bottled and fit for use. A common spoonful of this liquor will coagulate a large bowl of milk very readily.

4. PENTANDRIA.

11. BRYONIA.

1. Br. *dioica* (*red-berried Briony*), leaves palmate rough on both sides, flowers diœcious. *Lightf. p.* 590 (*Bryonia alba*). *E. B. t.* 439.

Hab. Sometimes seen in garden hedges and near houses, but probably not indig., *Dr. Burgess.* *Fl.* May. ♃.

Root exceedingly large, white and branched. *Stem* long, slender, branched, weak, and climbing, with simple tendrils. *Leaves* large, 5-lobed, the lobes angular. *Flowers* in axillary bunches. *Cor.* whitish, with green veins. *Berries* red.—Full of a fetid, acrid juice.

5. POLYANDRIA.

12. CERATOPHYLLUM.

1. C. *demersum* (*common Hornwort*), fruit armed with three spines. *Lightf. p.* 580. *E. B. t.* 947.

Hab. Under water in slow streams and ditches, common. *Fl.* July. ♃.

Stem long, slender, and much branched. *Leaves* whorled, di-trichotomous, linear, setaceous, distantly serrated. *Flowers* whorled, in the axils of the leaves, small. *Anthers* sessile, crowded, spotted. *Germen* with 3 unequal spines longer than the *cal.*, and terminated by a more or less curved, subulate *style*.—Are the spines upon the fruit of this plant sufficient to form a specific distinction between this and *C. submersum*?

13. MYRIOPHYLLUM.

1. M. *spicatum* (*spiked Water Millfoil*), sterile flowers in interrupted leafless spiked whorls. *Lightf. p.* 581. *E. B. t.* 88.

Hab. Ditches and stagnant waters, common. *Fl.* July, Aug. ♃.

Stems slender, much branched. *Leaves* 4 together in a whorl, finely pectinated, and always under water. *Spikes* slender, 2—3 inches long. *Petals* small, reddish. *Anthers* yellowish.

14. ARUM.

1. A. *maculatum* (*Cuckow-pint*, or *Wake-robin*), leaves all radical hastato-sagittate, lobes deflexed, spadix club-shaped obtuse shorter than the spatha. *Lightf. p.* 528. *E. B. t.* 1298.

Hab. Hedges and shady places, but not frequent. Woods at Bothwell and Hamilton, *Hopk.* Woods at Dalhousie, abundant, and Bogsmill, near Slateford, *Maugh.* Cliesh woods, *Mr. Arnott.* Upon Inchmahone, Loch of Monteith, *Mr. Young.* *Fl.* April. ♃.

Roots tuberous, affording an abundant feculum, which, if properly prepared, for it is of a poisonous nature, proves an excellent succedaneum for bread-flour, and is sold for that purpose in great abundance at Weymouth and in the Portland Island. *Leaves* large, shining, often spotted with black. *Spatha* more or less convolute, large. The *germens* are at the base of the *spadix*: above is a ring of 2-celled sessile anthers, and above these another ring of apparently abortive germens. The *spadix* is long, club-shaped, and of

a purplish colour. *Berries* crowded into an oblong spike, of a bright scarlet colour.

15. POTERIUM.

1. P. *Sanguisorba* (*common Burnet*), thorns none, stem somewhat angular, stamens much longer than the cal. *E. B. t.* 860.

Hab. Dry pastures, occasionally. Sandy banks near the Clyde at Dalbeith, *Hopk.* Daldowie, *Dr. Brown.* Road-side between Dunfermline and Saline: and Eildon hills, near Montrose, *Maugh.* *Fl.* July. ♃.

Stems 1—2 feet high. *Leaves* pinnate. *Leaflets* ovate, serrated. *Flowers* on longish terminal stalks, in round heads of a dull purplish colour. *Sterile fl.* mostly at the base; *fertile* ones mostly at the extremity. *Style* much exserted, with a large radiated *stigma.*

16. QUERCUS.

1. Q. *Robur* (*common British Oak*), leaves deciduous dilated towards the extremity, obovato-oblong sinuated and lobed their sinuses rather acute their lobes obtuse, fruitstalks elongated. *Lightf. p.* 581. *E. B. t.* 1342.

Hab. In the Lowlands, frequent; in the Highlands very dwarfish, seldom attaining to a trunk, except in sheltered situations near gentlemen's houses, *Lightf.* *Fl.* May. ♄.

The uses of the wood and the bark of this most invaluable tree are too generally known to require that I should speak of them here. The acorns *were* formerly the food of our British ancestors; but are now left to hogs and squirrels.

2. Q. *sessiliflora* (*sessile-fruited Oak*), leaves deciduous petiolate oblong sinuated and lobed the sinuses rather acute the lobes obtuse, fruit sessile. *E. B. t.* 1845.

Hab. Rosslyn woods, *Maugh.* Edge of Birnam Wood, near Dunkeld, and it is probably not uncommon, *Hook.* *Fl.* May. ♄.

This species is well distinguished from *Q. Robur* by its sessile fruit: its wood also is said to be very inferior to that of the common oak.

17. CASTANEA.

1. C. *vulgaris* (*Spanish Chesnut Tree*), leaves oblongo-lanceolate acuminate mucronato-serrate glabrous on each side. *Decand. Fl. Gall. Syn. p.* 181. *E. B. t.* 886 (*Fagus Castanea*).

Hab. This occurs in plantations, but is not indigenous, *Lightf.* *Fl.* May. ♄.

Surely a distinct genus from *Fagus*, although the learned and excellent author of *E. Bot.* is of a different opinion, and condemns Gærtner for separating it. This beautiful tree is now much cultivated in plantations for its timber. Evelyn tells us "it hath formerly built a good part of our ancient houses in the city of London. I had once a very large barn near the city entirely framed of it." It affords excellent stakes for pallisades and props for vines and hops. It is good for mill timber and for water-works; but if water touch the roots of the growing tree it spoils both the fruit and timber.

The fruit is much used as an article of food in the S. of Europe, and in parts of France I have had them served up for breakfast, boiled in milk.

18. FAGUS.

1. F. *sylvatica* (*Beech Tree*), leaves ovate glabrous obsoletely dentate their margins ciliated. *Lightf. p.* 584. *E. B. t.* 1846.

Hab. Woods and plantations, frequent. *Fl.* May. ♄.

This tree affords excellent shelter; especially that variety which retains its leaves through the winter. The wood is employed for an infinity of purposes by carpenters, turners, wheelwrights, &c. Swine are driven into the forests of beech to feed upon the *mast* in Autumn.

19. BETULA.

1. B. *alba* (*common Birch Tree*), leaves ovato-deltoid acute doubly serrated glabrous. *Lightf. p.* 572. *E. B. t.* 2198.

Hab. Woods, plentiful, especially in the Highlands. There is a *var.* of this, with remarkably drooping branches which are more warty than in the common appearance, not unfrequent in the Highlands, and generally known by the name of the *drooping birch.*

The wood is tough and white and is used for various purposes. Much is burned into charcoal. Brooms are made of it. Of the bark in some countries hats and drinking cups are formed, and of the sap a wine is produced by fermentation. ♄.

2. B. *nana* (*dwarf Birch*), leaves orbicular crenate. *Lightf. p.* 575. *t.* 25. *E. B. t.* 2326.

Hab. Abundant in Corry-y-callin, N. of Glen Lyon, in Breadalbane: also moors of Loch Glass, Ross-shire, and Lands of Bertram, 1 mile from Carnwrath, Clydesdale, *Lightf.* Ben Lawers, *Mr. Winch. Fl.* May. ♄.

This is a small, shrubby plant, not exceeding 1—2 feet in height. The *leaves* are on short footstalks. *Fertile catkins* at the extremity of the branches, small. Even this humble shrub the poor Laplander turns to account. It is almost all he meets with in certain situations that can be converted into fuel for burning and driving away the gnats; and, covered with the rein-deer's skin, it serves him for a bed.

20. CARPINUS.

1. C. *Betulus* (*Hornbeam*), scales or bracteas of the fruit oblong serrated with 2 smaller lateral lobes. *Lightf. p.* 585. *E. B. t.* 2032.

Hab. Woods and plantations. *Fl.* May. ♄.

Rather a small tree with ovate or subcordate, doubly serrated, acute *leaves,* of which the veins are somewhat hairy, and which are beautifully plaited when in the act of expanding. The wood of the Hornbeam is white, tough, and hard, and burns like a candle. It is used in turnery work, for implements of husbandry, cogs of wheels, &c. The inner bark produces a yellow dye.

21. CORYLUS.

1. C. *Avellana* (*Hazle-nut*), stipules oblong obtuse, leaves roundish-cordate pointed, involucre of the fruit campanulate rather spreading torn at the margin. *Lightf. p.* 586. *E. B. t.* 723.

Hab. Woods, very frequent. *Fl.* March, April. ♄.

The Hasel wood is employed for a number of domestic and agricultural and some superstitious purposes, and makes an excellent charcoal for drawing. The *Nuts* are much esteemed at table, though unwholesome if eaten in large quantities, from their undigestible nature. It is of the young forked twigs of this plant that the celebrated *divining rod* (*virgula divinatoria*) is taken, with which individuals even in our days and in our country have believed that they possessed the power of discovering springs of water, when nothing on the surface of the earth indicated their existence. A curious account of this faculty, supposed to be inherent in the person of a lady of high rank, is given in a note to a most valuable essay on "*the popular Mythology of the middle Ages*," in the 44th No. of *the Quarterly Review, p.* 373.

22. PINUS.

1. P. *sylvestris* (*Scotch Fir*), leaves in pairs rigid, cones conico-ovate acute as long as the leaves generally in pairs. *Lightf. p.* 587. *E. B. t.* 2460.

Hab. Constitutes vast natural forests in many parts of the Highlands. *Fl.* May. ♄.

A tree of great value but little beauty, except indeed when it grows in large masses, as in some of the Highland forests. It affords the red or yellow deal. The bark has been used with much success in tanning, and in the northern parts of Europe it is made into a wretched substitute for bread. Tar and pitch, and turpentine, are the produce of this tree; and in the Highlands the resinous roots afford a succedaneum for candles.

XXII. DIŒCIA.

(Monandria.

Salix purpurea, Helix and *Lambertiana.*)

1. DIANDRIA.

1. Salix. *Barren Fl. Scales* of the *catkin* single-flowered, imbricated, with a nectariferous gland at its base. *Perianth* 0. *Stam.* 1—5.

Fertile Fl. Scales of the *catkin* single-flowered. *Perianth* 0. *Stigmas* 2, often cleft. *Caps.* 1-celled, 2-valved, many-seeded. *Seeds* comose.

2. TRIANDRIA.

2 Empetrum. *Barren Fl. Cal.* tripartite. *Cor.* of 3 petals (7 in *E. B.*). *Stam.* 3 (9 in *E. B.*), upon long filaments.

Fertile Fl. Cal. tripartite. *Cor.* of 3 petals. *Style* very short. *Stigma* with 6—9 rays. *Berry* superior, globose with 6—9 *seeds.*

3. Ruscus. *Barren Fl. Perianth* single, of 6 leaves. *Filaments* united into a tube. *Anth.* 3—6.

Fertile Fl. Perianth single, of 6 leaves. *Nectary* tubular. *Style* 1. *Stigma* 1. *Berry* superior, 3-celled. *Cells* 2-seeded.

(*Valeriana dioica*, Triand. *Salix triandria*, and *lanceolata*, Ord. Diandr.)

3. TETRANDRIA.

5. Myrica. *Barren Fl. Scales* of the *catkin* concave. *Perianth* 0.

Fertile Fl. Scales of the *catkin* concave. *Perianth* 0. *Styles* 2. *Drupe* 1-celled, 1-seeded.

4. Viscum. *Barren Fl. Cal.* 0. *Petals* 4, dilated at the base, connate, resembling a *cal.* *Anthers* sessile, adnate with the petals.

Fertile Fl. Cal. submarginate. *Petals* 4, dilated at the base. *Style* 1. *Berry* (*Drupe*) inferior, 1-seeded.

(*Rhamnus catharticus*, Pentand. *Urtica dioica*, Monœc.)

4 PENTANDRIA.

6. Humulus. *Barren Fl. Perianth* single, of 5 leaves. *Anthers* with 2 pores at the extremity.

Fertile Fl. Scales of the *catkin* large, persistent, concave, entire, single-flowered. *Perianth* 0. *Styles* 2. *Seed* 1.

(*Ribes alpin.*, Pentand. *Bryonia dioica*, Monœc. *Salix pentandra*, Ord. Diandr.)

5. OCTANDRIA.

8. Rhodiola. *Barren Fl. Cal.* quadripartite. *Petals* 4. *Nectaries* 4, emarginate.

Fertile Fl. Cal. quadripartite. *Petals* 4. *Nectaries* 4, emarginate. *Germens* 4. *Caps.* 4, many-seeded.

7. Populus. *Barren Fl. Scales* of the *catkin* lacerated. *Anthers* 8—30, arising from a turbinate, oblique, entire, single *perianth.*

Fertile Fl. Scales of the *catkin* lacerated. *Perianth* turbinate (entire)? *Stigmas* 4. *Caps.* superior, 2-celled, 2-valved, many-seeded. *Seeds* comose.

6. ENNEANDRIA.

9. Mercurialis. *Barren Fl. Perianth* single, tripartite. *Stam.* 9—12. *Anthers* globose, 2-lobed.

Fertile Fl. Perianth single, tripartite. *Styles* 2. *Caps.* 2-celled, *cells* 1-seeded.

10. HYDROCHARIS. *Barren Fl. Cal.* tripartite. *Petals* 3, "the 3 interior filaments beaked," *Sm.*

Fertile Fl. Cal. tripartite. *Petals* 3. *Styles* 6, each with 2 *stigmas*. *Caps.* inferior, coriaceous, roundish, 6-celled, many-seeded.

(*Empetrum*, Ord. TRIANDR.)

(DECANDRIA.

Lychnis dioica, Cl. DECAND. PENTAG.)

(ICOSANDRIA.

Rubus Chamæmorus, ICOS. POLYAND.)

(POLYANDRIA.

Stratiotes aloides, POLYAND. PENTAG. *Populus nigra*, Ord. OCTAND.)

7. MONADELPHIA.

11. JUNIPERUS. *Barren Fl. Scales* of the *catkin* subpeltate. *Perianth* 0. *Stam.* 4—8, 1-celled.

Fertile Fl. Scales of the *catkin* few, united, at length fleshy, and surrounding the 3-seeded berry.

12. TAXUS. *Barren Fl. Perianth* single at the base. *Stam.* numerous. *Anthers* peltate, 6—8-celled; *cells* opening beneath.

Fertile Fl. Perianth single, urceolate, scaly. *Style* 0. *Drupe* fleshy, perforated at the extremity.

(*Salix rubra*, Ord. DIANDR.)

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1. DIANDRIA.

1. SALIX[a].

* *Leaves serrated, smoothish, especially above.*

1. S. *purpurea* (*bitter purple Willow*), monandrous decumbent, leaves lanceolate broadest upwards serrated glabrous, germens ovate very pubescent sessile, stigma nearly sessile. *Lightf. p.* 598. *E. B. t.* 1388.

HAB. Banks of the Esk, near Netherby, in Eskdale, *Lightf.* N. bank of the river Tweed, opposite Melrose, *Maugh. Fl.* March, Apr. ♄.

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[a] The following specific characters of this most intricate genus are taken in every instance, where not otherwise mentioned, from specimens that are the best authority for the *E. Bot.* species; that is, from individuals gathered in the late Mr. Crowe's garden near Norwich, in company with Mr. Crowe himself, or with Sir James Smith. If my characters differ in some measure from those published by Smith, it will show how variable are these plants, and how careful we ought to be in not multiplying the species unnecessarily. Future observations, I think, will warrant the reduction of the present very extensive list of British willows.

2. S. *Helix* (*Rose Willow*), monandrous erect, leaves lanceolate broadest upwards serrated glabrous, germens oblongo-ovate very pubescent sessile, style short, stigma small 2-lobed. *Lightf. p.* 597. *E. B. t.* 1343.

Hab. Marshes and the banks of rivers, frequent. *Fl.* March, Apr. ♄.

Surely Hoffman was right in uniting this and the last species. There is *no* difference in the shape of the *leaves*. That in the *stigma* and *style* is very trifling.—I have this species from Switzerland, with pubescent leaves on both sides.

3. S. *Lambertiana* (*Boyton Willow*), monandrous erect, leaves lanceolate broadest upwards serrated glabrous, germens shortly ovate very pubescent sessile, stigma nearly sessile. *E. B. t.* 1359.

Hab. Banks of the Water of Leith; above Coltridge; and banks of the Esk, above Musselburgh. *Fl.* April. ♄.

A very slight var. indeed, in my opinion, of *S. purpurea* or *Helix*.

4. S. *rubra* (*green Osier*), stam. 2 united at the base, leaves linear-lanceolate serrated glabrous green on both sides, capsules oblongo-ovate very pubescent sessile, style elongated, stigmas rarely 2-lobed linear. *E. B. t.* 1145.

Hab. Hedges and osier grounds, frequent, *D. Don. Fl.* April, May. ♄.

Leaves 4—5 inches long. Reckoned among the most valuable of the osier tribe.

5. S. *Croweana* (*broad-leaved monadelphous Willow*), "monadelphous, leaves elliptical" (obovato-elliptical acute) "subserrated quite glabrous glaucous beneath," *Sm. E. B. t.* 1146.

Hab. Glen Nevis, *Mr. Borrer. Fl.* April, May. ♄.

I have no flowering specimens of this plant; nor has Smith himself seen the *germens*.

6. S. *triandra* (*short-leaved triandrous Willow*), leaves oblongo-lanceolate acute serrated glabrous, germens pedicellate oblongo-ovate glabrous as well as the scale, stigmas sessile bifid. *E. B. t.* 1435.

Hab. Marshy places, not unfrequent, *D. Don.* Near Craigcrook, 3 m. N.W. of Edinb., *Maugh. Fl.* April, May. ♄.

An excellent osier. *Stipules*, as in its affinities, ovate, oblique, toothed. *Germens* brown, rather lax. *Scales* yellow.

7. S. *lanceolata* (*long-leaved triandrous Willow*), triandrous, leaves lanceolate acuminate serrated glabrous, germens pedicellate oblongo-ovate glabrous, style elongated, stigmas bifid, scales very villous. *E. B. t.* 1436.

Hab. Angus-shire, *G. Don. Fl.* April, May. ♄.

A small tree, and, like the last, according to Smith, casting its bark. Said to be not so valuable as an osier, since the rods are apt to split when peeled, but very useful for brown hampers, &c., *Sm.*—The *scales* are almost equal to the *germens* in length.

8. S. *amygdalina* (*Almond-leaved Willow*), triandrous, leaves oblongo-lanceolate acute serrated glabrous, germens pedicel-

late ovate glabrous, stigmas sessile bifid, scales glabrous or a little pubescent at the base. *Lightf. p.* 596. *E. B. t.* 1936.

Hab. Banks of rivers, *Dr. Parsons. Fl.* April, May. ♄.

So very nearly do my specimens of this plant from Smith himself correspond with *S. triandra*, that, I must confess, had it not been for such high authority, I should have been disposed to do what Curtis has been condemned for doing, and unite this with that species. The leaves are called in *E. B.* ovate; but there is not an ovate leaf in all my specimens, nor in the fig. in *E. B.* The *stipules* are described as large; but then they are afterwards said to vary in dimensions. It is indeed considered inferior to *S. triandra* as an osier; but that may arise from soil or other accidental circumstances.

9. S. *decipiens* (*white Welsh*, or *varnished Willow*), "leaves lanceolate serrated very glabrous, petioles subglandular, germens attenuated pedicellated, branches smooth and highly polished," *Sm. E. B. t.* 1937.

Hab. Sterile plant only, Collington woods, Edinb., *Maugh. Fl.* May. ♃.

Produces good rods for basket-work. I have seen no *germens*; nor are they figured in *E. B.* It seems to possess few important characteristic marks, and is said to be very near *S. Russelliana. Stam.* 2 in my specimens.

10. S. *Russelliana* (*Bedford Willow*), leaves lanceolate tapering at each extremity strongly serrated glabrous, germens pedicellate oblongo-subulate glabrous, style elongate, stigmas bifid, scales lanceolate very narrow slightly ciliated or pubescent. *E. B. t.* 1808.

Hab. Common near Edinb., *Maugh. Fl.* April, May. ♄.

A tall tree with very long handsome *leaves*. *Catkins* long, lax. *Bark* esteemed for tanning.

11. S. *fragilis* (*crack Willow*), leaves ovato-lanceolate acute serrated glabrous, germens shortly pedicellate oblongo-ovate glabrous, style elongated, stigmas bifid, scales pubescent and much ciliated. *Lightf. p.* 597. *E. B. t.* 1807.

Hab. Banks of rivers in the Lowlands, frequent. Less frequent about Edinb. than *S. Russelliana, Maugh. Fl.* April, May. ♄.

A large tree, with very fragile branches. The *catkins* seem to me exactly to resemble those of *S. lanceolata. Stam.* from 2—3, according to Smith.

12. S. *pentandra* (*pentandrous* or *sweet Bay Willow*), pentandrous, leaves obovato-elliptical shortly acuminate glanduloso-serrated glabrous, germens oblongo-ovate glabrous nearly sessile, style elongated, stigmas bifid, scale almost as long as the germen glabrous or slightly pilose. *Lightf. p.* 593. *E. B. t.* 1805.

Hab. Banks of rivers and watery places, not uncommon. *Fl.* May, June. ♄.

The most beautiful of our British willows, readily known by its large,

broad, bright, very shining *leaves*, and its broad sterile *catkins*, with numerous crowded yellow *stam.* Smith says that the small yellow *glands* upon the footstalks of the leaves cause the agreeable fragrance of this plant.

13. S. *nigricans* (*dark broad-leaved Willow*), leaves mostly obovate acute crenato-serrate glaucous and often downy beneath, germens pedicellate lanceolato-subulate very silky, styles elongated, stigmas mostly entire, scales villous. *E. B. t.* 1213.

Hab. Banks of the Esk, *D. Don.* Craigcrook, Edinb. (fertile plant), *Maugh.* *Fl.* April, May. ♄.

Leaves dark green, turning black when dry, very variable in size, but always more or less elliptical or obovate, veiny. *Catkins* rather short. *Germens* long, extremely silky. *Scales* brownish or almost black at the tips. I have some plants from Switzerland whose leaves are quite silky beneath, and a series of specimens gradually less so, till they have the common nearly glabrous appearance.

14. S. *bicolor* (*shining dark green Willow*), "leaves elliptical acute denticulato-serrate smoothish glaucous beneath, germens pedicellate lanceolate silky," *Sm. E. B. t.* 1806.

Hab. Banks of the Clyde, a little above Glasgow, *Maugh.* Banks of the Esk, *D. Don.* *Fl.* April, May. ♄.

I have never seen this species; but the characters do not appear at all to distinguish it from the last.—"Grows in an upright wand-like form, with dark mahogany-coloured stems," *Sm.* *Germens* and *scales*, according to the fig. as above quoted, exactly as in *S. nigricans.*

15. S. *petiolaris* (*dark long-leaved Willow*), leaves lanceolate serrated glabrous glaucous and often silky beneath, "germens pedicellate ovate silky, stigmas sessile 2-lobed," *Sm. E. B. t.* 1147.

Hab. Possil Marsh, N. side of the canal, *D. Don.* Marshes, Angusshire, *G. Don.* *Fl.* April. ♄.

Of this I am unacquainted with the *germens*, which, according to Smith, are much shorter than in the two last species, while at the same time the leaves are longer and truly lanceolate:—they, however, turn almost black in drying.

16. S. *radicans* (*rooting-branched Willow*), leaves obovato- or elliptico-lanceolate with often wavy serratures glabrous glaucous beneath, germens lanceolate pedicellate very silky as well as the scales, style elongated, stigma sentire or bifid. *S. radicans, Sm. Fl. Brit. p.* 1053. *S. phylicifolia, E. B. t.* 1958; *not of Wahl. or Linn.*

Hab. Scotland, *Dickson.* Banks of the river Nith towards Sanquhar, *Maugh.* *Fl.* May. ♄.

My specimens are from Sir James Smith, but they do not at all accord in the germens with the *S. phylicifolia* of Wahl., which that author considers to be the same as Linnæus's. He describes and figures them as *subulate* and *glabrous*, and expressly says he never knew them to be otherwise. Unfortunately Linnæus himself says nothing

about the germens.—May not the present plant be the same as *S. Croweana?*

17. S. *phylicifolia* (*Phylica-leaved Willow*), leaves oblong shortly attenuated at each extremity with often wavy serratures glabrous and glaucous beneath, germens pedicellate subulate glabrous, style much elongated, stigmas bifid. *Linn.? Wahl. Lapp. p.* 270. *p.* 17. *f.* 2.

Hab. Ben Lawers, *Mr. Borrer* and *Hook.* *Fl.* May, June. ♄.

A small bushy shrub, with leaves of a much thinner texture than the last, and capsules of a totally different nature, more like those of *S. Russelliana*, from which again the leaves are widely different. The *rachis* of the *catkins* is pubescent, and the small scales slightly so. The plant precisely accords with Wahlenberg's figure and description.

18. S. *Arbuscula* (*little Tree Willow*), leaves lanceolate obsoletely denticulato-serrate glabrous glaucous beneath, germens oblongo-ovate very silky pedicellate, style elongated, stigmas entire. *E. B. t.* 1366. *Wahl. Lapp. p.* 263. *t.* 16. *f.* 2.

Hab. Highlands of Scotland, *Dickson.* Vallies of the mountains of Clova, *G. Don.* Banks of the Nith 20 m. above Dumfries, *Maugh.* *Fl.* April. ♄.

"About 1 foot high, naked below, like a little tree," *Sm.* *Branches* downy. *Leaves* one or one inch and a half long, very minutely serrated, sometimes according to Smith and Wahlenberg oblong or ovate. *Catkins* short, very silky. *Scales* short, blackish, silky. My specimens become black in drying. Wahlenberg says his remain green in that state; and his plants have the leaves much more serrated than ours.

19. S. *livida* (*livid Willow*,) "leaves oblong nearly entire glabrous livid beneath, germens pedicellate somewhat silky, stigmas nearly sessile 2-lobed." *Wahl. Lapp. p.* 272. *t.* 16. *f.* 6. *S. arbuscula* γ. *Linn.*

Hab. Foot of Hertfell, near Moffat, *Maugh.* *Fl.* —. ♄.

"Glabrous every where, and even shining, about 1 foot high; the branches divergent, and almost deflexed, brownish. *Leaves* oblongo-rhomboid, broader upwards, acuminated at each extremity, livid rather than glaucous beneath. *Scales* not so long as the *pedicel*, shortly pubescent." *Wahl.* l. c.

20. S. *vitellina* (*yellow Willow*, or *golden Osier*), leaves lanceolate with cartilaginous serratures glabrous above more or less silky beneath, germens lanceolate sessile glabrous, style short, stigmas bipartite, scales lanceolate as long as the germen glabrous. *E. B. t.* 1389.

Hab. Hedges and osier grounds, not rare, *D. Don.* Near Dumbarton (fertile plant), *Maugh.* Banks of the Clyde, frequent, *Hopk.* *Fl.* May. ♄.

Branches singularly yellow, and indeed the whole foliage approaches to that tint. It is rather an ornamental than useful tree.

21. S. *tenuifolia* (*thin-leaved Willow*), "leaves elliptical acute serrated smoothish glaucous beneath, stipules obsolete, capsules very smooth," *Sm. E. B. t.* 2186.

Hab. Drawn in *E. B.* from the garden of Mr. T. Forster, who received it from Scotland. Various parts of Scotland, *D. Don. Fl.* May, June. ♄.

This species I never saw. There are no germens figured in *E. B.*

22. S. *myrsinites* (*green Whortle-leaved Willow*), leaves oval serrated veined shining quite glabrous, germens nearly sessile lanceolate slightly downy, style elongated, stigmas bifid. *E. B. t.* 1360.

Hab. Mountains of Glen-co, *Dr. Stuart. Fl.* June. ♄.

A low, shining, bushy shrub, with thick, much branching *stems* and roundish-oval *leaves*, not unlike some *Vaccinium*, or more like, both in habit and dark colour, as Wahlenberg well observes, *Betula nana*. *Leaves* rigid, often keeled at the back, much veined. The *flowers* appear when the plant is in full leaf. *Scales* small, blackish, with silky long hairs.

23. S. *prunifolia* (*Plum-leaved Willow*), leaves ovate serrated more or less veiny glabrous glaucous beneath, germens sessile oblongo-ovate extremely silky, style short, stigmas notched. *Lightf. p.* 599 (*S. myrsinites*), according to Smith. *E. B. t.* 1361, and *t.* 1362 (*S. venulosa.*).

β. leaves ovato-oblong. *S. vacciniifolia*, *E. B. t.* 2341.

Hab. Breadalbane mountains, *Dr. Stuart.* Blair, in Athol, *Mr. M'Nab.* Marsh south from Huggenfield Loch, rare (?), *Hopk.* β. South of Scotland. *Fl.* April, May. ♄.

Leaves ovate, not shining like the last, and paler green. The *flowers* appear before the expansion of the *leaves*. *Germens* smaller, much more silky, and the *scales* longer and extremely silky; forming a very compact, cylindrical, obtuse *catkin*. I can see no difference whatever in the *S. vacciniifolia*, but in the leaves being narrower; they are silky beneath only in a young state. I think the veiny leaves of the *S. venulosa* cannot constitute a species; besides which the veins are more or less apparent on different individuals: and in the specimens I have from Sir James Smith there is no other character whatever.

24. S. *carinata* (*folded-leaved Willow*), leaves ovate serrated glabrous glaucous beneath frequently folded so as to form a keel, germens sessile oblongo-ovate extremely silky, style short, stigmas notched. *E. B. t.* 1363.

Plant 2 feet high. *Leaves* generally longer than the last, and mostly remarkably carinated by the laterally folding together of the two halves; but I see no other difference.

25. S. *Dicksoniana* (*broad-leaved Mountain Willow*), "leaves elliptical acute slightly toothed glabrous glaucous beneath, young branches very glabrous, catkins ovate short erect silky," *Sm. E. B. t.* 1390.

Hab. Scottish mountains, *Dickson*. *Fl.* April. ♄.

Specimens under this name from my friend *Mr. Borrer*, who has paid great attention to this genus, precisely accord with what I have above called *S. radicans* (*S. phylicifolia*, *E. B.*); and I can only add to the above character, that, if the *E. B.* plant be a good species, I am perfectly unacquainted with it.

26. S. *herbacea* (*least Willow*), leaves orbicular serrated glabrous shining veined, germens sessile lanceolate glabrous, stigmas sessile bifid, catkins of few flowers. *Lightf. p.* 600. *E. B. t.* 1907.

Hab. Summits of the Highland mountains, frequent. *Fl.* June, July. ♄.

The least of our British species, though not so small as is generally supposed, for its stems divide and creep below the surface of the earth, while the branches scarcely rise an inch above. *Germen* large, but soon ripening and shedding its seeds, which are furnished with their silky or comate appendage.

** *Leaves sub-entire, more or less hairy or silky.*

27. S. *reticulata* (*reticulated Willow*), leaves nearly elliptical-orbicular mostly glabrous remarkably reticulated with veins glaucous beneath, germens sessile oblongo-ovate downy, style short, stigmas bifid. *Lightf. p.* 601.

Hab. On many of the Highland mountains, especially in a micaceous soil; as in the Breadalbane range. *Fl.* June. ♄.

Stems short, very woody, much branched, procumbent. When cultivated, forming a beautiful tuft of considerable extent with its curiously reticulated large leaves. I have this, from Hudson's Bay, with long silky hairs on both sides the leaves.

28. S. *arenaria* (*downy Mountain Willow*), leaves oblongo-lanceolate entire downy especially beneath, germens sessile lanceolate downy with a very long style, stigmas linear often entire. *E. B. t.* 1809, and *t.* 2586 (*S. Stuartiana; fertile plant*). *S. limosa*, *Wahl. Lapp. p.* 265. *t.* 16. *f.* 4.

Hab. Breadalbane, *Dr. Stuart*. Ben Lawers, abundant, *Mr. Winch*, Clova mountains, *G.* and *D. Don*. *Fl.* June. ♄.

One foot to two feet high, with dark brown, glossy *bark*. *Leaves* downy or silky, slightly so above, but especially beneath, where they are almost white. *Germen* with a remarkably long, slender, dark coloured *style*. *Scales* almost black, very villous.

29. S. *glauca* (*glaucous Mountain Willow*), leaves ovato-lanceolate entire downy white and very silky beneath, germens sessile narrow-elliptical ovate very downy, stigmas nearly sessile bifid. *E. B. t.* 1810. *S. Lapponum*, *Lightf. p.* 604?

Hab. Highlands of Scotland, *Dickson*. Clova mountains, *G.* and *D. Don*. *Fl.* July. ♄.

Much resembling the last in every thing except the fruit, which is shorter, more obtuse, and terminated by the nearly sessile stigmas. Mr. D. Don has favoured me with specimens of what he supposes

to be the *lanata* of *Linn.*; but without the fructification I should be disposed to consider them a broad-leaved var. of this or the preceding species.

30. S. *repens* (*dwarf silky Willow*), monadelphous, leaves elliptical lanceolate acute entire somewhat downy glaucous and generally very silky beneath, germens upon a long footstalk lanceolate very silky, styles short, stigmas bifid, stems more or less procumbent.

α. "leaves entire elliptico-lanceolate submucronulate nearly naked above glaucous and silky beneath, stem depressed," *Sm. Linn. Sp. Pl. p.* 1447, according to *Smith*. *E. B. t.* 183. *S. arenaria*, *Lightf. p.* 604.

β. "leaves elliptical oblong subserrated with recurved points glaucous and silky beneath, stem ascending, stipules ovate serrated" (very minute linear-setaceous entire, in my specimens from *Smith*), *Sm.* *S. adscendens*, *E. B. t.* 1962.

γ. "leaves elliptical nearly entire with recurved points glaucous and silky beneath, stem decumbent, stipules ovate entire," *Sm.* *S. parvifolia*, *E. B. t.* 1961.

δ. "leaves somewhat toothed" (quite entire in my specimens from *Sm.*) "elliptical oblong acute glabrous above glaucous beneath and silky, petioles attenuated" (not more so than in the other vars.), *Sm.* *S. fusca*, *E. B. t.* 1960.

ε. "leaves entire elliptical somewhat revolute with a recurved point slightly hairy above beneath and on the branches with a silvery silkiness," *Sm.* *A. argentea*, *E. B. t.* 1364.

Hab. α. On moist heaths and marshes, plentiful. β. Wet moors, abundant, *D. Don.* γ. Marshes, Angus-shire, common, *G.* and *D. Don.* δ. Marshes, N. of Forfar, rare, *G. Don.* Road-side between Auchincairn and Kirkcudbright; near Ravelrig-toll-bar, *Maugh.* ε. Sands of Barrie, *G. Don.* Near Clunie, *Mr. Winch. Fl.* May. ♄.

I have given the characters of the above four willows in Smith's own words, and they may be considered species or vars. at the pleasure of the student. The leaves, in all, are smoothish above, with prominent nerves beneath: the catkins are oblong and differ in no respect, be the leaves ever so variable. It is a small, usually procumbent shrub with rather long straight branches.

31. S. *cinerea* (*grey Willow*), leaves obovato-elliptical approaching to lanceolate generally slightly downy above, beneath pubescent and reticulated with veins glaucous the margins slightly recurved, stipules semicordate, germens pedicellate lanceolate subulate silky, style short, stigmas mostly entire. *E. B. t.* 1897, and 1437 (*S. aquatica*), and *t.* 1402 (*S. oleifolia*).

Hab. Banks of rivers and moist woods, in several places. *Fl.* Apr. ♄.

A small tree of no beauty and little use. The *stipules* soon fall off, and they are truly semicordate in *S. aquatica* as in *S. cinerea*; and

their different forms being the chief point of distinction indicated, and finding no characteristic marks in my own authentic specimens, I do not hesitate about uniting them. My plants of *S. oleifolia* likewise, from the same source, offer no points of discrimination; though, like Sir James Smith, I have never seen the fertile catkins.

32. S. *aurita* (*round-eared Sallow*), leaves obovate repando-dentate rugose with veins more or less pubescent very downy beneath their margins recurved tipped with a small recurved point, stipules roundish semicordate, germens lanceolato-subulate pedicellate silky, style very short, stigmas generally entire. *Lightf. p.* 602. *E. B. t.* 1487.

Hab. Woods and hedges, frequent. *Fl.* May. ♄.

A small bushy tree, with straggling branches. May it not be, that in in a moister soil this would become *S. cinerea?* It is, however, decidedly more toothed, far more veiny, and shorter in the leaves. The germens of the two in my specimens are exactly similar, and longer than represented in *E. B.*

33. S. *rupestris* (*silky Rock Willow*), leaves obovate approaching to lanceolate subserrated pubescent and subsilky beneath veined, stipules small semicordate, "germens pedicellate lanceolato-subulate, style short, stigmas mostly entire," *Sm. E. B. t.* 2342.

Hab. Rocks on the mountains of Craig-Chailloch and Mael-Ghyrdy, as well as near Aberfoyle, *Mr. Borrer.* On the Clova mountains, *G. Don. Fl.* May. ♄.

A trailing depressed shrub; probably a dwarf of one of the two preceding species.

34. S. *Andersoniana* (*green Mountain Sallow*), leaves elliptical oblong acute faintly crenato-dentate the upper ones chiefly subpubescent all glaucous beneath, stipules small subovate, branches minutely downy, germens pedicellate linear-subulate glabrous, style elongated, stigmas bifid, scales fringed with a few long silky hairs. *E. B. t.* 2343.

Hab. Scotland, in various parts, *Sm.* in *E. B.* Clova mountains, *G. Don. Fl.* May. ♄.

A small tree or bush, differing from all the preceding species of this division in its glabrous germens. The *leaves* are all serrated, and so glabrous that the plant might be looked for in the first division.

35. S. *Forsteri* (*glaucous Mountain Sallow*), "leaves elliptical-obovate acute notched slightly downy glaucous beneath, stipules vaulted, branches minutely downy, germen stalked silky, stigmas undivided," *Sm. E. B. t.* 2344.

Hab. Obtained by Mr. T. F. Forster from Scotland. *Fl.* May. ♄.

I presume the silky germens will distinguish this plant (of which I have no specimens) from *S. Andersoniana*, with which it is compared by its author, on the one hand; and with *S. hirta* on the other: like that turning black in drying, "but the *hirta* is a tree vastly more hairy, with larger, flat, quite smooth *stipules*, its *leave* heart-shaped at the base," *Sm.*

36. S. *cotinifolia* (*Quince-leaved Willow*), leaves elliptical-orbicular obsoletely dentate slightly pubescent above more so and veiny beneath, germens slightly silky pedicellate, style elongated, stigmas bifid. *E. B. t.* 1403.

Hab. Road-side between Newton Stewart and Glenluce, Wigtonshire, *Maugh.* Banks of the Esk, near Forfar, but rare, *G. Don. Fl.* May. ♄.

A small tree, according to Smith. Its *leaves* become black in drying.

37. S. *sphacelata* (*withered-pointed Willow*), "leaves entire elliptical plane pubescent on both sides, somewhat withered at the point, stipules obsolete, capsules subulate," *Sm. Lightf. p.* 602 (*S. lanata*, according to *Sm.*). *E. B. t.* 2333.

Hab. Vallies amongst the Highlands, as at Finlarig, at the head of Loch Tay, &c., *Dr. Stuart.* Ben Lawers, *Maugh. Fl.* May. ♄.

If a species, unknown to me.

38. S. *caprea* (*great round-leaved Sallow*), leaves ovato-elliptical acute serrated and undulated at the margin downy beneath, stipules semicordate, germens pedicellate lanceolato-subulate silky, stigmas sessile undivided. *Lightf. p.* 607. *E. B. t.* 1488.

Hab. Woods and dry pastures, common. *Fl.* April, May. ♄.

A tree which distinguishes itself in the spring by being covered with blossoms before the leaves appear. The *catkins* of both kinds are broader and shorter than in most species, with crowded *flowers*. The Highlanders employ the bark to tan leather, and the handles of various agricultural implements are made with its wood. The bark has even been used, and with success, instead of that from Peru.

39. S. *acuminata* (*long-leaved Sallow*), "leaves lanceolato-oblong pointed waved slightly toothed downy beneath, stipules kidney-shaped, capsules ovate tapering," *Sm. E. B. t.* 1434.

Hab. River banks, frequent, *D. Don.* Banks of the Kelvin, *Hopk.* Banks of the Esk, near Musselburgh; and Collington woods, by the river side, Edinb., *Maugh.. Fl.* April, May. ♄.

This, Smith tells us, has been considered a var. of the preceding; but both the *leaves* and the *catkins* are longer and narrower. I have two states of this plant from Sir James Smith: in one the *leaves* are truly lanceolate, and the *germens* as figured in *E. B.*; the other with the *leaves* as in *E. B.*, but the *germens* nearly sessile, a long *style*, and the *scales* with a beautifully silky fringe, which is longer than the fruit.

40. S. *stipularis* (*auricled Osier*), leaves lanceolate very indistinctly crenate white and downy beneath, stipules large semicordate acute, "germens shortly pedicellate ovate downy, style a little elongated, stigmas long awl-shaped recurved entire, nectary cylindrical," *Sm. E. B. t.* 1214.

Hab. Hedges and woods, common, *D. Don. Fl.* March (*Sm.*). ♄.

Leaves 4—6 inches long, somewhat silky beneath. I have never seen the *flowers*.

41. S. *mollissima* (*silky-leaved Willow*), leaves lanceolate obscurely crenate white and covered with silky pubescence beneath, stipules rather small semicordate acute, germens lanceolato-subulate very silky shortly pedicellate, style elongated, stigmas long linear mostly entire. *E. B. t.* 1509.

Hab. Banks of the Esk above Musselburgh, rare, *Maugh.* Hedges and osier-grounds in Scotland, frequent, *D. Don. Fl.* April. ♄.

This is considered a useless Osier.

42. S. *viminalis* (*common Osier*), leaves linear lanceolate obscurely crenate white and silky beneath, stipules very small sublanceolate, branches straight and twiggy, germens upon very short footstalks silky lanceolato-subulate, style elongated, stigmas long linear mostly entire. *Lightf. p.* 608. *E. B. t.* 1898.

Hab. Marshes, frequent. *Fl.* April, May. ♄.

Whatever may be the differences in the economical value between this and the two preceding species, it must, nevertheless, be acknowledged that their specific distinctions rest upon very slight grounds. The present is considered among the most useful of the genus, in consequence of its long pliant twigs, for basket-makers.—In all, the germen and long stigmas agree; and by these they may be known from all other species.

43. S. *alba* (*common white Willow*), leaves elliptical-lanceolate regularly glanduloso-serrate acute silky beneath often so above, germens ovato-acuminate nearly sessile glabrous, stigmas nearly sessile short recurved bifid, scales short pubescent at the margin. *Lightf. p.* 610. *E. B. t.* 2430, and *t.* 2431 (*S. cærulea*).

Hab. River sides, woods and moist meadows. *Fl.* May. ♄.

A well-known tree of exceedingly rapid growth, and of late much cultivated about Glasg., where it is known by the name of the Huntingdon Willow. It is very distinct, and I regret that another species should have been made resting upon such slight grounds as the lesser degree of silkiness on the leaves; as in the *S. cærulea, Sm.* The learned author of the *E. B.*, however, tells us he ventured to make it so, that it might be the more noticed. The growth of this var. (if even such it may be called) is extraordinary, Dr. Rigby, of Norwich having planted a cutting, which in ten years became a tree of 30 feet in height, and 5 feet 2 inches in girth. The wood and bark of both kinds are valuable; the former for making into poles, stakes, hoops, and even butter-firkins and milk-pails; the latter not only for tanning, but as a substitute for Peruvian bark.

2. TRIANDRIA.

2. EMPETRUM.

1. E. *nigrum* (*black Crow* or *Crake-Berry*), procumbent, leaves linear-oblong. *Lightf. p.* 612. *E. B. t.* 526.

Hab. Mountainous heaths, frequent. *Fl.* May. ♄.

A small procumbent branching shrub, with linear-oblong leaves, recurved at the margin, and there ciliated. *Flowers* axillary, towards the summit of the branches, rose colour, small. *Berries* black, clustered: these, though sometimes eaten by the Highlanders, are unpleasant, better suited to the moor game. Boiled with alum, according to Lightf., they yield a blackish brown dye.

3. RUSCUS.

1. R. *aculeatus* (*Butcher's Broom*), stem rigid branched, leaves ovato-acuminate very rigid bearing the solitary flower on its upper surface. *E. B. t.* 560.

Hab. Woods at Bothwell, *Hopk.* *Fl.* March, April. ♃.

Flower small, white, arising from the disk of the leaf. *Berry* red.

3. TETRANDRIA.

4. VISCUM.

1. V. *album* (*Misseltoe*), leaves lanceolate obtuse, stems dichotomous, heads of flowers axillary. *E. B. t.* 1470.

Hab. Parasitic on trees, but rare. Woods of Meikleour (on beech trees?), *Mr. Murray.* *Fl.* May. ♄.

Whole plant, including the *flowers*, yellowish. *Berry* whitish.

5. MYRICA.

1. M. *Gale* (*sweet Gale* or *Dutch Myrtle*), leaves lanceolate broader upwards serrated, stem shrubby. *Lightf. p.* 613. *E. B. t.* 562.

Hab. Bogs and moorish ground, most abundant. *Fl.* May. ♄.

This plant has a very agreeable smell; the leaves a bitter taste. In the Hebrides, according to Lightfoot, they are given as tea to destroy worms: and occasionally they are used as hops in beer. In Isla and Jura the inhabitants scent their clothes and their linen with them. The catkins on being boiled are said to produce a scum like the wax of *Myrica cerifera* and to be capable of being employed for the same domestic purposes.

4. PENTANDRIA.

6. HUMULUS.

1. H. *Lupulus* (*common Hop*). *Lightf. p.* 615. *E. B. t.* 427.

Hab. Hedges, &c. In the plantains, Possil; about Craignethan castle, and on the Hamilton road, near Tollcross, Glasg., *Hopk.* Hedges near Duddingston, *Mr. Arnott.* *Fl.* July. ♃.

Stems long, weak, and climbing, scabrous. *Leaves* petiolate, opposite, 3—5-lobed, serrated, veiny, rough. *Flowers* greenish yellow. The fragrant bitter, so valuable in the manufactory of beer, resides in the *catkins* or *cones* as they are sometimes called.

5. OCTANDRIA.

7. POPULUS.

1. P. *alba* (*great white Poplar* or *Abele*), leaves roundish cor-

date lobed toothed glabrous above downy and very white beneath, fertile catkins ovate, stigmas 4. *Lightf. p.* 616. *E. B. t.* 1618.

Hab. In the Lowlands, near houses, and in plantations. *Fl.* Apr. ♄.

A large tree, with smooth bark and spreading branches, of very rapid growth. The wood is white and soft, and only used for coarse purposes.

2. P. *tremula* (*Aspen*), leaves nearly orbicular broadly toothed glabrous on both sides, petioles compressed, "stigmas 4, auricled at the base," *Sm. Lightf. p.* 616. *E. B. t.* 1909.

Hab. Frequent in moist woods, both in the Highlands and Lowlands. Dwarfish in some of the western Isles, *Lightf. Fl.* April. ♄.

This tree is well known for the tremulous movement of its leaves with the slightest breath of wind. This motion is aided by the compressed petioles.—The bark is said to be a favourite food of the beavers, in countries where those curious animals still exist, and the wood serves for pack-saddles, milk-pails, &c. Lightfoot tells us that the Highlanders entertain a superstitious notion that our Saviour's cross was made of this tree, and for that reason suppose that the leaves of it can never rest.

3. P. *nigra* (*black Poplar*), leaves deltoid acute serrated glabrous on both sides, fertile catkins cylindrical lax, "stigmas 4." *Sm. Lightf. p.* 618. *E. B. t.* 1910.

Hab. Often seen about houses, and in plantations; but a doubtful native, *Lightf. Fl.* April. ♄.

Forms a very large and tall tree of quick growth, having a light and not very valuable wood, as is the case with most trees that come soon to perfection.

8. RHODIOLA.

1. Rh. *rosea* (*Rose-root*). *Lightf. p.* 619. *E. B. t.* 508.

Hab. Upon wet rocks towards the summits of most of the Highland mountains. *Fl.* June. ♃.

Root large, woody, which when drying gives out a smell that has been compared to that of roses. *Stem* 6—8 or 10 inches high, simple. *Leaves* numerous, subimbricated, obovate, thickly fleshy, glaucous, serrated at the point, and in the sterile plant tipped with a reddish tint. *Flowers* in a small terminal cyme, yellow, agreeing with *Sedum* in every thing but the number of its parts, and having a good deal the habit of *S. Telephium.*

3. ENNEANDRIA.

9. MERCURIALIS.

1. M. *perennis* (*perennial* or *Dog's Mercury*), stem perfectly simple, leaves rough, root creeping perennial. *Lightf. p.* 620. *E. B. t.* 1872.

Hab. Woods and shady places, common. *Fl.* April, May. ♃.

About 1 foot high, herbaceous. *Leaves* mostly in the upper part, ovate, serrated. *Flowers* in axillary, short, lax *spikes.*

This plant in drying becomes of a blue green colour; and it was supposed it might yield a useful dye. With this view, Mr. Mackintosh of Glasgow, a most able chemist, tried various experiments, which were published many years ago in Curtis's *Flora Lond.*; but he never could succeed in fixing the fine blue colour which the plant yielded. It is considered poisonous.

2. M. *annua* (*annual Mercury*), stem branched, branches opposite, leaves glabrous, root fibrous annual. *Lightf. p.* 621. *E. B. t.* 559.

Hab. Waste places about towns and villages, but not common. Burntisland, *Lightf.* In the parish of Aberfoyle, *Rev. Dr. Grahame.* *Fl.* Aug. ☉.

One foot high. *Sterile* flowers on long, axillary, interrupted *spikes.*

10. HYDROCHARIS.

1. H. *Morsus ranæ* (*common Frog-bit*). *Lightfoot, p.* 622. *E. B. t.* 808.

Hab. Ditches and slow-flowing waters, but rare, *Sibbald.* *Fl.* July. ♃.

Floating and sending down from the horizontal *stems* long fibrous radicles. *Leaves* petiolate, reniform, entire. *Flowers* subumbellate, from membranous bracteas or spathas, large, white, delicate.

7. MONADELPHIA.

11. JUNIPERUS.

1. J. *communis* (*common Juniper*), leaves ternate spreading mucronate longer than the berry. *Lightf. p.* 613. *E. B. t.* 1100.

Hab. Woods and heaths; frequent. Very dwarfish on the moors in the north of Caithness. *Fl.* May. ♄.

A shrub extremely variable in size, with numerous linear mucronated leaves. *Flowers* axillary, small. The *berries,* which are blueish black, form an important article of commerce in Holland, where they are employed in the distillation of Geneva; and they give that singular flavour which our distillers try to imitate by oil of turpentine. They are used in medicine. The wood is reddish and hard, and employed for veneering, &c. It emits a fragrant smell when bruised.

12. TAXUS.

1. T. *baccata* (*common Yew*), leaves thickly set. *Lightf. p.* 626. *E. B. t.* 746.

Hab. Found here and there in the Highlands in a truly wild state. At Glenure, near Glen-Creran in Upper Lorn, are the remains of an old wood of it; thence the name of the valley *Gleaniuir, the valley of Yew-trees, Lightf.* *Fl.* March. ♄.

A tree of no great height, but often of considerable diameter. Lightfoot tells us of one tree which *Mr. Pennant* saw in Fortingal churchyard, whose trunk measured 56½ feet in circumference. The *leaves* are distichous, linear, persistent, of a deep green colour. *Sterile flowers* small, clustered. *Drupes* red, esteemed poisonous. The

wood is hard, beautifully veined, much valued for cabinet-maker's work, and was formerly still more highly prized for making into bows; and on that account is said to have been planted so frequently by our ancestors in churchyards.

XXIII. POLYGAMIA.

1. MONŒCIA.

1. ATRIPLEX. *Perfect fl. Perianth* single, 5-partite, inferior. *Stam.* 5. *Style* bipartite. *Fruit* depressed, 1-seeded, covered by the *cal.*

Pistilliferous fl. Perianth single, 2-partite. *Stam.* 0. The rest as in the perfect fl.

1. MONŒCIA.

1. ATRIPLEX.

1. A. *portulacoides* (*shrubby Orache* or *Sea Purslane*), stem shrubby, leaves obovato-lanceolate entire silvery white. *Lightf. p.* 635. *E. B. t.* 261.

HAB. Sea shore, in muddy places. Near Hellensburgh, *Hopk. Fl.* Aug. ♄.

One foot to two feet or more high, with small yellowish flowers, in axillary racemes.

2. A. *laciniata* (*frosted Sea Orache*), stem herbaceous diffuse, leaves ovato-deltoid dentato-sinuate very mealy beneath. *Lightf. p.* 626. *E. B. t.* 165.

HAB. Sea shores, not uncommon. *Fl.* Aug. ⊙.

Whole plant hoary. *Flowers* axillary, 2—3 together.

3. A. *patula* (*spreading Halberd-leaved Orache*), stem herbaceous spreading, leaves triangular hastate glabrous above, irregularly toothed the upper ones entire, perianth of the fruit more or less tuberculated at the sides. *Lightf. p.* 636 (*A. patula*). *E. B. t.* 936.

HAB. Cultivated ground and waste places, frequent. *Fl.* July. ⊙.

Stems straggling; branches long, striated. *Flowers* in small clusters upon long interrupted axillary spikes.

4. A. *angustifolia* (*spreading narrow-leaved Orache*), "stem herbaceous spreading, leaves lanceolate entire the lower ones somewhat hastate, cal. of the fruit hastate slightly tuberculated at the sides." *Sm. Lightf. p.* 637 (*A. patula*). *E. B. t.* 1774.

HAB. Waste places, dunghills, &c. *Fl.* July. ⊙.

This seems to be but a narrow-leaved var. of the preceding.

5. A. *littoralis* (*grass-leaved Sea-Orache*), stem herbaceous erect, leaves all linear entire or toothed, perianth of the fruit

sinuated and muricated on the back. *Lightf. p.* 638, and *p.* 637 (*A. marina*). *E. B. t.* 708.

Hab. Sea shore. About Dysart Dock, on the coast of Fife, *Lightf.* Shore to the E. of Caroline Park; Guillon Links, *G. Don.* Below the house of Carriden in W. Lothian, *Dr. Walker.* *Fl.* July. ⊙.

The under side of the leaves and the flowers are mealy. The latter are in rather crowded, axillary, and terminal spikes.

XXIV. CRYPTOGAMIA.

This, the only remaining class in the Linnæan System, being a perfectly natural one, and coming the first in the natural arrangement (to which the Second Part of this work is devoted), and the characters of the Orders and Genera being the same, it is thought quite unnecessary to repeat them here.

END OF PART I.

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FLORA SCOTICA.

PART II.

CONTAINING

A SYNOPSIS OF THE SCOTTISH PLANTS

ARRANGED ACCORDING TO THE

NATURAL ORDERS.

Flora Scotica.

PART II.

CLASS I. ACOTYLEDONS. *Juss.*

(CRYPTOGAMIA, *Linn. Acotyledones, and part of Monocotyledones (Ferns), of Decand. and Brown. Agamæ and Exembryonatæ, Rich.*)

Fruit or organs of reproduction[a] without any *Cotyledon.*

Vegetation. In all, with the exception of the *Filices* or *Ferns*, the structure seems to be entirely cellular, and hence the term "*cellulares*," applied to them by Decandolle, in opposition to "*vasculares*," or those plants which, in addition to the cellular structure, have tubular vessels, as in the cotyledonous plants and the *Ferns*; on which account Decandolle and Brown have removed these latter into the 2d Class, Monocotyledons.

ORDER I. FUNGI[b]. *Linn.*

(*Fungi, and part of Algæ, Juss. Fungi, and part of Hypoxyla, Decand.*)

Plants growing upon the ground, or parasitic on other vegeta-

[a] The more intimately we become acquainted with the reproductive organs of the *Acotyledonous* or *Cryptogamic plants*, the more apparent is it, in my opinion, that there are no sexes as in the *Phænogamous* plants, no stamens and no pistil, nor any thing analogous to them; consequently no true *seed*, which can only be produced through their co-operation. The structure of the *seeds* themselves (more properly *sporules*) tends greatly to confirm such an opinion; there being, in reality, no distinction into *cotyledon*, *radicule*, or *plumule*, in short, no embryo, any more than there is in the little bulbs seen upon the stalks of the Onion tribe, and upon the *Polygonum viviparum*, &c., which, yet, equally produce perfect plants. A *sporule* has alike the power of producing, from every part of it, either stem or root, as circumstances may require: but it is quite otherwise with the true seed.—On this subject Professor Richard has ably written, both in his "*Dictionnaire de la Botanique*," and in his "*Analyse du Fruit*;" the latter of which works, containing a valuable mass of information relative to fruits and seeds, has been translated and published by Mr. Lindley, with illustrative plates.

[b] The arrangement, divisions, and characters, both of the genera and the species of this order, are, for the most part, taken from the *Synopsis Methodica Fungorum* of *Persoon*.

ble substances, rarely (never?) aquatics, and scarcely ever green; filamentous, gelatinous, spongy, corky, coriaceous, fleshy, or membranaceous. In the larger sense of the word, the whole may be considered as *fructification*, since distinct from it there is no stem, there are no branches, no leaves, no frond, and very rarely a simple crustaceous base. The *seeds* or *sporules* are either internal as in *Sphæria*, *Bovista*, or external as in *Agaricus*, &c. After being once dried they do not revive by the application of moisture, like the greater number of plants in this class; and, generally speaking, they are of very short duration, soon decaying, and frequently becoming putrid in decay.

DIV. I. ANGIOCARPI. *Seeds or sporules contained within the Fungus, which is closed, at least in an early stage, on all sides.*

SECT. I. SCLEROCARPI. *Fungi of a hardish nature externally, internally soft.*

1. SPHÆRIA.

Receptacle (or fungous substance) varying in form, or none. *Sphærules* roundish, when dry generally hollow; when moist filled with *seeds* included in a gelatinous substance.

* *Receptacle of the sphærules elongated, clavate.*

1. S. *Hypoxylon*, of a corky substance black compressed gregarious branched hairy at the base white and pulverulent at the extremity. *Pers. p.* 5. *Clavaria Hypox., Lightf. p.* 1059. *Sow. t.* 5.

HAB. Rotten trunks and stumps of trees, common. Autumn and winter, *Lightf., Hopk., Mr. Greville.*

2. S. *polymorpha*, of a substance between coriaceous and corky black generally simple gregarious rounded swelling upwards and there studded with the numerous sphærules. *Pers. Syn. p.* 7. *Clavaria digitata, Lightf. p.* 1058. *Sphæria dig., Sow. t.* 69.

HAB. Rotten stumps of old trees, in woods and shady places, *Lightf.* About Edinb. Aug. *Mr. Greville.*

** *Receptacle sessile, roundish, spreading; sphærules forming little points in all parts of the circumference.*

3. S. *concentrica*, obovate roundish large, within having many concentric lines. *Pers. p.* 8. *Sphæria fraxinea, Sow. t.* 160.

HAB. On the decayed trunks of ash trees, about Edinb., *Mr. Greville.*

4. S. *fragiformis*, rather small roundish gregarious confluent reddish, within black and shining, sphærules forming papillæ. *Pers, p.* 9. *Lycoperdon variolosum, Sow. t.* 271.

Hab. On rotten wood, frequent, Sept., *Hopk.*

5. S. *fusca*, roundish somewhat confluent brown nearly of the same colour within, sphærules umbilicated scarcely prominent. *Pers. p.* 12. *Sphæria tuberculosa, Lightf. p.* 1113. *Sow. t.* 374. *f.* 8.

Hab. On decayed wood, autumn, not uncommon, *Lightf., Hopk.* Rosslyn, on decayed branches of hazel, *Mr. Greville.*

6. S. *ribesia*, small bursting through the bark elliptical black somewhat depressed, sphærules whitish within. *Pers. p.* 14.

Hab. On the dead stems of Currant bushes about Edinb. Nov. *Mr. Greville.*

**** Form various, spreading, orbicular, or rounded. Sphærules scattered, horizontal, imbedded in a fleshy substance; their orifices mostly prominent, papilliform, or spinulose.*

7. S. *poronia*, stipitate peziziform whitish, disk truncated, sphærules scattered punctiform black. *Pers. p.* 15. *Peziza punctata, Lightf. p.* 1050. *Sphæria punctata, Sow. t.* 54.

Hab. On dry horse- and cow-dung, *Lightf.* On dry dung-hills and old hot-beds, rare, *Hopk.*

8. S. *deusta*, broadly spreading thick undulato-rugose pustulate, at first fleshy greyish white, afterwards black and rigid. *Pers. p.* 16. *S. maxima, Sow. t.* 338.

Hab. On trunks of trees about Kinross. Sept. *Mr. Greville.*

9. S. *undulata*, naked thickish undulato-rugose, the orifices of the sphærules prominent roundish, receptacle of the sphærules whitish. *Pers. p.* 21.

Hab. Trunks of trees about Edinb. Aug. *Mr. Greville.*

About 2 inches wide, and 1—2 lines thick, surface undulato-rugose.

10. S. *Stigma*, spreading smooth rimose, orifices of the sphærules immersed nearly plane. *Pers. p.* 21. *Hypoxylon operculatum, Bull. Champ. t.* 478. *f.* 2.

β. *decorticata*, spreading longitudinally, orifices prominent, subconical. *S. decorticans, Moug. et Nestl. No.* 373.

Hab. α. On dead trunks of cherry-trees about Edinb. Sept. *Mr. Greville.* β. On the barkless stems of *Corylus avellana*, about Edinb. and Kinross. Sept. *Mr. Greville.*

11. S. *disciformis*, scattered orbicular nearly plane smooth, orifices immersed punctiform. *Pers. p.* 24.

Hab. Trunks of trees about Edinb. Autumn. *Mr. Greville.*

One to two lines broad, brown, bursting through the *epidermis*, white within.

12. S. *bullata*, depressed roundish oval or reniform, orifices papillose. *Pers. p.* 27. *S. depressa, Sow. t.* 216.

Hab. On the bark of decaying branches of trees, frequent. April. *Hopk.*

Larger than the last, black, with prominent orifices. White within.

**** *Spreading, sphærules horizontal, at first solitary at the margins, then confluent, not united, with a manifest fleshy substance or receptacle; sometimes distant, but united by some crust.*

13. S. *lata*, broadly spreading somewhat rugose opaque, sphærules somewhat prominent white within, orifices conical rough. *Pers. p.* 29.

Hab. Dead wood about Edinb. *Mr. Greville.*

14. S. *typhina*, subcompound elongate, parasitic on the culms of grasses. *Pers. p.* 29. *Ejusd. Ic. et Descr. Fung. fasc.* 1. *p.* 21. *t.* 7. *f.* 1. *Sphæria spiculifera, Sow. t.* 274?

Hab. On the culms of living grasses, about Edinb. Aug. *Mr. Greville.* On grass, rare, about Glasgow, *Hopk.*

Colour white at first and smooth, then orange yellow with the prominent *sphærules*, which are soft and solid. It precisely accords with Sowerby's *S. spiculifera*, except in wanting the spicules.

15. S. *striæformis*, gregarious in short striæ attenuated at each extremity quite smooth, sphærules concealed and without the appearance of orifices. *Pers. p.* 32.

Hab. On the dead stems of *Pteris aquilina*, about Edinb. Feb. *Mr. Greville.*

***** *Sphærules piercing the receptacle, and collected together into a distinct conical mass, the orifices converging towards the middle.*

16. S. *ferruginea*, bursting transversely through the bark black, orifices spinulose straight, sphærules imbedded within the receptacle in a ferruginous dust. *Pers. p.* 35.

Hab. On dead branches of hazel. Sept. *Mr. Greville.*

17. S. *Prunastri*, ventricose, orifices spinulose bursting through the bark 4-sided. *Pers. p.* 37.

Hab. On the dead stems of *Prunus spinosa*. Sept. *Mr. Greville.*

Growing under the *epidermis*, and bursting it transversely.

18. S. *nivea*, conical, disk farinaceous whitish, orifices prominent papillose. *Pers. p.* 38.

Hab. On dry oak branches, about Edinb. Aug. *Mr. Greville.*

Bursting through the *epidermis* of the bark, small; at first resembling a white spot. Internally white.

19. S. *corniculata*, much spreading beneath the epidermis black with the orifices resembling spicules thickish rounded umbilicate at the top. *Pers. p.* 40?

Hab. On decayed stems, about Edinb. Aug. *Mr. Greville.*

****** *Sphærules collected into a circle, decumbent, naked, beneath the epidermis; orifices approximate, generally protruded.*

20. S. *faginea*, circular, orifices hooked rough. *Pers. p.* 44?

Hab. On decayed stems, about Edinb. Aug. *Mr. Greville.*

******* *Bursting through the epidermis in small roundish clusters. Sphærules free, fixed on a receptacle.*

21. S. *decolorans*, clustered vermilion colour becoming paler,

sphærules globose rough with minute tubercles. *Pers. p.* 49. *Sphæria fragiformis, Sow. t.* 256.

Hab. On the dry branches of oaks, &c., about Edinb. Aug. *Mr. Greville.*

22. S. *coccinea*, clustered red, sphærules ovate smooth. *Pers. p.* 49. *Ejusd. Ic. et Descr. Fung. t.* 12. *f.* 2. *Sphæria Mori, Sow. t.* 255.

Hab. On dead wood, about Edinb. Aug. *Mr. Greville.*

******** *Sphærules solitary, free, destitute of a receptacle.*

23. S. *tubæformis*, simple growing upon leaves, sphærules together with the epidermis prominent ovate, orifices spinulose straight reddish. *Pers. p.* 60.

Hab. On the fallen leaves of *Corylus avellana*, about Edinb. Aug. *Mr. Greville.*

24. S. *hirsuta*, gregarious crowded quite black, sphærules ovate subtuberculated with scattered hairs, orifices somewhat angular obtuse. *Pers. p.* 73.

Hab. On dead wood, about Edinb. Aug. *Mr. Greville.*

25. S. *Peziza*, gregarious red, sphærules globose when dry concave by collapsion somewhat hairy at the base. *Pers. p.* 66. *Lycoperdon hydrophorum, Sow. t.* 23?

Hab. On dead wood, about Edinb. Aug. *Mr. Greville.*

26. S. *spermoides*, clustered opaque rigid, sphærules globose with the mouth papilliform obsolete. *Pers. p.* 75. *Lycoperdon nigrum, Lightf. p.* 1069. *t.* 31.

Hab. On dead wood. Autumn. *Lightf.* About Edinb., *Mr. Greville.*

27. S. *Patella*, scattered simple black, sphærules with the disk impressed from the folding in of the margins, orifice papillose subobsolete. *Pers. p.* 76.

On dead stalks of herbaceous plants, about Edinb. Sept. *Mr. Greville.*

28. S. *Doliolum*, simple scattered naked, sphærules prominent rounded obtuse, orifice papilliform. *Pers. p.* 78.

Hab. On dead wood and stalks of plants, Rosslyn. Aug. *Mr. Greville.*

Sphærules small, shining, roundish, conical, sometimes subdepressed. *Orifice* manifest, papilliform.

29. S. *Herbarum*, simple, sphærules scattered smooth for the most part depressed, orifices papillose. *Pers. p.* 78.

α. *complanata*, longer, sphærules for the most part naked collapsed. *S. complanata, Decand. S. concava, Sow. t.* 317.

γ. *tecta*, smaller, sphærules covered with the thin epidermis of the plant on which it grows, orifices prominent punctiform.

Hab. On the dead stems of herbaceous plants about Edinb. Sept. *Mr. Greville*; and on holly leaves, *Mr. Greville.* About Glasgow, *Hopk.*

30. S. *pulvis pyrius*, simple crowded, sphærules ovate or roundish tuberculated rugose sulcate in the middle. *Pers. p.* 86. *Moug. et. Nestl. No.* 381.

Hab. On dead wood, about Edinb. Sept. *Mr. Greville.*

31. S. *moriformis*, gregarious simple, sphærules tuberculated obovate. *Pers. p.* 86.

Hab. On dead wood, about Edinb. Sept. *Mr. Greville.*

32. S. *punctiformis*, simple epiphyllous punctiform, sphærules scattered umbilicated by collapsion, somewhat shining. *Pers. p.* 90.

β. *Hederæ*, larger depressed cupuliform.

Hab. β. On the underside of the leaves of *Hedera Helix*, about Edinb. Autumn. *Mr. Greville.*

33. S. *Ægopodii*, simple epiphyllous scattered, sphærules blackish inserted upon a pale crustiform spot. *Pers. p.* 89.

Hab. On the leaves of *Ægopodium Podagraria*, about Edinb. July. *Mr. Greville.*

34. S. *strobilina*, simple scattered bursting through the epidermis, sphærules irregularly oblong black depressed in the centre. *Moug. et Nestl. No.* 572. *Hysterium conigenum. Pers. p.* 102 ?

Hab. On the decaying scales of the cones of firs. Autumn. *Mr. Greville.*

Growing on the outside of the scale, and confined to that part which is exposed when the scales are upon the cone.

2. HYSTERIUM.

Receptacle none. *Perithecium* for the most part oblong, opening with a longitudinal fissure.

1. H. *pulicare*, gregarious oblong or elliptical striated. *Pers. p.* 98. *Lichen scriptus* β. *pulicaris, Lightf. p.* 801 (*according to Pers.*).

Hab. On the bark of trees.

Differs from the genus *Opegrapha*, in having no crust.

2. H. *angustatum*, linear elongated subparallel smoothish. *Pers. p.* 99. *Moug. et Nestl. No.* 563. *Nees von Esenb. t.* 39. *f.* 303. *a.*

Hab. On dead wood about Edinb. August. *Mr. Greville.*

Very narrow, substance softer and more open than the latter; colour black, opaque.

3. H. *Fraxini*, bursting through the epidermis black subovate with the margins tumid. *Pers. p.* 100. *Sphæria sulcata, Sow. t.* 315.

Hab. On the branches of ash-trees, about Edinb. August. *Mr. Greville.*

4. H. *Pinastri*, bursting through the epidermis oval black shining. *Pers. p.* xxviii. *Moug. et Nestl. No.* 76.

Hab. On the dead leaves of *Pinus sylvestris*, about Edinb. Sept. *Mr. Greville.*

3. XYLOMA.

Receptacle (*perithecium*) various in form, hard, subcarnose within, remaining closed or opening in various ways.

* *Many Perithecia united into one body* (*Majora*).

1. X. *salicinum*, thick tuberculose, white and cartilaginous at the base within. *Pers. p.* 103. *Ejusd. Disp. Meth. Fung. p.* 5. *t.* 2. *f.* 4. *Xyloma leucocreas*, *Decand. Fl. Gall. p.* 63.

Hab. On the upper surface of the leaves of *Salix capræa*, at Castle Campbell. Sept. *Mr. Greville.*

2. X. *acerinum*, maculiform thin contiguous subrugose. *Pers. p.* 104.

Hab. On the leaves of *Acer pseudo-Platanus*, abundant in the autumn, *Mr. Greville.*

3. X. *rubrum*, crowded orbicular somewhat confluent orange red. *Pers. p.* 105. *Polystigma rubrum*, *Pers. in litt. Moug. et Nestl. n.* 270.

Hab. On the leaves of *Prunus spinosa*, Auchindenny woods. Autumn. *Mr. Greville.*

** *Simple. Perithecia solitary, scattered, for the most part rounded, pezizæform or punctiform* (*Minora*).

4. X. *alneum*, minute scattered roundish plicate. *Pers. p.* 108.

Hab. On fallen leaves of *Alnus glutinosa*, about Edinb. September. *Mr. Greville.*

4. TUBERCULARIA.

Receptacle somewhat hemisphærical, sessile. *Tubercle* filled with a thick, frequently red, fluid.

1. T. *vulgaris*, gregarious red sulcato-rugose, receptacle stipitiform thick pale. *Pers. p.* 112. *Sphæria tremelloides*, *Hopk. Glott. p.* 164. *Tremella purpurea*, *Lightf. p.* 901. *Clavaria coccinea*, *Sow. t.* 294.

Hab. On decaying sticks in the autumn. Common upon those of *Ribes rubrum*, *Hopk.*; *Mr. Greville.*

2. T. *confluens*, gregarious confluent flesh-coloured red, tubercles small roundish oblong and angular somewhat flat. *Pers. p.* 113.

Hab. Dead stems about Edinb. Autumn. *Mr. Greville.*

Very near *T. vulgaris*, but smaller and depressed, paler colour.

Sect. II. Sarcocarpi. *Fungi fleshy, solid.*

5. PILOBOLUS.

Receptacle stipitiform, pellucid and watery, upon which is fixed a naked *vesicle*, bursting open with an elastic force.

1. P. *crystallinus*, receptacle inflated upwards, vesicle hemisphærical black. *Pers. p.* 117. *Mucor urceolatus*, *Sow. t.* 300.

Hab. On horse-dung, early in the morning, *Hopk.*

Very fugacious. In an early stage it is a small yellow sessile *vesicle*, which, in a short time, acquires the pellucid inflated *receptacle* or *stipes*, upon the acuminated point of which the vesicle is inserted.

6. SCLEROTIUM.

Solid, varying in form, internally of one uniform texture, externally frequently corrugated.

1. Scl. *durum*, ovate hard somewhat striated dull black. *Pers. p.* 121.

Hab. On the dried stalks of herbaceous plants, about Edinb. Nov. *Mr. Greville.*

Elongated, and, for the most part, obtuse; often, however, of an indeterminate form, white within, substance tough.

2. Scl. *Erysiphe*, epiphyllous, granules aggregated brownish black fixed upon a white downy substance. *Pers. p.* 124.

β. *corylea*, down very minute, tubercles impressed upon the disk somewhat hairy. *Erysibe suffulta, Nees von Esenb. t.* 14. *f.* 134.

Hab. On the underside of the leaves of *Betula alba*, about Edinburgh. August. *Mr. Greville.*

7. TUBER.

Roundish, fleshy; *substance* variegated with seminiferous veins.

1. T. *cibarium*, blackish studded with wart-like excrescences. *Pers. p.* 126. *Sow. t.* 309. *Lycoperdon Tuber, Lightf. p.* 1064.

Hab. Subterraneous; found in the woods of Miggerney, in Glen Lyon, Perthshire, by *Mr. Menzies*, in the greatest perfection in autumn and winter, *Lightf.*

Roundish, 2—3 inches in diameter. These Fungi, under the name of Truffles, are greatly employed upon the continent for sauces of almost every kind. They are hunted for by dogs, who scratch them up with their feet; hogs likewise root them up with their snouts, and persons follow to secure them.

Sect. III. Dermatocarpi. *Membranaceous, coriaceous, or hairy Fungi, filled internally with the dust-like sporules.*

A. Trichospermi. *Seminal dust mixed with filaments.*

8. BOVISTA.

Peridium smooth, sessile, the exterior covering (*volva?*) white, and at length becoming partially evanescent, opening irregularly at the top. (*Seminal dust purplish brown.*)

1. B. *nigrescens*, large white at length becoming brownish black, beneath plicate. *Pers. p.* 137. *Lycoperdon globosum, Hopk. Glott. p.* 163. *Lycoperdon Bovista, Sow. t.* 331.

Hab. Dry fields, in the summer and autumn, *Hopk.*

Globose, or roundish oblong, opening with a large aperture.

9. LYCOPERDON.

Peridium caulescent, at length bursting at the extremity, covered externally with scaly warts, or small spinous processes.

1. L. *giganteum*, nearly stemless globose very large whitish, scales scattered obsolete. *Pers. p.* 140. *Lyc. Bovista, var. glabrum, Lightf. p.* 1066. *Lyc. Proteus,* upper figures, *Sow. t.* 332.

Hab. Meadows and pastures, King's Park, Edinburgh, &c. *Lightf.*

Grows to a great size, 8 or 10 inches in diameter.

2. L. *Bovista,* large obconical soft palish white plicate beneath, scales broad. *Pers. p.* 141. *L. Bovista, var. maculatum, Lightf. p.* 1067. *L. Proteus, Sow. t.* 332, *lower figures.*

Hab. Meadows and pastures, *Lightf.*

2—4 inches broad.

3. L. *pratense,* white soft, *peridium* hemisphærical smoothish, warts few, stem very short. *Pers. p.* 142. *L. Bovista, var. granulatum. Lightf. p.* 1067.

Hab. Meadows and pastures, *Lightf.*

4. L. *excipuliforme,* large white varying in form, *peridium* somewhat globose, warts spinulose scattered, stem rounded long plicate. *Pers. p.* 143. *L. Bovista, var excipuliforme. Lightf. p.* 1067.

Hab. Meadows and pastures, *Lightf.*

These four are probably, as the older botanists considered them, varieties of each other, and are used indiscriminately as stiptics.

5. L. *pyriforme,* cæspitose pyriform umbonate pale brown, scales extremely minute, fibrous radicles long. *Pers. p.* 148.

Hab. On the ground in Castle Campbell, near Edinb. *Mr. Greville.*

2—3 inches high, studded all over with very minute elevated points.

10. LYCOGALA.

Peridium roundish, membranaceous, smooth, internally filled with a fluid pulpy mass, afterwards with seminal dust, mixed with a few filaments.

1. L. *argentea,* pulvinate subhemisphærical smooth of a silvery colour. *Pers. p.* 157. *Reticularia Lycoperdon, Sow. t.* 272.

Hab. On decayed trees and paling, in wet weather. On a fallen tree in Carmyle wood, plentiful, *Hopk.*

2. L. *miniata,* gregarious globose purplish red at first afterwards brownish, dust purplish. *Pers. p.* 158. *Lycoperdon Epidendrum, Lightf. p.* 1068. *Sow. t.* 52.

Hab. Rotten wood after rains, in autumn and spring, *Lightf., Hopk.*

Varies in colour.

11. FULIGO.

In its early stage pulpy and for the most part effuse, varying in form, externally rather compact and fibrous or hairy, membranaceous at the base, within fibroso-cellular and hairy, at length resolving into dust.

1. F. *flava*, effuse and roundish yellow externally cellular and fibrous. *Pers. p.* 161. *Reticularia lutea*, *Sow. t.* 399. *f.* 2. *Mucor septicus*, *Lightf. p.* 1073.

Hab. On grass and mosses occasionally. Aug. *Hopk. Mr. Greville.*

2. F. *vaporaria*, at first yellowish extending itself in a veiny or reticulated manner, when mature forming broad and thick masses cellular and fibrous olivaceous. *Pers. p.* 161. *Reticularia hortensis*, *Sow. t.* 399. *f.* 1.

Hab. On the tan in hot-beds and stoves, abundant, *Hopk. Mr. Greville.*

The pest of plants in the tan-pit, running in one night's time up their stem from the tan, and covering them with a slimy yellow matter, which soon dries; when, under a thin crust, is seen a greyish or olivaceous powder, which disseminates itself in all directions.

12. DIDERMA.

Peridium generally double; *ext.* fragile; *int.* pellucid, rather distant from the outer one. *Columella* large, roundish. *Threads*, or *filaments*, few, buried among the *sporules.*

1. D. *globosum*, stemless smooth globoso-hemisphærical white. *Pers. p.* 167. *Sturm's Fungi*, *t.* 6.

Hab. On dead beech leaves at Braid Hermitage, Edinb., *Mr. Greville.* A minute but very pretty little fungus.

2. D. *vernicosum*, stipitate collected together reddish brown ovate shining, stipes short whitish. *Pers. p.* 165. *Obs. Mycol.* 1. *p.* 89. *t.* 3. *f.* 7. *Leiocarpus vernicosus*, *Nees von Esenbeck*, *t.* 9 *f.* 110. *Sphærocarpus fragilis*, *Sow. t.* 279.

Hab. Upon the stems of mosses about Edinb. Autumn. *Mr. Greville.*

13. PHYSARUM.

Peridium rigid simple, for the most part rugulose somewhat farinaceous. *Filaments* scattered, united generally in a reticulated manner amongst the sporules.

1. P. *nutans*, stipitate greyish white, peridium lenticular glabrous rugulose drooping. *Pers. p.* 171. *Trichia alba*, *Sow. t.* 259.

Hab. On rotten sticks, on the peat in wet moors, frequently. *Hopk.*

Peridium umbilicate beneath. *Dust* dark brown. *Stipes* somewhat attenuated, brownish.

14. TRICHIA.

Peridium at length bursting irregularly, persistent. *Tuft* of *filaments* compact, adhering to the base of the peridium within, and expanding elastically.

1. Tr. *ovata*, clustered sessile obovate opaque brownish yellow. *Pers. p.* 180. *Trichia turbinata*, *Sow. t.* 85. *Lycoperdon epiphyllum*, *Lightf. p.* 1069.

Hab. Upon dead leaves, moss and rotten wood in the winter, *Lightf.* Small, closely crowded.

15. ARCYRIA.

Peridium with its upper part evanescent. *Tuft* of *filaments* naked, fixed into the cup-shaped *receptacle.*

1. A.? *leucocephala*, gregarious, peridium funnel-shaped orange brown, tuft of filaments globose. *Pers. p.* 183. *Hoffm. Germ. v.* 2. *t.* 6. *f.* 1. *Craterium leucocephalum, Sturm's Fungi, t.* 11.

Hab. On moss upon the Pentland hills, *Mr. Greville.*

A very elegant minute species, funnel-shaped, with a pale evanescent convex extremity, on the disappearance of which the whitish filaments protruded in a more or less globular form. Nearly allied to this is the *Cyathus minutus, Sow. t.* 239.

2. A. *flava*, subgregarious yellow, tuft of filaments very long drooping. *Pers. p.* 184. *Trichia nutans, Sow. t.* 184.

Hab. On mosses about Edinburgh. Autumn. *Mr. Greville.*

3. A. *punicea*, crowded red. *Pers. p.* 185. *Clathrus denudatus, Linn. Trichia denudata, Sow. t.* 49.

Hab. Decaying sticks, about Edinb., *Mr. Greville.*

16. STEMONITIS.

Peridium very thin, subevanescent. *Tuft* of *filaments* forming a net-work, somewhat compact, surrounding, and fixed to, a central *style.*

1. S. *fasciculata*, tufted head of filaments subattenuated, the outer coat entirely evanescent. *Pers. p.* 187. *Clathrus nudus, Linn. Trichia nuda, Sow. t.* 188.

B. Gymnospermi. *Seminal dust without filaments.*

17. LICEA.

Peridium free, roundish or slightly spreading, fragile, without any subjacent membrane. Seminal *dust* destitute of filaments.

1. L. *circumscissa*, gregarious fulvous, peridium bursting all round transversely. *Pers. p.* 196. *Ejusd. Obs. Myc.* 1. *t.* 6. *f.* 1. and 2. *Sphærocarpus sessilis, Bull. Champ. t.* 417. *f.* 5.

Hab. On the dead bark of trees about Edinburgh. Autumn. *Mr. Greville.*

At first sight resembling the eggs of some insect. *Peridium* minute, globose, of a dirty yellow, at length fulvous and separating horizontally into two equal parts. *Dust* quite naked, or with one or two minute *filaments* intermixed. *Pers.*

18. MUCOR.

Peridium membranaceous, globose, stipitate, at first pellucid and watery, afterwards becoming opaque. *Sporules* naked, somewhat cohering. (*Minute fugacious Fungi.*)

1. M. *Mucedo*, stipes simple, peridium inflated blackish grey, orifice roundish opening around the stipes. *Pers. p.* 201.

β. *vulgaris*, crowded heads very minute blackish. *Mucor Mucedo, Linn.*; *Hopk. Glott. p.* 165; *Sow. t.* 378. *f.* 5, 6, *and* 7.

Hab. On putrid wood, bread, and vegetables, at all seasons of the year. *Hopk.*

2. M.? *Embolus*, "stem black bristle-shaped set with brown woolly hair." *With. Bot. Arr. ed.* 4. *v.* 4. *p.* 395.

Hab. Found on rotten wood at all seasons, *Hopk.*

19. ÆCIDIUM.

Peridia (stemless) manifest, rounded, membranaceous, at length opening with a dentated orifice. *Sporules* farinaceous, naked. (*Parasitic on leaves.*)

Cæspitose. Peridia crowded together so as to form a crustaceous spot upon the leaves.

1. Æ. *cornutum*, yellowish peridia very long curved olivaceous grey. *Pers. p.* 205. *Sow. t.* 319.

Hab. On the leaves of *Sorbus Aucuparia*, at Rosslyn, Slateford, &c. August. *Mr. Greville.*

A singular plant, growing on the under side of the leaves, but forming a yellow spot in the upper.

2. Æ. *Tussilaginis*, forming a purplish yellow spot, peridia immersed nearly plane on their surface. *Pers. p.* 209. *Sow. t.* 397. *f.* 1. *Lycoperdon epiphyllum*, *Hopk. Glott. p.* 164.

Hab. On the back of the leaves of *Tussilago Farfara*, very common, *Hopk. Mr. Greville.*

3. Æ. *Berberidis*, cæspitose orbicular small convex, peridia somewhat elongated yellow. *Pers. p.* 209. *Sow. t.* 397. *f.* 5.

Hab. On the leaves of *Berberis vulgaris*. This has been frequently supposed to be the origin of the blight in wheat, but I suspect from a common idea that the two plants are the same species.

20. UREDO.

Peridium none. *Dust* naked, easily dispersed. *Sporules* uniform, generally globose.

* *Dust yellowish* (*Rubigo, or Rust*).

1. U. *Alchemillæ*, crowded yellow and bursting the epidermis in somewhat parallel lines. *Pers. p.* 215.

Hab. Upon the leaves of *Alchemilla vulgaris*. Sept. *Mr. Greville.*

Mr. Greville observes that his specimens differ somewhat from the description of Persoon. The *sporules* are brown, and the leaves upon which they grow are not smaller than the rest; contrary to the observation of that author.

2. U. *Euphorbiæ Helioscopiæ*, scattered somewhat globose prominent yellow. *Pers. p.* 215.

Hab. On the leaves of *Euphorbia Helioscopia*, at Arlary and Kinross. September. *Mr. Greville.*

3 U. *miniata*, roundish effuse orange-colour. *Pers. p.* 216.

Hab. On the leaves of roses about Edinburgh. *Mr. Greville.*

4. U. *linearis* (*α. Frumenti*), linear very long brownish yellow becoming darker. *Pers. p.* 216. *Uredo longissima, Sow. t.* 139.

Hab. On the stems of grasses about Edinburgh. Aug. *Mr. Greville.*

This is considered by some authors to be the young of *Puccinia Graminis.*

5. U. *Sonchi,* crowded somewhat confluent yellow, clusters flattish irregular. *Pers. p.* 217.

Hab. On the leaves of *Sonchus oleraceus,* about Edinburgh. Autumn. *Mr. Greville.*

6. U. *farinosa,* confluent farinose ochraceous. *Pers. p.* 217.

Hab. On the leaves of *Salix capræa,* about Edinb. Aug. *Mr. Greville.*

7. U. *Tussilaginis,* in sub-concentric orange-coloured spots. *Pers. p.* 218.

Hab. On the leaves of *Tussilago Petasites,* Rosslyn, and about Edinburgh. August. *Mr. Greville.*

8. U. *populina,* crowded yellow unequal blistered generally closed. *Pers. p.* 219.

β. betulina, crowded yellowish minute rounded closed.

Hab. On the leaves of *Populus balsamifera* and *tremula; β.* on the leaves of *Betula alba,* about Edinburgh. *Mr. Greville.*

9. U. *Menthæ,* scattered orbicular flattish pale brownish. *Pers. p.* 220.

Hab. On the leaves of *Mentha arvensis,* Arlary and Kinross. Sept. *Mr. Greville.*

** *Dust brown or blackish* (*Nigredo*).

10. U. *suaveolens,* confluent fragrant unequal, dust pale brownish purple. *Pers. p.* 221.

Hab. On the leaves of *Cnicus arvensis,* King's Park, Edinburgh. June, July. *Mr. Greville.*

*** *Dust white* (*Albugo*).

11. U. *candida,* diffuse white. *Pers. p.* 223.

α. Thlaspeos, large bursting the epidermis with a profuse dust. *Uredo Thlaspi, Sow. t.* 340. U. *cruciferarum, Decand. p.* 49?

Hab. Upon the stems of *Thlaspi Bursa-Pastoris,* and upon the leaves of various cruciform plants.

**** *Dust blackish or brown, parasitic within the fructification of plants.* (*Ustilago, Smut.*)

12. U. *Segetum,* dust or sporules naked copious black within the fruit or glumes of grasses. *Pers. p.* 224. *Mougeot and Nestl. No.* 291. *Reticularia Segetum, Bull. t.* 422. *f.* 2. *Ustilago Segetum, Link in Sturm's Deutsch. Flora.*

Hab. In the fructification of grasses, especially of wheat, barley, and oats.

This is a fungus which does considerable injury to corn, particularly to the wheat crops by destroying the grain and converting it wholly into black dust, known by the name of *brand, dust brand, smut, burnt corn,* &c. It has, however, no scent like the following, and does not affect the whole mass in the thrashing.

13. U. *Caries,* sporules minute inclosed in peridia of a brownish black colour, and filling the grain with a fetid powder. *U. sitophila, Ditmar in Sturm's Deutsch. Fl. wth a fig.*

Hab. The inside of the grains of wheat.

It is not a little remarkable that I can find no account of this little fungus, the most injurious perhaps of all the tribe to the agriculturist, in any botanical work but that above quoted; except, indeed, that it is said in the *Nouveau Dictionnaire d'Hist. Nat.* now publishing, to be the *Uredo Caries* of *Decand.*; but I know not in what work of that author, for most assuredly it is not in the *Flore Françoise.* It is, according to *Ditmar,* a distinct genus from the foregoing, inasmuch as its *sporules* are included in a sort of *capsule* or *peridium,* which he calls *sporidium.* It affects the kernel of wheat in a different manner from that, not appearing externally, though its presence may be known by the somewhat smaller, yet inflated, appearance of the grain, and its darker colour. When broken it is greasy to the touch, and has a fetid smell, which may be aptly compared to that of *Chenopodium olidum.* It is not merely that a vast quantity of grain is destroyed by the action of this *fungus* upon each separate kernel it attacks, but, in the operation of thrashing, the injured kernels are broken, and the soil and smell are communicated to the whole sample.

21. PUCCINIA *.

Peridia having dissepiments, stipitate.

Parasitic on the stalks or leaves of plants.

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* A German author, M. Strauss, unites, I think with propriety, the genera *Stilbospora* and *Puccinia* with *Uredo,* which he subdivides in the following manner.

UREDO.

Pulverulent Fungi. Capsules (*Thecæ, Sporulæ*) collected into a pulverulent cluster, for the most part covered with the epidermis.

A. *Fungi growing upon wood.* (*Colour black.*) Stilbospora.

B. *Fungi parasitic on the fructifications of plants.* (*Colour black.*) Ustilago.

C. *Fungi parasitic upon leaves.*

1. *Capsules destitute of dissepiments.*
   a. *Colour white.* Albugo.
   b. *Colour yellowish.* Rubigo.
   c. *Colour obscure, becoming black.* Nigredo.
2. *Capsules furnished with dissepiments.* Puccinia.

1. P. *Menthæ*, scattered punctiform dark brown, sporules? (peridia) sub-quadrangular, stipes very short. *Pers. p.* 227.

Hab. On the leaves of *Mentha hirsuta*, at Duddingston Loch, near Edinburgh. September. *Mr. Greville.*

2. P. *Valantiæ*, scattered blackish brown, peridia fusiform. *Pers. p.* 227.

Hab. On the leaves of *Galium cruciatum*, about Edinburgh. Sept. *Mr. Greville.*

3. P. *Polygoni amphibii*, opaque brown depressed, peridia oblongo-ovate attenuated into the footstalk. *Pers. p.* 227.

Hab. On the leaves of *Polygonum amphibium*, about Edinburgh. August. *Mr. Greville.*

4. P. *Polygoni avicularis*, sublinear scattered brown, peridia globose. *Pers. p.* 227.

Hab. On the leaves of *Polygonum aviculare*, about Edinburgh. September. *Mr. Greville.*

5. P. *Asparagi*, scattered brown ovato-oblong convex much crowded in the disk, peridia oblong obtuse 2-celled. *Decand. Fl. Gall. Syn. p.* 45. *Moug. et Nestl. No.* 392.

Hab. Upon the stalks of dead cabbages, *Mr. Greville.*

6. P. *Circææ*, scattered verruciform red brown, peridia ovate acute. *Pers. p.* 228.

Hab. On the leaves of *Circæa Lutetiana* and *alpina*, Castle Campbell, and Rumbling Brigg. September. *Mr. Greville.*

7. P. *Graminis*, crowded linear becoming black, peridia somewhat turbinated. *Pers. p.* 228. *Uredo Frumenti, Sow. t.* 140. *Sir Jos. Banks's Essay on the Blight in Corn, in the* 2*d vol. of Annals of Botany, p.* 51. *t.* 3 *and* 4.

Hab. On the stems and leaves of corn, and various grasses, too common.

This is that disease so well known to agriculturists by the names of *blight, mildew*, and *rust* in corn. Strauss says, that "the *Uredo linearis* of this work (*U. longissima of Sow.*) is but the young state of it." For a scientific history of this injurious plant, I must refer to the Essay of Sir Jos. Banks, above cited, and to a paper written by my friend, the Rev. Mr. Kirby, in the 5th vol. of the *Linn. Trans. p.* 102. The plates quoted in the former work do not do justice to the inimitable drawings of this *Fungus*, made by Mr. Bauer, for Sir Jos. Banks. An unpublished engraving, from the original drawing, presented to me by Sir Joseph, I have deposited in the portfolio of drawings at the Royal Botanic Garden, Glasgow. It is to be lamented, that no certain cure for this disease has yet been discovered; a true knowledge of its structure, however, may tend to this desirable end.

8. P. *mucronata*, crowded black stipitate cylindrical mucronate, 3—5-celled, footstalk incrassated at the base. *Pers. p.* 230. *Nees von Esenbeck, t.* 1. *f.* 14. *P. Rubi, Sow. t.* 400. *f.* 9.

α. Rosæ, peridia thickish rather obtuse. *P. Rosæ, Decand.*

β. *Rubi*, crowded resembling black hairs, peridia subattenuated. *P. Rubi, Decand.*

Hab. α. On the leaves of roses. β. On those of *Rubus idæus* and *fruticosus*, about Edinburgh. September. *Mr. Greville.*

C. Sarcospermi. *Fructifications (peridia?) of a large size, fleshy.*

21. CYATHUS.

Receptacle funnel- or cup-shaped, at first closed at the orifice with a membrane, including several lentiform *vesicles.*

1. C. *striatus*, hairy brown internally striated. *Pers. p.* 237. *Nidularia striata, Sow. t.* 29. *Peziza striata, Lightf. p.* 1049.

Hab. On old decaying timber, sticks and straws, and sometimes on the ground, in the spring and autumn, *Lightf.*

2. C. *Olla*, externally ash-coloured or brownish somewhat downy internally smooth lead-coloured. *Pers. p.* 237. *Peziza lentifera, Lightf. p.* 1048. *Nidularia campanulata, Sow. t.* 28.

Hab. Old decaying timber, sticks, straws, &c., spring and autumn, *Lightf.*

3. C. *Crucibulum*, subcylindrical indurated slightly downy (or glabrous) tawny yellow. *Pers. p.* 238. *Nidularia lævis, Sow. t.* 30. *Peziza crucibuliformis, Lightf. p.* 1049.

Hab. On decaying wood, autumn and winter, *Lightf. Mr. Greville.*

Div. II. Gymnocarpi. *Fleshy Fungi, bearing seeds externally upon the receptacle (or hymenium).*

Sect. I. Lytothecii. *Fructifying surface (hymenium) dissolving into a gelatinous mass.*

22. PHALLUS.

Inclosed (at first) with a *Volva*. *Pileus* ovate, stipitate, entire, covered with the gelatinous fluid mass.

1. P. *fœtidus*, stipes perforated somewhat oblique, pileus cellular open at the extremity. *P. impudicus, Pers. p.* 242. *Lightf. p.* 1044. *P. fœtidus, Sow. t.* 329.

Hab. Woods and banks, but not common, at Blair in Athol; sands by the sea on both sides of the Firth of Forth, and at Carubber Bank, *Sibbald.* Woods and under hedges, frequent about Glasg., *Hopk.* Autumn.

The abominably strong smell of this plant has procured it the names of *stinking morel* and *stink-horns.* There is an admirable description and history of it in *Curt. Fl. Lond.*

SECT. II. HYMENOTHECII. *Receptacle of the fructification, a permanent membrane with pulverulent sporules.*

A. AGARICOIDEI. *Membrane forming plates (or gills), or veiny.*

23. AMANITA.

Bursting from a *Volva*. *Pileus* fleshy, generally warted. *Gills* crowded, nearly entire. *Stipes* mostly elongated, annulate, or naked.

1. A. *muscaria*, pileus orange-red or brown shining at length nearly plane, the warts gills and stipes white, stipes annulate. *Agaricus muscarius*, *Sow. t.* 286.

α. Pileus orange-red. *A. muscaria*, *Pers. p.* 253. *Agaricus muscarius*, *Lightf. p.* 1010.

β. Pileus brownish. *A. aspera*, *Pers. p.* 254. *Agaricus verrucosus*, *Bull. t.* 316. *Curt. Fl. Lond. with a fig. Lightf. p.* 1012.

HAB. Woods, not unfrequent. Autumn. *Lightf.*

This is one of the largest, and, at least the var. α., the most beautiful of all the Agaric tribe. It is, however, esteemed of an acrid and deleterious quality. Steeped in milk it is set in Sweden to decoy and kill flies, and, by rubbing on the bedsteads and other furniture, to destroy bugs. It is nevertheless said to be eaten by the Russians, and that the natives of Kamschatka prepare an inebriating liquor from this, and the runners of *Epilobium angustifolium*; but, if taken in too large a dose, it produces trembling of the nerves, intoxication, delirium, and melancholy.

24. AGARICUS [a].

Volva none. *Pileus* with gills beneath, differing in substance from the rest of the plant.

* *Stipes central.*

† *Stipes solid and decurrent.*

+ *Gills white.*

1. A. *fragrans*, gills white four in a set, pileus brownish white semi-transparent, stipes brownish white. *With. p.* 158. *Sow. t.* 10.

HAB. Fir woods, near Helensburgh, but not plentiful, *Hopk.*

2. A. *velatus*, gills greyish white much branched, pileus convex entirely covered by the membranaceous curtain. *With. p.* 161. *Ag. glutinosus*, *Sow. t.* 7.

HAB. Fir woods, not unfrequent. Woods near Kenmuir. Sept. *Hopk.*

+ + *Gills brown.*

3. A. *lactifluus*, gills red brown, pileus dark red brown, stem

[a] Both in this and the following most intricate genera, I follow the arrangement and adopt the specific characters of Withering, since almost my only knowledge of the species hitherto found in Scotland, is derived from the *Fl. Glottiana* of *Mr. Hopkirk*; and that gentleman refers exclusively to the "*Botanical Arrangement*;" so that I have no means of ascertaining what the species are of other authors. My edition of *Withering's Arrangement* is the 4th.

somewhat buff-coloured, juice white milky mild. *With. p.* 165. *Lightf. p.* 1012. *Schæff. t.* 5. *Sow. t.* 204.

Hab. Woods, frequent, *Lightf.* Bothwell Wood, *Hopk.*

Lightfoot says this is one of the best kinds for the table; but such assertions should be received with great caution, for Withering tells us, that, on tasting it, it leaves a pungent sensation on the tongue.

+++ *Gills red.*

4. A. *piperatus*, gills pale pinky red numerous in pairs, pileus dirty yellow white woolly depressed in the centre, stipes pale yellow. *With. p.* 169. *Lightf. p.* 1013. *Sow. t.* 103.

Hab. Woods, frequent. Blair in Athol. Autumn. *Lightf., Dickson.*

++++ *Gills purple.*

5. A. *amethystinus*, gills purple 2 3 or 4 in a set, pileus purple convex, stipes pale purple cylindrical. *With. p.* 176. *Sow. t.* 157.

Hab. Woods, occasionally, as Carmyle wood. Autumn. *Hopk.*

6. A. *rutilus*, gills reddish purple leathery few in pairs, pileus red; disk purple fleshy, stipes reddish purple cylindrical. *With. p.* 177. *Schæf. t.* 55. *Sow. t.* 105.

Hab. Fir woods, but not very common, in the autumn, *Hopk.*

†† *Stipes solid and fixed.*

+ *Gills white.*

7. A. *crassipes*, gills white brownish at the edges fleshy distant 4 in a set, pileus reddish brown bossed cracking, stipes greatly tapering downwards ribbed. *With. p.* 180. *Schæff. t.* 88. *Sow. t.* 129.

Hab. On the roots of decayed trees. Aug., Sept. *Hopk.*

8. A. *stipitis*, gills brownish white 4 in a set, pileus pale brown darker and woolly in the centre, stem pale brown with a buff tinge thicker and bulbous at the base, ring white permanent. *With. p.* 187. *Bolt. t.* 136. *Sow. t.* 101.

Hab. Stumps of trees, common, frequently in clusters, *Hopk.*

9. A. *integer*, gills white mostly uniform, pileus of various tints, stipes white. *With. p.* 190. *Lightf. p.* 1009. *Sow. t.* 201.

Hab. Woods, frequent. Autumn. *Lightf., Hopk.*

10. A. *elephantinus*, gills yellowish white fleshy distant 4 in a set, pileus brownish yellow changing to black and cracking, stipes white. *With. p.* 194. *Sow. t.* 36.

Hab. Woods, occasionally. Plantation opposite Dalbeth-house, frequent, *Hopk.* Autumn.

++ *Gills purplish.*

11. A. *violaceus*, gills purple numerous 8 in a set, pileus varying from purple to brown convex, edge turned down, stipes purple cylindrical. *With. p.* 203. *Lightf. p.* 1018. *Sow. t.* 209? (*the stipes is cottony*).

Hab. On the ground in gardens and in grass walks, but not common. Autumn. *Hopk.* Woods, frequent, *Lightf.*

††† *Stipes solid and loose.*

+ *Gills white.*

12. A. *Orcadis*, gills brownish watery white 2—4 in a set, pileus pale brown convex irregular, stipes whitish brown with age very tough rarely central. *With. p.* 217. *A. coriaceus*, *With. p.* 217.

Hab. On the ground in pastures, frequently forming *fairy rings.* June—Oct. *Lightf., Hopk.*

13. A. *horizontalis*, gills yellowish white 4 in a set, pileus yellowish brown convex not fully circular, stipes bent horizontally. *With. p.* 220. *Bull. t.* 324.

Hab. On old trees in the autumn, especially after rain, *Hopk.*

14. A. *clavus*, gills white in pairs, pileus with a dimple in the centre, stipes very long and slender, root very long. *With. p.* 220. *Lightf. p.* 1027.

Hab. On decayed leaves and among moss, *Lightf.*

Very minute, scarcely an inch high.

15. A. *Georgii*, gills yellowish white, pileus yellow convex hollow in the centre, stipes yellow thickish smooth, juice yellow. *With. p.* 222. *Sow. t.* 304.

Hab. Pastures, occasionally growing to a large size, *Hopk.*

Although Mr. Sowerby seems to think this may prove only a var. of the *common Mushroom* (*A. campestris*) ; and although they are sold in large quantities in London for that species, yet he remarks that their dry and tough quality renders them unfit for the table in any shape. The *gills* in age become, according to Sowerby's figure, a dirty brownish purple [a].

++ *Gills red.*

16. A. *campestris*, gills pinky changing to dark liver colour crowded irregular, pileus convex varying from white to brown, stipes white cylindrical, curtain white. *With. p.* 225. *Lightf. p.* 1017. *Sow. t.* 305.

Hab. Dry pastures after rains, frequent, *Lightf., Hopk.*

This is the common mushroom which is so much esteemed for sauces, stews, and for converting into catchups. It is cultivated by the spawn or seeds ; and, in Russia, in large houses built for the purpose : so that the inhabitants have them the whole year through.

+++ *Gills buff-coloured.*

17. A. *hinnuleus*, gills buff very broad 4 in a set, pileus fawn-coloured convex mealy, stipes chesnut colour. *With. p.* 228. *Sow. t.* 173.

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[a] Mr. Hopkirk speaks of a mushroom, "probably of this kind," found near Paisley, which was 9 inches high, 43 in circumference, and weighed 5 pounds 6 ounces.

Hab. Fir woods, in autumn, not uncommon, *Hopk.*

+++++ *Gills yellow.*

18. A. *luteus*, gills yellow numerous uniform, pileus yellow conical tufted, stipes tapering upwards. *With. p.* 229. *A. Cæpæstipes, Sow. t.* 2 (*left-hand figures*). *W.*

Hab. Amongst the bark in stoves and hot-beds, but not common. Aug. *Hopk.*

†††† *Stipes hollow and decurrent.*

+ *Gills white.*

19. A. *niveus*, gills white in pairs, pileus white viscid flattish, stipes white cylindrical. *With. p.* 231 (*not of Sow.*).

Hab. In exposed pastures, among moss on the moors, *Hopk.*

++ *Gills red.*

20. A. *farinaccus*, gills pale pink edges scolloped 4 in a set, pileus pinky brown bossed, stipes very pale pinky brown thick at the top. *With. p.* 232. *Schæff. t.* 13. *Sow. t.* 208.

Hab. Woods, on the ground; but not common. Autumn. *Hopk.*

+++ *Gills yellow.*

21. A. *parvus*, gills yellow in pairs (about 20 pairs), pileus orange dimpled, stipes orange. *With. p.* 233. *A. Fibula, Sow. t.* 45.

Hab. Amongst short grass and moss, occasionally. Aug. *Hopk.*

††††† *Stipes hollow and fixed.*

+ *Gills brown.*

22. A. *tener*, gills nut-brown 4 in a set extending below the edge of the pileus, pileus deep buff bluntly conical dark brown at the edge, stipes nut-brown smooth splitting. *With. p.* 245. *Schæff. t.* 70. *Sow. t.* 33.

Hab. Among short grass and on moors. Autumn. *Hopk.*

23. A. *clypeatus*, gills greyish brown 4—8 in a set, pileus pale brown convex bossed viscid, stipes white viscid. *With. p.* 248. *Lightf. p.* 1020.

Hab. Woods and pastures. Autumn. *Lightf.*

++ *Gills red.*

24. A. *cinnamomeus*, gills deep tawny red broad about the middle 4 in a set, pileus rich cinnamon convex somewhat bossed, stipes yellow. *With. p.* 252. *Lightf. p.* 1019. *Sow. t.* 206.

Hab. Woods, not unfrequent. Autumn. *Lightf.*

+++ *Gills yellow.*

25. A. *aurantius*, gills yellow fleshy 8 in a set, pileus conical orange edge uneven, stipes yellow splitting. *With. p.* 256. *Lightf. p.* 1025. *Curt. Fl. Lond., with a fig. Sow. t.* 381.

Hab. Dry pastures. Autumn. *Lightf.* Meadows and heaths, frequent, *Hopk.*

26. A. *ceraceus*, gills pale yellow in pairs, pileus deep yellow hemisphærical smooth, stipes deep yellow cylindrical. *With.* *p.* 258. *Sow.* *t.* 20.

Hab. Amongst grass, not common. Sept. *Hopk.*

+++ *Gills grey.*

27. A. *semiglobatus*, gills grey mottled 4—8 in a set edge horizontal, pileus greenish yellow semi-globular, stipes pale buff. *With.* *p.* 265. *Curt.* *Fl.* *Lond.* *ed.* 2. *with a fig.* *Sow.* *t.* 248, and *t.* 407 (*A. virosus.*) *A. glutinosus*, *Curt.* *Fl.* *Lond.* *ed.* 1. *with a fig.*

Hab. On the ground every where, common. July—Oct. *Hopk.*

Highly poisonous according to Sowerby, who has given a long account of the species under *t.* 407.

†††††† *Stipes hollow and loose.*

+ *Gills white.*

28. A. *procerus*, gills white uniform fixed to a collar, pileus a broad cone bossed whitish brown scaly, stipes scaly, ring loose. *With.* *p.* 266. *Sow.* *t.* 190. *A. annulatus*, *Lightf.* *p.* 1025.

Hab. Woods and shady places. Autumn. *Lightf.*, *Hopk.*

29. A. *stercorarius*, gills white, pileus very thin white or brownish flat or bossed edge rolled up, stipes white enlarged downwards. *With.* *p.* 269. *Sow.* *t.* 262.

Hab. On dung-hills in the autumn, frequent, *Hopk.*

30. A. *clypeolarius*, gills white numerous 4 in a set, pileus convex bossed pale brown mottled, stipes smooth. *With.* *p.* 270. *Sow.* *t.* 14.

Hab. Woods and fir plantations, but not common. Bothwell wood, near the west gate. Aug., Sept. *Hopk.*

31. A. *alliaceus*, gills white irregular, pileus dark brown at the top pale at the edge, stipes almost black, root crooked knobbed. *With.* *p.* 271. *Sow.* *t.* 81.

Hab. Occasionally on rotten wood, in plantations, smelling like garlick. Aug., Sept. *Hopk.*

32. A. *congregatus*, gills white with grey edges 2—4 in a set, pileus conical brown buff, sides furrowed, stipes white smooth. *With.* *p.* 275. *Sow.* *t.* 261.

Hab. On stumps of trees and at the bottoms of posts, frequent. Aug. —Oct. *Hopk.*

++ *Gills red.*

33. A. *cylindricus*, gills pinky uniform, pileus white cylindrical scaly, stipes cylindrical white. *With.* *p.* 280. *A. fimetarius*, *Curt.* *Fl.* *Lond.* *ed.* 1. *Sow.* *t.* 189.

Hab. Gardens, pastures, and amongst rubbish, during the summer and autumn, frequent, *Hopk.*

Gills becoming black in age.

34. A. *lachrymabundus*, gills dull red broad numerous 2—4 in

a set, pileus dirty brown conical woolly, stipes hollow dirty white. *With. p.* 282. *Sow. t.* 41.

Hab. Woods, occasionally. Woods, Bothwell. Aug., Sept. *Hopk.*

+++ *Gills buff-coloured.*

35. A. *dryophyllus*, gills pale brownish buff broad few 4 in a set, pileus dead whitish colour nearly flat, stipes white gently tapering upwards. *With. p.* 282. *Sow. t.* 127.

Hab. Pastures and woods, not uncommon. Aug., Sept. *Hopk.*

++++ *Gills yellow.*

36. A. *equestris*, gills brimstone yellow 4 in a set, pileus pale yellow convex, stipes yellow cylindrical. *With. p.* 285. *Lightf. p.* 1019. *Schæff. t.* 79. *Bolt. t.* 65.

Hab. Dry pastures and woods. Autumn.

+++++ *Gills grey.*

37. A. *ovatus*, gills silvery grey uniform, pileus grey brown plaited, stipes white. *With. p.* 286. *Curt. Fl. Lond. ed.* 1. *A. fimetarius*, *Sow. t.* 188.

Hab. On the roots of trees in Carmyle wood. Autumn. *Hopk.*

38. A. *cinereus*, gills grey uniform not reaching the stem, pileus grey streaked, centre brown, stipes white tapering upwards. *With. p.* 288. *A. fimetarius*, *Lightf. p.* 1021.

Hab. Dunghills, banks of ditches, gardens, &c., especially after rains. Autumn, frequent, *Lightf.*

39. A. *campanulatus*, gills pale grey uniform, pileus mouse coloured grey conical blunt, stipes grey smooth. *With. p.* 289. *Lightf. p.* 1022.

Hab. Woods, pastures, and rotten leaves. Autumn. *Lightf.*

40. A. *semiovatus*, gills brown grey to black 2—4 in a set, pileus light brown smooth half egg-shaped, stipes cylindrical white. *With. p.* 290. *Sow. t.* 131.

Hab. Cow-pastures and on dunghills, frequent. June—Sept. *Hopk.*

41. A. *plicatilis*, gills grey, in pairs, pileus ash-coloured, centre brownish yellow, stipes white. *With. p.* 291. *Curt. Fl. Lond. with a fig. Sow. t.* 364.

Hab. Pastures and new mown grass fields, during the summer and autumn, frequent, *Hopk.*

** *Stipes lateral.*

\+ *Gills brown.*

42. A. *flabelliformis*, gills yellowish brown numerous, pileus smooth mealy whitish, stipes short variably excentrical. *With. p.* 296. *A. semipetiolaris*, *Lightf. p.* 1030. *Schæff. t.* 208. *Sow. t.* 109.

Hab. On the trunks of fallen trees and decayed timber, frequent. Autumn. *Lightf., Hopk.*

++ *Gills buff.*

43. A. *betulinus*, gills reddish yellow or reddish brown nume-

rous thin very much branched, pileus pale brownish buff cottony irregularly semicircular. *With. p.* 299.

Hab. Stumps of trees during most of the year. Stumps of trees on the banks of the Clyde at Bogleshole, plentifully, *Hopk.*

44. A. *alneus*, gills brownish buff in pairs, pileus gently convex semicircular velvety brownish grey. *With. p.* 300. *Lightf. p.* 1029. *Sow. t.* 183.

Hab. On the trunks of trees and dead wood. Autumn and spring. *Lightf.*

25. MERULIUS. *Withering.*

Volva none. *Pileus* with *gills* or *veins* beneath of the same substance with the rest of the plant.

* *With a stipes and gills beneath.*

1. M. *umbelliferus*, gills white broad at the base 2—4 in a set, pileus white convex a little bossed elegantly plaited at the sides, stipes white slender. *With. p.* 144. *Agaricus umbel., Lightf. p.* 1026.

Hab. On rotten leaves, in woods and shady places. Autumn. *Lightf.*

2. M. *androsaceus*, gills white decurrent, pileus white convex the centre depressed, stipes red brown shining. *With. p.* 145. *Ag. androsaceus, Lightf. p.* 1027. *Sow. t.* 94.

Hab. On old sticks, rotten leaves and mosses. Autumn. *Lightf.*

3. M. *collariatus*, gills white uniform fixed to a collar surrounding the stem, pileus white thin umbonate, stipes white above black below. *With. p.* 146. *Agaricus rotula, Pers. p.* 467. *Sow. t.* 95.

Hab. On sticks in woods, frequent. August. *Hopk.*

4. M. *cantharellus*, stem solid often compressed, gills decurrent branched and anastomosing. *With. p.* 147. *Agaricus canth., Sow. t.* 46. *Lightf. p.* 1008.

Hab. Woods, frequent; especially those of fir, *Lightf., Hopk.* July —September.

Of a yellow colour, an agreeable smell, and much eaten in some countries.

5. M. *Squamula*, stipes bristle-shaped, pileus whitish slightly convex, gills with a few plaits. *With. p.* 149. *Agaricus Squamula, Sow. t.* 93.

Hab. On decayed leaves in Bothwell wood. August. *Hopk.*

** *With a stipes, &c., and with veins beneath.*

6. M. *infundibuliformis*, stipes funnel-shaped hollow expanding at the top like a hollow pileus, gill-like veins branched silvery grey. *With p.* 150. *Merulius cornucopioides, Pers. p.* 491. *Peziza cornucopioides, Lightf. p.* 1050. *Sow. t.* 74.

Hab. In woods, not unfrequent, *Lightf.* October.

*** *Without a stipes, with deep anastomosing broad veins beneath.*

7. M. *lachrymans*, spreading large orange-coloured with the

margin white and downy, veins forming as it were large pores. *Merulius destruens, Pers. p.* 496. *Boletus lachrymans, With. p.* 321. *Sow. t.* 113.

Hab. On decayed wood, in cellars and outhouses, and sometimes on posts exposed to the weather. On the wood of churches and houses, *Hopk.*

The pores contain water. This is the *dry-rot*, from which buildings of all kinds, especially ships, have suffered so much. Mr. Sowerby recommends ventilation and avoiding to build in damp situations as the best way to guard against it.

B. Boletoidei. *Membrane or receptacle of the fructification forming tubes, oblong and compressed or rounded, sometimes prominent.*

26. DÆDALEA.

Pileus (dimidiate) between coriaceous and corky, reticulated with subporiform or oblong apertures beneath. (Intermediate between *Merulius* and *Boletus*.)

1. D. *quercina*, coriaceous pale brownish, pileus slightly wrinkled glabrous, apertures large, their interstices branched and sinuated. *Pers. p.* 500. *Agaricus quercinus, Lightf. p.* 1028. *Sow. t.* 181.

Hab. Trunks of various trees and decayed wood, frequent, all the year round, *Lightf., Hopk.*

27. BOLETUS.

Pileus varying in its form. *Tubes* and *pores* rounded, entire, separated.

A. *Pileus with the tubes beneath distinct from one another* (*Fistulina Bull.* and *With.*).

1. B. *hepaticus*, fleshy red dimidiate, tubes slender unequal free yellowish. *Pers. p.* 302. *Sow. t.* 56. *Lightf. p.* 1034. *Fistulina hepatica, With. p.* 302.

Hab. On the trunks of hollow trees. Aug., Sept. *Lightf.*

B. *Pileus with the tubes united.*

* *Stipes central*[a].

2. B. *aurantiacus*, tubes whitish, pileus red orange, stipes whitish rough. *With. p.* 305. *Sow. t.* 110. *B. aurantius, Pers. p.* 504.

Hab. Woods, occasionally. June, July. Bothwell wood, and frequent in a small wood near Carmyle, Glasg., *Hopk.*

3. B. *bovinus*, tubes pale yellowish brown unequal in length, pileus brown or olive clammy, stipes thick pale brown with rusty stains. *With. p.* 306. *Bol. scaber, Sow. t.* 175.

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[a] In this genus likewise I follow Withering's characters and names, with few exceptions.

AB. Woods and pastures, frequent, *Lightf.*, *Hopk.* Autumn.

B. *luteus*, tubes deep yellow, pileus deep bay striated, stipes dirty white, ring permanent. *With. p.* 312. *Sow. t.* 265. *B. cortinatus*, *Pers. p.* 503.

AB. Woods, and sometimes in pastures. In Carmyle and Bothwell woods. Woods, Dougalston; near Glasg. Autumn, plentiful. *Hopk.*

** *Stipes lateral.*

B. *lucidus*, tubes white, pileus chesnut coloured shining, stipes hard uneven chesnut coloured shining. *Sow. t.* 134. *B. rugosus*, *With. p.* 315.

AB. Stumps of trees, rare. Woods, Bothwell. July—Sept. *Hopk.*

B. *squamosus*, tubes yellow white, pores large angular, pileus pale buff pencilled with feather-like scales. *With. p.* 316. *Sow. t.* 266. *B. cellulosus*, *Lightf. p.* 1032.

AB. Stumps of trees, frequent. June—Sept. *Lightf.*, *Hopk.*

he stipes varies much in length, is sometimes branched, and instead of terminating with a *pileus* is acuminated. This state of it is the *B. rangiferinus*, *With.*—A plant of this species, Mr. Hopkirk tells us, has regularly made its appearance for several years past, on the stump of an ash, at Dalbeth, near Glasgow. In 1810 it attained an extraordinary size, being seven feet five inches in circumference, and weighing, after having been cut four days, thirty-four pounds avoird. It was only four weeks in attaining the above size, gaining thus an acquisition of weight, of above one pound three ounces in the day.

. B. *lateralis*, tubes yellow very short, pileus dead yellow thin smooth, stem yellow. *With. p.* 318. *B. nummularius*, *Sow. t.* 89.

IAB. On the trunks of trees, but not common. Aug., Sept. *Hopk.* At Woodside, *Ure.*

*** *Destitute of stipes.*

B. *salicinus*, tubes white to tawny very short, pileus semicircular whitish smooth thin soft leathery. *With. p.* 319. *Sow. t.* 227. *B. albus*, *Lightf. p.* 1037.

IAB. Trunks of old willows, in a wood near Laswade, *Dr. Parsons.*

). B. *suberosus*, tubes white pointed, pores irregular, pileus white convex smooth thin. *With. p.* 318. *Sow. t.* 288. *Lightf. p.* 1031.

IAB. Trunks of hollow trees. Autumn. *Lightf.*

10. B. *spongiosus*, pores whitish fringed angular, pileus brown woolly. *With. p.* 1033. *Lightf. p.* 1033. *B. velutinus?* *Sow. t.* 345.

IAB. On the trunks of trees. July. *Lightf.*

11. B. *versicolor*, tubes white, pileus striped with different colours. *With. t.* 321. *Sow. t.* 229. *Lightf. p.* 1036.

Hab. Trunks of old trees, decayed wood and rails, frequent, during the greater part of the year, *Lightf.*, *Hopk.*

12. B. *sulphureus*, tubes and pores sulphur-coloured, pileus bright reddish yellow streaked. *With. p.* 324. *Sow. t.* 135. *B. tenax*, *Lightf. p.* 1031.

Hab. Trunks of hollow trees. May and Sept. *Lightf.*

13. B. *igniarius*, tubes green grey or reddish brown, pores very fine, pileus shaped like a horse's hoof smooth brown waved. *With. p.* 326. *Sow. t.* 132. *Lightf. p.* 1034.

Hab. Trunks of old trees, frequent at all seasons, *Lightf.*, *Hopk.*

M. le Baron de Beauvois, in the "*Nouveau Dictionnaire des Sciences naturelles*," asserts, that it is the *B. fomentarius*, which is the famous *Amadou* of commerce, and not our *B. igniarius*: whose extremely hard and almost brittle nature renders it useless for such a purpose.

14. B. *fomentarius*, dimidiate hard, pileus subtriquetrous obsoletely banded cinereous brown, pores at first whitish glaucous afterwards subferruginous. *Pers. p.* 536. *Sow. t.* 133. *With. p.* 327.

Hab. Trunks of trees, about Edinb. Sept. *Mr. Greville.*

To render this fit for commerce, the epidermis and the porous parts are removed, and the rest beaten into a soft spongy state. This is one of the best styptics that can be employed. It is further used all over the continent instead of tinder, being first dipped in a solution of nitre: and no German who smokes, stirs without his *Amadou*, flint and steel. To render it still more combustible, it is rolled in gunpowder, and is then called *black Amadou*, whilst the common kind is the *red*. Gleditsch says, that garments have been made of it.

C. Hydnoidei. *Receptacle or membrane of the fructification forming awl-shaped processes.*

28. HYDNUM.

Pileus varying in form, furnished beneath with subulate entire teeth.

1. H. *repandum*, pale flesh-coloured, pileus wrinkled somewhat lobed glabrous, teeth thickish frequently compressed, stipes tuberous excentrical. *Pers. p.* 555. *Sow. t.* 176.

Hab. Woods, not unfrequent. At Belmont, in Angus, *Lightf.* Rare about Glasg. Woods Dougalston, *Hopk.* In the woods Torrance, *Ure.* Autumn.

2. H. *auriscalpium*, stipitate purplish brown, pileus dimidiate coriaceous. *Pers. p.* 557. *Sow. t.* 267.

Hab. On old decaying cones and branches of fir, in the pine forests; the whole year round, *Lightf.*

This curious vegetable has a long slender *stipes* usually excentrical, and a *pileus* with shaggy concentric circles.

). GYMNODERMI. *Pileus varying in form, generally dimidiate, spreading, stemless, dry and coriaceous. Receptacle or membrane of the fructification smoothish or papillose.*

29. THELEPHORA.

ileus coriaceous, papillose, rarely with minute bristles, or uniform and smooth.

Th. *caryophyllea*, somewhat imbricated purplish brown, pileus somewhat funnel-shaped with shaggy concentric lines very shaggy at the margin. *Decand. Fl. Gall. p.* 21. *Auricularia caryophyllea, Sow. t.* 213. *Helvella caryoph., With. p.* 332.

AB. Wood and stumps of trees, near the ground, and on the ground itself. At Castle Campbell. Sept. *Mr. Greville.*

Th. *rubiginosa*, imbricated rigid brownish rust colour glabrous on each side, pippillæ scattered rather large. *Pers. p.* 567. *Auricularia ferruginea, Sow. t.* 26. *Auric. nicotiana, With.*

BB. On old pales and decayed wood, not uncommon. June, July. *Hopk.*

Th. *ferruginea*, effuse reflexed ferruginous, pileus thin somewhat downy smoothish (nearly even) hairy beneath. *Pers. p.* 569. *Auricularia tabacina, Sow. t.* 25.

BB. Branches of decayed trees in the spring, frequent, *Hopk.*

Th. *hirsuta*, *α. vulgaris*, cæspitose coriaceous yellowish with concentric hairy lines glabrous beneath. *Pers. p.* 570. *Auricularia reflexa, Sow. t.* 27.

BB. Stumps of trees and rotten wood during the spring, not uncommon, *Hopk., Mr. Greville.*

Th. *purpurea*, imbricated subgelatinous zoned downy whitish purple beneath. *Pers. p.* 571. *Auricularia corrugata, Sow. t.* 90.

BB. Rotten wood and stumps of trees during most of the year, frequent, *Hopk.*

CLAVÆFORMES. *Fleshy, elongated, uniform, simple, or branched Fungi, with their surface smooth.*

30. CLAVARIA.

rate at the extremity, simple or branched, confluent, with he *stipes*, "discharging its *seeds* from the whole surface." *Decand.*

* CORALLOIDEÆ. *Branched.*

Cl. *coralloides*, branches crowded very much divided and ubdivided unequal. *With. p.* 359. *Sow. t.* 278. *Lightf.* 1060.

Woods and heaths, not uncommon. Autumn. *Lightf., Hopk.* lly white.

Cl. *fastigiata*, yellow, branches crowded very much divided d subdivided of equal height. *With. p.* 360. *Lightf. p.* 1061.

Woods and pastures. Autumn. *Lightf.*

Withering seems disposed to consider this a mere var. of the last and I suspect the following is not different.

3. Cl. *muscoides*, elongated yellow repeatedly branched in a d chotomous manner, branches slender acute. *Pers. p.* 58 *Sow. t.* 157. *Lightf. t.* 1062.

Hab. Woods and heaths among moss. Autumn. *Lightf., Hopk.*

4. Cl. *cornea*, gregarious small gelatinous viscid orange-colou ed simple or branched connate at the base. *Pers. p.* 59 *Sow. t.* 40.

Hab. Tops of the gate-post at Dalbeth, Glasg., *Hopk.* On uproot fir-trees, about Edinburgh, after the bark has fallen off. Autum *Mr. Greville.*

** Simplices. *Unbranched.*

5. Cl. *pistillaris*, solitary large very much thickened yellowi brown rounded at the extremity. *Pers. p.* 597. *Cl. her lanea, Sow. t.* 277. *Lightf. p.* 1056.

Hab. On the ground amongst rotten leaves, and sometimes on d cayed wood. In Dougalston wood. Autumn. *Hopk.*

6. Cl. *vermiculata*, subcylindrical or compressed simple holl brittle somewhat acuminated at the point rarely forked at t extremity. *Lightf. p.* 1057, and *p.* 1056 (*Cl. pistillaris Sow. t.* 253.

Hab. Woods and pastures in the autumn, frequent, *Lightf., Hop*

31. GEOGLOSSUM.

Club-shaped; extremity fleshy, generally compressed (short with the margin prominent, contiguous with the *stipes.*

1. G. *hirsutum*, subfasciculated hairy black. *Pers. p.* 608.

β. *capitatum*, scattered downy black capitate. *Clavaria oph glossoides, Sow. t.* 83.

Hab. Moist heaths and woods occasionally, seldom found with m than one head. Autumn. *Hopk.*

2. G. *mitrata*, undivided subfasciculated green, pileus rugose o tuse, stipes squamulose. *Clavaria mitrata, Holmsk. Fun Dan. p.* 24. *t.* 9. *Dicks. Plant. Crypt. Geoglossum viri Pers. p.* 611.

Hab. Woods in Scotland, near Loch-Lomond, *Dicks.*

F. Helvelloidei. *With a variously-formed, smooth, d stinct pileus.*

32. SPATHULARIA.

Club-shaped. *Pileus* compressed, membranaceous on each si and decurrent with the *stipes.*

1. Sp. *flavida*. *Pers. p.* 611. *Clavaria spathulata, Sow. t.* 3

Hab. Woods, rare. Dougalston wood. Autumn. *Hopk.*

33. LEOTIA.

Capituliform. *Pileus* conical or orbicular, with its margins flexed, closely embracing the *stipes.*

1. L. *epiphylla*, stipes pale yellow, pileus subclavate obtuse h low dull orange. *Clavaria epiphylla, Dicks. Pl. Cry*

fasc. 3. *p.* 22. *t.* 9. *f.* 10. *Sow. t.* 293. *Leotia Dicksoni, Dicks. p.* 612.

Hab. On decayed leaves in damp situations. Abundant by the road-side on the western shores of Loch-Lomond.

34. HELVELLA.

Pileus membranaceous, inflated, irregular, bent down on each side.

1. H. *Mitra*, large, pileus inflated (free?) pale livid colour, stipes furrowed and lacunose whitish. *Pers. p.* 615. *Sow. t.* 39.

Hab. Woods, not unfrequent in the autumn, *Lightf.* Rare about Glasg. Wood near Castlemilk, *Ure.* Dougalston, *Hopk.*

2. H. *fuliginosa*, greyish free subinflated, stipes long attenuated smooth hollow. *Schæff. t.* 320. *Dicks. Pl. Crypt. fasc.* 3. *p.* 25. *Sow. t.* 454.

Hab. Woods, *Dickson.*

3. H. *aurea*, stipes short yellow, pileus umbrella-like gold-coloured. *With. p.* 334.

Hab. On sticks and stumps of trees in woods and moist places, frequent, *Hopk.*

35. MORCHELLA.

Pileus elongate, rounded, pitted with holes. (*Volva and gelatinous seminal mass none.*)

1. M. *esculenta*, pileus contracted at the base, stipes solid. *Pers. p.* 618. *Helvella esculenta, Sow. t.* 51.

Hab. Woods in the spring, not unfrequent, as at Blair in Athol, in the woods at Langholm in Eskdale, and in Logton wood, near Dalkeith, *Lightf.*

Esculent *Morel.* Much used for seasoning dishes.

36. TREMELLA.

Spreading, gelatinous, variously folded and lobed. "*Seeds* scattered throughout the whole surface." *Decand.*

1. Tr. *albida*, sessile dilated obtuse whitish or somewhat brownish pulpy semipellucid. *Sm. in E. B. t.* 2117. *Tremella candida? Pers. p.* 624.

Hab. On rotten branches of trees, and on pales. On rotten wood at Dalbeth, *Hopk.*

2. Tr. *arborea*, sessile gelatinous roundish undulated blackish beset with mammillary white-headed processes on the upper side. *Sm. in E. B. t.* 2448.

Hab. On fallen trees and on dead wood, frequent. Found on the trunk of a dead tree in Carmyle wood for several years past, about February, *Hopk.*

Dillenius says that this is called, in Herefordshire, Witches' Butter, because, when thrown into the fire, it is believed to be efficacious against witchcraft.

3. Tr. *sarcoides*, sessile gelatinous reddish purple at first club-shaped then rounded lobed plaited or curled finally blackish. *Sm. in E. B. t.* 2450.

Hab. On rotten wood in damp shady places, rare. On the stump of a tree near the pond, Dalbeth, *Hopk.*

Mr. Hopkirk has preserved specimens of this plant in spirits of wine for four years, without the least change in its appearance.

4. Tr. *Sabinæ*, sessile prominent oblong tooth-shaped tawny somewhat powdery. *Sm. in E. B. t.* 710.

Hab. On living plants of the *Juniperus Sabina* and *communis*. May. *Hopk.*

From Mr. Hopkirk's remarks that "on examining this plant with a good microscope, it seemed to consist of a mass of fibres running irregularly across each other, interspersed with many opaque globular bodies, probably the seed," I suspect it will prove to belong to a rather higher order of vegetables, and to be of the genus *Nostoc*.

5. Tr. *mesenterica*, sessile clustered plaited lobed waved orange-coloured. *Sm. in E. B. t.* 709.

Hab. On dead wood occasionally. *Hopk.*

6. Tr. *ferruginea*, sessile clustered lobed waved of a rusty brown the surface finely pubescent. *Sm. in E. B. t.* 1452.

Hab. On dead wood, rare. Found on the pales before the baths, Helensburgh. October. *Hopk.*

7. Tr. *intumescens*, sessile clustered twisted tumid brown shining and gelatinous, when dry thin and membranous. *Sm. in E. B. t.* 1870.

Hab. On the roots of beech trees at Carmyle, *Hopk.*

8. Tr. *Auricula*, sessile leathery reddish brown rough beneath rugged and plaited above resembling an ear. *Sm. in E. B. t.* 2447. *Peziza Auricula, With. p.* 344. *Lightf. t.* 1054.

Hab. Upon the bark of old decayed trees, particularly upon the Elder, *Lightf.* Rotten tree at Dalbeth, Glasgow, *Hopk.*

Mr. Hopkirk's plant was of a dark red colour.

9. Tr.? *cruenta*, minutely granulated diffuse indeterminate shining dark purple. *Sm. in E. B. t.* 1800.

Hab. About the bottom of walls in damp situations in winter, North side of St. George's Church, Glasgow, *Hopk.*

37. PEZIZA.

Receptacle hemisphærical, concave, slightly tumid, bearing the *seed* in the smooth disk, and dispersed in the form of an extremely fine dust.

A. Tremelloideæ. *Substance more or less gelatinous.*

1. P. *inquinans*, gregarious large blackish and staining when touched at length convex obconical rugose and brownish externally. *Pers. p.* 631. *P. polymorpha, Sow. t.* 428. *Lightf. p.* 631.

Hab. Trunks of trees in November, *Lightf.*

B. HELVELLOIDEÆ. *Large, carnoso-membranaceous, fragile, externally subfarinaceous.*

2. P. *aurantia*, stemless cæspitose subflexuose reddish orange, externally whitish. *Pers. p.* 638. *P. coccinea, Sow. t.* 78 *P. cyathoides, Lightf. p.* 1052.

HAB. Rotten sticks and sometimes upon the ground, on ditch banks in shady places. Spring and autumn. *Lightf., Hopk.*

3. P. *vesiculosa*, cæspitose large olive brown somewhat connivent at the mouth at length campanulate torn at the margin, exterior coat separating from the inner one. *Pers. p.* 641. *Sow. t.* 4.

HAB. On the ground on road sides, and on dunghills, during the spring and autumn, but not common, *Hopk.*

C. *Mostly small, externally hairy or pubescent.*

4. P. *scutellata*, rather large flattened orange-coloured, externally furnished with divergent black hairs. *Pers. p.* 650. *Sow. p.* 24. *Lightf. p.* 1053.

HAB. On rotten wood and old cow dung, in spring and autumn, *Lightf.*; and often on the ground in hot-beds, and in flower-pots, common, *Hopk.*

5. P. *pulchella*, scattered subsessile hairy white, disk orange red. *Pers. p.* 653. *P. bicolor, Sow. t.* 17.

6. P. *virginea*, gregarious white upon rather a long stipes hemisphærical patulous hairy. *Pers. p.* 653. *P. nivea, Sow. t.* 65.

HAB. On rotten wood and decayed trees, frequent. Autumn. *Hopk.*

D. *Entirely glabrous, at least not manifestly downy, carnoso-cereaceous (mostly minute).*

7. P. *Prunastri*, breaking through the epidermis scattered sessile coriaceous black paler beneath. *Pers. p.* 673.

HAB. On the dead stems of *Prunus Cerasus, Mr. Greville.*

38. ASCOBOLUS.

Receptacle hemisphærical, fleshy. *Capsules* (*thecæ*) manifest, protruding, filled with a fluid, and generally three *seeds* or *sporules.*

1. A. *furfuraceus*, gregarious somewhat concave brown or greenish, externally furfuraceous. *Pers. p.* 676. *Peziza stercoraria, Sow. t.* 18.

HAB. On cow dung, about Edinburgh. Autumn. *Mr. Greville.*

SECT. II. NÆMATOTHECII. *Filamentous Fungi.*

39. MONILIA.

Stipitate, or spreading. *Filaments* moniliform or articulated.

* *Stipitate. Filaments forming a rounded head.*

1. M. *glauca*, tufted cinereo-glaucous. *Pers. p.* 691. *Mucor*

glaucus, Lightf. p. 1072. *Sow. t.* 378. *f.* 9. *f.* 14. *M. lignifragus.*

Hab. On decayed fruit and vegetables, &c., common, *Lightf., Hopk.* This is the well known *blue mould.*

** *Caulescent. Filaments moniliform, straight, digitate.*

2. M. *digitata*, glaucous, stipes simple digitate. *Pers. p.* 693. *Mucor crustaceus, Lightf. p.* 1073.

Hab. On corrupted fruit of various kinds, frequent, *Lightf.*

40. DEMATIUM.

Filaments of an indeterminate form, erect or depressed, somewhat fasciculate or spreading, smooth and not interwoven.

1. D. *epiphyllum*, erect fasciculate subolivaceous at length pulveraceous, filaments smooth. *Pers. p.* 695.

Hab. On the under surface of the dead leaves of *Pinus Picea, Mr. Greville.*

2. D. *strigosum*, tufted tawny filaments somewhat rigid divergent. *Pers. p.* 695. *Byssus fulva, Lightf. p.* 1002. *B. barbata, E. B. t.* 701.

Hab. Upon wet half decayed wood lying in shady places, in autumn and winter, *Lightf.*

3. D. *violaceum*, dense spreading violet-coloured. *Pers. p.* 697. *Byssus phosphorea, Lightf .p.* 1000. *Auricularia phosphorea, Sow. t.* 350. *Conferva phosph., Dillw. Conf. t.* 88.

Hab. On the bark of decayed wood and sticks, in the autumn and winter, frequent, *Lightf.*

Almost forms a membrane, and hence Sowerby has made it an *Auricularia.*

41. ERINEUM.

Epiphyllous. *Filaments* rigid, collected into a subcupuliform tuft impressed upon the leaves.

1. E. *acerinum*, depressed broadish reddish brown. *Pers. p.* 700.

Hab. On the leaves of *Acer pseudo-Platanus*, about Edinburgh. *Mr. Greville.*

2. E. *alneum*, tufted dense almost scarlet. *Pers. p.* 701.

Hab. On the leaves of *Betula alba* on the upper surface, *Mr. Greville.*

3. E. *betulinum*, tufted dense ferruginous. *Decand. Fl. Gall. p.* 15.

Hab. On the under surface of the leaves of *Betula alba*, about Edinburgh. Autumn. *Mr. Greville.*

42. RACODIUM.

Expanded, soft, with the filaments densely interwoven.

1. R. *cellare*, broadly spreading very soft greenish black. *Pers. p.* 701. *Nees von Esenbeck, t.* 5. *f.* 70. *Byssus septica, Lightf. p.* 999. *Fibrillaria vinaria, Sow. p.* 432.

Hab. Wine-vaults, upon the casks and walls, frequent, *Lightf.*

43. HIMANTIA.

Creeping, hairy, with branching fibres.

1. H. *candida*, epiphyllous delicate white somewhat feathery and dilated at the extremity. *Pers. p.* 704. *Nees von Esenbeck, t.* 5. *f.* 72. *Byssus candida, Lightf. p.* 1003. *Fibrillaria stellata, Sow. t.* 387. *f.* 1.

Hab. On rotten leaves and damp decaying wood, in autumn and winter, *Lightf.*

Order II. LICHENS. *Ach.*

(Lichenes, *Ach. Lichenes, and part of Hypoxyla, Decand. Part of Algæ, Juss. Genus Lichen, and some Byssi, Linn.*)

Universal recept. (*thallus, crust* or *frond,*) polymorphous, without roots, perennial, abounding in excessively minute bodies for the purposes of propagation, either imbedded in the substance or scattered upon its surface, or included in peculiar organs, which have been considered the *fruit* (partial receptacles, or *apothecia*, by some called *shields*, or *scutella*, and *tubercles*). *Ach.*

Vegetation.—The *Lichens* bear a closer affinity to the *Fungi* than to any other order. Sometimes they are formed of a simple, pulverulent crust or frond, sometimes membranous, coriaceous, gelatinous, lobed, and variously branched; at all times destitute of leaves. They present various colours, not unfrequently tending to green.

Div. I. Idiothalami. *Lichens whose Apothecia are formed of a substance distinct from the Thallus, and different from it in colour.*

Sect. I. Homogenei. *Apothecia simple, entirely formed of a nearly uniform pulverulent or cartilaginous substance.*

A. *Apothecia destitute of a raised margin.*

1. SPILOMA.

Universal receptacle crustaceous, spreading, plane, adnate, uniform. *Partial recept.* composed of minute granules collected into a compact, homogeneous, subpulverulent, naked, variously shaped, coloured mass.

1. S. *tumidulum*, crust somewhat cartilaginous whitish, apothecia crowded tumid oblong varying in figure roughish reddish at length brownish black and somewhat pruinose. *Ach. Syn. Lich.*[a] *p.* 1. *E. B. t.* 2151.

Hab. On the bark of trees, occasionally, *Hopk.*

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[a] "*Acharii Synopsis Methodica Lichenum,*" whose arrangement and characters are here, with few exceptions, adopted.

2. ARTHONIA.

Universal receptacle crustaceous, spreading, plane, adnate, uniform. *Partial recept.* sessile and subimmersed, roundish, but varying in form, destitute of margin (black), covered with a subcartilaginous membrane.

1. A. *astroidea*, crust membranaceous pale cinereous and glaucescent, apothecia flattened upon the crust plane angular substellate black. *Ach. Syn. Lich. p.* 6. *Opegrapha astroidea*, *E. B. t.* 1847.

Hab. On the smooth bark of trees, common, *Hopk.*

3. SOLORINA.

Universal receptacle foliaceous, coriaceous, lobed, free, beneath having fibrous or woolly veins. *Partial recept.* adnate, rounded, destitute of margin, covered by a coloured membrane.

1. S. *crocea*, thallus greenish (brown when dry) lobed, beneath veiny and of a fine saffron colour, apothecia somewhat tumid brown. *Ach. Syn. Lich. p.* 8. *Lichen croceus*, *Lightf. p.* 856. *E. B. t.* 498.

Hab. Tops of the Highland mountains, not uncommon, especially in a micaceous soil, Ben Lomond, &c.

Remarkable for the brilliant orange or saffron colour of the underside. Habit of a *Peltidea*, near which it would much more naturally range.

2. S. *saccata*, thallus lobed greyish green whiter and fibrous beneath, apothecia at length sunk into deep pits or hollows brown. *Ach. Syn. Lich. p.* 8. *Lichen saccatus*, *Lightf. p.* 855. *E. B. t.* 288.

Hab. Upon the earth in the chasms of the rocks that are damp and shady, not unfrequent, especially in the Highlands, *Lightf.*

B. *Apothecia with a raised border or margin.*

4. LECIDEA.

Universal receptacle various, crustaceous, spreading, adnate, uniform or foliaceous. *Partial recept.* scutelliform, sessile, surrounded by a cartilaginous membrane, having a disk of a similar nature with the raised border or margin.

* *Thallus crustaceous, uniform* (*Catillaria*).

† *Apothecia constantly black, naked* (*not pruinose*).

1. L. *coracina*, crust continued tessellated greyish black, apothecia immersed between the areolæ plane at length convex somewhat angular black of the same colour within. *Ach. Syn. Lich. p.* 11. *Lichen atratus*, *E. B. t.* 2335.

Hab. Granite rocks at the head of Loch Lee, in Glen Esk, Angus-shire, rare, *G. Don.*

2. L. *atro-alba*, crust spreading very thin cracked black with swelling whitish scattered areolæ, apothecia plane or slightly convex often in the interstices black of the same colour within. *Ach. Syn. Lich. p.* 11.

Hab. Upon rocks, *Lightf.*

3. L. *fusco-atra*, crust very thin black cracked and tessellated, areolæ chesnut brown plane marginated shining scattered, apothecia rather convex black margined white within. *Ach. Syn. Lich. p.* 12. *Patellaria fusco-atra, Hoffm. Pl. Lich. t.* 54. *f.* 1. *Lichen fusco-ater, Lightf. p.* 804. *Lichen dendriticus, E. B. t.* 1734.

Hab. Rocks, *Lightf.* Pentland Hills, *Dr. Walker.* Ben Lomond, *Mr. Turner.*

Margin of the crust sometimes fimbriated, where it becomes the *Verrucaria dendritica, Hoffm. Pl. Lich. t.* 19. *f.* 4.

4. L. *fumosa*, crust subcartilaginous tessellated smoothish brownish grey, apothecia buried in the crust plane margined at length convex clustered and losingt heir margin black, within greyish black. *Ach. Syn. Lich. p.* 12. *Lichen gibbosus, Dicks. Pl. Crypt. fasc.* 2. *t.* 6. *f.* 5. *Lichen cechumenus, E. B. t.* 1830, and *L. athrocarpus, E. B. t.* 1829.

Hab. Alpine rocks, upon the summit of Ben Lawers, *Dickson.*

5. L. *confluens*, crust tartareous somewhat spreading tessellated nearly even greyish brown, apothecia sessile at length irregular convex subglobose confluent black immarginate, within having a thin greyish stratum beneath the disk. *Ach. Syn. Lich. p.* 16. *E. B. t.* 1964.

Hab. Rocks on the Pentland Hills, *Sir Jas. E. Smith.* On the Cathkin Hills, near Glasgow, *Hopk.* On the ascent, south side, and summit, of Ben Lomond, *Mr. Turner* and *Hook.*

6. L. *parasema*, crust thin submembranaceous greyish white bordered with black at length spreading somewhat granulated, apothecia nearly plane sessile margined black blackish within. *Ach. Syn. Lich. p.* 17. *Lichen parasemus, E. B. t.* 1450. *L. sanguinarius, Lightf. p.* 803.

Hab. On the bark of trees, frequent, *Lightf., Hopk.*

7. L. *sanguinaria*, crust rugose and warted greyish white, apothecia at length convex hemisphærical somewhat tuberculated black horny and black within having beneath a powdery bright red stratum. *Ach. Syn. Lich. p.* 19. *Lichen sanguinarius, E. B. t.* 155.

Hab. On rocks, *Lightf.*, who has confounded it with *L. parasema.*

8. L. *atro-virens*, crust spreading thin black scattered with planish subcontiguous bright yellow areolæ, apothecia plane or slightly concave black of the same colour within. *Ach. Syn. Lich. p.* 21. *Verrucaria atro-virens, Hoffm. Pl. Lich. t.* 17. *f.* 4.

β. *geographica*, areolæ bright yellow plane angular black between and with a black margin. *Lichen geographicus, E. B. t.* 248.

Hab. α. Upon rocks about New Posso and other places, *Lightf.* β. On rocks frequent.

9. L. *silacea*, crust tartareous tessellated yellowish red, apothecia

sessile plane at length convex irregular confluent black internally corneous and black. *Ach. Syn. Lich. p.* 22. *E. B. t.* 1118 (*Lichen silaceus*).

Hab. Rocks on Ben Nevis, *Mr. Turner* and *Hook.*

10. L. *Œderi*, crust granulated and tessellated somewhat pulverulent ochraceous red, apothecia minute elevated with the margin tumid, the disk depressed black nearly of the same colour internally. *Ach. Syn. Lich. p.* 22. *E. B. t.* 1117 (*Lichen Œd.*).

Hab. Rocks in Scotland, *Dickson.* On Ben Nevis, *Mr. Turner* and *Hook.*

11. L. *alba*, crust membranaceous white with a greyish or whitish grey powdery substance scattered over it in small clusters, apothecia minute appressed plane black. *Ach. Syn. Lich. p.* 24. *Lepraria alba*, *E. B. t.* 1349. *Byssus lactea*, *Lightf. p.* 1007.

Hab. On the bark of old trees and rocks, common.

I have never seen the *apothecia*, described by Acharius, on this species.

†† *Apothecia black with a grey bloom.*

12. L. *albo-cærulescens*, crust tartareous contiguous even at length somewhat tessellated and whitish, apothecia sessile and elevated plane black with a grey bloom and a black smooth border. *Ach. Syn. Lich. p.* 30. *E. B. t.* 2224 (*Lichen pruinosus*).

Hab. Scotch Alps, *Dickson.*

13. L. *epipolia*, crust tartareous defined tessellated white, areolæ swelling, apothecia sessile hemisphærical with a grey bloom black within with a thin persistent margin. *Ach. Syn. Lich. p.* 32. *E. B. t.* 1137 (*Lichen epip.*).

Hab. Scotch Alps, *Dickson.*

††† *Apothecia orange, red, flesh-colour, or more or less brown.*

14. L. *incana*, crust spreading leproso-farinose soft uneven glaucous green, apothecia scattered sessile brown with the margin entire paler. *Ach. Syn. Lich. p.* 36. *E. B. t.* 1685 (*Lichen incanus*). *Byssus incana*, *Lightf. p.* 1006.

Hab. Woods, trunks of trees, and amongst moss, frequent, *Lightf.*, *Hopk.*

The *apothecia*, which are published no where but in *Engl. Bot.*, are of extremely rare occurrence, and, till their discovery, the plant was arranged among the *Leprariæ* by Acharius.

15. L. *sulphurea*, crust tartareous cracked and broken uneven smoothish pale sulphur colour, apothecia adnate plane scarcely margined brown and scarcely paler in the margin at length irregular and convex. *Ach. Syn. Lich. p.* 37. *E. B. t.* 1186 (*Lichen sulph.*).

Hab. Rocks in Scotland, *Dickson.* On Ben Lomond, *Mr. Turner* and *Hook.* Walls and rocks about Helensburgh, *Hopk.*

16. L. *decolorans*, crust granulated greyish white, granules becoming pulverulent, apothecia nearly plane red flesh-coloured livid or brown with the elevated margin paler at length flexuose. *Ach. Syn. Lich. p.* 37.

β. *granulosa*, crust firmer granulated and subpapillose, apothecia at length hemisphærical rugose brownish-black and black confluent. *Ach. Lichen escharoides*, *E. B. t.* 1247, and *Lichen quadricolor*, *E. B. t.* 1185.

Hab. On the ground by the side of Loch Lomond, *Mr. Turner* and *Hook.*

17. L. *rupestris*, crust thin tartareous contiguous greyish white, apothecia immersed plane margined at length convex the margin persistent glabrous reddish brown of the same colour within. *Ach. Syn. Lich. p.* 39. *Lichen rupestris*, *E. B. t.* 2245. *Lichen calvus*, *E. B. t.* 948.

Hab. Upon rocks in the subalpine parts of Scotland, *Dickson.*

18. L. *luteola*, crust thin whitish covered with somewhat globular pale granules at length greyish, apothecia sessile becoming convex yellowish brown. *Ach. Syn. Lich. p.* 41. *Lichen vernalis*, *Lightf. p.* 805. *E. B. t.* 845.

Hab. On the bark of trees, *Lightf.*

19. L. *fusco-lutea*, crust spreading very thin membranaceous white or greyish somewhat shining subgranulose, apothecia plane yellow-brown at length red-brown with the margin paler elevated at length flexuose. *Ach. Syn. Lich. p.* 42. *Lichen fusco-luteus*, *E. B. t.* 1007.

Hab. Highland mountains, plentiful. On low ground in Orkney, as in the isle of Eda, covering grass, moss, &c.

20. L. *anthracina*, crust spreading somewhat scaly uneven roughish darkish brown, apothecia minute plane reddish-yellow with the margin paler at length somewhat convex and brownish. *Achar. Syn. Lich. p.* 43. *Lichen byssinus*, *E. B. t.* 432.

Hab. On rocks and on trees, Scotland, *Dickson.*

21. L. *cæsio-rufa*, crust tessellated rugose darkish grey, apothecia plane rusty orange the margin sometimes crenulate at length convex with the margin obsolete blackish red. *Ach. Syn. Lich. p.* 44. *Lichen ferrugineus*, *E. B. t.* 1650.

Hab. Rocks on Ben Nevis and Ben Lomond, *Mr. Turner* and *Hook.* Rocks and trees, frequent, *Hopk.*

22. L. *icmadophila*, crust leprose uneven somewhat granulated greenish white, apothecia nearly sessile plane flesh-coloured at length waved roughish in the disk margin scarcely any. *Ach. Syn. Lich. p.* 45. *Lichen ericetorum* β, *Lightf. p.* 809. *L. ericetorum*, *E. B. t.* 372.

Hab. Upon the ground in heaths, sides of peat-bogs, gravel-pits, and on banks, *Lightf. p.* 809.

23. L. *marmorea*, crust thin greyish white, apothecia somewhat globose at length urceolate white, the disk flesh-coloured, the margin tumid entire. *Ach. Syn. Lich. p.* 46. *E. B. t.* 739 (*Lichen marm.*).

Hab. Upon the bark of trees, on earth and mosses, *Dickson.*

24. L. *alabastrina*, crust thin smoothish minutely granulated greyish white, apothecia slightly convex entire whitish rose-colour paler at the margin. *Ach. Syn. Lich. p.* 46. *Lichen rosellus*, *E. B. t.* 1651.

Hab. Received from Scotland by *Mr. Turner, v. E. Bot.*

25. L. *Ehrhartiana*, crust cartilaginous cracked rugoso-plicate granulated white or greenish, apothecia nearly sessile plane at length slightly convex waved unequal clustered pale yellowish. *Ach. Syn. Lich. p.* 47. *Lichen Ehrhartianus*, *E. B. t.* 1136.

β. *polytropa*, crust subtartareous tessellated pale, apothecia nearly plane with the margin lobed waved clustered at length subglobose destitute of margin yellowish flesh-colour. *Lichen polytropus*, *E. B. t.* 1264.

Hab. β. Rocks on the Pentland hills, *Maugh.* Rocks about N. Queensferry, and upon Ben Lomond, *Mr. Turner* and *Hook.*

26. L. *lucida*, crust thin leprose powdery soft pale greenish yellow, apothecia slightly convex pale yellowish, margin obsolete. *Ach. Syn. Lich. p.* 48. *Lichen lucidus*, *E. B. t.* 1550.

Hab. Rocks above N. Queensferry, *Mr. Turner* and *Hook.*

27. L. *luteo-alba*, crust thin smoothish white, apothecia crowded at length convex hemisphærical margined orange coloured white within. *Ach. Syn. Lich. p.* 49. *Lichen aurantiacus*, *Lightf. p.* 810. *Lichen luteo-albus*, *E. B. t.* 1426.

** *Thallus crustaceous of some determined figure, or foliaceous* (*Lepidoma*).

28. L. *vesicularis*, crust somewhat imbricated brownish black covered with a greyish powder, lobes entire swelling, apothecia black naked at length hemisphærical with the margin obsolete. *Ach. Syn. Lich. p.* 51. *Lichen cæruleo-nigricans*, *Lightf. p.* 805. *E. B. t.* 1139.

Hab. Upon the Highland rocks, but not common, *Lightf.*

29. L. *lurida*, crust imbricated greenish brown, lobes roundish crenate paler beneath, apothecia plane at length somewhat convex black. *Ach. Syn. Lich. p.* 51. *Lichen luridus*, *E. B. t.* 1329.

Hab. Scotch Alps, *Dickson.*

30. L. *scalaris*, crust imbricated pale olive green, lobes distinct reniform nearly erect beneath and the margin powdery, apothecia plane margined glaucous black. *Ach. Syn. Lich. p.* 52. *Lichen scalaris*, *E. B. t.* 1501.

Hab. Upon rocks and earth in the Scotch Alps, *Dickson.*

31. L. *decipiens*, crust subimbricated, lobes distant subpeltate roundish flesh-coloured and red brown whitish beneath, apothecia in their border convex and subglobose black, margin obsolete. *Ach. Syn. Lich. p.* 52. *Lichen decipiens*, *E. B. t.* 1501.

Hab. Upon the earth in heathy places, Scotland, *Dickson.*

32. L. *microphylla*, thallus slightly imbricated fragmentary greyish green on a dense black fibrous cushion, its segments somewhat linear lobed crenate and granular at the margin, apothecia scattered tawny paler at the margin at length convex brown obliterating the margin. *Lichen microphyllus*, *E. B. t.* 2128. *Lecidea microphylla, var. triptophylla*, *Ach. Syn. Lich. p.* 53.

Hab. Trees by Loch Katarine, *Mr. Turner* and *Hook.* At Inverary and in Glen Ach-na-shilloch, Ross-shire, *Mr. Borrer* and *Hook.*

5. CALICIUM.

Universal receptacle crustaceous, spreading, plane, adnate, uniform. *Partial recept.* cup-shaped, sessile, or stipitate, cartilaginous, containing a compact pulverulent mass, plane or convex above, forming a naked disk.

1. C. *sphærocephalum*, crust very thin greyish smooth, apothecia subglobose, the disk dark brown, the margin greyish, stipes filiform black. *Ach. Syn. Lich. p.* 57. *Lichen sphæroc.*, *E. B. t.* 414. *Mucor sphærocephalus* and *lichenoides*, *Lightf. p.* 1071.

Hab. On the bark of old trees and pales.

6. GYROPHORA.

Universal receptacle foliaceous, coriaceo-cartilaginous, peltate, of one piece (or by luxuriance many-leaved), free beneath. *Partial recept.* subscutelliform, sessile, and adnate, covered by a cartilaginous (black) membrane, the *disk* warted or marked with circles, variously plaited and contorted and margined.

1. G. *glabra*, thallus smoothish blackish green beneath smooth black and naked, apothecia at length convex rough and plaited. *Ach. Syn. Lich. p.* 63.

β. *polyphylla*, thallus of many leaves or lobes variously folded blackish green quite black beneath on each side naked and smoothish. *Lichen polyphyllus*, *Lightf. p.* 863. *E. B. t.* 1282.

Hab. Rocks on the Highland mountains, frequent, *Lightf.*

2. G. *proboscidea*, thallus membranaceous with elevated reticulations at length of a smoky ash-colour rough smoother paler and subfibrillose beneath, apothecia turbinate at length convex variously plaited. *Ach. Syn. Lich. p.* 64. *E. B. t.* 2484. *Lichen deustus*, *Lightf. p.* 861.

Hab. Highland mountains, on rocks near their summits, common. The *G. arctica, E. B. t.* 2485, is but a var. of this.

3. G. *cylindrica*, thallus somewhat naked dark greenish grey folded and lobed strongly ciliated beneath smooth pale with branching fibres, apothecia elevated nearly plane with concentric and plaited lines. *Ach. Syn. Lich. p.* 65. *Lichen crinitus, Lightf. p.* 522. *Lichen proboscideus, E. B. t.* 522.

Hab. Rocks on the Highland mountains, not uncommon.

4. G. *erosa*, thallus rugged olivaceous brown its circumference perforated and laciniated dark grey beneath glabrous somewhat granulated and fibrous, apothecia somewhat convex variously plaited. *Ach. Syn. Lich. p.* 65. *E. B. t.* 2066. *Lichen torrefactus, Lightf. p.* 862.

Hab. Rocks on the Highland mountains, frequent, especially near the summits.

5. G. *deusta*, thallus roughish olivaceous brown with a brown scattered dust smooth beneath with pits and reticulations naked of the same colour, apothecia plane with circular plaits at length convex. *Ach. Syn. Lich. p.* 66. *E. B. t.* 2483.

Hab. Rocks in the Highlands of Scotland, *Dickson, Mr. Turner* and *Hook.*

6. G. *pustulata*, thallus blistered and warty greenish ash-colour beneath deeply pitted smooth palish brown naked, apothecia few plane margined, disk somewhat even papillose and plaited. *Ach. Syn. Lich. p.* 66. *Lichen pust., E. B. t.* 1283. *Lightf. p.* 858.

Hab. Rocks on the Highland mountains, not unfrequent, *Lightf.*

The fruit is rare, and has been found by *Mr. Menzies;* and by *Mr. Borrer* and *myself* on rocks in Skye.

7. G. *pellita*, thallus smooth sinuato-lobate of a greenish coppery brown beneath black with dense pulvinate fibres, apothecia sessile at length somewhat globose variously plaited intricate. *Ach. Syn. Lich. p.* 67. *Lichen pellitus, E. B. t.* 931. *L. polyrhizus, Lightf. p.* 864.

Hab. Rocks on the Highland mountains, frequent.

7. OPEGRAPHA.

Universal receptacle crustaceous, spreading, plane, adnate, uniform. *Partial recept.* oblong, elongated, sessile, covered with a cartilaginous black membrane, its disk linear, margined on each side.

1. O. *Persoonii*, crust tartareous smoothish cohering uneven whitish, apothecia innate oblong their disk resembling a cleft, at length rugose waved plaited dissimilar rather confluent with the disk irregular somewhat dehiscent. *Ach. Syn. Lich. p.* 71.

β. *aporea*, crust tartareous or leprose uneven pulverulent, apothecia roundish dissimilar waved plaited tortuose and variously expanded in the disk. *Lichen simplex, E. B. t.* 2152.

Hab. β. On slate and stones, frequent, *Hopk.*

2. O. *vulgata*, crust between cartilaginous and membranaceous somewhat scaly smoothish greenish white, apothecia sessile long or roundish, waved somewhat shining, with the disk very narrow. *Ach. Syn. Lich. p.* 73. *E. B. t.* 1811.

Hab. Bark of trees, common, *Hopk.*

3. O. *macularis*, crust very thin brownish black, apothecia minute much crowded roundish elliptical at length rugose irregular, disk very narrow. *Ach. Syn. Lich. p.* 72. *O. epiphega, t.* 2282.

Hab. On the bark of trees, common, *Hopk.*

Known by the *apothecia* being so closely crowded as to form largish black spots.

Sect. II. Heterogenii. *Apothecia subsimple, formed of a solitary perithecium* (*or external covering*) *including the fructiferous mass.*

* *Apothecia margined.*

8. GRAPHIS.

Universal receptacle crustaceous, spreading, plane, adnate, uniform. *Partial recept.* elongated, immersed in the *thallus*, which forms a margin on each side the naked linear disk, not covered by a membrane. (However correct this character may be, the genus does not appear, in habit and general external character, at all different from *Opegrapha.*

1. Gr. *scripta*, crust membranaceous smooth somewhat shining white or greyish brown bordered with black, apothecia half immersed naked flexuose simple or branched, disk very narrow, margin formed of the thallus raised membranaceous. *Ach. Syn. Lich. p.* 81. *E. B. t.* 1813 (*Opegrapha scripta*). *Lichen scriptus, Lightf. p.* 800.

Hab. On the smooth bark of trees occasionally, *Lightf., Hopk.*

** *Apothecia without any margin.*

9. VERRUCARIA.

Universal receptacle crustaceous, spreading, plane, adnate, uniform. *Partial recept.* globoso-hemisphærical, its base immersed in the *thallus*, with a double coat; *exterior* subcartilaginous, thick (black), closing the upper half, tipped with a small prominent orifice; *interior* very thin, membranaceous, including a subglobose cellular nucleus.

1. V. *maura*, crust very thin smooth much cracked very black, apothecia very minute subglobose immersed the extremity prominent umbilicated, nucleus blackish. *Ach. Syn. Lich. p.* 95. *E. B. t.* 2456.

Hab. Frequent on rocks on the Scottish coast; as at Losie-mouth, coast of Moray; basaltic rocks at Dunbar, *Mr. Borrer* and *Hook.*

10. ENDOCARPON.

Universal receptacle crustaceous, plane, adnate, of some determined figure, or foliaceous and peltate. *Partial recept.* globose, concealed within the substance of the *thallus*, and surrounded by a simple, thin, diaphanous membrane, with a subpapilliform thick orifice rising just above the *thallus*, and including a *nucleus* of nearly the same substance.

1. E. *tephroides*, thallus crustaceous submembranaceous spreading and subfoliaceous contiguous wavy cracked glaucous ash-colour irregularly lobed and crenated at the margin beneath black somewhat spongy, orifices elevated convex black perforated. *Ach. Syn. Lich. p.* 98. *E. B. t.* 2013 (*Lichen tephr.*), and *t.* 1500 (*Lichen fuscellus*).

Hab. On the ground at Burgh-head, in Stronsa, one of the Orkney islands, *Mr. Borrer* and *Hook.*

2. E. *parasiticum*, thallus coriaceous convex rounded lobed copper coloured at length rugged black and shaggy beneath, orifices scattered sunk minute coal-black at length convex. *Ach. Syn. Lich. p.* 100. *E. B. t.* 1866 (*Lichen parasit.*).

Hab. On *Parmelia omphalodes*, at the foot of Ben Nevis, and upon rocks in the hilly moors of Ross-shire, *Mr. Borrer* and *Hook.*

3. E. *leptophyllum*, thallus cartilaginous foliaceous orbicular peltate brown or greyish the border spread and wavy smooth naked rough and black beneath, orifices of the apothecia very minute slightly prominent black. *Ach. Syn. Lich. p.* 102. *E. B. t.* 2012 (*Lichen leptoph.*).

Hab. Upon rocks on the hill of Kinnoul, near Perth, *Mr. Borrer* and *Hook.*

4. E. *smaragdulum*, thallus crustaceo-cartilaginous somewhat foliaceous minute subpeltate appressed plane roundish entire yellow green, orifices of the apothecia depressed reddish brown. *Ach. Syn. Lich. p.* 98. *Lichen smaragd., E. B. t.* 1512.

Hab. Upon rocks near Sheean Ferry, *Mr. Turner* and *Hook.*

5. E. *miniatum*, thallus thick crustaceo-cartilaginous foliaceous orbicular peltate greyish spread at the margin somewhat lobed and waved beneath smooth at length rugose and tawny, orifices minute slightly prominent brownish. *Ach. Syn. Lich. p.* 101. *Lichen miniatus, E. B. t.* 593. *Lightf. p.* 857.

Hab. Rocks, frequent; as King's Park, Edinb., *Lightf.* Castle rock, Edinb., *Maugh.*

6. E. *complicatum*, thallus coriaceo-cartilaginous lobed greyish beneath brownish black, the lobes nearly erect rounded plicate and convolute, orifices of the apothecia numerous convex black. *Ach. Syn. Lich. p.* 102. *Lichen miniatus, β. amphibius, E. B. t.* 593. *f.* 2. *Lichen miniatus, β. complicatus, Lightf. p.* 858.

Hab. On rocks with the preceding, *Lightf.* Common.

Sir James Smith justly remarks, that this seems to unite the foregoing and the following species.

7. E. *Weberi*, thallus cartilagineo-coriaceous lobed greenish brown olivaceous beneath rather tawny or blackish on both sides smooth, the lobes laciniated waved plaited and crisped crowded, orifices rather convex black. *Ach. Syn. Lich. p.* 103. *Lichen aquaticus*, *E. B. t.* 594.

Hab. Rocks and stones over which water trickles, within reach of the spray of cascades, &c., not uncommon.

Div. II. Cœnothalami. *Lichens whose apothecia are formed in part from the substance of the crust or thallus.*

Sect. I. Phymatoidei. *Apothecia included in wart-like processes which are formed of the thallus.*

11. PORINA.

Universal receptacle crustaceo-cartilaginous, expanded, plane, adnate, uniform, with wart-like processes. *Partial receptacle* immarginate (1 or more), hid within the substance of the wart, and surrounded by a very thin diaphanous membrane, its orifice thicker coloured, in the surface of the wart, and containing a subglobose cellular *nucleus*.

1. P. *pertusa*, crust smooth even whitish grey, warts of the apothecia subglobose, orifices many depressed black. *Ach. Syn. Lich. p.* 109. *Lichen pertusus*, *Lightf. p.* 802. *E. B. t.* 677.

Hab. Trunks of trees and sometimes rocks, *Lightf.*

12. THELOTREMA.

Universal receptacle crustaceo-cartilaginous, spreading, plane, adnate, uniform, with wart-like processes, perforated with a wide pore, and margined. *Partial receptacle* solitary, included in the wart, with a double coat; one dimidiate, superior, thick (black), rarely wanting; the other very thin, membranous, sometimes breaking above, inclosing a compressed cellular *nucleus* placed in the bottom of the wart.

1. Th. *lepadinum*, crust smooth whitish, warts of the apothecia smooth somewhat cone-shaped with the margin of the aperture thin simple somewhat inflexed and contracted covered at the bottom with a membrane which bursts. *Ach. Syn. Lich. p.* 115. *Lichen inclusus*, *E. B. t.* 678.

Hab. On the bark of *Ilex aquifolia*, at Bilston-burn, near Edinb., *Mr. G. Don.*

2. Th. *exanthematicum*, crust subtartareous thin contiguous

greyish, warts of the apothecia convex half immersed whiter, orifices much contracted radiated with fissures concealing the flesh-coloured apothecia. *Ach. Syn. Lich. p.* 116. *Lichen exanthematicus, p.* 1184.

Hab. Calcareous rocks, *Dickson.*

Of this very pretty little Lichen, Acharius observes, that it has a habit peculiar to itself; but that it corresponds better with this genus than with any other.

13. PYRENULA.

Universal receptacle crustaceous, spreading, plane, adnate, uniform; with wart-like processes including or surrounding at the base a solitary, simple, thick (black), papillary *partial receptacle*, which contains a globose cellular *nucleus*.

1. P. *nigrescens*, crust tartareous somewhat tessellated unequal brownish black, warts of the apothecia spreading at the base depressed somewhat rugose surrounding the greater part of the prominent apothecia. *Ach. Syn. Lich. p.* 126. *Verrucaria umbrina, E. B. t.* 1499.

Hab. Rocks, not uncommon, *Mr. Turner* and *Hook.*

14. VARIOLARIA.

Universal receptacle crustaceous, expanded, plane, adnate, uniform. *Partial receptacle* warted, formed of the *thallus* (generally sorediform), somewhat margined (white). *Nucleus* compressed, cellular, concealed within the substance of the warts.

1. V. *amara*, crust rugose cracked uneven subpulverulent white or greyish, warts of the apothecia appressed plano-concave margined bearing soredia of the same colour as the crust. *Ach. Syn. Lich. p.* 131. *Lichen fagineus, Lightf. p.* 807. *E. B. t.* 1713.

β. *discoidea*, crust pulverulent white at length greyish naked, soredia crowded at length spreading waved plano-concave with the margin raised swollen. *Lichen discoideus, E. B. t.* 1714. *L. carpineus, Lightf. p.* 807.

Hab. α. On the bark of beech, oak, and other trees, frequent. β. On the smooth bark of beech and other trees, *Lightf., Hopk.*

Var. α. is highly bitter. Mr. Turner observes, that the bitter flavour is not found in β.

2. V. *lactea*, crust tartareous distinctly bordered cracked smooth white the circumference somewhat zoned crenato-lobate, warts of the apothecia crowded margined very white and pulverulent. *Ach. Syn. Lich. p.* 132. *E. B. t.* 2410.

Hab. On rocks, common. Whin stones, on Campsie and Cathkin hills, *Hopk.*

SECT. II. DISCOIDEI. *Apothecia scutelliform, subsessile, furnished with a disk formed of a peculiar coloured substance, and surrounded by a margin of a different colour arising from the thallus.*

15. URCEOLARIA.

Universal receptacle crustaceous, spreading, plane, adnate, uniform. *Partial receptacle* scutelliform, its disk concave coloured immersed in the crust, its margin formed of the crust and of the same colour.

1. U. *Acharii*, crust with a rather decided edge smooth with narrow cracks pale brick coloured, disk reddish the margin tumid. *Ach. Syn. Lich. p.* 137. *Lichen Acharii, E. B. t.* 1087.

β. *cyrtapsis*, crust bordered smooth tessellated reddish at length white, apothecia becoming elevated with the disk rather convex reddish brown reaching the margin of the crust. *Lichen punctatus, E. B. t.* 450.

HAB. Common on rocks in the Isle of Mull, also at Sheean Ferry, *Mr. Turner* and *Hook.* β. Rocks, Scotland, *Dickson.*

16. LECANORA.

Universal receptacle crustaceous, spreading, plane, adnate, uniform. *Partial receptacle* scutelliform, thick, sessile and adnate; *disk* plano-convex, its *margin* thickish, formed of the crust and of the same colour, somewhat free.

* *Thallus adnate, uniform.*

† *Disk of the apothecia black, naked.*

1. L. *atra*, crust with a somewhat decided edge granulated and cracked greyish white, disk of the apothecia plane at length swelling and black, the margin free raised at length waved and crenulate. *Ach. Syn. Lich. p.* 146. *Lichen ater, Lightf. p.* 813. *E. B. t.* 949.

HAB. Common on the bark of trees, and on walls and rocks.

2. L. *oculata*, crust glabrous papillose and branched white, apothecia sessile scattered, disk slightly concave black, margin tumid. *Ach. Syn. Lich. p.* 148. *Isidium oculatum, Lich. Univ. p.* 576. *Lichen oculatus, E. B. t.* 1833. *Lichen dactylinus, Wahl. Lapp.*

HAB. Rocks in Scotland, *Mr. Dickson.* On Ben Lawers, growing upon moss and grass, *Mr. Turner* and *Hook.*

†† *Apothecia brown in the disk.*

3. L. *subfusca*, crust cartilaginous smooth at length granulated unequal white or greyish, disk of the apothecia plano-convex brown or almost black, margin tumid entire at length waved and crenate. *Ach. Syn. Lich. p.* 157. *Lichen subfuscus, p.* 813.

Hab. Trunks of trees, walls and rocks, common.

4. L. *ventosa*, crust tessellated with tumid warts yellow green or grey, apothecia appressed at length irregular with the disk plane or swelling red brown at length rising above the entire margin. *Ach. Syn. Lich. p.* 159. *Lichen ventosus, Lightf. p.* 806. *E. B. t.* 906.

Hab. Rocks upon the mountains, common.

5. L. *frustulosa*, crust tartareous very much cracked variegated with black and white (yellowish white in dispersed tumid warts, *Sm.*), apothecia pale brown at length convex dark brown, margin white. *Ach. Syn. Lich. p.* 159. *E. B. t.* 2273 (*Lichen frustul.*).

Hab. Rocks in Scotland, *Dickson.* On Ben Lawers, *Mr. Borrer* and *Hook.*

6. L. *ochroleuca*, crust thin leprose white, apothecia crowded elevated, disk plane olive, the margin waved. *Ach. Syn. Lich. p.* 180. *Lichen ochrol., E. B. t.* 1373.

Hab. Mountains of Scotland, upon the ground.

††† *Disk of the apothecia black, but covered with a powdery substance or bloom.*

7. L. *Glaucoma*, crust tartareous tessellated even greyish white, apothecia immersed in the crust, the disk plane at length convex subglobose glaucous and powdery, margin entire afterwards obliterated. *Ach. Syn. Lich. p.* 165. *Lichen Glaucoma, E. B. t.* 2156. *L. rupicola, Lightf. p.* 806.

Hab. On rocks, not unfrequent. At the fall of Fyers, *Mr. Turner* and *Hook.* On slate and whin stones, on Campsie hills, *Hopk.*

†††† *Disk of the apothecia somewhat flesh-coloured, pale, testaceous, yellowish or orange.*

8. L. *Perellus*, crust granulated or somewhat warted white, apothecia thick crowded by pressure angular, the disk concave and as well as the tumid entire margin of the same colour as the crust. *Ach. Syn. Lich. p.* 169. *Lichen Perellus, E. B. t.* 726. *Lightf. p.* 814.

β. *upsaliensis*, crust very thin membranaceous smooth glaucous white bearing awl-shaped bristles, disk of the apothecia at length spreading plane pale yellowish. *L. upsaliensis, E. B. t.* 169.

Hab. Stones and rocks in exposed situations, frequent. Walls and stones, at Helensburgh, common, *Hopk.* β. Not uncommon on the ground, and covering grass and mosses.

Affords a purple or crimson dye, and called in the south of France, where it is employed in lieu of the *L. tartarea, Perelle d'Auvergne,* whence the specific name, as Smith tells us, though generally spelled *Parellus.* *L. Turneri* is probably only a var. growing upon the bark of trees.

9. L. *tartarea*, crust tartareous with clustered granules greyish white, apothecia scattered, disk plano-convex a little wrinkled flesh-colour, the margin inflexed at length waved. *Ach. Syn. Lich. p.* 172. *Lichen tartareus, Lightf. p.* 811. *E. B. t.* 156.

γ. crust thin glaucous white running out into papillæ and spinuliferous branches. *Lichen frigidus, E. B. t.* 1879.

Hab. Most abundant upon rocks, especially in the alpine districts. β. on the ground, mosses, &c.

This is the famous *Cudbear* (so called after a Mr. Cuthbert, who first brought it into use) employed to produce a purple for dyeing woollen yarn; and no where, perhaps, used to so great an extent as in the manufactory of Mr. Mackintosh at Glasgow. The manufacturers import it largely from Norway, where it grows more abundantly than with us; yet in the Highland districts many an industrious peasant gets a living by scraping this Lichen with an iron hoop, and sending it to the Glasgow market. When I was in the neighbourhood of Fort Augustus, in 1807, a person could earn 14*s.* per week at this work, selling the material at 3*s.* 4*d.* the stone of 22 lbs. The fructified specimens are reckoned the best.

10. L. *vitellina*, crust granulated bright yellow, apothecia crowded, the disk plane of the same colour as the crust at length convex deeper coloured and powdery, the margin elevated thin at length waved pulverulent. *Ach. Syn. Lich. p.* 174. *Lichen vitellinus, E. B. t.* 1792. *L. candelarius, α. Lightf. p.* 800.

Hab. On pales and smooth wood exposed to the weather, common, *Lightf., Hopk.*

11. L. *erythrella*, crust cracked subrugose greenish yellow, apothecia at length subglobose deep orange shining, when the entire margin becomes obliterated. *Ach. Syn. Lich. p.* 175. *E. B. t.* 1993.

Hab. On stone walls near Killin, at the head of Loch Tay, *Mr. Turner* and *Hook.*

†††† *Disk of the Apothecia red.*

12. L. *rubra*, crust submembranaceous smooth at length unequal pulverulent and granular white, apothecia crowded, the disk concave red, margin tumid inflexed crenulate. *Ach. Syn. Lich. p.* 177. *Lichen Ulmi, E. B. t.* 2218.

Hab. On trunks of trees at the foot of Ben Lawers, *Mr. Mackay.*

13. L. *Hæmatomma*, crust tartareous pulverulent whitish, apothecia imbedded scattered subconfluent, the disk scarlet rather convex, the margin sometimes obliterated. *Ach. Syn. Lich. p.* 178. *Lich. Hæmatomma, E. B. t.* 486, and *p.* 223 (*Lich. coccineus*).

Hab. Rocks on Salisbury craigs, *Sir J. E. Smith.* Rosslyn wood, and

rocks in the King's Park, *Maugh.* On the largest cross among the ruins at Iona, *Mr. Turner* and *Hook.*

** *Thallus adnate, radiato-stellate, and somewhat lobed in the circumference.*

14. L. *epigea*, crust plaited and wrinkled white the circumference smooth lobed, disk of the apothecia at length rather convex brownish black, the margin thin entire. *Ach. Syn. Lich. p.* 179. *Lichen candicans*, *E. B. t.* 1778.

Hab. On the ground near Sheean Ferry, *Mr. Turner* and *Hook.*

15. L. *murorum*, crust plaited and lobed cracked bright yellow-orange pulverulent the circumference plicate and rayed the segments linear convex cut, apothecia crowded, the disk at length convex of a deeper orange, margin entire waved. *Ach. Syn. Lich. p.* 181. *Lichen murorum*, *E. B. t.* 2157. *L. candelarius*, β. *Lightf. p.* 811.

Hab. Walls, rocks, and stones, *Lightf., Hopk.*

16. L. *elegans*, crust somewhat imbricated plaited and rugose tawny orange naked, lobes linear lanceolate waved convex somewhat distant radiating, disk of the apothecia concave of the same colour with the crust, margin somewhat inflexed entire. *Ach. Syn. Lich. p.* 182. *Lichen elegans*, *E. B. t.* 2181.

Hab. Rocks, Scotland, *Dickson.* Rocks on Cathkin hills, and frequent about Helensburgh, *Hopk.*

17. L. *circinata*, crust cracked greyish plaited and rayed in the circumference linear-laciniate, apothecia much crowded at length angular, disk plane brownish black even with the margin of the crust. *Ach. Syn. Lich. p.* 184. *Lichen circinatus*, *E. B. t.* 1941.

Hab. On flat stones, not unfrequent. Walls at Cathkin, *Hopk.*

18. L. *gelida*, crust cracked pale reddish grey the circumference rayed and lobed having brown warts in the centre cracked and rayed, disk of the apothecia depressed reddish margin thick elevated entire. *Ach. Syn. Lich. p.* 186. *Lichen gelidus*, *E. B. t.* 699.

Hab. Rocks, first discovered by *Dr. Francis Hamilton* (late *Buchanan*) in the Glen of Lenay, near Stirling. Rocks on Ben Lomond, and at the castle of Kilchurn, near Dalmally, *Mr. Turner* and *Hook.*

*** *Thallus imbricated throughout.*

19. L. *squamulosa*, crust with lobed scales of a brownish ash-colour, disk of the apothecia immersed nearly plane blackish brown with the margin at length prominent. *Ach. Syn. Lich. p.* 188 (*L. cervina*). *Lichen squamulosus*, *E. B. t.* 2011.

Hab. Rocks and stones in Scotland, *Dickson.* About Loch Carron, Ben Lomond, and other parts of the Highlands, *Mr. Turner* and *Hook.*

20. L. *crassa*, crust scaly greenish, lobes imbricated inciso-crenate waved irregular, disk of the apothecia slightly swelling brownish orange margin thin entire at length obliterated. *Ach. Syn. Lich. p.* 191. *Lichen crassus*, *E. B. t.* 1893. *Lich. cartilagineus*, *Lightf. p.* 815.

Hab. Rocks thinly covered with earth, not unfrequent, as in the King's Park, Edinb., *Lightf.*

21. L. *candelaria*, crust scaly yellow, lobes very much crowded cut and laciniated imbricated their margins minutely granular, apothecia nearly of the same colour as the crust margin elevated entire. *Lightf. p.* 192. *Lichen candelarius*, *E. B. t.* 1794.

β. *polycarpa*, crust formed of lobes with many crowded teeth and segments greyish yellow, apothecia crowded waved, disk plane dilated of the same colour as the crust at length fulvous and the margin crenulated. *Lichen polycarpus*, *E. B. t.* 1795.

Hab. Old posts and doors, occasionally, *Hopk.* β. with α.

This plant derives its name from the circumstance of the Swedes employing it to stain the candles that are used in their religious ceremonies.

22. L. *hypnorum*, crust scaly greenish brown, lobes minute somewhat rounded with the margin granular and crenulated, apothecia submembranaceous, the disk concave at length dilated plane reddish brown the margin elevated inflexed crenate. *Ach. Syn. Lich. p.* 193. *Lichen hypnorum*, *E. B. t.* 740.

Hab. Rosslyn wood, *Maugh.*

23. L. *carnosa*, crust scaly livid brown, lobes irregularly and deeply cut and laciniated, apothecia thick with the disk plane reddish brown at length elevated and obliterating the entire margin. *Ach. Syn. Lich. p.* 193 (*L. muscorum*). *Lichen carnosus*, *E. B. t.* 1684.

Hab. Wet rocks among moss, not uncommon in the Highlands.

24. L. *brunnea*, crust imbricated lobed and granulated ash-coloured brown, apothecia imbedded in the crust crowded irregular, disk rather convex red-brown the margin elevated crenulated persistent. *Ach. Syn. Lich. p.* 193. *Lichen brunneus*, *E. B. t.* 1246.

Hab. Discovered in Britain, by *Dr. Burgess*, in Dumfries-shire, and *Dr. Hamilton* (late *Buchanan*) near stirling. Not uncommon on the ground in heathy places. Pentland hills, *Maugh.*

25. L. *Hookeri*, crust imbricated greyish, lobes minute appressed blunt, disk of the apothecia plane black margin elevated and crenate. *Ach. MSS.* (according to Swartz). *Lichen Hookeri*, *E. B. t.* 2283. *Lichen leucolepis*, *Wahl. Lapp. p.* 420. *Lecanora leucolepis*, *Ach. Syn. Lich. p.* 194.

Hab. On wet micaceous rocks of Mael Greadha and Ben Lawers, *Mr. Borrer* and *Hook.*

17. PARMELIA.

Universal receptacle foliaceous, between coriaceous and membranaceous, spreading, appressed, orbicular, lobed and stellated or multifid and laciniated, fibrous beneath. *Partial recept.* scutelliform, submembranaceous, beneath formed of the thallus, free, and attached to it by a central point. *Disk* concave, coloured, its margin formed by the inflexed crust.

* *Thallus with its segments not inflated at the extremity* (Circinaria).

1. P. *glomulifera*, thallus cartilaginous rigid orbicular livid and glaucous smooth bearing dark green scattered tufted excrescences, tawny beneath and downy, the lobes waved and laciniated angular, apothecia reddish brown rugose at the margin. *Ach. Syn. Lich. p.* 195. *Lichen glomuliferus*, *E. B. t.* 293. *Lightf. p.* 853.

Hab. Trunks and roots of trees in shady woods, but not common, *Lightf.* Duke of Argyle's grounds, near Inverary, but without apothecia, *Mr. Turner* and *Hook.* Pentland hills, *Maugh.*

2. P. *caperata*, thallus orbicular pale yellowish green rugose at length granulated black and hispid beneath, the lobes waved laciniated rounded nearly entire, apothecia scattered brown their margin incurved entire at length pulverulent. *Ach. Syn. Lich p.* 196. *Lichen caperatus*, *Lightf. p.* 837. *E. B. t.* 654.

Hab. Trunks of trees, rocks, and pales, frequent.

3. P. *perlata*, thallus orbicular greyish white smooth, blackish brown and hairy beneath, lobes rounded cut plane, their margin waved entire, apothecia brown their margin thin entire. *Ach. Syn. Lich. p.* 197. *Lichen perlatus*, *Lightf. p.* 839. *E. B. t.* 341.

Hab. Trunks of oaks and other trees, very common, *Lightf.*

4. P. *herbacea*, thallus orbicular membranaceous bright green above, beneath pale brown almost white and downy, lobes waved and cut the segments rounded subcrenate, apothecia red, the margin inflexed rugose and crenate. *Ach. Syn. Lich. p.* 199. *Lichen læte-virens*, *Lightf. p.* 852. *E. B. t.* 294.

Hab. Trunks and roots of trees, sometimes on rocks in moist shady places, not uncommon.

5. P. *olivacea*, thallus orbicular olive brown rugged with elevated points paler beneath and fibrous, lobes radiating appressed plane dilated rounded and crenate, apothecia dark brown the margin crenulated. *Ach. Syn. Lich. p.* 200. *Lichen olivaceus*, *Lightf. p.* 818. *E. B. t.* 2180.

Hab. On trees and rocks, common.

6. P. *parietina*, thallus orbicular bright yellow, beneath paler and fibrillose, the lobes radiating appressed plane dilated rounded crenate and crisped at the extremity, apothecia of

the same colour as the crust their margin entire. *Ach. Syn. Lich. p.* 200. *Lichen parietinus, Lightf. p.* 822. *E. B. t.* 194.

Hab. On trees, walls, &c. abundant.

7. P. *lanuginosa*, thallus orbicular yellowish white pulverulent, greyish black and downy beneath, lobes imbricated plane rounded slightly crenated, apothecia reddish ("of the same colour as the crust," *Dicks.*) their margin pulverulent. *Ach. Syn. Lich. p.* 201. *Lichen membranaceus, Dicks. Pl. Crypt. fasc.* 2. *p.* 21. *t.* 6. *f.* 1.

Hab. On rocks lightly covered with earth, in the Highlands, *Dicks.*

This species is not taken up in *Eng. Bot.*, but it appears very distinct from any other.

8. P. *plumbea*, thallus orbicular blueish grey, beneath having a very thick spongy down, the lobes of the circumference rounded and crenate, apothecia scattered at length convex rusty brown their margin of the same colour and entire. *Ach. Syn. Lich. p.* 202. *Lichen plumbeus, Lightf. p.* 826. *t.* 26. *f.* 2. *E. B. t.* 353.

Hab. Trunks of trees, not unfrequent in the Highlands, as at Arroquhar and Inverary.

9. P. *rubiginosa*, thallus orbicular brownish grey, beneath having a blueish grey spongy down, lobes of the circumference obtusely notched elevated pale, apothecia plane crowded central reddish brown with tumid incurved crenulated whitish margins. *Ach. Syn. Lich. p.* 202. *Lichen affinis, E. B. t.* 983.

Hab. Trunks of trees, often with the last, Duke of Argyle's grounds at Inverary, and on the sides of Loch Lomond, *Mr. Turner* and *Hook.*

10. P. *omphalodes*, thallus orbicular dark purplish brown shining dotted with black, beneath black and fibrillose, the segments sinuato-multifid linear plane truncated crenate in the circumference, apothecia dark brown the margin slightly crenulate. *Ach. Syn. Lich. p.* 203. *Lichen omphalodes, Lightf. p.* 818. *E. B. t.* 604.

Hab. On rocks every where; abundant on the dry stony moors.

This is much used by the Highlanders in dyeing a reddish-brown colour. They steep it in urine for a considerable time till it becomes soft and like paste; then forming the paste into cakes, they dry them in the sun and preserve them for use. *Lightf.*

11. P. *saxatilis*, thallus orbicular greyish rough and pitted beneath black and fibrillose, the segments imbricated sinuated plane subretuse, apothecia bright chesnut brown their margin subcrenulated. *Ach. Syn. Lich. p.* 204. *Lichen saxatilis, Lightf. p.* 816. *E. B. t.* 603.

Hab. Stones and trunks of trees, but not very common in fructification.

12. P. *fahlunensis*, thallus orbicular pitchy brown smooth, beneath black and scarcely fibrillose, the segments sinuated

multifid divergent plane or slightly grooved their margins elevated lacerated, apothecia dark brown the margin granulated. *Ach. Syn. Lich. p.* 204. *Lichen fahlunensis, Lightf. p.* 819. *E. B. t.* 653.

Hab. Rocks on the more elevated Highland mountains, not uncommon.

13. P. *stygia*, thallus stellated shining pitchy black, beneath black and almost naked, the segments nearly linear multifid and somewhat palmate convex, the margins and extremity recurved, apothecia of the same colour at length black with the margin crenated. *Ach. Syn. Lich. p.* 205. *Lichen stygius, E. B. t.* 2048.

Hab. Summits of the Highland mountains, plentiful, as upon Ben Nevis, growing on the rocks.

14. P. *aquila*, thallus orbicular tawny brown paler beneath with blackish fibres, the segments multipartite nearly linear convex those of the circumference dilated nearly plane and crenate, apothecia dark brown their margin crenated. *Ach. Syn. Lich. p.* 205. *Lichen pullus, Lightf. p.* 825 (*according to Smith*). *Lichen aquilus, E. B. t.* 982.

Hab. Rocks, not unfrequent, as in the King's Park, Edinburgh, &c. *Lightf.* Hermitage and Pentland Hills, *Maugh.*

15. P. *encausta*, thallus stellated pale grey, beneath black unequal naked, the segments often uniting convex and almost rounded linear multifid roughish dotted with black, apothecia reddish brown their margin somewhat crenulated. *Ach. Syn. Lich. p.* 206. *Lichen encaustus, E. B. t.* 2049.

Hab. Plentiful on rocks on the summit of Ben Nevis, where it was first discovered by *Dr. Stuart.*

16. P. *recurva*, thallus stellated pale greenish bearing powdery warts, beneath black with spongy fibres, the segments of the circumference multifid very narrow convex and almost rounded, apothecia reddish brown their margin nearly entire. *Ach. Syn. Lich. p.* 206. *Lichen incurvus, E. B. t.* 1375.

Hab. Rocks, *Dickson* and *G. Don.* On Ben Lomond, rare, *Mr. Turner* and *Hook.*

17. P. *sinuosa*, thallus stellated pale yellowish grey smooth, black and fibrous beneath, the segments broadly linear sinuato-pinnatifid their sinuses broad and circular, apothecia nearly plane dark brown, their margin thin entire. *Ach. Syn. Lich. p.* 207. *Lichen sinuosus, E. B. t.* 2050.

Hab. First discovered by *Mr. James Burgess Mac-Garroch* on moor-stones in Dumfries-shire. Old walls at Ballacheulish, *Mr. Turner* and *Hook.* Stones on Cathkin Hills, not unfrequent, *Hopk.*

This has never, I believe, been found with shields in Britain; nor, indeed, has it been met with out of Scotland.

18. P. *aleurites*, thallus orbicular continuous rugose pale grey pulverulent, beneath of the same colour with blackish fibres, seg-

ments in the circumference distinct plane rounded waved inciso-crenate, apothecia plane reddish brown their margin at length crenulate and pulverulent. *Ach. Syn. Lich. p.* 208. *Lichen aleurites, E. B. t.* 858.

Hab. Trunks of trees, posts, rails, &c.

19. P. *ambigua*, thallus stellated pale yellow green smooth bearing powdery warts, beneath brownish black and fibrillose, the segments linear appressed plane dichotomous somewhat truncated, apothecia subcentral small nearly plane brown their margin entire. *Ach. Syn. Lich. p.* 208. *Lobaria ambigua, Hoffm. Pl. Lich. t.* 40. *f.* 2—4, and *t.* 42. *f.* 2, 3 (*P. sona*).

Hab. Trunks of fir trees in the Highlands, about Cairngorum, *Mr. Borrer* and *Hook.* Bark of firs about Kinnordy, Kerrie-muir, always barren.

20. P. *conspersa*, thallus orbicular greenish yellow smooth with blackish dots, brown and fibrillose beneath, the segments sinuato-lobate rounded crenate nearly plane, apothecia central chesnut brown with the margin nearly entire. *Ach. Syn. Lich. p.* 209. *Lichen centrifugus, Lightf. p.* 814. *Lichen conspersus, E. B. t.* 2097.

Hab. Rocks, common.

21. P. *speciosa*, thallus stellated glabrous greenish white, beneath snowy white with greyish fibres, the segments imbricated linear plane cut and branched crenate their extremities ascending and powdery, apothecia central brown with a tumid singularly rough and crenate border. *Ach. Syn. Lich. p.* 211. *Lichen speciosus, E. B. t.* 1079.

Hab. In a wood between Ballacheulish and Linnhe Loch, *Mr. Turner* and *Hook.*

22. P. *lævigata*, thallus stellate smooth greyish white, beneath black and fibrillose, the segments multifid linear broader upwards cut divaricated acute in the circumference frequently bearing powdery warts, apothecia concave chesnut colour with the margin entire. *Ach. Syn. Lich. p.* 212. *Lichen lævigatus, E. B. t.* 1852.

Hab. On trees in Ross-shire, *Mr. Borrer* and *Hook.*

23. P. *pulverulenta*, thallus stellated deep glaucous green cæsious and pruinose when dry, beneath black and downy and hispid, the segments linear multifid in the circumference plane appressed waved retuse at the extremities, apothecia glaucous black the margin entire and waved at length leafy. *Ach. Syn. Lich. p.* 214. *Lichen pulverulentus, E. B. t.* 2063. *L. stellaris*, β. *Lightf. p.* 824.

Hab. Very common on the trunks of trees.

24. P. *stellaris*, thallus stellated at length rugged and granulated greyish green, beneath with grey fibres, the segments sublinear

rather convex cut multifid, apothecia glaucous black their margin entire at length waved and crenate. *Ach. Syn. Lich. p.* 216. *Lichen stellaris, Lightf. p.* 824. *E. B. t.* 1697.

Hab. Trunks of trees, common.

** *With the segments of the thallus inflated at the extremity* (Physcia).

25. P. *physodes*, thallus substellated glaucous white, beneath brownish black, the segments sinuato-multifid convex glabrous inflated and ascending at the extremity, apothecia red brown their margin entire. *Ach. Syn. Lich. p.* 218. *Lichen physodes, E. B. t.* 126.

Hab. Rocks, on the Pentland Hills, *Maugh.* Cathkin Hills, plentiful, *Hopk.*

The fruit is very rare. Besides the true apothecia, there are often pedunculated whitish powdery warts.

22. P. *diatrypa*, thallus substellate greyish green, beneath rugose blackish and white, the segments sinuato-multifid nearly plane smooth bearing powdery warts and perforated, the extremities inflated, apothecia reddish their margin entire. *Ach. Syn. Lich. p.* 219. *Lichen diatrypus, E. B. t.* 1248.

Hab. Wet rocks among moss, rare. At Balacheulish, bearing fructification.

18. BORRERA.

Universal receptacle cartilaginous, branched and laciniated, the segments free, generally channelled beneath, and the margins ciliated. *Partial recept.* scutelliform, thick, formed of the *thallus* beneath, its disk coloured and surrounded by the elevated and inflexed margin formed also of the thallus.

1. B. *Ciliaris*, thallus glaucous green the segments linear branched attenuated ciliated especially towards the apices beneath whitish and channelled, apothecia mostly terminal their disk concave at length plane blackish brown glaucous, the margin crenate and fimbriated. *Ach. Syn. Lich. p.* 221. *Lichen ciliaris, Lightf. p.* 828. *E. B. t.* 1352.

Hab. Trunks of trees, frequent.

2. B. *tenella*, thallus greyish white naked on both sides and of the same colour substellated, the segments pinnatifid ascending dilated arched and ciliated at the extremity, apothecia scattered, the disk plane cæsious black its margin entire. *Ach. Syn. Lich. p.* 221. *Lichen tenellus, E. B. t.* 1351. *Lichen ciliaris, β. Lightf. p.* 828.

Hab. On the branches of trees.

3. B. *furfuracea*, thallus greenish grey farinaceous the segments linear attenuated branched grooved naked rugose and blackish beneath, apothecia somewhat marginal cup-shaped with their margin thin inflexed. *Ach. Syn. Lich. p.* 222. *Lichen furfuraceus, Lightf. p.* 832. *E. B. t.* 984.

Hab. Trunks of old trees and pales, but not very common, *Lightf.*

4. B. *flavicans*, thallus yellow naked, segments dichotomously branched slightly compressed attenuate divaricated complicated, apothecia scattered their disk plane orange red their margin entire naked. *Ach. Syn. Lich. p.* 225. *Lichen flavicans*, *E. B. t.* 2113. *Lichen vulpinus*, *Lightf. p.* 896.

Hab. Trunks of old trees, but not common. On the ground on the Craig of Ailsa, *Lightf.*

19. CETRARIA.

Universal receptacle between cartilaginous and membranaceous, ascending or spreading, lobed and laciniated, on each side smooth and naked. *Partial recept.* scutelliform, obliquely adnate with the margin of the *thallus*, the lower portion being free (not united with the thallus), the upper sessile, the *disk* coloured, plano-concave, with a margin formed of the *thallus* and inflexed.

1. C. *juniperina*, thallus pale yellow very yellow beneath, the segments plane ascending erose crenate and crisped, apothecia elevated their disk brown the margin crenulated. *Ach. Syn. Lich. p.* 226.

β. *pinastri*, thallus with the segments depressed the lobes rounded crenate the margins crisped pulverulent and very yellow. *Lichen pinastri*, *E. B. t.* 2111. *Lichen juniperinus*, *Lightf. p.* 836.

Hab. Trunks and branches of elms and many other trees, common. Fir trees about Aviemore and at Kinnordy Kerrie-muir, *Hook.* Never, I believe, found with *apothecia* in Britain; though not rare in that state in Switzerland.

2. C. *sepincola*, thallus olive-brown paler beneath the segments plane ascending lobed waved subcrenate, apothecia elevated of the same colour their margin rugose and crenulate. *Ach. Syn. Lich. p.* 227. *Lichen sepincola*, *E. B. t.* 2386.

Hab. On stones in the Scotch mountains, according to *Mr. Dickson.* I have never seen it in any country but on wood. On fir trees at Kinnordy Kerrie-muir, *Mr. Lyell* and *Hook.* *Fructification* very rare.

3. C. *glauca*, thallus glaucous somewhat shining sinuated and lobed brown beneath, the segments cut and jagged curled ascending, apothecia elevated chesnut brown their margin wrinkled. *Ach. Syn. Lich. p.* 227. *Lichen glaucus*, *Lightf. p.* 838. *E. B. t.* 1066.

β. *fallax*, thallus white on each side, or with occasional black spots beneath. *L. fallax*, *E. B. t.* 2373.

Hab. On the ground in heathy places, on rocks and trees, not uncommon. β. On the ground near the cascade at Inverary.

4. C. *nivalis*, thallus sulphur-coloured orange at the base pitted

and reticulated erect nearly plane laciniated, its segments multifid crisped crenato-dentate and often warted at the points, apothecia pale flesh-colour their margin crenulated. *Ach. Syn. Lich. p.* 228. *Lichen nivalis*, *E. B. t.* 1994.

Hab. Native of Scotland, *Dr. R. Townson*, *Smith* in *E. B.* Rocks in Scotland, Ben Lawers. Summit of Cairngorum, *Hook.*

Fructification, I believe, never found with us.

5. C. *islandica*, thallus olive brown paler beneath, the segments erect sublinear multifid channelled smooth dentato-ciliate, the fertile branches spreading, apothecia appressed plane of the same colour, their margin elevated entire. *Ach. Syn. Lich. p.* 229. *Lichen islandicus*, *Lightf. p.* 829. *E. B. t.* 1330.

Hab. Rocky places. Upon most of, if not all, the lofty Highland mountains; but never, that I am aware of, bearing *apothecia* with us.

Though plentiful with us, it is scarcely sufficiently so to form an article of commerce. A great proportion of what comes to our shops, where it is in great request as a medicine in coughs, consumptions, &c., is procured from Norway or from Iceland. Immense quantities are gathered in the latter country, not only for sale, but for home consumption, as an article of common food. The bitter and purgative quality being extracted by steeping in water, the Lichen is dried, reduced to powder, and made into a cake, or boiled and eaten with milk; and eaten with thankfulness, too, by the poor natives, who confess "that a bountiful Providence sends them bread out of the very stones."

20. STICTA.

Universal receptacle foliaceous, coriaceo-cartilaginous, spreading, lobed, free and pubescent beneath, with little cavities or hollow spots. *Partial recept.* scutelliform, formed of the *thallus* beneath, appressed and fixed to it by a central point; its disk coloured, plane, surrounded by the margin of the crust, which reaches beyond it.

1. S. *crocata*, thallus dark glaucous brown pitted with broad rounded spreading entire lobes having bright lemon coloured powdery spots upon the margin and on the elevated parts between the pits, downy and tawny beneath with minute lemon coloured little hollows, apothecia scattered blackish brown their margin entire. *Ach. Syn. Lich. p.* 232. *Lichen crocatus*, *E. B. t.* 2110.

Hab. "On rocks in the Highlands," *Dickson.* Upon trees, rare, in the Duke of Argyle's grounds, Inverary, *Mr. Turner* and *Hook.*

2. S. *pulmonaria*, thallus olivaceous pitted and reticulated, downy beneath with smooth prominences, the segments sinuato-lobate truncated, apothecia submarginal plane reddish their margin rugose. *Ach. Syn. Lich. p.* 233 (*S. pulmonacea*). *Lichen pulmonarius*, *Lightf. p.* 831. *E. B. t.* 572 (*too green*).

Hab. Trunks of old trees in shady woods, plentiful. On old walnut trees, at Barncluith, near Glasgow, *Hopk.*

3. S. *scrobiculata*, thallus suborbicular glaucous greyish green very broad somewhat pitted and having mealy warts, beneath downy tawny with white naked spots, the segments rounded and lobed irregular, apothecia scattered nearly plane reddish brown their margin somewhat crenate. *Ach. Syn. Lich. p.* 134. *Lichen scrobiculatus*, *Lightf. p.* 850. *E. B. t.* 497.

Hab. Trunks of trees and on rocks, among moss, Pentland Hills, *Maugh.*

4. S. *limbata*, thallus orbicular glaucous brown roundly lobed smooth grey and powdery at the margin, downy beneath with white hollow spots, apothecia brown. *Ach. Syn. Lich. p.* 236. *Lichen limbatus*, *E. B. t.* 1104.

Hab. Rocks in Scotland, *Mr. Menzies.* At the Hermitage, near Edinburgh, *Sir J. E. Smith.* On rocks and trees in shady places, by the sides of Loch Lomond, and near the Falls of the Clyde, *Mr. Turner* and *Hook.*

5. S. *fuliginosa*, thallus orbicular dark lurid grey rough with brown granules, beneath greyish brown with white concave spots, the segments roundly lobed nearly entire, apothecia scattered dark brown their margin entire. *Ach. Syn. Lich. p.* 236. *Lichen fuliginosus*, *E. B. t.* 1103.

Hab. On moist rocks near the Falls of the Clyde, and near Inverary and Ballycheulish, *Mr. Turner* and *Hook.*

Has a very dingy appearance and unpleasant smell.

6. S. *sylvatica*, thallus wide rusty brown naked and pitted, brown and downy beneath with small pale excavations, segments lobed and obtusely cut unequal, apothecia marginal dark brown. *Ach. Syn. Lich. p.* 236. *Lichen sylvaticus*, *Lightf. p.* 848. *E. B. t.* 2298.

Hab. Shady woods about the roots of trees, frequent, *Lightf.* Falls of the Clyde, *Hopk.* Woods, Inverary and Ballacheulish, *Mr. Turner* and *Hook.*

Smell very fetid. *Apothecia* rare; never found in Britain, but by *Dr. Burgess*, as mentioned in *E. B.*

21. PELTIDEA.

Universal receptacle foliaceous, coriaceous, spreading, subadnate, lobed, with woolly veins beneath. *Partial recept.* formed upon the upper side of a produced portion of the under surface of the *thallus*, orbicular, subobliquely adnate, having a thin elevated margin of the substance of the *thallus*.

1. P. *venosa*, thallus greenish ash-colour, white beneath having dark brown prominent branched veins, lobes rounded cut somewhat entire, apothecia marginal plane rounded swelling brown scarcely crenulate at the margin. *Ach. Syn. Lich. p.* 237. *Lichen venosus*, *Lightf. p.* 844. *E. B. t.* 887.

Hab. On the earth in moist situations, among rocks, most frequent in the Highlands; Glenkill Linn and Burn, Dumfries-shire, *Dr. Burgess.* Pass of Killicrankie, *Mr. Turner* and *Hook.* On the earth of walls, Blair in Athol, *Mr. Borrer* and *Hook.*

This is a small but very pretty species.

2. P. *scutata*, thallus ash-coloured whitish and veiny beneath, the lobes rounded sinuated and cut crenate and crisped, fertile lobules very short, apothecia orbicular ascending nearly plane brown somewhat entire. *Ach. Syn. Lich. p.* 237. *Lichen scutatus*, *E. B. t.* 1834.

Hab. Bark of trees, *Dickson.* I believe very rare. I never saw it any where but upon trees in the Duke of Argyle's grounds at Inverary, in company with *Mr. Turner.*

3. P. *horizontalis*, thallus glaucous and brownish green lobed crenate and shining pale beneath with numerous brown branching reticulated veins, fertile lobules abbreviated, apothecia terminal plane horizontal transversely oblong reddish brown with a nearly entire margin. *Ach. Syn. Lich. p.* 238. *Lichen horizontalis*, *Lightf. p.* 849. *E. B. t.* 888.

Hab. Moist shady rocks and about the roots of trees, not uncommon, *Lightf.*

4. P. *aphthosa*, thallus green smooth roundly lobed sprinkled with brown warts, whitish beneath with brown branching veins, fertile lobules very long contracted in the middle their sides reflexed, apothecia terminal large ascending red-brown with a lacerated margin. *Ach. Syn. Lich. p.* 238. *Lichen aphthosus*, *Lightf. p.* 847. *E. B. t.* 1119.

Hab. Moist situations among rocks and moss, or by the roots of trees. Foot of the Pentland Hills, *Mr. Yalden.* Moist rocks near the Falls of the Clyde, with shields, *Mr. Turner* and *Hook.*

A large handsome species; has its name from the circumstance related by Linnæus, that the Swedish peasants boil it in milk as a cure for the *aphthæ*, or *thrush*, in children.

5. P. *canina*, thallus greyish green with broad rounded lobes, white beneath with brownish branching veins, fertile lobules rather long with their sides reflexed, apothecia terminal nearly erect revolute reddish brown with a subcrenulated border. *Ach. Syn. Lich. p.* 239. *Lichen caninus*, *Lightf. p.* 845. *E. B. t.* 2299.

β. *rufescens*, thallus polyphyllous concave reddish brown, pale reddish white beneath with obsolete veins, lobes rounded incurved, fertile lobules short, apothecia terminal erect roundish dark brown nearly entire at the margin. *E. B. t.* 2300 (*Lichen rufescens*). *Peltidea canina*, β.? *Ach. Syn. Lich. p.* 239. *Lichen caninus*, β. *Lightf. p.* 846.

Hab. Upon the ground, among moss, roofs of houses, trees, &c. very common. β. with *a.*

Formerly used, at the suggestion of Dr. Mead, as a cure for the bite of a mad dog, but without success.

6. P. *polydactyla*, thallus glaucous green naked glabrous with brown reticulated veins beneath, fertile lobules very numerous elongate and as well as the brown terminal apothecia cucullato-revolute. *Ach. Syn. Lich. p.* 248. *Lichen caninus*, γ. *Lightf. p.* 846. *Lichen polydactylus*, *Jacq. Coll. t.* 14. *f.* 2. *a.* 6.

Hab. On the ground, but rather rare, *Lightf.*

22. NEPHROMA.

Universal receptacle foliaceous, coriaceo-membranaceous, spreading, lobed, free, and naked, or hairy beneath. *Partial recept.* resupinate (on the underside), formed upon a produced portion of the upper surface of the *thallus*, reniform, adnate, coloured, plane, its margin of the same substance as the *thallus*.

1. N. *resupinata*, thallus greyish brown pale pubescent and granulated beneath, fertile lobules very short, apothecia large numerous reddish. *Ach. Syn. Lich. p.* 241. *Lichen resupinatus*, *Lightf. p.* 843. *E. B. t.* 305.

Hab. Rocks among moss, on the stems and roots of trees, not uncommon. Dumbarton castle, *Sir J. E. Smith.* Sides of Loch Lomond, at Inverary, and in Aros Mull, *Mr. Turner* and *Hook.*

Readily distinguished as a genus from the last, by bearing its *apothecia* on the under instead of the upper side of the *thallus*.

23. EVERNIA.

Universal receptacle subcrustaceous, branched, and laciniated, angular or compressed, nearly erect or pendulous, with a central thread within. *Partial recept.* scutelliform, sessile, the *disk* concave, coloured with an inflexed margin formed of the *thallus*.

1. E. *prunastri*, thallus greenish white segments dichotomous multifid ascending linear-attenuate plane pitted, grooved and white beneath, apothecia bright brown concave. *Ach. Syn. Lich. p.* 245. *Lichen prunastri*, *Lightf. p.* 835. *E. B. t.* 859, and 1353 (*Lichen stictoceros*).

Hab. Branches of trees, common.

Sect. III. Cephaloidei. *Apothecia subglobose, terminal on the branches or Podetia of the thallus, or scattered, sessile, immarginate.*

A. *Apothecia covered by the mass of fructification.*

24. CENOMYCE.

Universal receptacle crustaceo-cartilaginous, foliaceous, laciniated, subimbricated, free (rarely adnate, uniform, or want-

ing), producing subfistulose, fertile and sterile *podetia*. *Partial recept.* orbicular, immarginate, at length convex, capituliform, inflated, or hollow beneath, the circumference fixed to the *thallus* or the *podetia*, terminal, coloured.

* *Thallus foliaceous. Podetia fistulose, dilated upwards, and bearing cups, or attenuated and subulate; cups closed with a membrane.* (Scyphophora.)

† *Apothecia brown or pale.*

1. C. *alcicornis*, thallus foliaceous very pale glaucous green the segments subpalmated ascending obtuse and incurved, podetia elongated turbinate all cup-bearing smooth the cups regular crenate with the margin at length leafy and proliferous, apothecia brown. *Ach. Syn. Lich. p.* 250. *Lichen alcicornis, Lightf. p.* 872. *E. B. t.* 1392.

Hab. Heaths, mountains, and rocks.

2. C. *endivifolia*, thallus foliaceous large glaucous yellow green white beneath the segments multifid waved crenate crisped, podetia turbinate elongate mostly simple, apothecia marginal reddish brown. *Ach. Syn. Lich. p.* 2361. *Lichen endiv., E. B. t.* 2361.

Hab. Dry heathy places, *Dickson.*

3. C. *cervicornis*, thallus foliaceous glaucous green, segments erect multifid narrow repando-subdentate, podetia cylindrical short glabrous dingy at length black all of them cup-bearing, cups small regular dilated entire nearly plane proliferous from the centre, apothecia marginal sessile brownish black. *Ach. Syn. Lich. p.* 251. *Lichen cervicornis, E. B. t.* 2574.

Hab. Pentland hills, near Edinb., *Sir J. E. Smith.*

4. C. *pyxidata*, thallus foliaceous, segments crenulated ascending, podetia all turbinate elongate cup-shaped glabrous at length granulated warty rough greyish green, cups regular the margin at length proliferous, apothecia brown. *Ach. Syn. Lich. p.* 252. *Lichen pyxidatus, Lightf. p.* 469. *E. B. t.* 1393.

Hab. Heaths, banks and rocks, and roots of old trees, abundant.

Employed by the poor sometimes in the cure of the hooping cough.

5. C. *fimbriata*, thallus foliaceous the segments small crenate, podetia elongate cylindrical cup-bearing sometimes subulate slightly pulverulent white, cups regular their margins entire and crenated at length proliferous, apothecia brown. *Ach. Syn. Lich. p.* 254. *Lichen fimbriatus, Lightf. p.* 870. *E. B. t.* 2438.

η. *cornuta*, podetia elongate subulate simple or branched pulverulent white sterile or with reddish apothecia. *Lichen cornutus, Lightf. p.* 875. *E. B. t.* 1836.

Hab. Moors and heaths, *Lightf.* Near Edinb., *Sir James E. Smith.*

Milngavie, near Glasg., *Hopk.*—η. Moors and heaths, *Lightf.*, *Hopk.*

6. C. *anomæa*, thallus foliaceous ash-coloured brittle, segments imbricated minute crenate, podetia cylindrical rough and foliaceous, cups turbinate closed at length dilated and radiated, apothecia marginal sessile or stalked brownish black. *E. B. t.* 1867 (*Lichen anom.*). *Cenomyce gonorega*, γ. *anomæa*, *Ach. Syn. Lich. p.* 259.

Hab. Pentland hills, near Edinb., *Sir James E. Smith.*

7. C. *gracilis*, thallus foliaceous very minute, podetia elongate subulate sterile and cup-bearing smooth greenish brown, cups toothed at the margin at length proliferous, apothecia brown. *E. B. t.* 1264, and *Lightf. p.* 873 (*Lichen gracilis*). *Cenomyce ecmocyna* α. *gracilis*, *Ach. Syn. Lich. p.* 261.

Hab. Heaths and mountains, frequent.

†† *Apothecia scarlet.*

8. C. *filiformis*, thallus foliaceous small, segments inciso-lobate crenate, podetia cylindrical simple and somewhat branched at the extremity greenish white granulated rarely cup-bearing, cups narrow at length radiating, apothecia minute scarlet. *Ach. Syn. Lich. p.* 266 (*C. bacillaris*). *Lichen filiformis*, *E. B. t.* 2028. *L. tubiformis*, *Lightf. p.* 871.

Hab. Woods, heaths, and the roots of old trees, *Lightf.*

9. C. *digitata*, thallus foliaceous small, segments expanded rounded crenate beneath as well as on the cylindrical yellow-green cup-bearing podetia pulverulent, cups narrow small at length large with the often branched numerous digitate or rayed prolifications tipped with the bright scarlet apothecia. *Ach. Syn. Lich. p.* 267. *Lichen digitatus*, *Lightf. p.* 874. *E. B. t.* 2439.

Hab. Woods, at the roots of old trees, and on barren heaths.

10. C. *deformis*, thallus foliaceous minute segments broadish cut crenate naked beneath, podetia long thick subventricose sulphur-coloured slightly pulverulent cup-bearing, cups narrow crenato-dentate at length dilated and jagged, apothecia sessile and pedunculate scarlet. *Ach. Syn. Lich. p.* 268. *Lichen def.*, *Lightf. p.* 876. *E. B. t.* 1394.

Hab. Roots of old trees and in woods, but not common, *Lightf.*

11. C. *coccifera*, thallus foliaceous minute the segments rounded crenate naked beneath, podetia elongated turbinate naked nearly pale yellow or greyish green all cup-bearing, cups with their margins spreading fertile, apothecia large at length stalked scarlet. *Ach. Syn. Lich. p.* 269. *Lichen cocciferus*, *Lightf. p.* 866. *E. B. t.* 2051.

13. *cornucopioides*, podetia rather short cup-bearing, cups dilated crisped and foliaceous terminated by the scarlet stalked

apothecia at length proliferous. *Lichen cornucopioides, Lightf. p.* 868.

Hab. Moors and heaths, frequent. β. mixed with α.

12. C. *bellidiflora*, thallus foliaceous minute the segments inciso-crenate naked beneath, podetia elongate cylindrical rigid glabrous foliaceo-squamose pale all cup-bearing, cups narrow their margins fertile and proliferous, apothecia crowded scarlet. *Ach. Syn. Lich p.* 270. *Lichen bellid., E. B. t.* 1894.

Hab. Ben Nevis, Ben Lawers, Ben Lomond, and probably most of the lofty Highland mountains.

** *Thallus foliaceous. Podetia fistulose, dilated, and cup-bearing upwards; cups pervious.* (Schasmaria.)

13. C. *sparassa*, thallus foliaceous minute lobed and crenated, podetia elongated branched subventricose granulated rough with leafy scales cup-bearing, cups irregular pervious dentato-radiate proliferous, apothecia stalked pale brown. *Ach. Syn. Lich. p.* 273. *Lichen sparassus, E. B. t.* 273. *L. ventricosus, Lightf. p.* 875.

Hab. In woods upon the decayed stumps of old trees, but not common, *Lightf.*

*** *Thallus foliaceous, or scarcely any. Podetia cartilaginous, rigid, fistulose, all attenuated, subulate, and branched, their axils generally perforated.* (Cladonia.)

14. C. *racemosa*, podetia elongated smooth at length scaly greenish white inflated curved branched, branches lax subsecund their extremities divergent spinulose, apothecia pale brown. *Ach. Syn. Lich. p.* 275. *Lichen spinosus, Lightf. p.* 882. *Dill. Musc. t.* 16. *f.* 25.

Hab. Heaths and mountainous places, but not very common, as upon the Pentland hills, *Lightf.*

15. C. *furcata*, podetia elongated smooth livid brown dichotomous, axils not perforated, branches narrow subulate curved the extremities forked divergent, fertile ones with brown apothecia. *Ach. Syn. Lich. p.* 276. *Lichen furcatus, Lightf. p.* 881. *Dill. Musc. t.* 16. *f.* 27. A—D.

β. *subulata*, podetia elongate slender sparingly branched, branches nearly erect, fertile branches with brown capitate apothecia. *Ach. Syn. Lich. p.* 276. *Lichen subulatus, Lightf. p.* 881. *Dill. Musc. t.* 16. *f.* 21. A. B.

Hab. Woods, heaths, and mountainous places, frequent, *Lightf.*

16. C. *uncialis*, podetia elongate glabrous pale dichotomous the axils perforated open, extremities of the branches patent short acute and rigid, apothecia small terminal brown. *Ach. Syn. Lich. p.* 276. *Lichen uncialis, Lightf. p.* 880. *E. B. t.* 174.

β. *adunca*, podetia pale or hoary dichotomously branched, the axils perforated, extremities of the branches radiated uncinato-

spinose, apothecia capitate pale brown. *Ach. Syn. Lich. p.* 277. *Lichen uncialis* β. *Lightf. p.* 880. *Dill. Musc. t.* 16. *f.* 21. A. B.

Hab. On moors and heaths, frequent.

17. C. *rangiferina,* podetia elongate cylindrical erect roughish hoary branched, axils often perforated, branches scattered very much divided spreading the ultimate ones subradiate or drooping, apothecia subglobose clustered brown. *Ach. Syn. Lich. p.* 277. *Lichen rangiferinus; Lightf. p.* 877. *E. B. t.* 277.

Hab. Woods, heaths and mountains, abundant.

This is the Lichen which, for the greater part of the year, and especially in winter, is the support of the vast herds of rein-deer, in which consists all the wealth of the Laplanders. No vegetable, Linnæus tells us, grows throughout Lapland in such abundance as this, especially in woods of scattered pines, where, for very many miles together, the surface of the sterile soil is covered with it as with snow. On the destruction of forests by fire, when no other plant will find nutriment, this Lichen springs up and flourishes, and, after a few years, acquires its greatest size. Here the rein-deer are pastured: and, whatever may be the depth of snow during the long winters of that climate, they have the power of penetrating it and obtaining their necessary food. Linnæus has given a beautiful description of this Lichen, and of the animals whose support it is, in the *Flora Lapponica,* p. 332, which is too long for insertion in this place.

**** *Thallus none. Podetia soft, subsolid, subulate, but little branched (sterile), the axils not perforated.* (Cerania.)

18. C.? *vermicularis,* podetia subulate nearly simple smooth very white subfistulose flexuose prostrate. *Ach. Syn. Lich. p.* 278. *Lichen vermic., E. B. t.* 2029.

Hab. Ben Nevis, Ben Lawers, and probably most of the lofty Highland mountains, *Mr. Turner* and *Hook.* Discovered in Scotland by Mr. Dickson, but he has given no particular station for it.

25. BÆOMYCES.

Universal receptacle crustaceous, spreading, plane, adnate, producing soft, solid, fertile *podetia. Partial recept.* capituliform, immarginate, solid, terminal, sessile upon the *podetia,* coloured.

1. B. *roseus,* crust uniform granulated greenish white, podetia very short cylindrical, apothecia subglobose wrinkled pale flesh-colour. *Ach. Syn. Lich. p.* 280. *Lichen ericetorum, Lightf. p.* 809 (exclusive of the var. β). *E. B. t.* 374.

Hab. Upon the ground in heaths, banks, &c., in a sandy soil.

2. B. *rufus,* crust uniform rugose granulated and pulverulent greenish white, podetia very short somewhat compressed, apo-

thecia flattish at the top sometimes conglomerate reddish brown. *Ach. Syn. Lich. p.* 280. *Lichen byssoides, Lightf. p.* 809. *E. B. t.* 373.

Hab. Rocks, old walls and sometimes upon the ground, *Lightf.*

26. ISIDIUM.

Universal receptacle crustaceous, spreading, plane, adnate, uniform, bearing solid, shortish *podetia*. *Partial recept.* orbicular, convex, at length subglobose, solid, terminal upon the *podetia* and more or less sunk into their extremity, so as to leave a margin formed of the substance of the *podetium*.

1. I. *corallinum*, crust tartareous greyish white, podetia at length elongated rounded simple or branched, apothecia brownish grey. *Ach. Syn. Lich. p.* 281. *Lichen corallinus, Lightf. p.* 808. *E. B. t.* 1541.

Hab. Rocks in the Highlands, not unfrequent, as about Finlarig, in Breadalbane, *Dr. Stuart.* Dumfries-shire, *Dr. Burgess.* Blackford, near Edinburgh, *Sir James Edward Smith.* Ascent and top of Ben Lomond, *Mr. Turner* and *Hook.* Pentland hills, *Maugh.*

Podetia small, not $\frac{1}{4}$ of an inch high, much crowded and of a brittle or stony substance, whitish.

2. I. *Westringii*, crust tartareous thin unequal cracked and greyish, podetia subglobose at length cylindrical simple and branched, apothecia dark brown. *Ach. Syn. Lich. p.* 282. *Lichen Westringii, E. B. t.* 2204.

Hab. Rocks among the mountains, *Dicks.*

3. I. *microstictícum*, crust tartareous cracked smoothish nearly even of a brownish cream-colour thinner towards the edges, podetia scattered short hemisphærical simple of the same colour as the crust, apothecia brownish. *Turn.* and *Borr. Lichenogr. Brit. inedit. p.* 94. *Lichen microstícticus, E. B. t.* 2243.

Hab. Rocks in Scotland, *Dickson, Dr. Stuart.*

27. STEREOCAULON.

Universal receptacle cartilaginous or somewhat woody, branched and shrubby. *Partial recept.* turbinate, sessile, solid, plane, scarcely rising above a margin formed by the *thallus*, at length hemisphærico-globose, dilated, reflexed below and covering the margin.

1. S. *paschale*, thallus greyish branched and rough with granulated excrescences, branches crowded and very much divided, apothecia scattered and terminal at length convex conglomerate blackish brown. *Ach. Syn. Lich. p.* 284. *Lichen paschalis, Lightf. p.* 886. *E. B. t.* 282.

Hab. Rocks on the Highland mountains, abundant. Corstorphine and Pentland hills, near Edinb., *G. Don,* and *Mr. E. J. Maughan.*

B. *Apothecia covered by the substance of the thallus, containing a pulverulent mass.*

28. SPHÆROPHORON.

Universal receptacle crustaceo-cartilaginous, branched, shrubby, solid within. *Partial recept.* subglobose, sessile, terminal on the branches of the *thallus* and formed of it, breaking with a torn margin and containing within a pulverulent (black) mass collected into a ball.

1. S. *coralloides*, thallus palish brown, branches lateral elongated lax divaricated and forked acuminated, apothecia subglobose, smooth. *Ach. Syn. Lich. p.* 267. *Lichen globiferus*, *Lightf. p.* 887. *E. B. t.* 115.

Hab. Rocks in the Highlands and Lowlands, frequent.

2. S. *fragile*, thallus greyish branched, branches dichotomous short crowded fastigiate naked rounded rather obtuse, apothecia globoso-turbinate somewhat warted. *Ach. Syn. Lich. p.* 287. *Lichen fragilis*, *Lightf. p.* 888. *E. B. t.* 2474 (*not* 114, *which is the following*).

Hab. Rocks in mountainous places, frequent.

3. S. *compressum*, thallus whitish branched, branches compressed ramulose subfibrillose naked, apothecia subglobose depressed and smooth above. *Ach. Syn. Lich. p.* 287. *Lichen fragilis*, *E. B. t.* 114.

Hab. Rocks in mountainous places, but mostly sterile.

Div. III. Homothalami. *Lichens whose apothecia are formed wholly of the substance of the thallus and of the same colour with it.*

29. ALECTORIA.

Universal receptacle cartilaginous, subfiliform, branched, prostrate or pendulous, within somewhat fistulose and with a central thread. *Partial recept.* scutelliform, thick, sessile, plane or convex, margined, entirely formed of the *thallus*, and of the same colour.

1. A. *jubata*, thallus rounded somewhat shining livid brown very much branched, branches filiform compressed at the axils, apothecia of the same colour at length convex entire at the margin. *Ach. Syn. Lich. p.* 291. *Lichen jubatus*, *Lightf. p.* 891. *E. B. t.* 1880.

3. *chalybeiformis*, thallus and the subsimple branches flexuose or tortuose complicated rather rigid greyish black decumbent. *Ach. Syn. Lich. p.* 291. *E. B. t.* 1880. *L. chalybeiformis*, *Lightf. p.* 892.

Hab. Trunks of trees, especially firs, and rocks, frequent.

This, Linnæus tells us, occasionally supplies the rein-deer with food;

for which purpose the Laplanders cut down the trees that the Lichen may be devoured from the topmost branches.

2. A. *sarmentosa*, thallus roundish angular somewhat pitted dichotomous pale yellowish, the extremities much branched lax and slender, apothecia rather concave livid pruinose at length flattened. *Ach. Syn. Lich. p.* 293. *Lichen sarmentosus*, *E. B. t.* 2040.

Hab. Cairn-gorum, near the summit upon rocks, *Hook.* Ben Luyhal, in Sutherland, on the ground on the summit, *Mr. Borrer* and *Hook.*

30. RAMALINA.

Universal receptacle cartilaginous, with a central solid thread within, branched and laciniated, somewhat shrubby, generally bearing warts. *Partial recept.* scutelliform, thickish, pedicellate and subpeltate, plane, margined, entirely formed of the *thallus*, and nearly of the same colour.

1. R. *fraxinea*, thallus plane linear laciniated greyish white glabrous but rugose and pitted subreticulated the ultimate branches attenuated, apothecia mostly marginal plane pale-flesh coloured. *Ach. Syn. Lich. p.* 296. *Lichen fraxineus*, *Lightf. p.* 835. *E. B. t.* 1781.

Hab. Trunks and branches of trees, particularly oaks and ashes, frequent.

A variable species, especially in the breadth and ramifications of the *thallus*.

2. R. *fastigiata*, thallus compressed glabrous pitted branched glaucous white, branches thickened and fastigiated upwards, apothecia numerous terminal peltate subsessile white. *Ach. Syn. Lich. p.* 296. *Lichen fastig.*, *E. B. t.* 890.

β. *calicaris*, thallus and branches elongated, branchlets cylindrical attenuated pitted and channelled, apothecia subterminal appendiculated beneath. *Ach. Syn. Lich. p.* 297. *Lichen calicaris*, *Lightf. p.* 834.

Hab. Rocks and trees.

3. R. *scopulorum*, thallus compressed glabrous somewhat pitted branched yellowish grey, branches linear attenuated, apothecia scattered on short stalks of the same colour as the thallus. *Ach. Syn. Lich. p.* 297. *Lichen scopulorum*, *E. B. t.* 688.

Hab. Rocks by the sea-coast. Most abundant on the "Standing stones of Stonhouse," in Pomona, Orkney, *Mr. Borrer* and *Hook.*

4. R. *farinacea*, thallus compressed glabrous somewhat pitted bearing powdery warts rigid branched greyish or greenish white, branches linear attenuated, apothecia scattered on short stalks plane somewhat margined whitish. *Ach. Syn. Lich. p.* 298. *Lichen farinaceus*, *Lightf. p.* 833. *E. B. t.* 889.

Hab. Trunks of trees, frequent, but rare in fructification.

31. CORNICULARIA.

Universal receptacle cartilaginous, with a somewhat solid thread within, branched, shrubby. *Partial recept.* orbicular, terminal, obliquely peltate, entirely formed of the substance of the *thallus*, at length convex, subinflated; the circumference somewhat margined, subdentate, at length reflexed, of a rather different colour.

1. C. *tristis*, thallus deep pitchy brown rounded or subcompressed smoothish distichously dichotomous, branches fastigiate black above, apothecia plano-convex blackish brown somewhat marginated entire and toothed. *Ach. Syn. Lich. p.* 299. *Lichen tristis*, *E. B. t.* 720. *L. corniculatus*, *Lightf. p.* 885.

Hab. Alpine rocks, frequent.

2. C. *aculeata*, thallus glabrous chesnut brown roundish angular pitted and subcompressed naked, branches and branchlets divaricated flexuose aculeated, apothecia reddish brown, the circumference somewhat toothed. *Ach. Syn. Lich. p.* 299.

β. *spadicea*, thallus glabrous chesnut coloured plano-compressed somewhat pitted with the margins denticulate, branches and branchlets short patent attenuated, apothecia spinoso-radiate reddish brown. *Lichen hispidus*, *Lightf. p.* 883. *E. B. t.* 452.

Hab. Highland mountains, frequent.

3. C. *bicolor*, thallus black rounded capillary suberect branched, branches fine shortish scattered patent their extremities curved greyish. *Ach. Syn. Lich. p.* 301. *Lichen bicolor*, *E. B. t.* 1853.

Hab. Ben y Glow, *Mr. Dickson.* Rocks upon hills about Loch Tay, not unfrequent, *Mr. Turner* and *Hook.*

Apothecia unknown.

4. C. *ochroleuca*, thallus glabrous pale yellowish white roundish suberect branched, branches short attenuated blackish at the points, apothecia brownish pale in the circumference. *Ach. Syn. Lich. p.* 301. *Lichen ochroleuc.*, *E. B. t.* 2374.

Hab. Highland mountains, *Dickson.*

5. C. *lanata*, thallus decumbent rounded smoothish dichotomous greyish black, branches and branchlets flexuose intricate forked at the extremity, apothecia somewhat margined plane, the circumference naked and granulated. *Ach. Syn. Lich. p.* 302. *Lichen lanatus*, *Lightf. p.* 892. *E. B. t.* 846.

Hab. Rocks in the Highlands and in the Lowlands.

6. C. *pubescens*, thallus decumbent rounded roughish black, branches intricate capillaceous the ultimate ones simple, apothecia of the same colour entire in the circumference. *Ach. Syn. Lich. p.* 302. *Lichen pubescens*, *Lightf. p.* 893. *E. B.*

t. 2313. (*excl. the Syn. of Lich. exilis Lightf.*) *Conferva atro-virens, Dillw. Conf. t.* 25. *Scytonema atro-virens, Agardh Disp. Alg. Suec. p.* 39.

Hab. Rocks, on the Highland mountains, not unfrequent.

32. USNEA.

Universal receptacle subcrustaceous, rounded, branched, generally pendulous, having in the centre an elastic thread. *Partial recept.* orbicular, terminal, peltate, entirely formed of the substance of the thallus and nearly of the same colour, the circumference without a margin and generally ciliated.

1. U. *florida*, thallus nearly erect roughish greenish grey with very numerous fine horizontal fibres, branches patent subsimple, apothecia plane very broad whitish ciliated, the ciliæ radiating long. *Ach. Syn. Lich. p.* 304. *Lichen floridus, Lightf. p.* 897. *E. B. t.* 872.

Hab. Branches of old trees, not very uncommon, *Lightf.*

2. U. *plicata*, thallus pendulous smooth pale, branches lax much divided subfibrillose the ultimate ones capillaceous, apothecia plane broad ciliated, ciliæ slender very long. *Ach. Syn. Lich. p.* 305. *Lichen plicatus, Lightf. p.* 889. *E. B. t.* 257.

β. *hirta*, thallus nearly erect somewhat shrubby pale greenish white very much branched subpulverulent and roughish, branches very much divided flexuose intricate attenuated subfibrillose. *Ach. Syn. Lich. p.* 305. *Lichen hirtus, Lightf. p.* 895. *E. B. t.* 1354.

Hab. α. On the branches of old trees, but not common. In the Barntimpen Linn, in the parish of Kirkpatrick, Dumfries-shire, *Dr. Burgess.* β. Upon old trees and in hedges, frequent, *Lightf.*

3. U. *barbata*, thallus pendulous smoothish rounded thickish pale greenish grey, branches divergent here and there fibrillose capillary at their extremity articulated below. *Ach. Syn. Lich. p.* 306. *Lichen barbatus, Lightf. p.* 890. *Lichen articulatus*, β. *E. B. t.* 258. *f.* 2.

β. *articulata*, thallus glabrous greenish grey glabrous, branches elongate dichotomously divided articulated, articulations swelling distinct, ultimate branches capillary fibrillose. *Lichen articulatus*, α. *E. B. t.* 258.

Hab. Branches of old trees in thick woods and pine-forests.

33. COLLEMA.

Universal receptacle entirely of one substance, sub-gelatinous, which in drying generally becomes hard and cartilaginous, polymorphous (crustæform, foliaceous or branched). *Partial recept.* scutelliform, sessile (rarely subpedicellate), margined, entirely formed of the substance of the *thallus;* the *disk* of the same colour, rarely (in drying) coloured.

* *Thallus imbricated, plicated, suborbicular, composed of minute lobes (when moist, thick and turgid).* (Euchylium.)

1. C. *cheileum*, thallus suborbicular imbricated, lobes thick all minute rounded crenulated ascending, apothecia nearly plane aggregated of the same colour as the thallus the margin crenulated subevanescent. *Ach. Syn. Lich. p.* 310. *Lichen marginatus, Bernh. in Schrad. Journ.* 1799, *v.* 1. *p.* 6. *t.* 1. *f.* 2. a. *Dicks. Crypt. fasc.* 4. *p.* 25.

Hab. Roots of trees in shady subalpine woods, *Dickson.*

2. C. *melænum*, thallus orbicular somewhat stellated imbricated, lobes cut and laciniated their margins elevated waved crisped and crenulated, apothecia marginal nearly plane of the same colour with the thallus their margin granulated. *Ach. Syn. Lich. p.* 315.

β. *marginale*, lobes of the thallus deeply laciniated narrow multifid spreading flexuose nearly plane crenate and lobed, apothecia marginal and scattered dark brown their margin entire. *Ach. Syn. Lich. p.* 316. *Lichen marginalis, E. B. t.* 1924.

Hab. β. Highlands of Scotland, *Sir J. E. Smith*, in *E. B.*

3. C. *fasciculare*, thallus suborbicular imbricato-plicate, plaits central erect flexuose, lobes of the circumference rounded inciso-crenate, apothecia marginal turbinate fasciculate, disk rather convex reddish. *Ach. Syn. Lich. p.* 317. *Lichen fascic., Lightf. p.* 841. *E. B. t.* 1162.

Hab. Shady places on the north sides of trunks of trees, not unfrequent, particularly on the ash, *Dr. Burgess.* Wood between Ballacheulish and Linnhe Loch, *Mr. Turner* and *Hook.*

** *Thallus foliaceous; lobes rounded, downy or fibrillose beneath.* (Mailotium.)

4. C. *saturninum*, thallus foliaceous blackish green glaucous and downy beneath, lobes rounded waved entire, apothecia scattered elevated plane reddish their margin entire. *Ach. Syn. Lich. p.* 320. *Lichen saturninus, E. B. t.* 1980.

Hab. Trunks of trees, *Dickson.*

5. C. *Burgessii*, thallus foliaceous somewhat imbricated glaucous greenish brown pubescent and somewhat spongy beneath, lobes rounded sinuated crenulated and crisped, apothecia depressed planish brown their margin foliaceous crisped. *Ach. Syn. Lich. p.* 320. *Lichen Burgessii, Lightf. p.* 827. *E. B. t.* 300.

Hab. Discovered upon trunks of hazel and birch in Dumfries-shire by *Dr. Burgess.* Plentiful on trees by the side of Loch Lomond, going to Tarbet; and near Inverary and Ballacheulish, *Mr. Turner* and *Hook.*

*** *Thallus foliaceous; lobes submembranaceous, lax, naked, blackish green.* (Lathagrium).

6. C. *nigrescens*, thallus foliaceous membranaceous submonophyllous orbicular depressed plaited rounded and lobed black-

green, apothecia central crowded at length convex reddish brown their margin entire. *Ach. Syn. Lich. p.* 321. *Lichen nigrescens, E. B. t.* 345. *L. Vespertilio, Lightf. p.* 840.

Hab. Trunks of trees, not uncommon.

7. C. *flaccidum*, thallus foliaceous membranaceous smooth blackish green, lobes distinct rounded entire lax waved, apothecia scattered nearly plane reddish, their margin thin entire. *Ach. Syn. Lich. p.* 322. *Lichen flaccidus, E. B. t.* 1653.

Hab. Received from Scotland by *Mr. Dickson. Sm.* in *E. B.*

8. C. *furvum*, thallus foliaceous membranaceous somewhat wrinkled complicate blackish green granulated on both sides, lobes rounded unequal waved and crisped entire, apothecia scattered plane dark brown their margin entire. *Ach. Syn. Lich. p.* 323. *Lichen granulatus, E. B. t.* 1737.

Hab. Trunks of trees, rocks, &c.; mentioned by *Lightf.* as a var. of C. *nigrescens.*

**** *Thallus foliaceous; lobes rounded, membranaceous, thin, naked, glaucous grey, subdiaphanous. Apothecia subpedicellate.* (Leptogium.)

9. C. *tremelloides*, thallus foliaceous membranaceous thin subdiaphanous lead-colour obsoletely rugose and dotted, lobes rounded somewhat cut, apothecia scattered subpedicellate plane reddish brown their margin pale. *Ach. Syn. Lich. p.* 326. *Lichen tremell., E. B. t.* 1981. *L. cochleatus, Dicks. Crypt. fasc.* 1. *t.* 2. *f.* 9.

Hab. East side of the rock of Dumbarton Castle, *Sir J. E. Smith.* Upon rocks among moss, at Aros, Isle of Mull, plentiful, *Mr. Turner* and *Hook.*

10. C. *lacerum*, thallus nearly erect foliaceous membranaceous subdiaphanous subrugose with obscure reticulations glaucous, lobes small subimbricated cut and laciniated and somewhat fringed, apothecia scattered rather concave red their margin pale. *Ach. Syn. Lich. p.* 327. *Lichen lacer, E. B. t.* 1982. *L. tremelloides, Lightf. p.* 842.

Hab. Common on the ground among mosses, *Lightf.*

***** *Thallus very slender, laciniated and branched.* (Polychidium).

11. C. *subtile*, thallus substellate the segments very narrow linear appressed very much branched obtuse, apothecia central nearly plane of the same colour as the crust their margin thin entire. *Ach. Syn. Lich. p.* 328. *Lichen subtilis, E. B. t.* 1008.

Hab. Scotland, not unfrequent, *Mr. Brown.*

12. C. *muscicola*, thallus pulvinate brown, branches rounded nearly erect flexuose uneven subfastigiate rather obtuse, apothecia nearly terminal plane brown margined. *Ach. Syn. Lich. p.* 328. *Lichen muscicola, E. B. t.* 2264.

Hab. Rocks among mosses in the Highlands, *Dickson.*

DIV. IV. ATHALAMI. *Lichens which have no apothecia, or whose fructification we are not acquainted with.*

34. LEPRARIA.

Universal receptacle a pulverulent spreading adnate uniform crust, rarely mixed with fibres, or filmy at the base. *Partial receptacle* none?

1. L. *chlorina*, crust thick pulvinate bright sulphur-colour composed of a dust-like substance collected into somewhat hairy globules. *Ach. Syn. Lich. p.* 330. *E. B. t.* 2038.

HAB. Scotland, *Mr. Dickson*, in *E. B.* On rocks behind the inn at Aviemore, in Strathspey, *Mr. Borrer* and *Hook.*

2. L. *flava*, crust spreading equal thin somewhat cracked bright yellow composed of subglobose granules. *Ach. Syn. Lich. p.* 330. *E. B. t.* 1350. *Byssus candelaris, Lightf. p.* 1005.

HAB. Old pales, the bark of trees and wood of houses, common.

3. L. *Jolithus*, crust spreading equal thin red composed of subglobose minute granules. *E. B. t.* 2471. *Turn. & Borr. Lich. Brit. ined. p.* 19. *Byssus Jolithus, Linn.*

HAB. Rocks in damp shady situations at Luss, *Mr. Turner* and *Hook.*

This diffuses at all times, even when dry, a faint violet-like smell, which, together with its red colour, suffices to distinguish it. It is this which tinges the stones at Holywell, in Flintshire, and there is a superstitious notion that they are sprinkled with the blood of St. Winifred.

4. L. *æruginosa*, light verdigrise green, crust minutely fibrous branched covered with numerous minute clustered granules. *E. B. t.* 2182. *Byssus æruginosa, Huds. Angl.* (*according to Sm.*) *Conferva pulveria, Dillw. Conf. p.* 78 *of the Synopsis, t.* D. *Suppl.*

HAB. Pillars of Rosslyn Chapel, *Sir Jas. E. Smith.*

5. L. *latebrarum*, grey, crust fibrous forming dense cushions, granules in small round clusters. *Ach. Syn. Lich. p.* 331, *E. B. t.* 2147.

HAB. Rock at the Hermitage at Blackford, as well as on several rocks in Rivelston Wood, *Smith.*

Appears in its *structure*, from the *E. B.* figure, exactly to resemble the former species.

6. L. *botryoides*, crust thin spreading granulato-pulverulent green somewhat gelatinous, granules collected into a somewhat beaded form and clustered. *Ach. Syn. Lich. p.* 331. *E. B. t.* 2148. *Byssus botryoides, Lightf. p.* 1006.

HAB. Trunks of trees, posts, rails, &c. in shady situations, abundant.

7. L. *nigra*, crust filmy greyish granulated in patches, granules extremely minute in thin even layers quite black. *Turn. & Borr. Lich. Brit. ined. p.* 21. *E. B. t.* 2409.

HAB. On the flat tops of gateposts, frequent, *Hopk.*

ORDER III. ALGÆ[a].

Vegetables for the most part aquatics, destitute of *roots*, or furnished only with a fibrous or scutate base for the purpose of attachment merely; whose *fronds* are either gelatinous, filamentose, membranous, or coriaceous, having, for fructification, *seeds* or *sporules*, either imbedded in *tubercles* or processes arising from the *frond*, or immersed and more or less scattered in the substance of the *frond* itself.

Many species of this singular, and, generally speaking, beautiful order of plants, frequently float in the water without any point of attachment to extraneous substances. They are mostly subpellucid, and the cellules are often elongated and united so as to form fibres interrupted by transverse dissepiments. Their colour is various, often green, brown, red, &c. After having been kept dry for a great length of time, they will revive by immersion in water, but that portion of the plant only imbibes the fluid which is immersed in it.

DIV. I. TREMELLINÆ. *Frond gelatinous of a determined figure, containing within conferva-like or beaded filaments.—Root none. Frond either globose or palmate, or filiform, consisting of a gelatinous, pellucid substance, in which are imbedded clustered, conferva-like, jointed, branched, or simple filaments. Fructif. either interior, included in the joints of the filaments, or rarely exterior in capsules. Colour generally green, sometimes brown or purplish.*

1. NOSTOC.

Filaments moniliform, composed of united globules. *Frond* olivaceous, between gelatinous and coriaceous, bullate, hollow, at length spreading, filled with moniliform, simple, curved, and crisped filaments. According to Vaucher, these plants propagate by the globules of which the filaments are composed, which, by degrees, separate and grow into new individuals.

1. N. *commune*, upon the ground, frond lobed and plicate bullate gelatinous olive green. *Ag. p.* 133. *Tremella Nostoc*, *Lightf. p.* 898. *E. B. t.* 461.

HAB. Gravelly walks and pastures after rain, frequent, *Lightf.*, *Hopk.*

2. N. *verrucosum*, frond bladdery subcoriaceous hollow plicate and smooth. *Ag. p.* 132. *Tremella verrucosa*, *Lightf. p.* 899.

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[a] In this order I follow and adopt the ordinal and generic characters, with few exceptions, of *Agardh*, in his *Synopsis Algarum Scandinaviæ*, Lund. 1817.

Hab. Rocks in the Highland rivulets, near the foot of the mountains, frequent, *Lightf.*

Frond oval, an inch or more in diameter, olive green, gelatinoso-coriaceous, plicato-lobate, smooth, at length spreading into an ulva-like membrane, 4—5 inches in diameter. *Filaments* flexuose, compact and intricate, nearly equal at first, at length moniliform. *Ag.*

2. ALCYONIDIUM. *Lamour.*

Capsules graniferous, imbedded in a fleshy or gelatinous substance. *Frond* subcylindrical, lobed; substance between spongy and gelatinous.

1. A. *diaphanum*, subgelatinous pale yellowish pellucid somewhat cylindrical with numerous branches and lobes of various sizes. *Ag. p.* 131. *Ulva diaphana, E. B. t.* 263. *Alcyonium gelatinosum, Linn.*

Hab. Cast on shore in the Orkney islands, *Mr. P. Neill.*

Has very much the appearance of animal substance.

3. RIVULARIA.

Filaments arising from a common base, continuous, annulated within, of an olive or dark green colour, globular.—*Filaments* (resembling those of *Oscillatoria*) simple, continuous, annulated within, having a globule at one extremity, at the other terminating in a long diaphanous point. Their mode of increase is hitherto unknown.

1. R. ? *tuberiformis*, frond irregularly globose inflated folded olivaceous brown smooth, globules of the filaments in the external surface of the frond. *E. B. t.* 1956. *Tremella difformis, Lightf. p.* 900.

Hab. On *Confervæ* and other marine substances, and on the rocks at low water, *Lightf.* Abundant at Ulva, Staffa, and Iona, in such situations.

An inch or more in diameter, coriaceo-gelatinous, hollow. The *filaments* tapering from the globular extremity, which is in the surface, internally, to long attenuated points.

2. R. *atra*, fronds hemisphærical solitary hard shining blackish green, filaments densely crowded fasciculated at the base pellucid green. *Ag. p.* 130. *E. B. t.* 1798. *Tremella hemisphærica, Linn., Lightf. p.* 900.

Hab. Marine rocks, not uncommon.

Minute, appearing black.

4. CHÆTOPHORA.

Filaments arising from a common base, jointed. *Gemmæ* scattered among the mass of the frond.—*Frond* very gelatinous, palmate, globose, or filiform. *Filaments* (like those of a *Conferva*) branched, jointed, gradually tapering, produced beyond the surface of the *frond*, into long, diaphanous points. *Gem-*

mæ scattered within the *frond*, hard, thicker than the *filaments*, and producing new individuals. *Colour* light green, brown, or purplish.

* *Filiform. Filaments from the axis of the frond.*

1. C.? *vermiculata*, "cylindrical much branched brown, branches scattered subdivided crooked, internal filaments compound and divaricated their ultimate branches clustered beaded thickened upwards, fruit (gemmæ ?) sessile at the base of the beaded branches." *E. B. t.* 1818 (*Rivularia vermiculata*).

Hab. On rocks in the sea; Berriedale in Caithness, and at Losiemouth, on the coast of Morayshire, *Mr. Borrer* and *Hook.*

2. C. *multifida*, frond rounded filiform solid repeatedly dichotomous, the branches elongated divaricated, filaments within the substance dichotomous very much branched, branchlets fastigiate straight torulose blackish purple. *Rivularia multifida*, *Roth*, *Cat. Bot. t.* 3. *p.* 335. *Ulva rubra*, *E. B. t.* 1627? *Chætophora rubra*, *Ag. p.* 127.

Hab. Coast of Moray, on rocks in the sea, *Mr. Borrer* and *Hook.*

Colour purple. Can this be the younger state of *R. vermiculata?* If so, the present name should be retained.

** *Filaments arising from the base of the fronds.*

3. C. *endiviæfolia*, frond compressed much branched, branches lobed obtuse, filaments parallel branched at the extremity in a fastigiated manner. *Ag. p.* 129. *Ulva incrassata*, *E. B. t.* 967.

Hab. In pools of fresh water near Brodie-house, by Forres, *Hook.*

One inch long, very soft and gelatinous, pale green, attached to sticks, mosses, &c., in the water.

4. C. *tuberculosa*, frond globose hollow, granules numerous scattered through the mass and emitting filaments. *Ag. p.* 129. *Rivularia tuberculosa*, *E. B. t.* 2366.

Hab. Ditches and lochs (fresh water), occasionally. In a ditch leading into Frankfield Loch; and in a well near Clyde Iron-works, Glasgow, *Hopk.* Rivulet near Edinb., *Mr. Greville.*

From a quarter to half an inch in diameter, palish green, wrinkled, but very soft. *Filaments* much branched, diaphanous at the points.

Div. II. Confervoideæ. *Fruit, either naked granules included in the frond, or capsules. Frond tubular, internally or externally jointed. Substance membranous. Root generally none. Fronds either affixed by their base, or floating, free, tubular, filiform or capillary, jointed; joints sometimes annuliform, sometimes external, sometimes internal (as in Oscillatoria and Scytonema), simple or branched. The articulations various in length, full of a coloured matter, generally either*

purple or green. They propagate by various means, either by granules, which fall out on the bursting of the filaments, or, after the union of two filaments by the granules of two articulations collecting into one; or, by an articulation giving origin to a new individual, and, as it were, viviparous; or, by seeds included in a capsule or immersed in gelatine.

5. DRAPARNALDIA.

Frond gelatinous. *Primary filaments* jointed, with penicellate branchlets. *Granules* internal.—*Fronds* very gelatinous, and formed of conferva-like *filaments* of two kinds, of which one is penicelliform, and, as it were, parasitic on the other more simple one. The *primary filaments* are equal, jointed; the *articulations* pellucid, marked with a green transverse zone. *Secondary filaments* in pencil-shaped fascicles, with short *articulations* scarcely distinct, terminated by a long, acuminated, pellucid point. *Fruit;* none external, but the species are propagated by *granules* included in the *articulations*. They have a most elegant appearance on paper, resembling a beautiful drawing, and adhere firmly by their own tenacity.

1. D. *glomerata*, pencils of branchlets ovate obtuse patent. *Ag. p.* 124. *Batrachospermum glomeratum*, *Vauch. Conf. t.* 12. *f.* 1. *Conferva mutabilis*, *E. B. t.* 1746.

Hab. Margins of lakes, clear ditches, and streamlets, attached to stones and aquatic plants.

Very gelatinous; in tufts of 2 or 3 inches in length. *Primary branches* pellucid, rather thick; *secondary ones* small, much pencilled, with the *branchlets* spreading, in which respect it differs principally from the following.

2. D. *plumosa*, pencils of the branchlets lanceolate acute erect. *Ag. p.* 124. *Batrachospermum plumosum*, *Vauch. Conf. t.* 11. *f.* 2. *Conferva mutabilis*, *Dillw. Conf. t.* 12.

Hab. The same situations as the last.

6. BATRACHOSPERMUM.

Frond gelatinous. *Primary filaments* jointed, branchlets verticillate. *Gemmæ* external. *Fronds* very gelatinous, branched, often moniliform, composed of *filaments* of two kinds. The *primary ones* resembling the more simple *Confervæ*, jointed, equal; and *filaments* or *branchlets* arising from their joints, whorled, divided, moniliform. *Fruit; gemmæ?* or *seeds*, external among the *branchlets*.

1. B. *moniliforme*, frond alternately branched moniliform, branches attenuated. *Ag. p.* 122. *Batrachospermum moniliforme*, *Vauch. Conf. t.* 1. *f.* 5. *t.* 11. *f.* 1 and 3. *E. B. t.* 689. *Dillw. Conf. t.* 32.

Hab. Clear running streams, not uncommon.

Very lubricous, but varying excessively in the size and colour of the whorled *branchlets*. Most frequently purple, sometimes dark or blue green, or even blue. The *Conf. nigra* of *Dillw.* and *E. B.* is now, I believe, generally acknowledged to be only a state of this on which the *branchlets* have been destroyed.

7. GLOIONEMA.

Filaments gelatinous, continuous, with very obscure joints, within filled with elliptical *sporangia*.

1. Gl. *fœtidum*, filaments compressed branched flaccid and gelatinous coadunate free at their extremities, branches crowded subdichotomous, dissepiments obsolete, articulations rather long (*Dillw.*) including a solitary elliptical granule. *Dillw. Conf. t.* 104, and *E. B. t.* 2101 (*Conferva fœtida*).

Hab. Rocks on the coast of Morayshire, *Mr. Borrer* and *Hook.*

This is a singular production, and from its smell one would suspect it to be animal matter. I have never been able to distinguish the articulations Mr. Dillwyn mentions, but have found the ovate or elliptical brown bodies in the pellucid membranous filaments to assume a beaded appearance.

8. SCYTONEMA.

Filaments continuous, subcoriaceous (not gelatinous), having internally transverse annuliform parallel sporangia.

1. S. *atro-virens*, tufts brownish black, filaments olivaceous brown rigid branched, branches slender, rings dotted with granules. *Ag. p.* 115. *Conferva atro-virens, Dillw. t.* 25. *Lichen exilis, Lightf. p.* 894. *Collema pannosum, Ach. Syn. Lich. p.* 329.

Hab. Naked rocks in the Highlands, especially such as are moistened by the spray of cataracts, *Lightf.*

Forming dense blackish tufts, with shortish capillary branched filaments. It seems doubtful whether this should be arranged with the *Lichens* or *Confervæ*. External swellings (tubercles or apothecia?) have been observed upon them; but whether actual fructification or not, future observations must determine. Agardh includes in the present genus, besides the plant in question, *Conferva comoides, radicans, Myochrous* and *ocellata* of *Dillw.*, which certainly have a habit in common.

9. OSCILLATORIA.

Filaments continuous, membranaceous, gelatinous, filled internally with transverse parallel annuliform *sporangia*.—The *Oscillatoriæ* are divided into two kinds by Agardh. The *Oscill. veræ* are those which are collected into a gelatinous stratum, shining and blackish green above, after being dried partaking of a beautiful æruginose tint. Their *filaments* have been thought to have a voluntary movement; they elongate and increase rapidly, are always simple, though Agardh has

occasionally seen them laterally united. The species of the second division have more the appearance of true *Confervæ*; they are scarcely gelatinous; but they have no true joints, and their internal structure resembles the true *Oscillatoriæ*.

* *Simple decumbent, surrounded by a Mucus* (Oscillatoriæ veræ).

. O. *nigra*, filaments brownish green rigid straight collected into a gelatinous mass throwing out on all sides of its circumference numerous long rays. *Ag. p.* 103. *Conferva fontinalis, Lightf. p.* 977. *Dillw. t.* 64. *E. B. t.* 2054? *Conferva confragosa, Lightf. p.* 976?

AB. Under water by the sides of limpid springs or fountains, and on the banks of rivers, *Lightf.* Frequent in wells, *Hopk.*

aucher and Agardh describe several species of this family, besides the following, most or all of which will probably prove natives of Scotland.

. O. *limosa*, filaments blueish green rigid straight collected into a gelatinous mass and throwing out on all sides of its circumference numerous rather short rays. *Conferva limosa, Dillw. t.* 20. *E. B. t.* 2053. *Oscillatoria tenuis, Ag. p.* 105.

AB. Rivulets and ditches, frequent, *Hopk.*

* *Simple, decumbent, not surrounded by a Mucus* (Confervoideæ).

O. *muralis*, filaments green somewhat rigid curved flexuose thickish interwoven into a green stratum, rings lax. *Ag. p.* 108. *Conferva muralis, E. B. t.* 1554. *Dillw. t.* 7.

AB. On damp walls, stones, and shady gravel walks, very common, *Hopk.* Walls of Branksome castle, *Mr. Turner* and *Hook.*

*** *Erect, simple.*

O. *scopulorum*, filaments green curved flexuose erect minute acuminate forming a dense velvet-like substance. *Ag. p.* 111. *Conferva scopulorum, Dillw. Conf. Syn. p.* 39. T. A. *E. B. t.* 2171.

AB. Rocks by the sea-side at Cawsie, Morayshire, *Mr. Borrer* and *Hook.*

10. ZYGNEMA.

(*Conjugata, Vauch.*)

laments, containing *granules* which vary in their arrangement, but take some decided figure, at length, from different filaments, uniting by means of lateral *tubes*.—*Filaments* simple, equal, jointed, green, gelatinous. *Articulations* pellucid. *Granules* disposed either in spiral lines, in stellated figures, or, rarely, scattered. *Joints* as in the true *Confervæ*. The transverse *tubes* are prolonged from the middle of the articulations of two contiguous filaments at the same time, unite into one, are pervious, and transmit the granules from one articulation into that of another filament, where they form an elliptical or sphærical mass.

(*Granules disposed in spiral lines.*)

1. *Z. nitidum*, articulations about as long as they are broad, spiral lines crossing each other slender crowded, mass of granules at length elliptical. *Ag. p.* 98. *Conferva nitida*, *E. B. t.* 2337. *Dillw. Conf. t.* 4. *f.* C. *Conjugata princeps*, *Vauch.*

Hab. In stagnant waters, occasionally, *Hopk.*

Filaments thicker than in the rest of the genus, forming large dark green patches.

2. *Z. quininum*, filaments equal, spiral lines simple rather lax, articulations longer than their diameter, mass of granules at length elliptical. *Ag. p.* 100. *Conferva spiralis*, *E. B. t.* 1656. *Dillw. Conf. t.* 3.

Hab. A frequent inhabitant of ditches and ponds, *Hopk.* In a burn on the summit of Ben Nevis, *Mr. Turner* and *Hook.*

3. *Z. inflatum*, filaments here and there inflated, spiral lines simple lax, mass of granules at length elliptical. *Ag. p.* 101. *Conferva inflata*, *E. B. t.* 2376.

Hab. Ditches and bogs, frequent, *Hopk.*

Articulations twice or thrice as long as they are broad.

11. HYDRODICTYON.

Filaments united in a reticulated manner. *Articulations* viviparous. *Frond* utriculate, composed of *filaments* united in such a manner as to form a beautiful net-work. From each *articulation* (forming one side of the, mostly, pentangular areolæ) a new individual is produced, according to Vaucher, entirely resembling the parent plant.

1. H. *utriculatum*. *Ag. p.* 97. *Conferva reticulata*, *Linn. E. B. t.* 1687. *Dillw. Conf. t.* 97.

Hab. Ditches and pools?

I think, but am not sure, I have heard this has been found in Scotland. It is one of the most singular of all the *Algæ*, and resembles, when floating upon water, a fine and beautiful tubular net.

12. CONFERVA.

Filaments jointed, uniform, bearing excessively minute seeds or sporules internally.—The *filaments* are all uniform, simple or branched, green or coloured, jointed. The *articulations* filled with a mass of sporules, including frequently scattered granules. The *joints* are formed by an annular constriction, where the filaments are easily broken. There is no external *fructification;* but the *granules* frequently vegetate within the filaments, as has been seen to be the case in *Conf. rivularis*, *fracta*, &c.

* *Coloured, branched, not aquatic.*

1. C. *Orthotrici*, filaments very short olivaceous brown branched

obtuse erect tufted, articulations about as long as they are broad. *Ag. p.* 73. *Dillw. Conf. t.* 89. *C. muscicola, E. B. t.* 1638.

Hab. On *Orthotrichum striatum, Lyellii,* and *pulchellum,* and probably other species of the genus. Very common in Kinross-shire, at Caldron Linn, and Castle Campbell; and in a small wood at the foot of the Pentland hills, *Mr. Arnott.*

2. C. *ebenea,* filaments branched erect tufted rigid subcartilaginous obtuse, articulations as long as they are broad. *Ag. p.* 74. *Dillw. Conf. t.* 100. *Byssus nigra, Lightf. p.* 1003. *E. B. t.* 702.

Hab. Rocks and trees. On the stump of a tree in Macbeth's wood, at Brodie, near Forres, *Hook.*

3. C. *arachnoidea,* filaments decumbent elongate membranaceous equal a little branched loosely entangled and forming a fulvous or brownish mass, the articulations thrice as long as they are broad. *Ag. p.* 74. *Dillw. Conf.* Tab. C.

Hab. On decaying wood, Arlary, by Kinross, *Mr. Greville.*

4. C. *purpurea,* filaments erect subflexuose dichotomously branched forming rather large crimson dense tufts or patches, articulations rather longer than they are broad. *Dillw. t.* 43. *Byssus purpurea, Lightf. p.* 1000. *E. B. t.* 192.

Hab. Upon the Abbot of Mackinnon's tomb, in the ruined Abbey of I-columb-kill, *Lightf.*

** *Coloured, simple.*

5. C. *ericetorum,* filaments simple decumbent intricate forming a purplish stratum, articulations half as long again as they are broad. *Ag. p.* 76. *E. B. t.* 1553.

Hab. On the ground in moist heathy places.

6. C. *Pteridis,* filaments simple creeping brownish orange, articulations longitudinally plicated thrice as long as broad. *Ag. p.* 76.

Hab. About the dead stems of *Pteris aquilina,* not uncommon about Edinb., *Mr. Arnott.*

Growing in small tufts of about an inch or less in diameter. *Filaments* membranaceous, straight, subparallel, fixed by their two extremities, and thus creeping. *Articulations* longitudinally plicated, subcollapsed, somewhat as the medulla in the inside of the quill of a feather. *Ag.*

*** *Greenish, simple.*

7. C. *dissiliens,* filaments simple slender fragile straight, articulations twice as short as they are broad. *Ag. p.* 81. *Dillw. Conf. t.* 63. *E. B. t.* 2464.

Hab. Ditch near Possil bog, *Hopk.*

8. C. *bipunctata,* filaments simple capillary intricate softish, articulations twice as long as they are broad at length with two masses of sporules. *Dillw. t.* 2. *E. B. t.* 1610.

Hab. Stagnant waters, frequent, *Hopk.*

I have seen some states of *C. ericetorum,* which I have hardly known from this. This is more or less green.

9. C. *capillaris,* filaments very long simple flexuose loosely entangled, articulations nearly twice as long as they are broad, when dry alternately contracted. *Ag. p.* 81. *E. B. t.* 2364 (*excluding the branching plant*).

Hab. Marshy ditches and stagnant waters near the sea-side, *Lightf.*

Rather stout, rigid.

10. C. *vesicata,* " variegated with brown and green, filaments unbranched slender, articulations half as long again as broad, alternately pellucid and opaque here and there swelling." *Sm. Ag. p.* 82. *Conf. alternata, E. B. t.* 2304. *Dillw. Conf. Syn. t.* B.

Hab. Ditches and stagnant waters, frequent. Pond at Dalbeth, abundant, *Hopk.*

11. C. *tumidula,* " green, filaments unbranched, articulations thrice as long as broad, when fertile swelling and elliptical." *Sm. E. B. t.* 1670 (*excluding the synonym of Vauch.*).

Hab. Ditches and bogs with *Zygnema inflata,* but not common, *Hopk.*

12. C. *rivularis,* filaments simple capillary very long equal, joints pellucid, articulations granuliferous about twice as long as they are broad. *Dillw. Conf. t.* 39. *E. B. t.* 1654. *Lightf. p.* 975. *C. rivularis,* γ. *Ag. p.* 87.

Hab. Brooks and rivers, frequent, *Lightf., Hopk.*

Agardh considers the *C. crispata, Dillw. t.* 93, a var. of this.

**** *Branched, green, aquatic.*

13. C. *fracta,* filaments rigid very much branched capillary, branches divaricated alternate, articulations 4—5 times as long as they are broad. *Ag. p.* 88. *Dillw. Conf. t.* 14. *E. B. t.* 2338. *C. bullosa, Lightf. p.* 977.

Hab. Stagnant waters, common, *Lightf., Hopk.*

Conf. flexuosa of *Dillw.* and *E. B.* is made the var. β. *prolifera* of Agardh.

14. C. *glomerata,* filaments very much branched capillary, branches alternate, the ultimate ones fastigiate subsecund, articulations cylindrical about four times as long as broad. *Ag. p.* 89. *Lightf. p.* 993. *Dillw. Conf. t.* 13. *E. B. t.* 2192. *C. læte-virens, Dillw. Conf. t.* 48. *E. B. t.* 1854. *Conf. albida, E. B. t.* 2327 ?

Hab. In pools and ditches, and in the sea, most abundant.

15. C. *lanosa,* yellowish green, filaments slender very much branched rather short, branches remote alternate, articulations below about twice, the ultimate ones thrice, as long as they are broad. *Dillw. Suppl. t.* E. *E. B. t.* 2099. *C. ærugi-nosa ? Lightf. p.* 980.

Hab. On *Fuci* and *Corallines* at Forres, Morayshire, *James Brodie, of Brodie, Esq.*

About 1 inch long, growing in rather dense, fasciculated tufts.

16. *C. rupestris*, filaments fasciculated very much branched straight twiggy obtuse, branches erect, joints pellucid, articulations cylindrical thrice as long as broad. *Ag. p.* 91. *Dillw. t.* 948. *E. B. t.* 1699.

Hab. Rocks on the sea-shore, common.

Three to five inches long, blackish green, rigid; when dry not adhering to paper.

17. *C. ægagropila*, filaments divaricating from a centre very much branched rigid obtuse forming a compact globe, articulations 4—5 times longer than broad. *Ag. p.* 92. *E. B. t.* 1377. *Dillw. Conf. t.* 87.

Hab. Lakes and ditches, north of Scotland, *James Brodie, of Brodie, Esq.* In ditches, bogs, and stagnant waters, occasionally. In a ditch leading into Mugdoch-lake, plentifully, and in the Loch, *Hopk.*

This extraordinary production varies in diameter from half an inch to 2—3 inches, forming a compact green ball, which is said in *E. Bot.* to be useful for wiping pens upon. The name is derived from its resemblance to the balls that are found in the stomachs of goats. In drying, the filaments become contracted at the joints.

18. *C. lubrica*, filaments very much branched slender gelatinous, branches and branchlets approximate subulate pellucid at the extremities, articulations thrice as long as they are broad marked with a dark green zone in the middle. *Ag. p.* 92. *Dillw. Conf. t.* 57.

Hab. In a rivulet running into the water of Leith, in the middle of the Glasgow road from Edinb., *Mr. Greville.*

19. *C. olivacea*, filaments branched erect tufted intricate abbreviated rather rigid olive green, branches subsimple alternate obtuse, articulations about as long as broad. *Dillw. Conf. Syn. p.* 57. *t.* C.

Hab. Marine rocks in Papa Westra, Orkney, *Mr. Borrer* and *Hook.*

About half an inch long, much entangled, flexuose.

***** *Green, branched, not aquatic.*

20. *C. velutina*, filaments creeping and rooting branched, branches flexuose subpellucid erect obtuse collected into a beautiful green velvet-like stratum, superior articulations twice as long as they are broad. *Ag. p.* 94. *Dillw. Conf. t.* 77. *E. B. t.* 1556. *Byssus velutina, Lightf. p.* 1001.

Hab. Damp, clayey banks, sides of ponds, rivers, &c., *Lightf., Hopk.*

13. LEMANIA.

Filaments torulose, bearing their fructification internally. *Sporules* beaded, collected into pencil-shaped tufts, and fixed to the inner surface of the hollowed parts of the frond.—*Filaments*

rigid, generally olivaceous, scarcely jointed, truly torulose or inflated at intervals, formed of a thickish membrane, whose texture is evidently cellular.

1. L. *fluviatilis*, filaments subsimple olive-green torulose attenuated, intervals between the swellings cylindrical much longer than they are broad. *Ag. p.* 70. *Conferva fluviatilis, Dillw. Conf. t.* 29. *E. B. t.* 1763. *Lightf. p.* 985.

Hab. In the beds of alpine torrents, upon the rocks near Comrie, 4 m. west of Crieff, *Dr. Stuart*. Craig-hall, near Edinb., *Mr. Yalden*. Rare about Glasg.; in a rivulet on the hill to the north of Milngavie, *Hopk*. In the bed of the Clyde near the falls, *Mr. Turner* and *Hook*. Not uncommon about Edinb., *Mr. Greville*.

Filaments thick, tufted, elongated, from 2 to 5 inches in length, attenuated at the base and at the extremity.

14. GRIFFITHSIA[a].

Seeds immersed in a gelatine, and surrounded by an involucrum.

1. Gr. *corallina*, crimson much branched, articulations swelling upwards thrice as long as broad, the fertile ones fringed at the summit with short incurved simple filaments (involucre) enfolding numerous clustered seeds imbedded in a mucus. *Conferva corallina, E. B. t.* 1815. *Lightf. p.* 988.

Hab. On the western coast in deep waters, sometimes dragged up in fishing-nets, or cast upon the shore in storms, *Lightf*.

Turns whitish or greenish brown in drying.

2. Gr. *equisetifolia*, red branched cylindrical, branches clothed with short whorled imbricated forked jointed filaments whose articulations are four times as long as they are broad and a little thickened upwards. *Conferva equisetifolia, Lightf. p.* 984. *E. B. t.* 1479.

Hab. Firth of Forth, but rare, *Mr. Yalden*.

In the crowded and whorled disposition of the branches it would appear, at first sight, to have considerable affinity with *Cladostephus spongiosus* and *verticillatus*; but the structure of the articulations is very different.

15. CERAMIUM.

Fructification: Capsules. Filaments composed of simple tubes.

* *Reddish. Capsules subinvolucrate.*

1. C. *rubrum*, filaments dichotomous very much branched subcartilaginous, branchlets forked, articulations opaque towards the joints which are contracted, capsules globose lateral invo-

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[a] This truly beautiful genus is named by Agardh in honour of Mrs. Griffiths of Torquay, Devonshire, to whom the marine botany of this country is under the greatest obligations, and who has contributed so largely to the *Historia Fucorum* of Mr. Turner. This lady is paying particular attention to the fructification of the *Algæ*; and her discoveries will, I am confident, throw new light upon this tribe of plants.

lucrated. *Ag. p.* 60. *Conferva rubra, E. B. t.* 1166. *Conf. nodulosa, Lightf. p.* 994.

Hab. Common on rocks, stones, and sea-weeds, on the shores.

From 4—8 inches long. *Involucres* of from 2—4 setaceous, incurved, simple branchlets. A var. of this, as it is considered by Mr. Dillwyn, is published by that gentleman, having *seeds* scattered in the ultimate *ramuli*, and the *articulations* with a dark spot in the centre, pellucid near the joints.

2. C. *diaphanum*, filaments dichotomous very much branched submembranaceous alternately marked with reddish purple and white pellucid rings, branchlets forcipate the joints swollen, capsules globose lateral involucrated. *Ag. p.* 61. *Conferva diaphana, E. B. t.* 1742.

Hab. Rocky shores, frequent, *Lightf., Mr. Greville.*

Much smaller than the last, and vastly more delicate.

3. C. *ciliatum*, filaments dichotomous much branched membranaceous, articulations opaque at the joints which are beset with whorled bristles, branchlets remarkably forcipate, capsules globose lateral involucrated. *Conferva ciliata, Lightf. p.* 998. *E. B. t.* 2428.

Hab. Upon the western coast, entangled among the branches of *Fucus plicatus, Lightf.*

Still smaller and more delicate than the last. May not this be the younger and *C. diaphanum* the intermediate state of *C. rubrum?*

** *Reddish. Capsules naked, subsessile, inserted upon the extremity of the articulations.*

4. C. *roseum*, filaments extremely slender repeatedly branched membranaceous, branches and branchlets alternate very much crowded, joints somewhat contracted, articulations about thrice as long as broad, capsules secund. *Ag. p.* 62. *Conferva rosea, E. B. t.* 966.

Hab. In the Firth of Forth, near Kirkcaldy, *Mr. Greville.*

A very elegant species, of a purplish rose-colour. *Capsules* upon the ultimate branches.

5. C. *Hookeri*, filaments very much branched, the primary ones without joints, branchlets pinnate slender flexuose scattered pale reddish brown, pinnules alternate jointed, articulations half as long again as broad. *Dillw. t.* 106 (*Conferva Hookeri*).

Hab. Rocks in the sea at Cawsie, Morayshire, *Mr. Borrer* and *Hook.*

Two to four inches long, very gelatinous when fresh, and adhering firmly to paper in drying.

6. C. *Rothii*, filaments erect dichotomous short very densely cæspitose crimson, branches alternate, articulations thrice as long as broad. *Conferva Rothii, Dillw. Conf. t.* 73.

Hab. Rocks upon the coast of Durness, Sutherland; and in the island of Papa Westra, Orkney, *Mr. Borrer* and *Hook.* Rocks by the sea-shore at the mouth of the Firth of Forth, *Mr. Greville.*

Scarcely a quarter of an inch in height, spreading in rather large patches like crimson velvet. The *fructification* is unknown, but the habit and place of growth bespeak it a *Ceramium.*

**** Brownish or orange-coloured.*

7. C. *tomentosum,* filaments very much branched extremely slender intricate collected into long almost spongy fascicles, branches divaricating, articulations about 4 times as long as they are broad. *Ag. p.* 64. *Conferva tomentosa, Lightf. p.* 982. *Dillw. Conf. t.* 56.

Hab. Marine rocks on the western coast, frequent, generally adhering to the larger *Fuci, Lightf.*

Two to four inches long, brown. Agardh has observed long pods with seeds like those of *C. siliculosum.*

8. C. *littorale,* filaments very slender very much branched collected into numerous long fascicles, branches erect acuminate, articulations as long as they are broad. *Ag. p.* 65. *Conferva littoralis, E. B. t.* 2290. *Dillw. Conf. t.* 31.

Hab. Rocks and *Fuci,* abundant.

Four to six inches long, soft. Mr. Dillwyn has observed sphærical sessile *capsules* and swelling *articulations* apparently filled with *granules* at the extremities of some of the *branches.*

9. C. *siliculosum,* filaments very slender free, branches alternate subulate erect, articulations as broad as they are long, capsules pod-shaped with scattered seeds. *Ag. p.* 65. *Conferva siliculosa, Dillw. t.* E. *E. B. t.* 2319.

Hab. Upon *Fuci* on the Moray coast, *Mr. Borrer* and *Hook.*

Much smaller, slenderer, and paler than the last; and never collected into fasciculated, dense *branches,* as is the case in the two last.

10. C. *cirrosum,* branches pinnate, pinnules distichous nearly opposite subhorizontal approximate straight almost pectinate, articulations as long as they are broad. *Ag. p.* 67. *Conferva pennata, Dillw. Conf. t.* 86. *E. B. t.* 2330.

Hab. Rocks and on *Fuci,* coast of Moray, *James Brodie, of Brodie, Esq.* South Queen'sferry and Dunbar, *Mr. Borrer* and *Hook.* Firth of Forth, near Kirkcaldy, *Mr. Greville.*

One to two inches long, rigid, olive brown, fasciculate, dense. *Capsules* ovate, sessile or pedunculate.

11. C. *scoparium,* filaments very much branched rigid, branches fasciculate erecto-patent ultimate ones subulate alternate distichous, articulations about as long as they are broad. *Conferva scoparia, E. B. t.* 1552. *Dillw. Conf. t.* 52. *Lightf. p.* 981.

Hab. Rocks and *Fuci,* plentiful.

Two to four inches long, densely fascicled, darkish brown, rigid. *Capsules* at the extremities of the branches, according to Smith.

12. C. *aureum,* filaments flexuose collected into a dense soft pulvinate fine orange-coloured tuft, branches elongate patent

rather rigid, articulations twice as long as they are broad. *Ag. p.* 68. *Conferva aurea, Dillw. t.* 35. *Byssus aurea, Lightf. p.* 1002. *E. B. t.* 212.

Hab. Rocks in the Highland mountains, frequent, *Lightf.* Rare about Glasg.; below a rock at Mugdoch castle, *Hopk.* Upon the bark of trees, about Edinb., where it grows much smaller, yet bearing capsules, *Mr. Arnott.*

In the Herbarium, the colour changes to dull brownish yellow. The *capsules* are figured by Dillwyn, both lateral and terminal, oval.

16. HUTCHINSIA.

Fruit of two kinds: ovate reticulated capsules, and swollen branchlets containing globular seeds. *Filaments* formed of a number of parallel *tubes.*—*Filaments* more or less tufted, purplish, gradually attenuated, very much branched in a sub-fasciculated manner and jointed, frequently swelling at the joints; *articulations* composed of a number of parallel *tubes*, which give them a striated, rarely a reticulated, appearance; at the extremity of the branches, particularly when young, often having a small, pellucid tuft of hairs. *Fruit* of two kinds: ovate *capsules*, broader at the base, acuminated at the point, sometimes truncated, sessile with a few pyriform *seeds*; and *seeds* or globular granules, longitudinally arranged and imbedded in pod-shaped branchlets.

1. H. *fastigiata*, filaments dichotomous nearly equal fastigiate, articulations shorter than broad with a dark spot in their centre. *Ag. p.* 53. *Conferva polymorpha, E. B. t.* 1764. *Dillw. Conf. t.* 44. *Lightf. p.* 989.

Hab. Upon the rocky shores and on the larger *Fuci*, abundant.

A rigid, stout plant, of a very dark brown colour, black in drying, the branches forming a nearly level top, and the articulations with a central spot.

2. H. *elongata*, filaments dichotomous very much branched, branches elongated the ultimate ones very slender, articulations rather shorter than they are broad reticulated with veins, the lower joints obsolete. *Ag. p.* 54. *Conferva elongata, E. B. t.* 2429. *Dillw. Conf. t.* 33.

Hab. Adhering to rocks, shells, and the larger *Fuci*. Firth of Forth, near Kirkcaldy, *Mr. Greville.*

The largest of our *Confervæ*, though not the longest, and aptly named in some places *Lobster-horn Conferva.* It is in length from 4 to 8 or 9 inches, and of a dark purplish red colour. *Capsules* ovate, sessile, by no means common; still rarer are the minute fasciculated *pods*, figured by Dillwyn in his supplementary plate, Tab. C.

3. H. *fucoides*, filaments very much branched diffuse, branchlets subulate alternate, articulations below shorter than broad, above about half as long again as broad, capsules ovate late-

ral or terminal. *Hutchinsia violacea, Ag. p.* 54. *Conferva fucoides, E. B. t.* 1743, and *t.* 1717 (*C. nigrescens*). *Dillw. Conf. t.* 75, and *p.* 81 (*C. nigrescens*).

β. paler, small, terminated by small pencils of pellucid branchlets. *C. fibrata, Dillw. Conf. Syn. p.* 84. *t.* G. *E. B. t.* 2139.

Hab. Common on rocks, stones, &c., in the sea. β. Coast of Moray, *Mr. Brodie, Mr. Borrer* and *Hook.*

From 4—6 inches long, of a blackish brown colour, bushy. In *C. nigrescens*, the branches are fewer and straighter; I suspect, the effect of injury. β. is small, reddish, and fibrillose at the extremity, —probably only the young state of the plant.

4. H. *urceolata*, filaments very much branched bushy, branchlets short and spreading, lower articulations much longer, upper shorter than broad, capsules urceolate. *Conferva urceolata, Lightf. Mss. (according to Mr. Turner). Dillw. Syn. p.* 82. *t.* G. *E. B. t.* 2365. *Conf. nigrescens? Huds. Angl.*

Hab. Rocks and *Fuci*, at Forres, *James Brodie, of Brodie, Esq.* Firth of Forth, near Kirkcaldy, *Mr. Greville.*

From 4 to 6—8 inches long, very bushy, of a fine deep pellucid red when fresh, blackish brown when dry.

5. H. *badia*, "filaments branched straight reddish black, branches elongated, branchlets abbreviated remote subsimple, articulations half as long again as their diameter." *Dillw. Ag. p.* 56? *Conferva badia, Dillw. Conf. Syn. p.* 85. *t.* G.

Hab. Shores of the Firth of Forth, near Kirkcaldy, *Mr. Greville.*

Mr. Dillwyn says "this is intermediate between the *fucoides* and *urceolata*, from both of which it may be distinguished by its articulations, which are nearly of the same length throughout." If that be the case, it cannot be the *H. badia* of Agardh (who indeed quotes Dillwyn, the original authority for the name, doubtfully); for he expressly says, that the lower articulations are twice as short as they are broad, and that the upper ones are thrice as long; and he compares his plant with *H. stricta*, from which he tells us it differs in colour.

6. H. *stricta*, filaments branched nearly equal slender fastigiate purplish red, branches dichotomous nearly erect, articulations about thrice as long as they are broad. *Ag. p.* 56. *Conferva stricta, Dillw. Conf. Syn. p.* 83.

Hab. Rocks, &c., in the Firth of Forth, near Kirkcaldy, *Mr. Greville.*

About 4—5 inches long, remarkable for its slender straight twiggy branches, long joints, and fine colour.

7. H. *Brodiæi*, filaments very much branched purplish black, branches elongate, branchlets scattered patent fasciculated multifid, articulations of the main branches obsolete, those of the branchlets about half as long again as broad. *Conferva Brodiæi, Dillw. Conf. t.* 107. *E. B. t.* 2589.

Hab. Rocks in the sea near Forres, first discovered in Britain by *James Brodie, of Brodie, Esq.*

This is said to reach to the length of a foot or a foot and a half. The branches are however very slender, and the ultimate ones collected into numerous broad fascicles, which give the whole plant a singular appearance. *Fruit* either *capsular*, or *seeds* longitudinally arranged in the ultimate branchlets.

8. H. *arbuscula*, primary filaments incrassated with the joints obsolete, above very much branched reddish purple, branchlets crowded subverticillate abbreviated multifid patent, with the articulations about as long as they are broad. *Dillw. Conf. t.* 85, and *t.* G. *E. B. t.* 1916.

Hab. Shores of Orkney and Caithness, *Mr. Borrer* and *Hook.* Firth of Forth, *Mr. Arnott* and *Mr. Greville.*

This beautiful species is about 2 or 4 inches long, very delicate, deepish rose-colour. Two kinds of *fruit* have been found upon it, sessile *capsules* and swollen extremities of the branches with a double row of *seeds.*

9. H. *coccinea*, scarlet, filaments subcartilaginous very much branched hairy below, branches alternately doubly pinnate, the ultimate ones tufted, joints rather obscure about as long as they are broad. *Conferva coccinea*, *E. B. t.* 1055. *Dillw. Conf. t.* 36. *Conf. plumosa*, *Lightf. p.* 996.

Hab. It appears to be rare in Scotland. *Lightfoot* says that fragments of it were found on the western coast. *Mr. Greville* has gathered it in the Firth of Forth, near Kirkcaldy. Most allied to the last species.

17. CLADOSTEPHUS.

Filaments jointed, the primary ones solid. *Branches* of a different structure from the main stem, mostly whorled at the joints. *Fruit* capsular.

1. C. *verticillatus*, filaments dichotomous branched cartilaginous thick olive brown, branchlets verticillate incurved very short generally forked, articulations shorter than broad. *Conferva verticillata*, *Lightf. p.* 984. *Dillw. Conf. t.* 55. *E. B. t.* 1718.

Hab. Among the sea rocks in basins of water left by the tides, in the Firth of Forth, and many other places, not unfrequent, *Lightf.*

Four or six inches long. *Fruit*, according to Smith, oblong pedunculated *capsules* proceeding from the *ramuli.*

2. C. *spongiosus*, "filaments branched cartilaginous thick olivaceous, branchlets simple very short scattered and imbricated on all sides, articulations about half as long again as broad." *Dillw. Conferva spongiosa*, *Dillw. Conf. t.* 42. *E. B. t.* 2427. *Lightf. p.* 983.

Hab. Among the sea rocks in the Firth of Forth, and many other places, *Lightf.*

About 3 inches long, irregularly branched. *Capsules* like those of *C. verticillatus.*

DIV. III. ULVOIDEÆ. *Fruit: either naked seeds immersed in the frond or capsules. Frond continuous; its structure cellular subregular. Substance submembranaceous, thin. Colour frequently greenish. Frond plane or tubular, containing immersed seeds, or capsules of the same substance and colour as the frond, or minute blackish tubercles scattered upon the frond.*

18. ZONARIA.

Capsules approximated and arranged in linear parallel lines.—*Root* and *stipes* downy. *Frond* membranaceous or subcoriaceous, flabelliform or dichotomous, composed of straight parallel fibres from the base to the summit, often interrupted by darkish transverse lines.

* *Lines of fructification concentrical* (Frond flabelliform).

1. Z. *pavonia*, frond subcoriaceous flabelliform subdichotomous greenish brown above with numerous concentric lines of fructification, white and somewhat powdery beneath. *Ulva pavonia, Lightf. p.* 966. *E. B. t.* 1276.

HAB. Sea-rocks near Aberdeen, discovered by *D. Cargill*, above 140 years ago, according to *Lightf.*

** *Lines of fructification interrupted* (Frond generally narrow and dichotomous).

2. *Z. dichotoma*, frond membranaceous olive-green dichotomously divided linear obtuse, fructification in longitudinal interrupted dots. *Ulva dichotoma, Lightf. p.* 975. *t.* 34. *E. B. t.* 774. *Hook. in Fl. Lond. with a figure.*

HAB. In basins of water among the rocks, about Leith, New-Haven, &c., *Lightf.*

Frond 3—6 inches long, thin and membranous.

19. ULVA.

Seeds placed in clusters frequently of four, and scattered throughout every part of the *frond.*—*Frond* membranous or gelatinous, plane, plicated, or tubular. Mostly marine; some few are inhabitants of fresh water, rarely growing out of water.

* *Fronds plane.*

1. U. *Lactuca*, fronds aggregate oblong plane waved green attenuated below spreading upwards and cut and crisped at the margin. *Ag. p.* 40. *Lightf. p.* 970. *E. B. t.* 1551.

HAB. In the sea, frequent, growing upon stones, shells, &c., *Lightf.*

Substance very thin, semipellucid, varying much in size, and I suspect the *Ulva latissima* of Agardh to be only a var. *Fronds* clustered. Agardh says they are at first saccate, but soon open at the base, and spread out. This is the "green *Laver*," or "oyster-green," known at table, where it is served occasionally stewed with lemon-

juice, in the same way as *U. umbilicalis.* It is esteemed good, as indeed almost all esculent vegetables are, for scrophulous habits. Lightfoot says that the islanders ascribe to it an anodyne virtue, and bind it about the front and temples to assuage head-ache in fevers and to procure sleep.

2. U. *bullosa*, frond dilated tubular then spreading plane green variously sinuated and folded subgelatinous lubricous. *Ag. p.* 41. *E. B. t.* 2320. *Ulva Lactuca* β., *Lightf. p.* 971.

Hab. Fresh water ditches and pools, *Lightf.*

Smaller, subgelatinous, lubricous, firmly adhering to paper, and excessively tender, otherwise much resembling *U. Lactuca.* May not the differences arise from the different places of growth?

3. U. *umbilicalis*, fronds broadly oblong membranaceous purplish spreading nearly plane waved and crisped. *Lightf. p.* 967. *E. B. t.* 2286. *Ulva laciniata? Lightf. p.* 974. *Ulva purpurea, Ag. p.* 42.

Hab. Rocks on the shore, frequent, *Lightf.* Mouth of the Clyde, not common, *Hopk.*

This, under the name of *Laver*, is much eaten in many parts of England, pickled with salt and preserved in jars, and when brought to table served up with lemon juice. According to Lightfoot, the inhabitants of the western isles gather it in the month of March, and, after pounding and stewing it with a little water, eat it with pepper, vinegar, and butter. Others stew it with leeks and onions.

4. U. *Linza*, frond linear-lanceolate green with the margin waved and crisped. *Ag. p.* 44. *Lightf. p.* 968. *Dill. Musc. t.* 9. *f.* 6.

Hab. Ditches, especially of salt and brackish water.

Six inches to a foot long.

5. U. *crispa*, fronds bullate plicate and crisped wrinkled green collected into a broad mass or stratum. *Lightf. p.* 972. *Ag. p.* 43. *Dill. Musc. t.* 10. *f.* 12.

Hab. Upon the ground in shady places, below walls and houses and upon thatched roofs, not uncommon.

6. U. *montana*, "frond coriaceous dark red of numerous ascending rounded flattish finely granulated lobes." *Sm. Lightf. p.* 973. *E. B. t.* 2193.

Hab. Among grass and moss upon the mountains, in the Isle of Skye and on the western coast, *Lightf.*

This is called *mountain dulse* by the Scotch; and the Highlanders, according to Lightfoot, wash it, and rub it between their hands in water, so as to make a paste, with which they purge their calves.

** *Fronds tubular.*

7. U. *intestinalis*, frond linear-oblong very much sinuated and wrinkled tubular green simple. *Lightf. p.* 968. *Ag. p.* 45. *Dill. Musc. t.* 9. *f.* 7.

Hab. Ditches, especially of salt or brackish water.

8. U. *compressa*, frond tubular linear or filiform simple or

branched subcompressed. *Lightf. p.* 969. *E. B. t.* 1739. *Dill. Musc. t.* 9. *f.* 8. A—G.

Hab. In the sea and in marine ditches; sometimes in fresh-water.

Extremely variable in its length and breadth; occasionally so narrow as to resemble a very long *Conferva*. May not this and the last species be mere vars. of each other?

9. U. *fistulosa*, frond tubular filiform tapering at the base and summit simple brown subgelatinous and here and there contracted. *E. B. t.* 642. *Conferva Fistula, Roth. Cat. Bot. v.*3. *p.* 169. *U. incrassata, Fl. Dan. Fucus Filum*, β. *Ag. p.* 14.

Hab. Firth of Forth, near Dysart, attached to rocks and shells, *Mr. Greville.*

Four to 6 or 8 inches high, sometimes divided at the very base.

10. U.? *defracta*, frond filiform tortuose gelatinous white pellucid with numerous red dots. *E. B. t.* 1626.

Hab. Attached to *Fuci*, &c., on the shores of the Orkney islands, *Mr. Borrer* and *Hook.*

This has rather the appearance of animal matter, and is very unlike any other *Ulva*. It is from 1—2 inches long, and about 1 or 1½ line in diameter, adhering by its viscid quality to marine bodies.

11. U.? *purpurascens*, subgelatinous purplish filiform attenuated branched, branches scattered long simple distant. *E. B. t.* 641. *Ulva filiformis, Wahl. Lapp. p.* 508.

Hab. In the sea near Granton, *Maugh.*

Internally gelatinous, and scarcely of this genus.

20. VAUCHERIA. *Decand.* (*Ectosperma* Vauch.)

Fruit: vesicles of the same texture and substance as the *filaments*, which have within a scattered granulated mass.—*Fronds* filiform, tubular, branched, continuous, rather rigid, intricate, so as to be with difficulty unravelled, composed of a subdiaphanous membrane or coat. *Vesicles* generally lateral, sometimes terminal, often pedunculated, about twice as broad as the *filament*, solitary or clustered: these fall off, and, according to Vaucher, vegetate. Between these *vesicles* are, not unfrequent, in some species, sterile, hooked *peduncles*, which some have called *anthers*.—The species live in fresh water or upon moist earth.

* *Growing in water.*

1. V. *cæspitosa*, filaments dichotomous cæspitose, vesicles two terminal with an intermediate horn-like process. *Ag. p.* 48. *Conferva canalicularis, Lightf. p.* 978.

Hab. Found frequently upon the planks in mill-dams, and in the cavities of water-pipes, *Lightf.*

Forming a densely interwoven tuft or mass, deep green, from 1—2 inches high.

2. V. *ornithocephala*, filaments loosely branched, vesicles gene-

rally in pairs ovate obliquely but shortly beaked upon a short straight peduncle. *Ag. p.* 49. *Conferva vesicata, Dillw. Conf. t.* 49. *Conf. amphibia, Lightf. p.* 979. *Dillw. t.* 41.
HAB. Ditches, *Lightf.*
everal aquatic species of this genus were included, by Linnæus and the older botanists, under the name of *C. amphibia.*

** *Growing on the earth.*

. V. *Dillwynii,* filaments flexuose, vesicles sessile lateral globose. *Ag. p.* 50. *Conferva frigida, Dillw. t.* 16.
AB. Upon the ground in damp situations.
seems very doubtful if the number and form even of the *vesicles* is to be depended upon as constituting specific distinctions. This is probably but a var. growing upon land of *V. cæspitosa. Filaments* 1 or 2 inches long, branched, intricate, forming a green *stratum* on the earth.

V.? *radicata,* " filaments rooting, vesicles solitary terminal globose." *Ag. p.* 52. *Ulva granulata, Lightf. p.* 976. *Tremella granulata, E. B. t.* 324.
AB. On the perpendicular banks of rivers and lochs, in shady places, not unfrequent, *Lightf.*
is seems of doubtful genus, and I confess myself never to have seen the *filaments,* described by Agardh, the existence of which has induced that author to place the plant among the *Vaucheriæ.* Agardh says the *filaments* are clustered, very short, rooting below the soil, and branched, green above, colourless at the base. The *vesicles* are green, nearly as large as hemp-seed, and not elevated at all above the soil, full of a watery fluid within. The membranous *coat* has internally a number of small *granules* imbedded in it, which Agardh does not appear to have seen. In dry weather the upper part of the *vesicles* collapses, sinks in, and the *vesicle* becomes cup-shaped.

V. IV. FUCOIDEÆ. *Fruit: either naked seeds immersed in the frond, or capsules included in proper receptacles. Frond continuous. Texture fibrous, fibres longitudinal, intricate. Substance coriaceous or cartilaginous. Colour olive-brown, becoming black by exposure to the air.*

21. FUCUS.

ceptacles tuberculated, tubercles perforated, containing within clustered *capsules,* mixed with jointed *fibres.*

F. *natans,* stem compressed filiform pinnated, branches alternate simple, leaves linear-lanceolate serrated, vesicles sphærical on flat petioli, receptacles cylindrical racemose. *Turn. Hist. Fuc. t.* 46. *E. B. t.* 2114.
3. Cast on shore occasionally among the Orkney islands, but rafted probably from the W. Indies, *Mr. P. Neill.*
ome more southern seas this species floats in such immense quanties as to impede the progress of ships.

2. F. *bacciferus*, stem cylindrical filiform bipinnate, branches alternate mostly simple, leaves linear serrated, vesicles sphærical on cylindrical petioli. *Turn. Hist. Fuc. t.* 47. *E. B. t.* 1967.

Hab. Occasionally wafted to the Scottish shores, probably from the American seas. *Mr. P. Neill* has seen a specimen from Orkney.

3. F. *granulatus*, stem covered with elliptical knobs, branches filiform repeatedly pinnated, spines numerous scattered, vesicles elliptical innate moniliform, tubercles either scattered over the branches or collected into a lineari-subulate terminal receptacle. *Turn. Hist. Fuc. t.* 251.

β. *concatenatus*, vesicles elliptical distinct all arranged in a moniliform manner, tubercles collected into linear-acuminated receptacles. *Turn. F. concatenatus, Lightf. p.* 923.

Hab. β. Coast about Leith and Newhaven: a fragment was communicated to Mr. Lightfoot by *Mr. Yalden.*

Colour olive brown; 6 inches to 1 foot or more long.

4. *F. Mackaii*, frond coriaceous filiform, rounded dichotomous the extremities obtuse, vesicles scattered innate with the frond elliptical solitary broader than the frond. *Turn. Hist. Fuc. t.* 52. *E. B. t.* 1927.

Hab. Gathered many years ago in Loch Seaforth by the late *Lord Seaforth*, in whose collection at Brahan-castle I saw it in 1808. Loch Coul and Kyle Scough, Sutherland, abundant, *Mr. Borrer* and *Hook.* Shores of Arasaig, *Mr. Borrer.*

Five to 9 or 10 inches high. *Fructification* unknown.

5. F. *siliquosus*, stem coriaceous compressed linear branched pinnated like the branches with distichous alternate compressed petiolated jointed linear-lanceolate vesicles, leaves placed near the base distichous alternate flat linear entire, receptacles placed near the apices distichous alternate compressed linear-lanceolate pedunculated. *Turn. Hist. Fuc. t.* 159. *Lightf. p.* 922.

β. *smaller.*

Hab. Rocky shores, but not very frequent, *Lightf.* Rare about the Firth of Forth. β. Sea-shore at Caroline Park, *Maugh.*

One to one foot and a half long; about 6 inches in β., which has more abundant *receptacles* and fewer *vesicles.*

6. F. *nodosus*, frond coriaceous compressed veinless subdichotomous branched in a pinnated manner, vesicles innate inflated, receptacles distichous large pedunculated roundish pyriform mostly solitary. *Turn. Hist. Fuc. t.* 91. *E. B. t.* 570. *Lightf. p.* 918.

Hab. On rocky shores, common.

From 2 to 4 or 6 feet long. This is said by *Mr. Turner* to be preferred in the Hebrides to all other *Fuci* in the manufacturing of kelp, and passes there under the name of *Kelp-wrack.*

7. F. *vesiculosus*, frond coriaceous flat with a central rib linear-dichotomous quite entire, vesicles sphærical innate in the mem-

brane of the frond, receptacles solitary terminal compressed turgid mostly elliptical. *Turn. Hist. Fuc. t.* 88. *E. B. t.* 1066. *Lightf. p.* 904, and *p.* 910 (*F. inflatus*), and *p.* 909 (*F. divaricatus*).

β. *spiralis*, frond twisted in a spiral manner, vesicles none, receptacles roundish. *Turn. F. spiralis, Lightf. p.* 911. *E. B. t.* 1685.

η. *linearis*, frond narrow dwarfish, vesicles none, receptacles long between linear and lanceolate. *Turn. F. distichus, Lightf. p.* 912.

Hab. Rocky shores, abundant. β. Shore near Leith and Newhaven, *Mr. Yalden.* η. Loch Stennis, in Orkney, *Dr. Hope.*

This species is by far the most abundantly employed in the manufacturing of kelp, if it be not the best. But this, important as it is in a commercial point of view, is not the only end it serves. In the isles of Jura and Skye it is frequently a winter food for cattle, which regularly come down to the shores at the recess of the tide to seek for it; and sometimes even the deer have been known to descend from the mountains to the sea-side to feed upon this plant. Linnæus informs us that the inhabitants of Gothland, in Sweden, boil this *Fucus* with water, and, mixing with it a little coarse meal or flour, feed their hogs with it; for which reason they call the plant *Swintang:* and in Scania, he says, the poor people cover their cottages with it, and use it for fuel.—In Jura and some other Hebrides, the inhabitants dry their cheeses without salt, by covering them with the ashes of this plant; which abounds so much in salt, that from five ounces of the ashes may be procured two ounces and a half of fixed alkaline salts, or half their weight. The medicinal virtues of this *Fucus* have been much celebrated by *Dr. Russel,* in his *Dissertation concerning the Uses of Sea-water in Diseases of the Glands.* He found the saponaceous mucus or liquor in the *vesicles* of this plant to be an excellent resolvent, extremely serviceable in dispersing all scorbutic or scrophulous swellings of the glands; and by calcining the plant in the open air, he made a very black salt powder, which he called *vegetable Æthiops,* a medicine that has been much in use as a resolvent and deobstruent, and recommended also as an excellent dentifrice, to correct the scorbutic laxity of the gums, and take off the foulness of the mouth, *Lightf.*

. F. *serratus*, frond coriaceous flat with a central rib linear dichotomous serrated at the margins, receptacles solitary terminal flat linear serrated sharpish. *Turn. Hist. Fuc. t.* 90. *Lightf. p.* 902. *E. B. t.* 1221.

Iab. Rocks on the shores, most abundant.

he serrated *fronds* and absence of *vesicles* will always distinguish this species. It contains far less salt than the last species, and is consequently much less esteemed for kelp. In Norway it is the food of cattle, sprinkled with a little meal, according to Gunner. The Dutch cover their crabs and lobsters with it, and say that it is preferable to *F. vesiculosus,* because the mucus from the *vesicles* of the latter ferments and soon becomes putrid.

9. F. *ceranoides*, frond between coriaceous and membranaceous with a central rib linear subdichotomous pinnated with narrow lateral scattered multifid fruit-bearing branches, receptacles solitary terminal subcylindrical linear acuminated. *Turn. Hist. Fuc. t.* 89 (*not Lightf.*).

Hab. Rocks by the shore near the castle of Aros in Mull, *Mr. Turner* and *Hook.*

About 1 foot long.

10. F. *canaliculatus*, frond coriaceous linear nerveless channelled on one side dichotomous emarginate at the apices, receptacles terminal oblongo-cuneiform turgid bipartite obtuse. *Turn. Hist. Fuc. t.* 3. *Lightf. p.* 917. *E. B. t.* 823.

Hab. Rocky shores, Isle of Bute, &c., *Lightf.* Common in the Firth of Forth, *Mr. Greville.*

Three to 6 or 7 inches long. Well marked by its grooved *fronds.*

11. F. *loreus*, frond between cartilaginous and coriaceous compressed linear nerveless entire at the margins dichotomous arising from a peziza-shaped base, tubercles immersed in every part and on both sides of the frond. *Turn. Hist. Fuc. t.* 196. *Lightf. p.* 920. *E. B. t.* 569.

Hab. Sea-shores, not uncommon, *Lightf.* Dunbar, abundant, *Mr. Greville.* Westra, in Orkney, *Mr. Neill.*

From 2—10 feet long. The young plants have a curious appearance, are about an inch long, subgelatinous, turbinate, at length peziza-shaped; covering the rocks at low water for a great extent. Some I have seen on exposed rocks, probably from the effect of the sun, swollen into a large, hollow, perfectly sphærical ball.

22. LICHINA. *Ag.*

Fruit: a tubercle perforated at the extremity, at length scutelliform.—Habit shrubby and somewhat that of a Lichen.

1. L. *pygmæa*, frond cartilaginous compressed dilated upwards nerveless dichotomous, at its extremities palmated with very short truncated segments, tubercles terminal sessile sphærical perforated at the tips. *Ag. p.* 9. *Fucus pygmæus, Lightf. p.* 964. *t.* 32. *Turn. Hist. Fuc. t.* 204. *E. B. t.* 1332.

β. *minor*, frond nearly cylindrical. *Turn. Stereocaulon confine, Ach. Meth. Lich.* II. *p.* 317.

Hab. Rocks, not uncommon, at low water. First discovered by *Mr. Lightfoot* in Scotland, and described by him. β. Rocks at Dunbar, &c.

$\frac{1}{4}$ to $\frac{1}{2}$ an inch high, black.

23. SPOROCHNUS.

Fructiferous *tubercles* terminated by a pencil of hairs. The type of this genus is the English *Fucus pedunculatus.* *Frond* filiform, cartilaginous. *Fruit* oval or globose, with a pencil of conferva-like jointed deciduous threads at the extremity, within filled with concentric fibres, each terminated by a globule.

1. S. *aculeatus*, frond cartilaginous rounded very much branched,

branches plane filiform repeatedly divided in a pinnated manner scattered, the ultimate ones bearing pencils of hairs at length spiniferous, the spines approximate subulate straight. *Ag. p.* 10. *Fucus aculeatus, Lightf. p.* 924. *Turn. Hist. Fuc. t.* 187.

Hab. Sea-shores, not uncommon.

2—3 feet long, olivaceous brown when dry.

The fructification does not seem to be rightly known, and it is only from analogy that Agardh places it in this genus.

24. FURCELLARIA. *Lamour.*

Extremities of the frond swelling into closed *pericarps.*

1. F. *lumbricalis*, frond cartilaginous filiform dichotomous fastigiate, angles of the dichotomies acute, apices forked blunt, fruit in the elongated cylindrical acuminated apices. *Ag. p.* 10. *Fucus lumbricalis, Turn. Hist. Fuc. t.* 6. *E. B. t.* 824. *Fucus furcellatus, Lightf. p.* 932.

β. *fastigiatus*, apices compressed transparent ovato-lanceolate short acute. *Turn. F. fastigiatus, Lightf. p.* 930.

Hab. Sea-shores, frequent. Seafield rocks, Edinburgh, very fine, *Mr. Greville.*

6—9 inches long, purplish brown.

2. F.? *lycopodioides*, frond filiform mostly simple every where covered with closely imbricated filiform patent ramuli generally forked at their apices and swelling into lanceolate paniculated capsules. *Ag. p.* 11. *Fucus lycop., Turn. Hist. Fuc. t.* 12. *E. B. t.* 1163.

Hab. North of Scotland, *James Brodie, of Brodie, Esq.* Abundantly on the old stems of *F. digitatus*, at Seafield rocks, low tides, *Mr. Greville.*

Fronds many from the same base, 4—6 inches long, purplish brown, black when dry. Mr. Greville, besides the pod-like fruit here described, has had the good fortune to find globular *capsules*, such as Mr. Turner foretold the plant would be likely to have. It ill accords with this genus.

25. CHORDARIA. *Link.*

Fruit : subclavate jointed concentric filaments, among which the *seeds* are immersed.—A genus whose species accord sufficiently well in habit, and the fruit as far as known. *Fronds* filiform, cartilaginous, or lubricous, often covered with conferva-like hairs.

1. C. *rotunda*, frond cartilaginous filiform dichotomous fastigiated with the angles of the dichotomies rather obtuse, their extremities forked acute, capsules irregular lateral spongy not covered with an epidermis. *Turn. Ag. p.* 12. *Fucus rotundus, Turn. Hist. Fuc. t.* 5. *E. B. t.* 1738.

Hab. Caroline Park, *Mr. E. J. Maughan.* Rocks near Kirkcaldy, *Mr. Stewart.*

From 4—8 inches long, dark purplish brown.

2. C. *flagelliformis*, frond cartilaginous slimy cylindrical filiform branched, branches long mostly simple and distichous naked truncated, seeds naked immersed in the frond mixed with fibres. *Turn. Fucus flagellif.*, *Lightf. p.* 928. *Turn. Hist. Fuc. t.* 85. *E. B. t.* 1222.

Hab. Sea-shores, frequent, as at Newhaven, &c., *Lightf.*

1—3 feet long, very slender, olive brown, almost black when dry.

3. C. *Filum*, frond cartilaginous slimy cylindrical filiform attenuated at both ends jointed internally, spirally twisted when old. *Turn. Ag. p.* 12. (*excl. his var.* β.) *Fucus Filum*, *Lightf. p.* 963. *Turn. Hist. Fuc. t.* 86.

Hab. Rocks, salt-water lakes and bays, abundant.

From 1—20 feet long, olive brown, covered with slimy minute conferva-like hairs. *Fructification* unknown.

4. C. *viridis*, frond cartilaginous filiform cylindrical repeatedly pinnated, branches and ramuli all opposite and capillary. *Turn. Ag. p.* 14. *Turn. Hist. Fuc. t.* 97. *E. B. t.* 1669.

Hab. Seafield rocks, not uncommon, and Firth of Forth, near Dysart, *Mr. Greville.* Coast of Morayshire, *Mr. Borrer* and *Hook.*

1—3 feet long. When fresh a beautiful orange colour, turning almost olive when dry.

26. LAMINARIA. *Lamour.*

Seeds oblong, immersed in portions (not upon the whole) of the frond. *Root* generally fibrous. *Stipes* distinct, supporting a costate or ribless, simple or palmated leaf. *Fruit* either in appendages attached to the stipes, as in *Lam. bulbosa* and *esculenta*, or here and there immersed in the proper frond. *Substance* cartilaginous, tough.

* *With a central rib.*

1. L. *esculenta*, frond membranaceous flat with a central rib simple ensiform entire at the margins supported upon a short cylindrical pinnated stipes, pinnæ fleshy distichous oblong flat nerveless containing numerous pyriform immersed seeds. *Turn. Ag. p.* 16. *Fucus esculentus*, *Lightf. p.* 938. *t.* 28. *E. B. t.* 1759. *Hook. in Fl. Lond. with a figure.*

Hab. Abundant on the shores of Scotland.

From 2—12, or even 20 feet in length, greenish brown. It is eaten both by men and cattle; the former prefer the midrib and reject the more membranaceous substance. This is recommended in the cure of a disorder called the *Pica*, to strengthen the stomach and restore the appetite. The common Scotch name is *Badderlocks.*

** *Ribless, coriaceous.*

2. L. *saccharina*, root fibrous long and branching, stipes almost woody cylindrical undivided expanding at its apex into a single cartilaginous flat simple linear oblong nerveless leaf entire at the margins, scattered seeds immersed in the leaf. *Turn. Ag. p.* 17. *Fucus saccharinus*, *Lightf. p.* 940. *Turn. Hist. Fuc. t.* 163. *F. phyllitis*, *Turn. Hist. Fuc. t.* 164, and *E. B. t.* 1331 (*young state*).

β. *bullata*, frond bullated in the centre, margins undulated. *Turn.* *Ulva latissima*, *Linn.* *F. saccharinus*, *E. B. t.* 1376.

Hab. Sea-coasts, abundant. β. Berriedale, in Caithness, *Mr. Borrer* and *Hook.* Common in the Firth of Forth, *Mr. Greville.*

This common species, which grows to the length of 6—7 feet, derives its specific name from its being, after it is steeped in fresh water and exposed to the sun, covered with a white efflorescence resembling sugar, but nauseous to the taste. It is not the "*saccharine Fucus*" of the Icelanders, as has been generally supposed: nor do I think it is eaten at all by the natives of that country. It is said, however, to be eaten in England by the poor, boiled as a potherb; but I know not whether it has been asserted by any person besides Pallas. Thunberg tells us, that in Japan it is prepared in such a manner as to be quite esculent, and that it is customary there, when presents are made, to lay upon them a slice of this *Fucus* attached to a piece of paper, folded in a curious manner, and tied with threads of gold and silver. Cattle eat it not unfrequently.

Mrs. Griffiths and Mr. Greville are satisfied, from the various observations they have been enabled to make on *F. saccharinus* and *F. phyllitis* in a growing state, that the latter is nothing but the young state of the former.

3. L. *digitata*, root fibrous, stipes woody cylindrical expanded at its apex into a single cartilaginous flat nerveless roundish leaf quite entire at its margins deeply cleft into numerous ensiform mostly simple segments. *Turn. Ag. p.* 18. *Fucus digitatus*, *Lightf. p.* 935. *Turn. Hist. Fuc. t.* 162.

Hab. Sea-shores, frequent.

From 2—12 feet, or more, in length, olive brown. This and all the larger kinds of *Fuci* are much used for manure. Occasionally specimens are found with the segments connected at the top, from which springs a new sessile frond; this *Mr. Greville* has met with in the Firth of Forth.

4. L. *bulbosa*, root hollow swollen into a bulb rough all over, stipes coriaceous flat twisted once at its origin its margins undulated in the lower part its apex expanded into a single cartilaginous flat nerveless leaf entire at its margins deeply cleft into numerous ensiform mostly simple segments, oblong seeds immersed in the margin of the stipes. *Turn. Ag. p.* 18. *Fucus bulbosus*, *Turn. Hist. Fuc. t.* 161. *E. B. t.* 1760. *Fucus polyschides*, *Lightf. p.* 936.

Hab. Scotch coast, but not plentiful; I-columb-kill, *Lightf.* At Losiemouth on the N. E. coast, *Jas. Brodie, of Brodie, Esq.*

3 to 6, or even 12, feet long, olive brown.

**** Frond membranaceous, ribless.*

5. L.? *ligulata*, frond between cartilaginous and membranaceous linear flat nerveless doubly pinnate, segments linear-lanceolate serrated at their margins with spinous teeth. *Turn. Fucus ligulatus*, *Lightf. p.* 946. *t.* 29. *Turn. Hist. Fuc. t.* 98. *E. B. t.* 1636.

Hab. Firth of Forth, about Newhaven, and other places, but not common, *Lightf.* Caroline Park, *Mr. E. J. Maughan.* Orkney Islands, *Mr. Chas. Cluaston.*

From 2—6 feet long, olive-green; orange by exposure to the air.

Div. V. Florideæ. *Lamour. Fruit capsuliform and immersed seeds, or both. Frond continuous, with interwoven longitudinal fibres. Substance coriaceous or membranaceous, or between gelatinous and cartilaginous. Colour purplish or rosaceous.—Root scutate. Stipes very short, soon spreading into a frond (except in the Delesseriæ). Leaves distinct in some, confluent with the rest of the parts in others, in some none. Frond either plane or filiform, rarely tubular. Vesicles none, and no conferva-like hairs.*

27. DELESSERIA.

Frond membranaceous. *Fruit* double. *Seeds* collected together in spots and immersed in the leaves; and *capsules.*—*Frond* very thin, reticulated (under a microscope), generally veined with regularity. *Fruit* naked seeds either in marginal processes or innate upon the nerve, or collected in spots here and there upon the frond.

* *Fronds or leaves veined.*

1. D. *sanguinea*, stem cylindrical branched supporting simple membranaceous petiolated leaves between oblong and ovate quite entire, the midrib producing sphærical pedunculated capsules and scattered leaves in oblong leafy processes. *Turn. Ag. p.* 21. *Fucus sanguineus, Lightf. p.* 942. *Turn. Hist. Fuc. t.* 36. *E. B. t.* 1041.

Hab. Sea-shores, not unfrequent.

A beautiful and delicate species with leaves from 4 to 6 or 8 inches in length, of a fine rose colour, with deeper coloured nerves.

2. D. *sinuosa*, stem cylindrical branched supporting oblong membranaceous leaves either sinuated or pinnatifid their margins crenate and ciliated, sphærical tubercles imbedded in the frond and scattered seeds in the cilia. *Turn. Ag. p.* 21. *Fucus sinuosus, Turn. H. F. t.* 35. *E. B. t.* 822. *Fucus rubens, Lightf. p.* 943.

Hab. Shores of Iona and other places, plentifully, *Lightf.* Coast of Moray, *Mr. Borrer* and *Hook.* Caroline Park, *Maugh.* Common in the Firth of Forth, *Mr. Greville.*

4—6 inches in length, and leaves 2—4 inches long. *Colour* a fine pink, with deeper nerves, dull red when dry, and, in decay, turning to a dirty yellow, tinged with green.

3. D. *alata*, frond membranaceous extremely tender midribbed linear subdichotomous, the segments alternately pinnated, sphærical sessile tubercles and naked scattered seeds both placed sometimes on the apices of the branches and sometimes on oblong processes originating from the midrib. *Turn. Ag. p.* 22. *Fucus alatus, Lightf. p.* 951. *Turn. Hist. F. t.* 160. *E. B. t.* 1837.

Hab. Upon sea-rocks, frequent, in basins of water left by the recess of the tide, *Lightf.*

Fronds 4—6 inches long. *Colour* a deep red rose colour, with very dark veins.

4. D. *lacerata*, frond membranaceous very tender plane veiny mostly dichotomous, branches sublinear their apices rounded margins lacinulated and waved, hemisphærical tubercles immersed in the frond and naked seeds collected into oblong clusters. *Fucus laceratus, Turn. Hist. Fuc. t.* 68. *E. B. t.* 1067. *F. endivifolius, Lightf. p.* 948. *t.* 32.

Hab. Firth of Forth and the coast of Iona, *Lightf.* Orkney, *Mr. Chas. Clauston.*

Rose colour, sometimes inclining to tawny; 4—6 inches long.

** *Veinless.*

5. D. *coccinea*, frond compressed between membranaceous and cartilaginous much and irregularly branched, ramuli subulate disposed in alternate parcels of three or four each, sphærical sessile capsules and lanceolate pods. *Turn. Fucus coccineus, Turn. Hist. Fuc. t.* 59. *E. B. t.* 1242. *Fucus Plocamium, Lightf. p.* 957.

Hab. Sea-rocks, in basins of water left by the recess of the tide, frequent, *Lightf.*

From 3 to 6 inches, or even a foot long, very much branched, crimson.

6. D. *punctata*, frond membranaceous very tender flat nerveless mostly dichotomous, segments nearly linear bifid and obtuse at their apices, at their margins flat and entire, hemisphærical immersed tubercles scattered all over the frond and naked seeds collected into oblong spots. *Turn. Fucus punctatus, Turn. Hist. Fuc. t.* 71. *E. B. t.* 1573.

Hab. Upon the shore at Wick, in Caithness, among rejectamenta, *Mr. Borrer* and *Hook.*

From 2 to 6 inches long, and from 1 to 2 or 3 inches broad, pink coloured, or sometimes almost red, very thin and membranous, and elegantly spotted with fructification, reticulated.

7. D. *ulvoides*, frond membranaceous very tender flat nerveless lobed, lobes obtuse flat and quite entire at their margins, tubercles hemisphærical umbonated immersed in the frond and scattered all over it. *Turn. Fucus ulvoides, Turn. Hist. Fuc. t.* 80. *E. B. t.* 2134.

Hab. Shores of Moray, *James Brodie, of Brodie, Esq.* Orkney Islands, *Mr. Chas. Clauston.*

3 or 4 inches long, of a broadly ovate figure, almost orbicular, reddish rose colour.

28. SPHÆROCOCCUS.

Fruit uniform, *capsules.*—*Fronds* confluent in all their parts, plane or filiform, nerveless, cartilaginous. *Fruit* tubercles or capsules sessile upon the disk of the frond, or marginal and pedicellate.

* *Frond plane or compressed.*

1. S. *dentatus*, frond flat membranaceous branched alternately pinnatifid, ramuli alternate linear sharply toothed at the apices, capsules pedunculate axillary lanceolate and urceolate. *Turn. Ag. p.* 22. *Fucus dentatus, Lightf. p.* 952. *Turn. Hist. Fuc. t.* 13. *E. B. t.* 1241.

Hab. Firth of Forth, Iona, and other shores, plentifully.

From 5 inches to a foot long, dark reddish brown, opaque.

2. S. *rubens*, frond membranaceous obsoletely ribbed proliferous from the surface, branches elliptical simple and forked, roundish peltate leaves and hemisphærical externally uneven tubercles sessile on the disk. *Turn. Ag. p.* 23. *Fucus rubens, Turn. Hist. Fuc. t.* 42. *E. B. t.* 1053. *Fucus prolifer, Lightf. p.* 949. *t.* 30.

Hab. Shores of the western coast, adhering to shells and stones, *Lightf.* Rare and only among rejectamenta in the Firth of Forth, *Mr. Greville.*

3—7 inches long, fine reddish rose colour, approaching to purplish.

3. S. *crispus*, frond cartilaginous flat nerveless dichotomous, entire at the margins curled segments subcuneiform the uppermost narrowest, tubercles roundish solitary scattered immersed in the substance of the frond concave on one side deciduous. *Turn. Ag. p.* 24. *Fucus crispus, Turn. Hist. Fuc. t.* 216 and 217. *Fucus ceranoides, Lightf. p.* 913.

γ. *stellatus*, frond submembranaceous, branches dilated upwards divided at their apices into very numerous clustered shortish laciniæ. *Turn.*

δ. *æqualis*, frond cartilaginous thick, all the branches equal and linear, the extreme segments obtuse. *Turn. F. crispus, E. B. t.* 2285.

Hab. Rocky shores, α. and γ. plentiful. δ. Firth of Forth, *Mr. Greville.* A most variable species both in form and in colour. From 3 to 6 inches high, usually of a purplish or reddish cast, often inclining to green, especially in decay.

4. S. *mammillosus*, frond cartilaginous channelled on one side nerveless dichotomous elongato-cuneiform proliferous from the sides and surface entire at the margins, tubercles sphærical all over the frond on very short peduncles. *Turn. Ag. p.* 25. *Fucus mammillosus, Turn. Hist. Fuc. t.* 218. *E. B. t.* 1054. *Fucus ceranoides* ε., *Lightf. p.* 916.

β. *linearis*, frond narrow linear, apices bluntish and emarginate. *Turn. Fucus ceranoides* ζ., *Lightf. p.* 917.

Hab. Rocky shores, frequent. ζ. On the Cramond Island, *Lightf.*

3—6 inches long, very variable in width upwards. *Colour* purplish red.

5. S. *membranifolius*, stipes cylindrical branched, apices expanded into a subcuneiform leaf between membranaceous and cartilaginous flat nerveless bilobed or dichotomous, tubercles oblong

pedunculated growing on the stem. *Turn. Ag. p.* 26. *Fucus membranifolius, Turn. Hist. Fuc. t.* 74. *E. B. t.* 1965.

β. *lacer*, leaves dichotomous, segments linear, apices acute. *Turn. F. ceranoides γ., Lightf. p.* 915.

δ. *fimbriatus*, leaves fringed at the margin. *Turn. F. ceranoides* δ., *Lightf. p.* 916.

Hab. Firth of Forth, not uncommon, *Mr. Greville*[a].

4—6 inches high, of a reddish purple colour.

6. S. *Brodiæi*, stipes cylindrical branched its apex expanded into a leaf between membranaceous and cartilaginous oblong simple or forked flat nerveless proliferous from its margin, tubercles sphærical sessile upon the apices of the leaf. *Turn. Ag. p.* 27. *Fucus Brodiæi, Turn. Hist. Fuc. t.* 72. *E. B. t.* 1966.

Hab. Losie-mouth, *Jas. Brodie, of Brodie, Esq.* Half-way between Newhaven and Caroline Park, *Mr. Stewart* and *Mr. Greville.*

6—8 inches tall, of a very deep red purple colour.

7. S. *Sarniensis*, frond submembranaceous flat without midrib laciniated in a palmated manner proliferous from its margin, segments linear, tubercles sphærical immersed. *Turn. Fucus Sarniensis, Turn. Hist. Fuc. t.* 44. *E. B. t.* 2132.

Hab. Scotch coast, *Dr. Walker.* Orkney Islands, *Mr. Chas. Clauston.*

Fronds from 6 inches to 1 foot long, purplish, darker when dry. *Tubercles* minute, dispersed without order.

8. S. *ciliatus*, frond between membranaceous and cartilaginous flat nerveless generally lanceolate branched in a pinnated manner ciliated at its margins and surface, cilia mostly simple patent subulate producing tubercles at their apices. *Turn. Ag. p.* 28. *Fucus ciliatus, Turn. Hist. Fuc. t.* 70. *E. B. t.* 1069. *Lightf. p.* 944.

ε. *lanceolatus*, frond lineari-lanceolate narrow much and irregularly branched, cilia long compressed linear acuminated branched. *Turn. F. ciliatus* β., *Lightf. p.* 946.

Hab. Shores of Iona, and other places, but not common, *Lightf.*

From 4—6 inches long, purplish red. Eaten, according to Lightfoot, with the true Dulse.

9. S.? *laciniatus*, frond between cartilaginous and membranaceous flat nerveless branched, branches dilated upwards palmate and blunt at their apices their margins flat crenate and proliferous, immersed hemisphærical tubercles in the marginal processes

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[a] "It is a curious fact," Mr. Greville observes in a letter to me, "that wherever any striking var. of *F. crispus* is predominant, *F. mammillosus* is sure to be found assuming the same characters, as far as they relate to size and form. This I have not only noticed on this coast, but on the north and south coasts of Devon. On the Tor Abbey rocks var. β. of *F. crispus* (not, however, of a green colour) grows abundantly, and every plant of *F. mammillosus* in the immediate vicinity bore the same appearance: and that var. of *F. crispus* is one of the best marked and most constant."

and naked seeds scattered all over the frond. *Turn. Fucus laciniatus, Lightf. p.* 947. *Turn. Hist. Fuc. t.* 69. *E. B. t.*1068.

Hab. Coasts of Iona, &c. plentifully. Orkney, *Mr. Chas. Clauston.* Rare at Dunbar; more common near Berwick, *Mr. Greville.*

3—6 inches high, rather bright red. This should be perhaps removed to *Delesseria,* if the genera be really distinct.

10. S. *cristatus,* frond membranaceous flat veinless subdichotomous, branches alternate decurrent somewhat dilated upwards cleft at the apices, segments short obtuse bearing small globular sessile capsules. *Turn. Ag. p.* 29. *Fucus cristatus, Turn. Hist. Fuc. t.* 23.

β. *Valentiæ,* branches all linear, tubercles both lateral and terminal. *Turn.*

Hab. β. On the sea-shore at Wick, Caithness, *Mr. Borrer* and *Hook.* About 2 inches long, pinky scarlet.

11. S. *corneus,* frond between cartilaginous and corneous compressed nerveless irregularly branched, branches linear attenuated at each end bipinnate, pinnæ opposite patent obtuse bearing at their apices elliptical capsules. *Turn. Fucus corneus, Turn. Hist. Fuc. t.* 257. *E. B. t.*1970.

β. *filicinus,* frond setaceous, pinnæ horizontal widened very blunt. *Turn. F. nereidus, Lightf. p.* 957.

Hab. Firth of Forth and other places, but not common, *Lightf.*

Very variable in form and size, from 1 inch to 6 or 8 inches, and generally of a deep reddish purple colour.

**** Frond filiform, rounded.*

12. S. *purpurascens,* frond filiform irregularly branched, ramuli setaceous scattered bearing sphærical tubercles immersed in their substance. *Turn. Ag. p.* 31. *Fucus purpurascens, Turn. Hist. Fuc. t.* 9. *E. B. t.* 1243. *F. tuberculatus, Lightf. p.* 926.

Hab. Upon the shores, frequent.

From 9 inches to 1 foot long, purplish, subdiaphanous, often greenish in decay.

13. S. *subfuscus,* frond filiform much and irregularly branched, ramuli subulate pinnated subalternate, capsules axillary panicled both lanceolate and sphærical. *Turn. Ag. p.* 32. *Fucus subfuscus, Turn. Hist. Fuc. t.* 10. *E. B. t.* 1164.

Hab. Near Nether Cramond, *Maugh.;* not uncommon.

6—8 inches high, purplish brown.

14. S. *plicatus,* frond horny slender filiform of equal size throughout irregularly dichotomous beset with clustered entangled horizontal mostly simple branches generally pointing in the same direction, apices obtuse, tubercles irregularly hemisphærical sessile. *Turn. Ag. p.* 34. *Fucus plicatus, Turn. Hist. Fuc. t.* 180. *Lightf. p.* 929. *E. B. t.* 1089.

Hab. Upon the sea-shores in many places, as about Newhaven, *Lightf.* Fife coast, *Mr. Greville.*

3—4 or 6 inches long, generally dark purple, but often bleached by exposure on the beach.

29. CHONDRIA.

Frond between gelatinous and cartilaginous. *Fruit* double. *Seeds* naked, immersed in the branches, and *capsules* containing pyriform *seeds*.—*Frond* filiform, generally equal throughout, branched. *Colour* reddish, soon becoming pale.

1. Ch. *obtusa*, frond subcartilaginous cylindrical filiform repeatedly pinnated, branches generally opposite, ramuli cylindrical short between horizontal and patent truncated, capsules ovate sessile and naked seeds on the ramuli. *Turn. Ag. p.* 35. *Fucus obtusus*, *Turn. Hist. Fuc. t.* 21. *E. B. t.* 1201.

Hab. Rare, Firth of Forth, *Mr. Stewart* and *Mr. Greville.*

3—6 inches tall. *Colour*, a pinky yellow, very fugitive.

2. Ch. *pinnatifida*, frond compressed subcartilaginous branched, branches mostly alternate doubly pinnatifid, ramuli obtuse callous, capsules ovate sessile and naked seeds on the ramuli. *Turn. Fucus pinnatifidus*, *Lightf. p.* 953. *Turn. Hist. Fuc. t.* 20. *E. B. t.* 1202.

β. *Osmunda*, frond flat generally undivided, ramuli short and multifid, *Turn. F. filicinus*, *Lightf. p.* 954.

Hab. Rocky shores, common. β. with α.

Three to seven or nine inches high, livid purple, pale.

3. Ch. *ovalis*, frond subgelatinous nearly cylindrical filiform irregularly dichotomous naked below in its upper part clothed with elliptical simple ramuli imbricated on all sides bearing naked scattered seeds and hemisphærical sessile tubercles. *Turn. Fucus ovalis*, *Turn. Hist. Fuc. t.* 81. *E. B. t.* 711. *Fucus vermicularis*, *Lightf. p.* 958.

Hab. Basins of water upon marine rocks, but not common. Little Isles of Jura, *Lightf.*

Three to seven inches long, reddish purple. The ramuli are admirably compared by Lightfoot to the leaves of *Sedum album.*

4. Ch. *dasyphylla*, frond filiform cylindrical branched in an irregularly pinnated manner, branches between horizontal and patent mostly simple, ramuli cylindrical scattered attenuated at the base proliferous, capsules ovate sessile, and naked seeds on the ramuli. *Turn. Fucus dasyphyllus*, *Turn. Hist. Fuc. t.* 22. *E. B. t.* 847.

Hab. Losie-mouth, *James Brodie, of Brodie, Esq.*

Three to six inches long. *Colour* pale, pinky brown.

5. Ch. *clavellosa*, frond subgelatinous filiform cylindrical tubular much and irregularly branched, branches and ramuli mostly alternate and distichous, tubercles sessile and scattered seeds on the ramuli. *Turn. Fucus clavellosus*, *Turn. Hist. Fuc. t.* 30 (*bis*). *E. B. t.* 1203.

β. *sedifolius*, ramuli between oblong and oval crowded undivided. *Turn.*

Hab. Firth of Forth, rather rare, *Mr. Greville.* β. Losie-mouth, *James Brodie, of Brodie, Esq.*, abundant.

Three to seven inches in length; of a pale red colour.

6. Ch. *kaliformis*, frond subgelatinous filiform tubular much and irregularly branched, branches and ramuli generally verticillate contracted as if jointed, tubercles sessile and scattered seeds on the ramuli. *Turn. Fucus kalif., Turn. Hist. Fuc. t.* 29 (*bis*). *E. B. t.* 640. *F. verticillatus, Lightf. p.* 962. *t.* 31.

Hab. Sparingly on the rocks of the little Isles of Jura, *Lightf.* Western coast of Scotland, *Mr. Menzies.*

Six inches to a foot or more long. *Colour* a beautiful pink, very fugitive.

7. Ch. *Opuntia*, frond subcylindrical filiform solid here and there contracted as if jointed branched, with a net-work of fibres internally, branches horizontal acuminated, joints lanceolate obsolete, tubercles globular very minute scattered. *Turn. Fucus Opuntia, Turn. Hist. Fuc. t.* 107. *Fucus repens, Lightf. p.* 961. *Rivularia Opuntia, E. B. t.* 1868.

Hab. Rocky shores, common.

Thickly matted, from half an inch to an inch long.

8. Ch. *pusilla*, frond between cartilaginous and horny flat filiform here and there contracted as if jointed much and irregularly branched, ramuli horizontal attenuated at their base dilated and rounded at their apices, very minute globular sessile tubercles and scattered seeds upon the ramuli. *Turn. Fucus pusillus, Turn. Hist. Fuc. t.* 108.

Hab. Caroline Park, Firth of Forth, *Mr. Greville.*

Minute, from half an inch to an inch or more in length, purplish pink.

9. Ch. *articulata*, frond cylindrical filiform tubular contracted throughout as if jointed branched, branches of equal height dichotomous and whorled, joints subcylindrical, tubercles urceolate sessile and scattered seeds on the ramuli. *Turn. Fucus articulatus, Lightf. p.* 959. *Turn. Hist. Fuc. t.* 106. *E. B. t.* 1574.

Hab. Marine rocks in Jura, Oransa, Canay, Skye, &c., *Lightf.* Firth of Forth, not uncommon, *Mr. Greville.* Orkney, *Mr. Chas. Clauston.*

Three to four inches to one foot in length. *Colour* purplish pink.

30. PTILOTA. *Ag.*

Seeds naked, surrounded by an involucrum.—*Frond* compressed, nerveless, pinnated. *Seeds* collected into a cluster and inclosed in a setaceous *involucrum.*

1. Pt. *plumosa*, frond compressed cartilaginous much and irregularly branched, branches repeatedly pinnated, ramuli oppo-

site bearing the fruit at their apices, seeds naked surrounded by the quadrifid ends of the ramuli. *Turn. Ag. p.* 39. *Fucus plumosus, Lightf. p.* 955. *Turn. Hist. Fuc. t.* 60. *E. B. t.* 1308.

capillaris, frond very narrow nearly cylindrical jointed, *Turn.*
AB. Coast of Iona, and other shores, not uncommon, *Lightf.* Firth of Forth, *Maugh.* and *Mr. Greville.* β. Losie-mouth, *James Brodie, of Brodie, Esq.*
ree to six inches long. *Colour* a deep purplish red, inclining to brown.

31. HALYMENIA.

rond between membranaceous and coriaceous. *Seeds* dispersed in spots and immersed throughout the whole frond.—*Frond* membranaceous or sometimes coriaceous, plane or tubular, nerveless. Allied to the *Ulvæ;* but the substance is thicker and the colour and fibrous texture are different.

* *Fronds plane.*

H. *edulis*, frond cartilaginous plane nerveless simple cuneiform quite entire rounded at the apex attenuated at the base into a very short cylindrical petiole, solitary seeds scattered all over the frond. *Turn. Fucus edulis, Turn. Hist. Fuc. t.* 114. *E. B. t.* 1307. *Hook. in Fl. Lond. with a figure. Fucus palmatus* β., *Lightf. p.* 935.
AB. Not uncommon in the Firth of Forth, *Mr. Greville.*
ppears to be eaten as well as the following. It is from 4 to 6 or 8 inches tall, deep brownish purple, tough and rather leathery.

. H. *palmata*, frond membranaceous plane nerveless palmated quite entire at the margin, segments oblong mostly simple, seeds naked collected into wide irregularly shaped spots scattered all over the frond. *Turn. Ag. p.* 36. *Fucus palmatus, Turn. Hist. Fuc. t.* 115. *E. B. t.* 1306. *Hook. in Fl. Lond. with a figure. Lightf. p.* 933. *t.* 27.
AB. Abundant on all the rocky shores.
our to six inches to a foot high, of a livid purplish colour. This is the *Dulse* of the Scotch, who are very fond of it in a fresh and crude state. Lightfoot says, however, that they prefer it dried and rolled up, when they chew it like tobacco for the pleasure arising from the habit. This is the *saccharine Fucus* of the Icelanders, the efflorescence of which has a sweetish and not disagreeable taste. It is dried by the natives, packed down in casks, and used as occasion requires, frequently cooked with butter. Cattle, sheep in particular, often eat this species with eagerness, whence it has been called *Fucus ovinus.*

. H. *sobolifera*, frond membranaceous flat without midrib laciniated in a palmated manner proliferous from the margin, segments dilated upwards the extreme ones gashed at their apices

with numerous short subsetaceous teeth. *Turn. Ag. p.* 36. *Fucus soboliferus, Turn. Hist. Fuc. t.* 45.

Hab. Orkney islands, *Mr. Charles Fothergill, Mr. Borrer* and *Hook.*

Three to four inches long, of a transparent pinky colour.

** *Frond cylindrical.*

4. H.? *subtilis*, fronds subgelatinous capillary branched, branches growing irregularly in parcels on different sides of the frond rather remote acuminated. *Turn. H. fœniculacea, Ag. p.* 38. *Fucus subtilis, Turn. Hist. Fuc. t.* 234. *Conferva fœniculacea, Lightf. p.* 981.

Hab. In basins of water left by the recess of the tides, among the rocks on the western coast, *Lightf.* Abundant on the shores of Iona, and at Oban, *Mr. Turner* and *Hook.*

One to two feet long; branches very fine and conferva-like, but quite destitute of joints. *Colour* olive brown. No fructification has been discovered.

Order IV. CHARACEÆ.

Fructification of two kinds. *Nucules* 4, bracteated, standing solitary, sessile, oval, spirally striated, surrounded by a diaphanous covering or *involucre*, which is obscurely quinquefid at the extremity, one-celled, many-seeded, indehiscent: *seeds* or *sporules* very minute, whitish, sphærical; and *globules* of a reddish or orange colour, accompanying the *Nucules*, surrounded by a pellucid coat or covering, at length opening into 3—4 valves, and containing a mass of very minute spiral filaments.

Vegetation. Aquatic plants never rising above the surface of the water, fixed into the mud by slender fibrous radicals issuing from a swollen portion of the base of the stem. *Stems* slender, confervoid, (always ?) tubular throughout, pellucid or covered with a calcareous crust, very brittle when dry and generally fœtid, branched; branchlets whorled, often aculeated, *Wallroth, Annus Botanicus.*—Wallroth, in his little work here referred to, has given a most admirable account of the fructification of this curious tribe of plants; from which it appears evident, that it has no claims to be ranked among the perfect plants, and that its nearest affinity is with the *Confervæ* and *Ulvæ* among the *Algæ*.

A minute fossil body frequently found in chalk, which is spirally twisted, and which was formerly considered to belong to the animal kingdom, is, I believe, now generally allowed to be the *Nucule* of *Chara*. Various species have been discovered, and they are called by the French, *Gyrogonites*. M. Leman, however, (who speaks of them in the *Nouveau Dict. des Sciences Naturelles*, under the article *Charagne*,) from an inves-

tigation of them in the fossil state, comes to a different conclusion from that of Wallroth, and says they are allied to the *Onagrariæ* and *Salicariæ*, and proposes that the genus *Chara* should constitute a new family of *Dicotyledons*, under the name of *Eleodeæ*.

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1. CHARA.

Ch. *flexilis*, stems pellucid glabrous and unarmed flaccid much branched, branches opposite patent, whorls of branchlets 6—8 di-trichotomous at the extremity or simple obtuse, nucules few scarcely bracteated. *Lightf. p.* 536. *E.B. t.* 1070, and *t.* 2140 (*Ch. gracilis? Wallr. An. Bot. p.* 176).

AB. Lakes, rivers, and ditches, abundant, *Lightf., Hopk., Don.*

Ch. *translucens*, "smooth transparent without prickles, leaves cylindrical obtuse with a small point all simple with transverse internal partitions." *Sm. E. B. t.* 1855.

AB. Ditches about Edinb.; Kinross-shire, Highlands, &c., *Mr. Arnott.* Restenart Marsh, near Forfar, *D. Don.*

allroth is disposed to consider the *Ch. translucens* of Vaillant and *E. Bot.* a var. of *Ch. vulgaris;* but he says the *stems* and *branches* are "roughish;" from which it would appear he is not acquainted with our plant, for it is remarkably smooth, and by far the largest of the genus. It is, however, very difficult to draw correctly the line of distinction between the different species of *Chara.*

Ch. *vulgaris*, stems branched rounded roughish, whorls of branchlets about 8 linear-subulate rather acute, bracteas about 4. *Lightf. p.* 535. *E. B. t.* 336.

AB. Ditches and slow streams.

Ch. *hispida*, stems branched excessively brittle below unarmed spirally striated above much aculeated, spines or teeth often pointing downwards, whorls of about 8 simple branchlets acute with numerous setaceous bracteas placed in fours. *Lightf. p.* 535. *E. B. t.* 463.

AB. Ditches and lakes. Guillon Loch, *Dr. Parsons.* Restenat Marsh, *D. Don.* Lismore, *Capt. Carmichael.*

overed apparently with an earthy or calcareous whitish *crust*, rendering the whole plant excessively fragile. Even the exposure to the air and light, when this plant is thrown out of the ditches, soon reduces it to a mere dust.—M. Bosc observes that fish, and especially carp, thrive best when the species of *Chara* abound:—probably because they harbour a number of insects, which are the food of these fish.

ORDER V. HEPATICÆ. *Juss. Decand.*

(*Part of Algæ, Linn. Calyptratæ Deoperculatæ, Mohr.*)

ructification generally of two kinds. *Capsules* in an early stage

covered with a *calyptra*, tipped with a *style* (?),—and then often surrounded by a *perianth* or *calyx*, at length bursting the *calyptra* irregularly, and rising on a *peduncle* (except in *Riccia*), and opening at the extremity into 2 or 4 equal *valves*, destitute of *operculum*, bearing within numerous *seeds* mixed with spiral *filaments*:—and oblong or mostly rounded, and frequently shortly pedunculated, reticulated bodies, *anthers* (?), containing a very minutely granulated substance which escapes by an aperture formed at the extremity.—*Minute plants* frequently frondose, sometimes (as in *Jungermannia*), foliiferous; the *leaves* often divided, never really nerved. *Substance* loosely cellular in general, easily reviving, after being dried, by moisture. Sometimes the *areolæ* of the *cells* have an evident *pore*, as in *Marchantia* and *Targionia*.

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1. RICCIA.

Capsule sphærical, immersed in the *frond* (not opening?), crowned with the *style* which is alone protruded. I am but imperfectly acquainted with the *fructification* of the plants attributed to this genus. In *R. glauca* I can discover no *calyptra*, and were it not that its herbaceous texture assimilates it with the *Hepaticæ*, it would be hard to distinguish it from the genus *Endocarpon* among the *Lichens*. Only one kind of *fructification* has ever been discovered; upon some of the British species indeed, *R. natans* and *fluitans*, none.

1. R. *glauca*, frond small oblong somewhat divided, the segments two-lobed at the extremity fleshy glaucous dotted on the surface and slightly channelled with the fructifications near the base. *Lightf. p.* 709. *E. B. t.* 2546.

Hab. Rocks slightly covered with earth at the Tarbet of Cantire, &c., *Lightf.*

Frequently growing in a radiating or stellated manner in patches of half an inch long.

2. R. *spuria*, "fronds membranaceous lobed pellucid, fructifications beneath the sinuses of the lobes solitary exserted turbinate toothed." *Dicks. Plant. Crypt. fasc.* 4. *p.* 20. *t.* 11. *f.* 16.

Hab. Turfy marshes among the Scotch mountains, *Dickson.*

Of this plant I know nothing but from Dickson's figure and description above quoted. It seems very ill to accord with *Riccia*.

2. ANTHOCEROS.

Capsule pedunculated, linear, two-valved, with a central *columella*, to which the *seeds* are attached.

1. A. *multifidus*, fronds bipinnatifid linear. *Dicks. Pl. Crypt. fasc.* 3. *p.* 13. *Dill. Musc. t.* 68. *f.* 4.

Hab. Crevices of rocks in the Highlands, *Dickson.*

With this plant of Mr. Dickson's also I am unacquainted, nor is it taken up in *E. Bot.*

3. JUNGERMANNIA.

Common receptacle of the *fruit* none. *Perianth* or *calyx* monophyllous, tubular (rarely wanting). *Capsule* 4-valved, terminating a peduncle which is longer than the *perianth.*

A. *Leafy.*

† *Stipules none.*

a. *Leaves inserted on all sides.*

1. J. *trichophylla*, stem creeping irregularly branched, leaves imbricated on all sides here and there fasciculated setaceous jointed patent straight, fruit terminal, cal. oblong the mouth contracted ciliated. *Hook. Jung. t.* 7.

Hab. Moist rocky places. On Craig-alleach and Schechallion in Breadalbane, Perthshire, and on Ben Luyal, in the N. of Sutherland, *Hook.*

2. J. *setacea*, stem creeping branched in a somewhat pinnated manner, leaves imbricating on all sides binous setaceous jointed patent incurved, fruit terminal on proper short branches, cal. oblong, the mouth expanded ciliated. *Hook. Jung. t.* 8. and *Suppl. t.* I.

Hab. Auchindenny woods, Edinb., *Mr. Greville.*

3. J. *julacea*, stem nearly erect irregularly branched filiform, leaves quadrifarious ovate closely imbricated erect acutely bifid, the segments lanceolate acuminate subserrate those of the perichætium 4-partite, fruit terminal, cal. oblong plicate above, the mouth open toothed. *Hook. Jung. t.* 2. *Lightf. p.* 785.

β. *gracilis*, stems elongated, leaves small rather distant.

Hab. Summits of Ben Lomond, the Breadalbane and other mountains, plentiful. β. On Ben Nevis, *Hook.*

Grows in large, dense, compact tufts, with frequently a white hoariness upon it.

4. J. *juniperina*, stem erect flexuose subsimple elongated filiform, leaves quadrifarious falcato-secund linear-lanceolate bipartite, the segments straight acuminate, fruit terminal, cal. ovate leafy. *Hook. Jung. t.* 4.

Hab. Scotch mountains, plentifully, as Ben Lomond, Cairn-gorum, Ben Nevis, Ben Lawers, Ben Arthur, Ben-y-caillich in Skye, &c.: —but the finest specimens I ever saw (almost 1 foot long) were by a cascade in a glen near the head of Loch Lomond.

Growing in large tufts of a fine yellow brown colour.

5. J. *Hookeri*, stem erect somewhat branched, leaves imbricated on all sides ovate or oblongo-ovate here and there lobed or angled, fruit terminal, cal. none, calyptra large oblong fleshy smooth, capsule oblong. *Hook. Jung. t.* 54.

Hab. Marshy ground at Kinnordy, Kerriemuir, *Charles Lyell, Esq.*

b. *Leaves bifarious.*

* *Leaves undivided.*

6. J. *asplenioides*, stem ascending branched, leaves obovato-roundish ciliato-dentate subrecurved, fruit terminal and lateral, cal. oblong compressed oblique, mouth truncated subciliated. *Hook. Jung. t.* 14. *Lightf. p.* 771.

Hab. Woods and shady places, plentiful.

7. J. *spinulosa*, stem erect branched, leaves obovate recurved with the margin on one side and the apex dentato-spinulose, fruit lateral and axillary, cal. roundish compressed, the mouth truncated ciliated. *Hook. Jung. t.* 14.

Hab. Mountainous parts of Scotland among rocks, not uncommon.

8. J. *pumila*, stem ascending nearly simple, leaves elliptical ovate, fruit terminal, cal. oblongo-ovate acuminate, mouth contracted denticulated. *Hook. Jung. t.* 17.

Hab. On the ground, Kinnordy, Kerriemuir, *Mr. Lyell.*

9. J. *lanceolata*, stem procumbent subsimple, leaves patent ovato-rotundate, fruit terminal, cal. oblongo-cylindrical depressed and flat at the extremity, the mouth much contracted cut and toothed. *Hook. Jung. t.* 18. *Lightf. p.* 773.

Hab. Moist, shady banks, and on the rotten trunks of trees, *Lightf.* Near Newburgh, on the Cathkin hills, *D. Don.*

10. J. *cordifolia*, stem erect flexuose dichotomous, leaves erect concave cordate circumvolute, fruit terminal and axillary, cal. oblongo-ovate subplicate, mouth minute toothed. *Hook. Jung. t.* 32.

Hab. Highland mountains in many situations. Isla and Catlaw, Angus-shire, *Mr. Lyell.*

11. J. *Sphagni*, stem procumbent nearly simple (the gemmiferous elongations of the stem alone having stipules), leaves orbicular, fruit upon short proper branches, cal. oblong attenuated at each extremity, the mouth contracted toothed. *Hook. Jung. t.* 33, and *Suppl. t.* 2.

Hab. Bogs near Forfar and Newburgh, Fifeshire, *D. Don.*

12. J. *crenulata*, stem procumbent branched, leaves orbicular margined, fruit terminal, cal. obovate compressed longitudinally quadrangular, the mouth contracted toothed. *Hook. Jung. t.* 37.

Hab. Marshy places, Kinnordy, *Mr. Lyell.*

** *Leaves emarginate or bifid, the segments equal.*

13. J. *emarginata*, stem erect branched, leaves loosely imbricated patent obcordate emarginate, fruit terminal, cal. ovate toothed immersed in the leaves. *Hook. Jung. t.* 27.

Hab. Moist places among rocks, abundant, especially in alpine situations.

14. J. *concinnata*, stem erect branched, leaves very closely imbricated erect concave ovate obtuse emarginate, fruit terminal, cal. none. *Lightf. p.* 786. *Hook. Jung. t.* 3.

Hab. Summits of the mountains, Ben Lawers, Ben Lomond, &c.

15. J. *orcadensis*, stem erect simple, leaves closely imbricated erect or patent cordato-ovate plane notched at the extremity their margins recurved. *Hook. Jung. t.* 71.

Hab. Wart hill of Hoy, Orkney, near the summit, *Hook.* Catlaw, near Kinnordy, *Mr. Lyell.*

16. J. *inflata*, stem procumbent simple or branched, leaves roundish concave acutely bifid, segments straight obtuse, fruit terminal, cal. obpyriform, the mouth contracted toothed. *Hook. Jung. t.* 38.

Hab. Moist places, not uncommon.

17. J. *excisa*, stem prostrate nearly simple, leaves patent subquadrate deeply emarginate, fruit terminal, cal. oblong, the mouth plicate toothed. *Hook. Jung. t.* 9.

Hab. Highland mountains, frequent, *Hook.* Marshes, common, *D. Don.*

18. J. *ventricosa*, stem prostrate somewhat branched, leaves patent subquadrate obtusely and broadly emarginated their sides incurved, fruit terminal, cal. oblong, the mouth contracted plicated toothed. *Hook. Jung. t.* 28.

Hab. Moist shady places, among rocks, and in woods.

19. J. *bicuspidata*, stem procumbent branched in a stellated manner, leaves subquadrate acutely bifid, the segments acute straight entire, fruit terminal, cal. oblong plicated, the mouth toothed. *Hook. Jung. t.* 11. *Lightf. p.* 775.

Hab. Woods, heaths, &c., abundant.

20. J. *byssacea*, stem procumbent branched in a stellated manner, leaves subquadrate obtusely bifid, the segments acute, fruit terminal, cal. oblong plicate, the mouth toothed. *Hook. Jung. t.* 12.

Hab. Highland mountains, in exposed situations, not uncommon.

21. J. *connivens*, stem procumbent branched in a stellated manner, leaves orbicular concave at the extremity lunulato-emarginate, fruit terminal upon short proper central branches, cal. oblongo-ovate, the mouth ciliated. *Hook. Jung. t.* 15.

Hab. Marshes and mountains, frequent.

22. J. *curvifolia*, stem procumbent branched in a stellated manner, leaves roundish very concave bifid, the segments long acuminate incurved, fruit terminal upon short proper branches, cal. oblong subplicate, the mouth toothed. *Hook. Jung. t.* 16.

Hab. Highland mountains, *Dickson.* On Ben Nevis; Ross-shire mountains, &c., *Hook.*

*** *Leaves tri-quadrifid, the segments equal.*

23. J. *incisa*, stem prostrate depressed nearly simple, leaves sub-

quadrate waved subtrifid the segments equal here and there toothed, fruit terminal, cal. obovate. *Hook. Jung. t.* 10.

Hab. Moors, common, growing with *J. resupinata, D. Don.*

24. J. *pusilla*, stem procumbent nearly simple, leaves spreading horizontally quadrate waved obtusely bi-tricrenate, fruit terminal, cal. campanulate, caps. sphærical bursting irregularly. *Hook. Jung. t.* 69.

Hab. Moist, especially clayey, banks.

25. J. *setiformis*, stem erect subsimple, leaves bifarious closely imbricated erect quadrate quadrifid their inferior angles here and there spinuloso-dentate, fruit terminal and lateral, cal. oblong plicate, the mouth open. *Hook. Jung. t.* 20.

Hab. Cairn-gorum, on the summit, *Hook.* Highland mountains, *Dickson.* Clova mountains, *G. Don.*

**** *Leaves two-lobed; the segments unequal, conduplicate.*

26. J. *nemorosa*, stem erect subdichotomous, leaves unequally bilobed semibifid dentato-ciliate, lobes conduplicate, the inferior ones larger obovate, the superior ones subcordate obtuse, fruit terminal, cal. oblong incurved compressed, the mouth truncate dentato-ciliate. *Hook. Jung. t.* 21. *Lightf. p.* 778 (*J. purpurea.*)

Hab. Woods, rocks, and shady places, frequent.

27. J. *umbrosa*, stem nearly erect somewhat branched, leaves unequally bilobed, lobes conduplicate serrated at the extremities acute, the lower ones larger ovate, superior ones roundish-ovate, fruit terminal, cal. oblong incurved compressed, mouth truncated entire. *Hook. Jung. t.* 24.

Hab. On Ben Nevis; in the Den of Rechip, near Dunkeld, *Hook.*

28. J. *undulata*, stem erect subdichotomous, leaves unequally two-lobed waved entire, lobes roundish conduplicate lower ones the largest, fruit terminal, cal. oblong incurved compressed, mouth truncated entire. *Hook. Jung. t.* 22. *Lightf. p.* 776.

Hab. Moist rocks, plentiful; especially by the side of streams.

29. J. *resupinata*, stem procumbent nearly simple, leaves roundish nearly equally bilobed entire, lobes conduplicate, fruit terminal, cal. oblong incurved compressed, mouth truncate toothed. *Hook. Jung. t.* 23. *Lightf. p.* 776.

Hab. Heaths, common, *D. Don.*

30. J. *albicans*, stem erect subdivided, leaves unequally bilobed, lobes conduplicate with a pellucid line in the middle serrated at the extremity, lower ones larger subacinaciform, upper ones oblongo-ovate acute, fruit terminal, cal. obovate cylindrical, the mouth contracted toothed. *Hook. Jung. t.* 25. *Lightf. p.* 777.

Hab. Woods, rocks, heaths, and mountains, abundant.

31. J. *obtusifolia*, stem ascending simple, leaves unequally bilobed,

lobes conduplicate obtuse entire, lower ones larger subacinaciform, superior ones ovate, fruit terminal, cal. obovate, the mouth contracted toothed. *Hook. Jung. t.* 26.

Hab. Cathkin Hills, *Hopk.* Near Newburgh, Fifeshire, *D. Don.*

32. J. *Dicksoni,* stem ascending subsimple, leaves unequally bilobed, lobes conduplicate, lower ones larger, both narrow ovate nearly entire acute, fruit terminal, cal. ovate plicate, the mouth contracted toothed. *Hook. Jung. t.* 48.

Hab. Most abundant upon dry rocks among mosses, near the Falls of the Isla, Angus-shire, *Mr. Lyell.*

33. J. *minuta,* stem erect subdichotomous, leaves horizontally patent subconduplicate, upper ones equally lower ones unequally two-lobed, all the lobes rather acute, fruit terminal cal. obovate a little plicate at the extremity the mouth contracted denticulate. *Hook. Jung. t.* 44.

Hab. Woods and mountains, not rare.

34. J. *cochleariformis,* stem procumbent subsimple, leaves imbricated on the upper side unequally two-lobed conduplicate, superior lobes the larger convex bifid and toothed at the extremity, the lower ones saccate. *Hook. Jung. t.* 68.

Hab. Highland mountains, not uncommon; more plentiful in the N. Highlands, especially in Sutherland.

35. J. *complanata,* stem creeping irregularly branched, leaves distichous imbricated above unequally two-lobed, superior lobes larger orbicular, lower ones ovate appressed plane, fruit terminal, cal. oblong compressed truncated. *Hook. Jung. t.* 81. *Lightf. p.* 780.

Hab. Trunks of trees, common.

†† *Stipulate.*

a. *Leaves entire, or rarely here and there emarginate.*

36. J. *anomala,* stem procumbent simple leaves orbicular and ovato-acuminate, stipules broadly subulate. *Hook. Jung. t.* 34.

Hab. Boggy places in various parts of the Highlands.

37. J. *Taylori,* stem erect subsimple, leaves all rounded, stipules broadly subulate, fruit terminal, cal. ovate compressed at the extremity truncate two-lipped. *Hook. Jung. t.* 57.

Hab. Cairn-gorum, and other mountains in the Highlands, *Hook.* Cathkin Hills, near Glasgow, and on the Ochil Hills, *D. Don.*

38. J. *scalaris,* stem creeping simple, leaves round concave entire and emarginate, stipules broadly subulate, fruit terminal, cal. immersed in the leaves. *Hook. Jung. t.* 61.

Hab. Heaths, banks, &c. abundant.

39. J. *polyanthos,* stem procumbent somewhat branched, leaves horizontal rotundato-quadrate plane entire and emarginate, stipules oblong bifid, fruit upon very short proper branches arising from the lower surface of the stem, cal. much shorter

than the calyptra two-lipped laciniated. *Hook. Jung. t.* 62. *Lightf. p.* 773.

Hab. Bilston Burn, near Edinburgh, and in Angus-shire, *G. Don*; growing in water.

40. J. *viticulosa*, stem procumbent branched, leaves horizontal plane ovate entire, stipules broadly ovate dentato-laciniate, fruit lateral, cal. subterraneous oblong fleshy, the mouth fimbriated with leafy scales. *Hook. Jung. t.* 60. *Lightf. p.* 772.

Hab. Woods and rocks in alpine situations, plentiful.

41. J. *trichomanis*, stem creeping subsimple, leaves horizontal convex ovate entire and emarginate, stipules round lunulari-emarginate, fruit lateral, cal. subterraneous oblong fleshy hairy, the mouth crenate. *Hook. Jung. t.* 79. *Lightf. p.* 769, and *p.* 771 (*J. fissa*).

Hab. Woods, caves in rocks, and shady places, abundant.

b. *Leaves bi- or trifid, the segments equal.*

42. J. *bidentata*, stem procumbent branched, leaves broadly ovate decurrent bifid at the apex, the segments very acute entire, stipules bi-trifid and laciniated, fruit terminal, cal. oblong subtriangular the mouth laciniated. *Hook. Jung. t.* 30. *Lightf. p.* 774.

Hab. Woods and shady places, frequent.

43. J. *stipulacea*, stem procumbent simple, leaves round acutely emarginate at the extremity, segments acute straight, stipules large ovate acuminate with a single tooth at the base on each side, fruit lateral, cal. obovate, subplicate at the extremity the mouth contracted obtusely toothed. *Hook. Jung. t.* 41.

Hab. Scotland, *G. Don.*

44. J. *barbata*, stem procumbent nearly simple, leaves rotundato-quadrate tri-quadrifid, stipules lanceolate acutely bifid their margins laciniated, fruit terminal, cal. ovate contracted and toothed at the mouth. *Hook. Jung. t.* 70. *Lightf. p.* 775 (J. 5-*dentata*).

Hab. Woods and among rocks, plentiful.

45. J. *albescens*, stem creeping branched, leaves very concave nearly hemisphærical emarginate, stipules ovato-lanceolate obtuse, fruit terminal upon short branches, cal. oblongo-ovate toothed at the mouth. *Hook. Jung. t.* 72, and *Suppl. t.* 4.

Hab. Summit of Ben Nevis, on the ground, *Hook.*

46. J. *reptans*, stem creeping branched in a stellated manner, leaves imbricated above subquadrate incurved acutely 4-dentate, stipules broadly quadrate quadridentate, fruit radical, cal. oblong plicate toothed at the mouth. *Hook. Jung. t.* 75. *Lightf. p.* 779.

Hab. Woods, rocks, and on the ground, abundant in shady places.

47. J. *trilobata*, stem creeping flexuose branched bearing flagella, leaves imbricated above ovate convex obtusely tridentate,

stipules broadly subquadrate crenate, fruit arising from the lower part of the stem, cal. oblong subacuminate, the mouth laterally cleft. *Hook. Jung. t.* 86, and *t.* 39 (*J. Doniana*).

Hab. Woods and mountains.

A recent examination of my *J. Doniana* has satisfied me that it is only an injured state of this plant.

c. *Leaves bifid; segments unequal, conduplicate.*

* *Lower or smaller segments plane.*

48. J. *platyphylla*, stem procumbent branched in a pinnated manner, leaves unequally lobed, superior lobes roundish-ovate nearly entire, inferior ones and the stipules ligulate quite entire, fruit lateral, cal. ovate compressed truncate at the mouth inciso-serrate longitudinally cleft on one side. *Hook. Jung. t.* 40, and *Suppl. t.* 3. *Lightf. p.* 784.

Hab. Woods, common.

49. J. *lævigata*, stem procumbent branched in a pinnated manner, leaves unequally two-lobed spinuloso-dentate, superior lobes roundish ovate, inferior ligulate, stipules oblongo-quadrate spinuloso-dentate. *Hook. Jung. t.* 35.

Hab. Woods and rocks in Scotland, not uncommon.

50. J. *ciliaris*, stem procumbent branched in a pinnated manner, leaves very convex unequally two-lobed, lobes and lobules ovate bipartite fringed with long and slender cilia, stipules subquadrate 4- or 5-lobed at the extremity with long cilia, fruit lateral, cal. obovate contracted and toothed at the mouth. *Hook. Jung. t.* 65.

Hab. On the ground in hilly and mountainous situations, abundant.

51. J. *tomentella*, stem nearly erect bipinnate, leaves nearly plane unequally two-lobed cut into numerous capillary segments, superior lobes bipartite, inferior minute, stipules subquadrate laciniate, fruit axillary, cal. oblong cylindrical hairy open at the mouth. *Hook. Jung. t.* 36.

Hab. Moist shady places, not unfrequent. Glen Finlas, near Loch Lomond, *D. Don.*

** *The lower or smaller segments of the leaves involute.*

52. J. *serpyllifolia*, stem creeping loosely branched in a pinnated manner, leaves unequally two-lobed, superior lobes rounded, inferior minute involute, stipules roundish acutely bifid, fruit lateral, cal. broadly obovate pentagonal, the mouth contracted elevated subdentate. *Hook. Jung. t.* 42.

Hab. Not uncommon on trees and rocks.

53. J. *hamatifolia*, stem creeping loosely branched, leaves unequally two-lobed, superior lobes ovate acuminate mostly curved at the extremity, inferior ones involute, stipules ovate acutely bifid, fruit lateral, cal. obovate pentagonal, the mouth contracted elevated and toothed. *Hook. Jung. t.* 51.

HAB. Rocks in the Den of Rechip, near Dunkeld, rare, *Hook.*

**** Lower or smaller segments of the leaves saccate.*

54. J. *dilatata*, stem creeping irregularly branched, leaves unequally two-lobed, superior lobes ovato-rotundate, inferior rounded saccate, stipules rounded plane emarginate, fruit terminal, cal. obcordate tuberculated triangular. *Hook. Jung. t.* 5.

HAB. Trunks of trees, frequent, and on rocks, *Lightf. p.* 781.

55. J. *Tamarisci*, stem creeping branched in a pinnated manner, leaves unequally two-lobed, superior lobes ovato-roundish, inferior ones minute obovate saccate, stipules subquadrate emarginate the margins revolute, fruit terminal on short branches, cal. obovate smooth triangular. *Hook. Jung. t.* 6. *Lightf. p.* 782.

HAB. Common on rocks and heaths.

B. *Frondose.*

a. *Nerveless.*

56. J. *pinguis*, frond oblong decumbent nerveless fleshy nearly plane above swelling beneath irregularly branched, the margin sinuated, fruit arising from the underside near the margin, cal. very short the mouth dilated fimbriated, calyptra exserted oblongo-cylindrical, smooth. *Hook. Jung. t.* 46. *Lightf. p.* 789.

HAB. Wet and boggy places, Pentland Hills, *Mr. Greville.*

57. J. *multifida*, frond linear nerveless fleshy compressed branched in a pinnated manner, fruit marginal, cal. very short, the mouth dilated fimbriated, calyptra exserted oblongo-cylindrical tuberculated. *Hook. Jung. t.* 45.

HAB. Bogs, common.

b. *Fronds with a nerve.*

* *Cal. single.*

58. J. *Blasia*, frond oblong submembranaceous dichotomous costate having scattered scales on the underside, cal. and the calyptra within the frond. *Hook. Jung. t.* 72, 73, and 74. *Blasia pusilla*, *Lightf. p.* 1118.

HAB. Woods and exposed rocky or heathy places. In fruit, at Kinnordy, *Mr. Lyell;* and Auchindenny wood, *Mr. Greville.*

59. J. *epiphylla*, frond oblong submembranaceous irregularly divided obsoletely ribbed the margin entire or lobed and sinuated, fruit arising from the superior part of the frond near the apex, cal. subcylindrical plicate, the mouth dilated inciso-dentate, calyptra exserted smooth. *Hook. Jung. t.* 47. *Lightf. p.* 788.

HAB. Shady moist places in bogs, plentiful.

60. J. *furcata*, frond linear dichotomous membranaceous costate glabrous above more or less hairy beneath and on the margin, fruit arising from the lower surface of the nerve, cal. 2-lobed

conduplicate ciliated at the margin, calyptra obovate hispid. *Hook. Jung. t.* 55 and 56. *Lightf. p.* 791.

Hab. Trunks of trees and rocks, plentiful.

61. J. *pubescens*, frond linear dichotomous membranaceous costate pubescent in every part. *Hook. Jung. t.* 73.

Hab. Rocks in alpine situations, not uncommon.

** *Calyx double.*

62. J. *Lyellii*, frond oblong somewhat branched membranous costate the margin nearly entire, fruit arising from the superior surface of the fronds, cal. double, ext. very short its margin laciniato-dentate, int. much exserted cylindrical subplicate, calyptra longer than the cal. *Hook. Jung. t.* 77.

Hab. Drumly Airy, a waterfall on the Noran, Angus-shire, *Mr. Lyell.* Damp woods, near the burn side, Forfar, *D. Don.*

63. J. *hibernica*, frond oblong dichotomous membranous costate with the margin entire, fruit arising from the superior surface of the frond, cal. double, ext. very short laciniated, int. much exserted ovato-cylindrical subplicate, calyptra much shorter than the interior cal. *Hook. Jung. t.* 78, and *Suppl. t.* 4.

Hab. Catlaw, near Kinnordy, Angus-shire, *Mr. Lyell.*

4. TARGIONIA.

Common receptacle of the fruit none. *Perianth* or *calyx* globose, arising from the underside of the extremity of the frond, at length opening vertically into 2 valves. *Capsule* globose, nearly sessile, included in the cal., opening irregularly at the extremity and filled with *seeds* and *spiral filaments*.

1. T. *hypophylla. Lightf. p.* 792. *E. B.*

Hab. Moist banks, rare. Near the Tarbet of Cantire, on the confines of Knapdale, *Lightf.*

Fronds imbricated, dark green, oblongo-obovate, purple and scaly beneath, with many radicles. *Cal.* sphærical, sessile. No bodies analogous to *anthers* (as they are called) have ever been discovered on this plant, nor any kind of fructification but the capsular.

5. MARCHANTIA.

Common receptacle of the *fruit* pedunculated peltate, bearing beneath shortly pedunculated capsules which are pendent, opening at the extremity with about 8 teeth, and filled with *seeds* and *spiral filaments*. *Anthers* (?) oblong, sessile, imbedded in a flat carnose sessile or pedunculated papillary disk. —*Gemmæ* are also abundant in this genus on the frond, lenticular, contained in variously shaped receptacles, and germinating even while on the parent frond.

1. M. *polymorpha*, receptacle of the capsules deeply cut in a stellated manner into about ten narrow segments, that of the anthers pedunculated. *Lightf. p.* 793. *E. B. t.* 210.

Hab. On shady moist rocks, on the banks of rivulets and the sides of wells and sometimes bogs, *Lightf.*

Cups of gemmæ serrated at the margin.

2. M. *hemisphærica*, receptacle of the capsules hemisphærical cloven into about 5 oval segments. *E. B. t.* 503. *Lightf. p.* 796.

Hab. Wet rocks and banks, by the sides of rivulets amongst the mountains, not uncommon, *Lightf.*

3. M. *apdrogyna*, "receptacle of the capsules hemisphærical half four-cleft of four cells," *Sm. E. B. t.* 2545.

Hab. Wet rocks in Scotland, *Dickson, Dr. Stuart,* and *Sir J. E. Smith.*

4. M. *conica*, receptacle of the capsules entire conical ovate somewhat angular, that of the anthers sessile. *Lightf. p.* 797. *E. B. t.* 504.

Hab. Moist shady banks by the sides of rivulets.

Order VI. MUSCI.

Fructification of two kinds. *Capsules*, in an early stage, covered with a calyptra, tipped with a style, which bursts transversely and regularly and rises up with the mostly pedunculated and operculated *capsule*. *Operculum* or *lid* deciduous in most instances; *mouth* of the *capsule* furnished with a single or double *fringe;* containing *seeds* surrounding a columella, destitute of spiral filaments:—and sphærical pedicellated reticulated *bodies*, concealed for the most part in peculiarly shaped leaves, and which have been considered *anthers*.

Plants of small size, of a more or less compactly cellular structure, readily reviving by the application of moisture after being dry, bearing leaves which are very rarely indeed divided, often nerved, entire or toothed, or serrated at the margin.

A. *Peristome none.*

1. ANDRÆA.

Capsule 4-valved, the *valves* cohering at the extremity by means of the persistent *lid*. *Calyptra* irregularly torn. *Musc. Brit.*[a] *t.* 1.

* *Leaves destitute of a nerve.*

1. A. *alpina*, stems branched, leaves obovate suddenly acuminated straight imbricating the stem on every side. *Musc. Brit. p.* 1. *t.* 8. *Jungermannia alpina, Lightf. p.* 787.

Hab. Alpine rocks, not very common.

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[a] Throughout this Order the arrangement, &c., adopted in "*Hooker* and *Taylor's Muscologia Britannica*," are followed.

. A. *rupestris*, stems branched, leaves ovate gradually acuminated, the upper ones falcate. *Musc. Brit. p.* 2. *t.* 8. *Jungermannia rupestris*, *Lightf. p.* 787.
AB. Rocky mountains, not unfrequent.

** *Leaves furnished with a nerve.*

. A. *Rothii*, stems almost simple, leaves lanceolato-subulate falcato-secund fragile, perichætial ones oblong nerveless their margins involute. *Musc. Brit. p.* 2. *t.* 8.
AB. Alpine rocks, not rare.

. A. *nivalis*, stems slightly branched, leaves loosely imbricated lanceolate subfalcate secund, perichætial ones similar to the cauline ones. *Musc. Brit. p.* 2. *t.* 8.
AB. Rocks upon the highest summit of Ben Nevis, on the eastern side, *Hook.*

2. SPHAGNUM.

eceptacle pedunculated, its peduncle resembling a fruitstalk. *Capsule* sessile, entire, its *lid* deciduous, its *mouth* naked. *Calyptra* irregularly torn. *Musc. Brit. t.* 1.

S. *obtusifolium*, branches tumid, leaves ovate obtuse. *Musc. Brit. p.* 3. *t.* 4.
AB. Bogs, common.

S. *squarrosum*, branches attenuated at their extremities, leaves ovato-acuminated squarrose recurved. *Musc. Brit. p.* 4. *t.* 4.
AB. Arlary, *Mr. Arnott*, in fr. Ravelrig-toll, and near N. Queensferry, *Mr. Greville.* Marshes, near Glasgow, *D. Don.*

S. *acutifolium*, branches attenuated, leaves ovato-lanceolate crowded. *Musc. Brit. p.* 4. *t.* 4.
AB. Bogs, plentiful.

S. *cuspidatum*, branches attenuated, leaves lanceolato-subulate lax *Musc. Brit. p.* 4. *t.* 4.
AB. Growing in the water in boggy places.

3. PHASCUM.

ruitstalks terminal. *Lid* persistent. *Calyptra* dimidiate. *Musc. Brit. t.* 1.

* *Shoots creeping; leafless, articulated, branched.*

Ph. *serratum*, shoots branched conferva-like, perichætial leaves lanceolate serrated nerveless. *Musc. Brit. p.* 5. *t.* 5.
AB. Wall top, opposite Blair Adam, Kinross-shire, *Mr. Arnott.* Pastures, Angus-shire, and marshes on Braid hills, *G. Don.*

** *Creeping shoots none.*

† *Leaves more or less subulate.*

Ph. *crispum*, leaves lanceolato-subulate flexuose crisped when dry. *Hook. & Tayl. Musc. Brit. p.* 6. *t.* 5.
AB. Scotland, *G. Don.* Caroline park, on the ground, *Mr. Arnott.*

Ph. *subulatum*, leaves subulato-setaceous straight their nerve

disappearing below the point. *Hook. & Tayl. Musc. Brit. p.* 6. *t.* 5. *Lightf. p.* 694.

Hab. Dry banks.

4. Ph. *axillare*, leaves lanceolato-subulate straight their nerve disappearing below the point, fruit at length lateral. *Musc. Brit. p.* 7. *t.* 5.

Hab. Banks, Angus-shire, *G. Don.*

†† *Leaves more or less ovate.*

(*Fruitstalk entirely immersed among the leaves.*)

5. Ph. *muticum*, leaves ovato-rotundate acuminate concave connivent, the nerve reaching to the point. *Musc. Brit. p.* 7. *t.* 5.

Hab. Banks, not uncommon.

6. Ph. *cuspidatum*, leaves ovato-acuminate erect their nerve reaching to the point. *Musc. Brit. p.* 8. *t.* 5. *Phascum acaulon, Lightf. p.* 693.

β. *piliferum*, leaves hair-pointed.

Hab. Sandy fields, common. β. King's Park, Edinb., *G. Don.* Arthur's Seat, common, *Mr. Greville.*

4. GYMNOSTOMUM.

Fruitstalks terminal. *Mouth* of the *capsule* naked. *Calyptra* dimidiate. *Musc. Brit. t.* 1.

* *Stem elongated, branched.*

1. G. *lapponicum*, leaves linear-lanceolate crisped when dry, the parichætial ones broadly ovate their margins involute, capsule turbinate striated. *Musc. Brit. p.* 10. *t.* 6.

Hab. Summits of Clova, *G. Don.* Mountains E. of Ben Voirlich, *Mr. Arnott.*

2. G. *æstivum*, leaves lanceolate twisted when dry, the perichætial ones broadly ovate their margins involute, capsule oblong smooth. *Musc. Brit. p.* 10. *t.* 6.

Hab. Wet rocks, not uncommon.

3. G. *viridissimum*, leaves broadly lanceolate, capsule ovate, lid obliquely rostrate. *Musc. Brit. p.* 10. *t.* 6.

Hab. Inch Keith, *D. Don.*

4. G. *curvirostrum*, leaves subulate, capsule turbinate ovate, lid obliquely rostrate. *Musc. Brit. p.* 11. *t.* 6.

Hab. Moist rocks, not rare.

** *Stems short, simple.*

5. G. *ovatum*, leaves ovate erect concave piliferous their nerve furnished with a granuliferous membrane, lid rostrate. *Musc. Brit. p.* 11. *t.* 7.

Hab. Banks and walls. Dumbarton and Angus-shire, *D. Don.* Very common, *Mr. Greville.*

6. G. *truncatulum*, leaves ovate apiculate patent nearly plane,

lid obliquely rostrate. *Musc. Brit. p.* 12. *t.* 7. *Bryum truncatulum, Lightf. p.* 730.

[AB. Corn-fields and banks, common.

. G. *Heimii,* leaves lanceolate serrated at the point, capsule ovato-oblong, lid obliquely rostrate. *Musc. Brit. t.* 12. *f.* 7.

[AB. Banks, especially near the sea.

. G. *fasciculare,* leaves oblongo-acuminate nearly plane sub-serrated marginated, capsule pyriform, lid plane sub-mammillate. *Musc. Brit. p.* 12. *t.* 8.

AB. Moors, near Forfar, plentiful, *D. Don.* Lismore, *Capt. Carmichael.* Cleish hills, *Mr. Arnott.*

. G. *pyriforme,* leaves ovato-acuminate concave serrated not marginated, capsule roundish obovate, lid convex shortly rostrate. *Musc. Brit. p.* 13. *t.* 7. *Bryum pyriforme, Lightf. p.* 718.

AB. Ditches, banks, &c., common.

). G. *tenue,* stem scarcely any, outer leaves very short ovato-lanceolate, inner ones lineari-lanceolate, all of them erect obtuse with a strong nerve disappearing below the summit, capsule oblong. *Musc. Brit. p.* 13. *t.* 7.

AB. Buchanan Castle; on sandstone rocks above Blantyre Priory, near Glasgow, *D. Don.* Auchindenny Woods, near Pennycuik, and Den of Dupplin, *Mr. Arnott.*

. G. *Donianum,* stem very short, leaves subulate straight, capsule turbinate. *Musc. Brit. p.* 13. *t.* 7.

AB. Sandstone rocks in the Den of Dupplin, *G. Don.*

. G. *microstomum,* leaves broadly subulate, their margin involute above flexuose crisped when dry, capsule elliptical contracted at the mouth, lid subulate incurved. *Musc. Brit. p.* 13. *t.* 7.

B. Clova mountains, also Ben High and Ben Nevis, *D. Don.* Glen Targ, Perthshire? *Mr. Arnott.*

5. ANICTANGIUM.

uitstalks terminal. Mouth of the *capsule* naked. *Calyptra* mitriform. *Musc. Brit. p.* 14. *t.* 1.

A. *ciliatum,* leaves ovate much lengthened out and diaphanous at the points, those of the perichætium laciniated at their extremity. *Musc. Brit. p.* 14. *t.* 6.

B. Rocks, especially in subalpine places.

B. *Mouth of the capsule having a peristome.*

a. *Peristome single.*

6. DIPHYSCIUM.

uitstalk terminal. *Capsule* gibbous. *Peristome* single, forming plicated, membranous, truncated cone. *Calyptra* mitriform. *Musc. Brit. p.* 15. *t.* 1.

1. D. *foliosum*, *Hook.* & *Tayl. Musc. Brit. p.* 16. *t.* VIII. *Buxbaumia foliosa*, *E. B. t.* 329. *Phascum maximum*, *Lightf. p.* 693.

Hab. Among rocks in alpine situations. Lorn, *Capt. Carmichael.*

Growing in dense patches. *Stems* short, scarcely any. *Leaves* minute, ligulate, with a strong nerve. Those of the *perichætium* large, erect, membranous, nerved, lacerated, concealing the large oblique almost sessile *capsule.*

7. TETRAPHIS.

Fruitstalk terminal. *Peristome* single, consisting of four equidistant upright teeth. *Calyptra* mitriform. *Musc. Brit. p.* 16. *t.* 1.

1. T. *pellucida*, stems elongated, leaves ovato-acuminate those of the perichætium lanceolate, capsule cylindrical. *Musc. Brit. p.* 16. *t.* 8. *Bryum pellucidum*, *Lightf. p.* 724.

Hab. On the ground, trunks of trees, posts, rails, &c. especially in woods.

2. T. *ovata*, stems very short, leaves few linear slightly incrassated upwards those of the perichætium ovate obtuse, capsule ovate. *Musc. Brit. p.* 17. *t.* 8.

Hab. On sandstone rocks by the side of the Black Devon, a small river in Fifeshire, *Maugh.* Arniston woods, Edinburgh; Kirkcaldy Den, and under a waterfall at Killside, Fifeshire, *Mr. Arnott.* Fall of the Aray, *Mr. Borrer.* Auchindenny woods, abundant, *Mr. Greville.*

8. SPLACHNUM.

Fruitstalks terminal. *Peristome* single, of eight double teeth. *Capsule* with an evident apophysis. *Calyptra* mitriform, without furrows. *Musc. Brit. p.* 18. *t.* 1.

* *Leaves acuminate.*

1. S. *sphæricum*, leaves ovato-rotundate acuminate slightly serrated, apophysis ovato-globose wider than the capsule. *Musc. Brit. p.* 18. *t.* 9. *Splachnum vasculosum*, *Lightf. p.* 697.

Hab. Dung of various animals, especially in mountainous situations.

2. S. *tenue*, leaves ovato-acuminate serrated, apophysis obconical narrower than the capsule, columella exserted. *Musc. Brit. p.* 19. *t.* 9.

Hab. On the ground in the Highland mountains; never on dung.

3. S. *mnioides*, leaves ovato-lanceolate much acuminated concave entire, apophysis obovate nearly as narrow as the capsule. *Musc. Brit. p.* 20. *t.* 9.

α. *minus*, of a deeper colour with shorter stems. *S. mnioides*, *Hedw.*

β. *majus*, of a paler colour with elongated stems. *S. fastigiatum*, *Dicks.*

Hab. On the ground in the Highland mountains, not uncommon. Ben Lawers, abundant.

4. S. *angustatum*, leaves ovato-lanceolate much acuminated serrated, apophysis obovate somewhat narrower than the cap-

sule, fruitstalks scarcely longer than the leaves. *Musc. Brit. p.* 20. *t.* 9.

HAB. Cow-dung by Loch Awen, *Dickson.* Scotch mountains, *Mr. Mackay.* Cairn-gorum, on the turfy soil, *Hook.* Clova mountains, *G. Don.*

. S. *ampullaceum*, leaves ovato-lanceolate acuminate serrated, apophysis inversely flagon-shaped twice as wide as the capsule. *Musc. Brit. p.* 20. *t.* 9. *Lightf. p.* 696.

HAB. Bogs and dung of animals, on the plains as well as in the mountains.

** *Leaves obtuse.*

. S. *vasculosum*, leaves rhombo-rotundate obtuse the nerve disappearing below the point, apophysis globose much wider than the capsule. *Musc. Brit. p.* 21. *Suppl. t.* 1.

HAB. Scotland, *G. Don.* Bog half-way up Ben Lawers, *Mr. J. T. Mackay.*

. *Frœlichianum*, leaves ovate rounded at the points their nerve disappearing before the summit, apophysis obovate much narrower than the capsule. *Hook. & Tayl. Musc. Brit. p.* 21. *t.* 9.

HAB. On Ben High, *Dickson.*

9. CONOSTOMUM.

Fruitstalks terminal. *Peristome* single, of 16 equidistant teeth all united at their summits. *Calyptra* dimidiate. *Musc. Brit. p.* 22. *t.* 10.

. C. *boreale*, stems rather short, leaves lanceolate acuminated carinated slightly toothed. *Hook. & Tayl. Musc. Brit. p.* 22. *t.* 10.

HAB. Summits of the Highland mountains. Very fine upon Ben Lomond.

10. POLYTRICHUM.

Fruitstalks terminal. *Peristome* single, of 32 or 64 equidistant incurved teeth, their summits united by a horizontal membrane. *Calyptra* dimidiate, small. *Musc. Brit. p.* 23. *t.* 1.

* *Calyptra naked.*

. P. *undulatum*, leaves lanceolate undulate their margins plane denticulated their nerve winged, capsule cylindrical curved, lid subulate. *Musc. Brit. p.* 23. *t.* 10. *Bryum undulatum, Lightf. p.* 722.

HAB. Moist shady banks, and in woods.

. P. *hercynicum*, leaves lanceolate rigid entire their sides involute, their nerve broad impressed with furrows, capsule oblong suberect, lid conical. *Musc. Brit. p.* 24. *t.* 10.

HAB. Mountains. Ben Lomond, near the summit, plentiful.

** *Calyptra covered with succulent filaments.*

† *Leaves entire, their margins involute.*

. P *.piliferum*, leaves lanceolato-subulate their margins involute

entire terminating in a pellucid hair-like point, capsule ovate obtusely quadrangular furnished with an apophysis, lid conical. *Musc. Brit. p.* 24. *t.* 10.

Hab. Heaths.

4. P. *juniperinum*, leaves lanceolato-subulate their margins involute entire their points acuminated coloured subserrated, capsule ovate obtusely quadrangular furnished with an apophysis, lid conical. *Musc. Brit. p.* 25. *t.* 10.

Hab. Heathy places.

5. P. *septentrionale*, leaves lineari-subulate obtuse their margins especially towards the top involute subserrulate, capsule ovate subangulate furnished with a minute apophysis, lid conical acuminate. *Musc. Brit. p.* 25. *t.* 10.

Hab. Highest summit of Ben Nevis. On Ben Lomond, rare.

†† *Leaves serrated, their margins plane.*

6. P. *commune*, stems elongated, leaves patent lineari-subulate their margins plane serrated as well as the points of the keels, capsule erect ovate quadrangular with an evident apophysis. *Musc. Brit. p.* 26. *t.* 10. *Lightf. p.* 698.

Hab. Heaths, in dry and wet places, varying much in size according to its place of growth.

7. P. *alpinum*, stems elongated branched, leaves patent subulato-lanceolate the margins plane serrated as well as the points of the keels, capsule sub-ovate with an indistinct apophysis. *Musc. Brit. p.* 27. *t.* 11. *Lightf. p.* 703.

Hab. Mountains, in rather elevated situations.

8. P. *urnigerum*, stems elongated branched, leaves erect patent lanceolate acute their margins plane serrated, capsule erect cylindrical destitute of an apophysis. *Musc. Brit. p.* 27. *t.* 11. *Lightf. p.* 703.

Hab. Hilly places. In the Highlands, frequent.

9. P. *aloides*, stems short, leaves linear-lanceolate obtuse their margins plane serrated principally at the extremity and at the summit of the keels, capsule nearly erect cylindrical without an apophysis. *Musc. Brit. p.* 28. *t.* 11.

Hab. Moist shady banks, abundant.

10. P. *nanum*, stems short, leaves linear-lanceolate obtuse their margins serrated principally at the extremity as well as the summit of the keels, capsule nearly erect subglobose. *Musc. Brit. p.* 28. *t.* 11. *Lightf. p.* 701.

Hab. Moist banks, often with *P. aloides*, from which it is only distinguishable by the rounder *capsules*.

11. CINCLIDOTUS.

Fruitstalks terminal. *Peristome* single, of 32 filiform, twisted teeth, anastomosing at their base. *Calyptra* mitriform. *Musc. Brit. p.* 29. *t.* 1.

. C. *fontinaloides. Musc. Brit. p.* 29. *t.* 11. *Fontinalis minor, Lightf. p.* 695.

IAB. On stones and wood in water. Collington, *G. Don.* Border of Lochnell, *Capt. Carmichael.*

our to six inches long, dark green. *Leaves* elliptico-lanceolate, acuminate, margined, entire, flexuose, curled when dry, nerve stout. *Fruitstalks* shorter than the oblong *capsule.*

12. TORTULA.

ruitstalks terminal. *Peristome* single, of 32 filiform, twisted teeth, more or less united at the base by a tubiform *membrane. Calyptra* dimidiate. *Hook.* & *Tayl. Musc. Brit. p.* 30. *t.* 2.

. T. *muralis,* stems short, leaves patent lineari-oblong their margins recurved, nerve produced beyond the leaf into a white hair-like point, capsule oblong, lid conical acuminate. *Musc. Brit. p.* 30. *t.* 11. *Bryum murale, Lightf. p.* 720.

IAB. On walls and stones.

. T. *ruralis,* stems elongated, leaves oblong carinated patent and recurved, nerve terminating in a long generally diaphanous serrated point, capsule oblong, lid subulate, teeth of the peristome united below into a tube. *Musc. Brit. p.* 30. *t.* 12. *Bryum rurale, Lightf. p.* 720.

IAB. Roofs of houses, on trees and banks.

. T. *subulata,* stems very short, leaves oblongo-lanceolate acuminate the nerve excurrent often forming an apiculus, capsule cylindrical, lid conico-subulate, teeth of the peristome united nearly to the apex into a long tube. *Musc. Brit. p.* 31. *t.* 12. *Bryum subulatum, Lightf. p.* 719.

IAB. Banks, common.

. T. *stellata,* stems scarcely any, leaves ovate concave, nerve running beyond the points, capsule ovate striated, lid rostrate. *Musc. Brit. p.* 32. *t.* 12.

IAB. Scotland, *Dickson.*

. T. *tortuosa,* stems elongated branched, leaves lineari-subulate carinate undulate much twisted when dry, capsule cylindrical, lid rostrate. *Musc. Brit. p.* 32. *t.* 12. *Bryum tortuosum, Lightf. p.* 727.

IAB. Rocky places. Pentland hills, *Mr. Greville.* Angus-shire, *G. Don.*

. T. *fallax,* stems elongated branched, leaves lanceolato-subulate patent or recurved their margins reflexed, capsule oblong, lid rostrate nearly as long as the capsule. *Musc. Brit. p.* 32. *t.* 12.

IAB. Walls, banks, and in fields among grass.

. T. *revoluta,* stems short, leaves lanceolate acuminate the margins of those of the stem remarkably revolute, perichætial

leaves sheathing, their sides involute, capsule oblong, lid rostrate shorter than the capsule. *Musc. Brit. p.* 33. *t.* 12.

Hab. Banks and wall-tops.

8. T. *unguiculata*, stems branched, leaves linear-lanceolate obtuse their nerve produced into an apiculus, the margins nearly plane, capsule oblong, lid rostrate nearly as long as the capsule. *Musc. Brit. p.* 33. *t.* 12.

Hab. Banks and hedges.

9. T. *convoluta*, stems short, leaves oblong rather obtuse, nerve not produced beyond the point the margins plane or slightly incurved, perichætial leaves sheathing acute remarkably convolute, capsule oblong, lid rostrate. *Musc. Brit. p.* 34. *t.* 12.

Hab. Moist banks. Pastures near Clyde Iron-works, *D. Don.*

13. ENCALYPTA.

Fruitstalks terminal. *Peristome* single, of 16 teeth. *Calyptra* campanulate, smooth, entirely inclosing the mature capsule. *Musc. Brit. p.* 34. *t.* 2.

1. E. *streptocarpa*, stems elongated, leaves elliptico-lanceolate somewhat obtuse their nerve not produced beyond the summits, capsule cylindrical spirally striated, calyptra toothed at the base. *Musc. Brit. p.* 34. *t.* 13.

Hab. Stony mountainous countries. Arthur's Seat and Pentland hills, but without fr., *Mr. Arnott.* Woods at Dunkeld, in the Duke of Athol's grounds, in a fine state of *fructification.*

2. E. *ciliata*, stems short, leaves oblong acuminate, nerve more or less produced beyond the summit, capsule cylindrical, calyptra toothed at the base. *Musc. Brit. p.* 35. *t.* 13.

α. *concolor*, leaves mostly apiculate, their points of the same colour, capsule smooth. *E. ciliata of authors.*

β. *alpina*, leaves much acuminated, their points diaphanous, capsules smooth. *E. alpina, E. B.*

Hab. Elevated mountains, α. and β. not rare. Pentland hills, abundant, *Mr. Greville.*

3. E. *vulgaris*, stems short, leaves oblongo-elliptical obtuse their nerve produced a little beyond the summits, capsule cylindrical smooth, calyptra entire at the base. *Musc. Brit. p.* 35. *t.* 13. *Bryum extinctorium, Lightf. p.* 718.

Hab. Banks, walls, and rocks. Walls about Edinb., frequent, *Mr. Greville.* Fissures of rocks, Lorn, *Capt. Carmichael.*

14. GRIMMIA.

Fruitstalks terminal. *Peristome* of 16 entire, or perforated, rarely cleft, equidistant teeth. *Calyptra* mitriform. *Musc. Brit. p.* 36. *t.* 2.

* *Fruitstalks scarcely any.*

1. Gr. *apocarpa*, stems branched, leaves ovato-lanceolate re-

curvo-patent their margins reflexed, the perichætial ones having their nerve disappearing immediately below their summits, capsule ovate sessile, lid shortly rostrate. *Musc. Brit. p.* 36. *t.* 10.

α. *nigro-viridis*, leaves broader blackish green. *Gr. apocarpa of authors. Bryum apoc., Lightf. p.* 716.

β. *stricta*, stem elongated, leaves narrower reddish. *Gr. stricta, Turn.*

Hab. Trees and rocks, common. β. Alpine rocks.

2. Gr. *maritima*, stems short pulvinate, leaves lanceolate acuminate nearly erect crisped when dry their margins recurved, the perichætial ones with their nerve running beyond the summits, capsule ovate sessile, lid shortly rostrate. *Musc. Brit. p.* 37. *t.* 10.

Hab. Rocks by the sea-shore. Most abundant in Lorn and Appin, *Capt. Carmichael.*

** *Fruitstalks longer than the leaves.*

† *Fruitstalks curved.*

3. Gr. *pulvinata*, stems short pulvinate, leaves narrow-elliptical their margins recurved their points diaphanous filiform, capsule ovate striated, fruitstalks curved, lid conical acuminate. *Musc. Brit. p.* 38. *t.* 13. *Bryum pulvinatum, Lightf. p.* 735.

Hab. Walls and rocks.

†† *Fruitstalks straight.*

4. Gr. *ovata*, stems slightly branched, leaves lanceolato-subulate gradually produced into long diaphanous hair-like points their margins incurved, capsule ovate, teeth of the peristome often perforated and split, lid rostrate. *Musc. Brit. p.* 39. *t.* 13.

Hab. Alpine rocks.

5. Gr. *Doniana*, stems short, leaves lanceolato-subulate produced into long diaphanous hair-like points their margins incurved, capsule ovate, teeth of the peristome quite entire, lid shortly rostrate. *Musc. Brit. p.* 40. *t.* 10.

Hab. Rocks in mountainous districts.

15. PTEROGONIUM.

Fruitstalks lateral. *Peristome* single, of 16 entire equidistant teeth. *Calyptra* dimidiate. *Musc. Brit. p.* 40. *t.* 2.

1. Pt. *gracile*, branches fascicled curved, leaves broadly ovate acute concave, their margins plane, summits serrated faintly two-nerved at the base, lid conical. *Musc. Brit. p.* 41. *t.* 14. *Hypnum gracile, Lightf. p.* 766.

Hab. Rocks in subalpine situations, not uncommon.

2. Pt. *filiforme*, stems irregularly branched curved, leaves ovate subacuminated concave their margins recurved serrated, nerve single or forked short faint, lid conical. *Musc. Brit. p.* 41. *t.* 14.

Hab. Mountains. Trunks of trees on the ascent of Cairn Gorum. Rocks, *D. Don.* Lowlands, *Mr. Mackay.*

16. WEISSIA.

Fruitstalks terminal. *Peristome* single of 16 entire equidistant teeth. *Calyptra* dimidiate. *Musc. Brit. p.* 42. *t.* 2.

* *Capsule with an apophysis.*

1. W. *splachnoides*, leaves lingulate rounded at the top their nerve disappearing below the summit, capsule obovate, apophysis obconical, lid convex acuminulate. *Musc. Brit. p.* 42. *t.* 14.

Hab. Turf bogs on the Scotch Alps, *Dicks.* Ben Lawers, *G. Don.* Sparingly on Ben Lomond, *D. Don.*

2. W. *Templetoni*, leaves ovato-lanceolate acute, capsule (with the apophysis) narrowly pyriform, lid nearly plane. *Musc. Brit. p.* 42. *t.* 14.

Hab. Oozy, shaded rocks, in Lorn and Appin, *Capt. Carmichael.*

** *Capsule destitute of an apophysis.*

† *Leaves nerveless.*

3. W. *nuda*, stems scarcely any, leaves ovato-lanceolate nerveless, capsule ovate gibbous on one side cernuous. *Musc. Brit. p.* 43. *t.* 14.

Hab. Clayey places; banks of the Tay, near Perth, *G. Don.*

†† *Leaves furnished with a nerve.*

+ *Leaves ovate or lanceolate.*

4. W. *nigrita*, stems elongated, leaves lanceolate acuminated, capsule obovate cernuous gibbous sulcate, lid hemisphærical obtusely pointed. *Musc. Brit. p.* 43. *t.* 14.

Hab. Moist banks. In the Highland mountains, frequent, *G.* and *D. Don.*

5. W. *lanceolata*, stems somewhat elongated, leaves ovate with an excurrent nerve almost piliferous, capsule ovate, lid obliquely rostrate. *Musc. Brit. p.* 44. *t.* 14.

Hab. Wall-top at Kirkliston, *Mr. Arnott.*

++ *Leaves linear or subulate.*

6. W. *striata*, leaves linear denticulate crisped when dry capsule ovato-turbinate sulcate erect, lid obliquely subulate. *Musc. Brit. p.* 45. *t.* 15.

Hab. Ben Voirlich, *Mr. Arnott.* Moist fissures of rocks in Lorn, *Capt. Carmichael.* Mountains of Angus-shire, &c., *G. Don.*

7. W. *cirrata*, leaves broadly subulate crisped when dry, their margins recurved, capsule ovate, lid rostrate. *Musc. Brit. p.* 46. *t.* 15. *Bryum cirratum, Lightf. p.* 728.

Hab. Posts, rails, rocks, and even trees.

8. W. *curvirostra*, leaves linear-subulate, capsule ovato-cylindraceous, lid rostrate. *Musc. Brit. p.* 46. *t.* 15.

Hab. Among rocks and on banks. Angus-shire, *G. Don.* Appin, *Capt. Carmichael.* King's Park, Edinb., &c., *Mr. Arnott.*

9. W. *crispula*, stems divided, leaves from a broad base lanceolato-subulate crisped when dry their margins incurved, capsule ovato-elliptical, lid rostrate. *Musc. Brit. p.* 46. *t.* 15.

Hab. Rocks. Pentland hills, &c., *Mr. Arnott.*

10. W. *controversa*, stems nearly simple, leaves linear-subulate crisped when dry their margins incurved, capsule ovato-elliptical, lid rostrate. *Musc. Brit. p.* 47. *t.* 15. *Bryum viridulum*, *Lightf. p.* 731.

Hab. Banks, common.

11. W. *recurvata*, stems scarcely any, leaves subulate, capsule broadly ovate, fruitstalks curved, lid rostrate. *Musc. Brit. p.* 47. *t.* 15.

Hab. Rocks. Habbie's How, Pentlands; Cliesh hills, &c., *Mr. Arnott.* On sandstone, banks of the Esk and Isla; Bilston burn, *G. Don.* Above Blantyre priory, *D. Don.*

12. W. *acuta*, stems branched, leaves subulato-setaceous subsecund rigid canaliculate, capsule turbinate, lid rostrate. *Musc. Brit. p.* 48. *t.* 15.

Hab. Rocks in alpine situations.

17. DICRANUM.

Fruitstalks terminal (except in *D. adiantoides* and *D. taxifolium*). *Peristome* single, of 16 bifid equidistant teeth. *Calyptra* dimidiate. *Musc. Brit. p.* 48. *t.* 2.

A. *Leaves inserted in a bifarious manner.* (*Fissidens, Hedw.*)

1. D. *bryoides*, fruitstalks terminal, perichætial leaves resembling the cauline ones. *Musc. Brit. p.* 49. *t.* 16. *Hypnum bryoides*, *Lightf. p.* 739.

Hab. Moist banks, common.

2. D. *adiantoides*, fruitstalks lateral, perichætial leaves ovate slightly convolute pointed. *Musc. Brit. p.* 51. *t.* 16.

Hab. Mossy grounds and wet banks.

3. D. *taxifolium*, fruitstalks radical, perichætial leaves ovate sheathing involute pointed. *Musc. Brit. p.* 51. *t.* 16. *Hypnum taxif.*, *Lightf. p.* 740.

Hab. Moist banks.

B. *Leaves inserted on all sides of the stem.*

a. *Leaves destitute of a nerve.*

4. D. *glaucum*, stems branched fastigiate, leaves erecto-patent ovato-lanceolate straight nerveless entire, capsule ovate cernuous, lid rostrate. *Musc. Brit. p.* 52. *t.* 16. *Bryum glaucum*, *Lightf. p.* 723.

Hab. Pentland hills, *Mr. Arnott.* Lorn, *Capt. Carmichael.* Alpine moors, common, *D. Don.*

b. *Leaves furnished with a nerve.*

* *Leaves apiculate or piliferous.*

5. D. *latifolium*, stems short, leaves oblong concave entire apiculate or piliferous, capsule erect ovato-oblong, lid rostrate. *Musc. Brit. p.* 52. *t.* 16.

Hab. Shady banks, near Aberfeldy, *Dickson.*

** *Leaves not apiculate.*

† *Nerve very broad.*

6. D. *cerviculatum*, stems short, leaves lanceolato-subulate entire subsecund their nerve very broad, capsule ovate subcernuous strumose, lid rostrate. *Musc. Brit. p.* 53. *t.* 16.

Hab. Near St. David's, Fifeshire, also in Restenat moss, *Mr. Arnott.* Clayey banks, Daldowie, *D. Don.*

7. D. *flexuosum*, stems nearly simple rigid, leaves lanceolato-subulate acuminated straight their nerve very broad, fruit-stalks flexuose, capsule ovate striated, lid rostrate. *Musc. Brit. p.* 53. *t.* 16. *Bryum flexuosum, Lightf. p.* 725.

Hab. Marshes, in the plains and on the mountains, abundant.

†† *Nerve narrow.*

+ *Capsule with a struma.*

8. D. *virens*, stems elongated, leaves from a broad sheathing base subulate their margins recurved crisped when dry pointing in all directions, capsule smooth oblongo-cylindrical subcernuous strumose, lid rostrate. *Musc. Brit. p.* 54. *t.* 17.

Hab. Marshy, mountainous situations. Clova and Cairn Gorum, *G. Don.*

9. D. *strumiferum*, stems elongated, leaves from a broad sheathing base subulate entire their margins plane crisped when dry pointing in all directions, capsule furrowed oblongo-ovate subcernuous strumose, lid rostrate. *Musc. Brit. p.* 54. *t.* 17.

Hab. Wet places in the Highland mountains, *D. Don.*

10. D. *falcatum*, stems nearly simple, leaves long lanceolato-subulate falcato-secund nearly entire, capsule ovate subcernuous strumose, lid rostrate. *Musc. Brit. p.* 54. *t.* 17.

Hab. Alpine rocks.

11. D. *Starkii*, stems somewhat branched, leaves lanceolato subulate falcato-secund entire, capsule oblongo-ovate suberect strumose, lid rostrate. *Musc. Brit. p.* 55. *t.* 17.

Hab. Alpine rocks.

++ *Capsule without a struma.*

12. D. *flavescens*, stems branched, leaves long lanceolate serrulate pointing in all directions crisped when dry, capsule oblong erect, lid rostrate. *Musc. Brit. p.* 55. *t.* 17.

Hab. Wet sandy places. Near Collington, *Mr. Greville.* Appin, *Capt. Carmichael.*

13. D. *squarrosum*, stems somewhat branched, leaves from a broad sheathing base lanceolate obtuse recurved and patent directed to every side crisped when dry, capsule ovate subcernuous, lid rostrate. *Musc. Brit. p.* 55. *t.* 17.

Hab. Very wet situations upon the mountains.

14. D. *pellucidum*, stems branched, leaves lanceolate their margins slightly undulated serrated rather obtuse pointing in all directions, capsule ovate subcernuous, lid rostrate. *Musc. Brit. p.* 55. *t.* 17.

Hab. Sides of streams and rivers. Angus-shire, *G. Don.* Pentland hills, and Collington, *Mr. Greville.*

15. D. *spurium*, stems elongated, leaves fasciculated concave erecto-patent directed to every side ovate, the superior ones lanceolate serrulate, capsule oblong curved, lid rostrate. *Musc. Brit. p.* 56. *t.* 17.

Hab. Bogs, Kinnordy, *C. Lyell, Esq.* Angus-shire, *G. Don.*

16. D. *crispum*, stems short, leaves from a sheathing base setaceous nearly distichous flexuoso-recurved crisped when dry, capsule ovate erect, lid with a long beak. *Musc. Brit. p.* 56. *t.* 17.

Hab. Highlands, *G. Don.* Bog between Paisley and Glasg., *D. Don.*

17. D. *Scottianum*, stems branched, leaves erecto-patent directed to every side subulate their margins plane subserrated crisped when dry, capsule ovato-cylindraceous nearly erect, lid with a long beak. *Musc. Brit. p.* 56. *t.* 18.

Hab. Highlands. Clova mountains, rare, *G. Don.*

18. D. *polycarpum*, stems branched, leaves patent directed to every side lanceolato-subulate their margins recurved flexuose subserrulate crisped when dry, capsule obovate subcernuous, lid rostrate. *Musc. Brit. p.* 57. *t.* 18.

Hab. Ben Lawers, *G. Don.* On rocks, Appin and Lorn, *Capt. Carmichael.* Pentland hills, *Mr. Greville.*

19. D. *undulatum*, stems elongated, leaves nearly plane lanceolate attenuated serrulate at the points transversely undulated, capsule cylindraceous cernuous, lid with a long beak. *Musc. Brit. p.* 57. *t.* 18.

Hab. Marshy places, among the mountains especially.

20. D. *scoparium*, stems elongated, leaves narrow subulate canaliculate secund, capsule cylindraceous arched cernuous, lid with a long beak. *Musc. Brit. p.* 57. *t.* 18. *Bryum scoparium, Lightf. p.* 721.

α. *majus*, stems 3—5 inches in length, leaves falcato-secund. *D. majus, Turn.*

β. *fuscescens*, half the size of the preceding, leaves subsecund narrower somewhat crisped when dry. *D. fuscescens, Turn.*

Hab. Banks and shady places, frequent. β. In moors.

21. D. *varium*, stems short, leaves narrow hastato-lanceolate, capsule ovate, lid rostrate. *Musc. Brit. p.* 58. *t.* 17.

α. *viride*, leaves pointing in all directions lanceolate green, capsules subcernuous. *D. varium, Hedw.*

β. *rufescens*, leaves subsecund lanceolato-subulate reddish, capsules erect. *D. rufescens, Turn.*

Hab. Moist banks and moors.

22. D. *heteromallum*, stems branched, leaves subulate falcato-secund nearly entire, capsule ovate subcernuous, lid with a long beak. *Musc. Brit. p.* 59. *t.* 18. *Bryum heteromallum, Lightf. p.* 726.

Hab. Moist banks.

18. TRICHOSTOMUM.

Fruitstalks terminal. *Peristome* of 16 equal teeth divided to the base, or 32 placed together in pairs. *Calyptra* mitriform. *Musc. Brit. p.* 59. *t.* 2.

* *Fruitstalks curved.*

1. Tr. *patens*, stems elongated, leaves lanceolate acuminate carinated their margins recurved, capsule ovate sulcated, fruitstalks curved, lid conical. *Musc. Brit. p.* 60. *t.* 19 (excluding the Syn. of *Tr. funale Schwægr.*).

β. With long diaphanous hair-like points. *Tr. funale, Schwægr.*

Hab. Highland mountains. β. Upon Trap rock on a hill side, Lorn, *Capt. Carmichael.*

** *Fruitstalks straight.*

† *Leaves with diaphanous points.*

2. Tr. *lanuginosum*, stems elongated subpinnate, leaves lanceolato-subulate acuminate, their long diaphanous points serrated margins recurved, capsules ovate, fruitstalks short on lateral branches, lid rostrate. *Musc. Brit. p.* 60. *t.* 19. *Bryum hypnoides, Lightf. p.* 732.

Hab. Mountains, abundant.

3. Tr. *canescens*, stems elongated irregularly branched, leaves ovato-lanceolate, their diaphanous acuminated points slightly serrated, capsule ovate, teeth of the peristome very long and filiform, lid subulate. *Musc. Brit. p.* 61. *t.* 19.

Hab. Heaths and mountainous plains.

4. Tr. *heterostichum*, stems elongated branched, leaves ovato-lanceolate, their diaphanous acuminated points slightly serrated, capsule oblong, teeth of the peristome rather short, lid rostrate. *Musc. Brit. p.* 61. *t.* 19.

Hab. Stones in mountainous districts.

5. Tr. *microcarpon*, stems elongated branched, leaves lanceolate their diaphanous acuminated points slightly serrated, capsule oblong, teeth of the peristome rather short, lid rostrate. *Musc. Brit. p.* 61. *t.* 19.

Hab. Rocks, frequent.

†† *Leaves never diaphanous at their points.*

6. Tr. *aciculare*, stems elongated branched, leaves lanceolate obtuse serrulated at the points, their nerve disappearing below the summit, capsule oblong, lid rostrate. *Musc. Brit. p.* 62. *t.* 19. *Bryum aciculare, Lightf. p.* 725.

Hab. In rivulets, or on very wet stones and rocks.

7. Tr. *fasciculare*, stems elongated branched, leaves lanceolate entire their summits never diaphanous their margins recurved, capsule ovato-oblong, lid rostrate. *Musc. Brit. p.* 62. *t.* 19.

Hab. Rocks among the mountains.

8. Tr. *polyphyllum*, stems branched, leaves lanceolato-subulate their margins recurved serrated above very much crisped when dry, capsule oblong, lid rostrate. *Musc. Brit. p.* 62. *t.* 19.

Hab. Rocks and walls in mountainous places.

19. LEUCODON.

Fruitstalks lateral. *Peristome* single, of 32 teeth closely united in pairs. *Calyptra* dimidiate. *Musc. Brit. p.* 63. *t.* 2.

1. L. *sciuroides*, leaves closely imbricated ovato-cordate acuminate striated, capsule oblong. *Musc. Brit. p.* 63. *t.* 20.

Hab. Trunks of trees, near Dunkeld, rare, *G. Don.*

20. DIDYMODON.

Fruitstalks terminal. *Peristome* single, of 16 or 32 teeth approaching in pairs, or united at the base. *Calyptra* dimidiate. *Musc. Brit. p.* 64. *t.* 2.

* *Capsules inclined.*

1. D. *purpureum*, stems scarcely branched, leaves lanceolate acuminate carinated their margins recurved entire, capsule ovato-cylindraceous oblique substrumose furrowed when dry, lid conical. *Musc. Brit. p.* 65. *t.* 20. *Dicranum, Hedw. Bryum purp., Lightf. p.* 734.

Hab. On the ground and moist banks, abundant.

2. D. *inclinatum*, leaves bifarious from a sheathing base subulate, capsule ovate inclined, lid conical. *Musc. Brit. p.* 65. *t.* 20.

Hab. Rocky places. Near Barrie, Angus-shire, *D. Don.*

** *Capsules erect.*

3. D. *flexifolium*, stems more or less elongated, leaves oblongo-ovate flexuose strongly serrated at the point, capsules erect cylindraceous, lid rostrate. *Musc. Brit. p.* 66. *t.* 20.

Hab. Near Oban, on the ground, *Capt. Carmichael.*

4. D. *rigidulum*, leaves closely imbricated on all sides lanceolate much acuminated carinated with the rigid nerve running beyond the point, capsule oblongo-ovate erect, lid rostrate. *Musc. Brit. p.* 67. *t.* 20.

Hab. Walls and rocks. Angus-shire, *G. Don.*

5. D. *trifarium*, leaves rather distant somewhat trifarious lanceolate rather obtuse carinated with the nerve scarcely reaching to the point, capsule oblongo-ovate erect, lid rostrate. *Musc. Brit. p.* 67. *t.* 20.

Hab. Moist banks. Ravines of Lorn, *Capt. Carmichael.* Pentlands and coast of Fife, *Mr. Greville.* Highlands, *G. Don.*

6. D. *capillaceum*, stems elongated, leaves nearly distichous subulato-setaceous, capsule erect ovato-cylindraceous, lid conical. *Musc. Brit. p.* 67. *t.* 20.

Hab. Banks and rocks in mountainous situations.

7. D. *heteromallum*, stems rather short, leaves subsecund subulate, capsule ovato-cylindraceous, lid conical. *Musc. Brit. p.* 68. *t.* 20.

Hab. Pentland hills and Fifeshire coast, *Mr. Greville.* Kinross-shire, Loch Earne, &c. *Mr. Arnott.*

b. *Peristome double.*

21. FUNARIA.

Fruitstalks terminal. *Peristome* double oblique; the *outer* of 16 teeth, the inner of 16 teeth opposite to those of the outer. *Musc. Brit. p.* 69. *t.* 2.

1. F. *hygrometrica*, leaves very concave ovate apiculate entire, nerve excurrent, fruitstalk curved flexuose. *Musc. Brit. p.* 69. *t.* 20.

Hab. Old walls and buildings, and dry and barren soils in almost every situation.

2. F. *Muhlenbergii*, stems short, leaves concave ovate suddenly acuminated serrated, nerve disappearing below the point, fruitstalks straight. *Musc. Brit. p.* 69. *t.* 20.

Hab. Among rocks, principally calcareous. Rocks of Lismore, not rare, *Capt. Carmichael.*

22. ZYGODON.

Fruitstalks terminal. *Peristome* double; the *ext.* of 16 teeth approaching in pairs, the *int.* of as many horizontal ciliary processes. *Calyptra* dimidiate, glabrous. *Musc. Brit. p.* 70. *t.* 3.

1. Z. *conoideum*, *Musc. Brit. p.* 71. *t.* 21.

Hab. Rare. Trunks of trees, near Inverary. Ash trees and hazel bushes, Lorn, *Capt. Carmichael.*

Tufted. *Leaves* erecto-patent, ovate and lanceolate, dotted, entire; the nerve reaching to the point. *Capsule* ovate, erect, with a slight apophysis, furrowed.

23. ORTHOTRICHUM.

Fruitstalks terminal. *Peristome* double; the *ext.* of 16 teeth approaching in pairs, the *inner* (usually) of as many ciliary processes lying horizontally. *Calyptra* mitriform, sulcate, more or less hairy. *Musc. Brit. p.* 72. *t.* 2.

* *Peristome without ciliary processes.*

1. O. *anomalum*, leaves lanceolate erecto-patent, fruitstalks exserted, peristome of 8 double teeth, calyptra slightly pilose. *Musc. Brit. p.* 72. *t.* 21.

Hab. Rocks and walls.

2. O. *cupulatum*, leaves lanceolate erecto-patent, capsule nearly sessile, peristome of 16 double teeth, calyptra slightly pilose. *Musc. Brit. p.* 72. *t.* 21.

Hab. Trees and stones.

** *Peristome with* 8 *ciliary processes.*

3. O. *crispum*, leaves lanceolato-subulate much crisped when dry, fruitstalks much exserted, capsule striated, peristome with 8 ciliary processes, calyptra very pilose. *Musc. Brit. p.* 73. *t.* 21.

Hab. Trees and stones.

4. O. *Hutchinsiæ*, leaves lanceolate erect and nearly straight when dry, fruitstalks much exserted, capsule striated, peristome with 8 ciliary processes, calyptra very pilose. *Musc. Brit. p.* 73. *t.* 21.

Hab. Rocks and stones, Lorn and Appin, *Capt. Carmichael.*

5. O. *affine*, leaves patent broadly lanceolate, capsules sessile, peristome with 8 ciliary processes, calyptra subpilose. *Musc. Brit. p.* 74. *t.* 21.

α. *majus*, stems elongated, calyptra, especially above, pilose. *O. affine, Schrad.*

β. *pumilum*, stems very short, calyptra glabrous. *O. pumilum, Swartz.*

Hab. Common on rocks and trees, both α. and β.

*** *Peristome with* 16 *ciliary processes.*

6. O. *diaphanum*, stems short, leaves lanceolate acuminated their points diaphanous, capsule sessile, peristome with 16 ciliary processes, calyptra subpilose. *Musc. Brit. p.* 74. *t.* 21.

Hab. Stone walls, rocks and trees.

7. O. *pulchellum*, stems short, leaves patent narrow-lanceolate crisped when dry, fruitstalks exserted, peristome with 16 slender ciliary processes, calyptra subpilose. *Musc. Brit. p.* 75. *t.* 21.

Hab. Trunks of trees and stones, Lorn, *Capt. Carmichael.* Trees near Dalkeith, *G. Don.* Rosslyn, Arlary, &c. *Mr. Arnott.*

8. O. *rivulare*, stems elongated much branched, leaves broadly lanceolate obtuse, capsules sessile, peristome with 16 slender ciliary processes, calyptra glabrous. *Musc. Brit. p.* 75. *t.* 21.

Hab. Stones in the Cart and in the burn at Calderwood, *D. Don.*

9. O. *striatum*, stems elongated branched, leaves lanceolate patent slightly twisted when dry, capsule sessile ovate smooth, peristome with 16 torulose ciliary processes, calyptra subpilose. *Musc. Brit. p.* 75. *Polytrichum striatum, Lightf. p.* 704.

Hab. Trunks of trees.

10. O. *Lyellii*, stems elongated much branched, leaves long linear lanceolate recurvo-patent much crisped when dry, capsule ob-

long striated, peristome with 16 rather broad distinctly jointed ciliary processes, calyptra very hairy. *Musc. Brit. p.* 76. *t.* 22.

Hab. Trunks of trees. About Arlary, Kinross-shire, on ash and fruit trees, and gooseberry bushes, plentiful; also, in Perthshire, more plentiful than any other *Orthotrichum, Mr. Arnott.* Near Glamis, *D. Don.*

24. NECKERA.

Fruitstalks lateral. *Peristome* double; the *outer* of 16 teeth, the *inner* of 16 cilia, connected only at the very base by a short membrane. *Calyptra* dimidiate.

1. N. *pumila*, leaves ovato-acuminate slightly concave their margins recurved, fruitstalks scarcely longer than the perichætial leaves, capsule oblongo-ovate. *Musc. Brit. p.* 77. *t.* 22.

Hab. Trees, at Inverary, *Mr. Turner* and *Hook.* Angus-shire, *G. Don.* Cliesh woods, Kinross-shire, *Mr. Arnott.*

2. N. *crispa*, leaves oblong acuminulate transversely wrinkled, fruitstalks much exserted, capsule ovate. *Musc. Brit. p.* 78. *t.* 22. *Hypnum crispum, p.* 745.

Hab. Trunks of trees and rocks.

25. ANOMODON.

Fruitstalks lateral. *Peristome* double, consisting of 16 teeth, with the ciliary process arising from each tooth. *Calyptra* dimidiate. *Musc. Brit. p.* 79. *t.* 3.

1. A. *curtipendulum*, leaves ovate acuminate serrulate the nerve disappearing below the point, fruitstalk twice as long as the perichætial leaves, capsule ovate. *Musc. Brit. p.* 79. *t.* 22.

Hab. On the ground, rocks and trees. Pentland hills, *Mr. Greville.* Common in Lorn, *Capt. Carmichael.*

2. A. *viticulosum*, leaves ovato-lanceolate obtuse entire, the nerve reaching to the point, fruitstalks very long, capsule cylindrical. *Musc. Brit. p.* 80. *t.* 22. *Hypnum viticulosum, Lightf. p.* 754.

Hab. Rocks and stones, frequent. In fruit, at Lismore, *Capt. Carmichael.*

26. FONTINALIS.

Fruitstalks lateral. *Peristome* double; the *ext.* consisting of 16 teeth; the *inner* of 16 cilia connected by transverse bars, and forming a reticulated cone. *Calyptra* mitriform. *Musc. Brit. p.* 81. *t.* 3.

1. F. *antipyretica*, leaves nerveless for the most part complicato-carinate. *Musc. Brit. p.* 82. *t.* 22. *Lightf. p.* 695.

Hab. Rivers and lakes. Appin, *Capt. Carmichael.* River Esk, at Rosslyn, and in the Logan water, Pentland hills, *Mr. Greville.*

Used by the Swedes, Linnæus tells us, to stuff between the woodwork of their chimneys, to prevent their catching fire; whence the specific name.

2. F. *squamosa*, leaves nerveless plane or very slightly concave. *Musc. Brit. p.* 82. *t.* 22. *Lightf. p.* 697.

Hab. Subalpine rivulets, common.

3. F. *capillacea*, leaves nerved slightly concave. *Musc. Brit. p.* 83. *t.* 22.

Hab. Alpine rivulets, *Dickson.*

27. BUXBAUMIA.

Capsule oblique, gibbous. *Peristome* double; the *ext.* of numerous, filiform, jointless processes; the *interior* a plicate membranous cone. *Calyptra* mitriform.

1. B. *aphylla. Musc. Brit. p.* 84. *t.* 22.

Hab. On the ground, near Rosslyn, *Mr. E. Maughan.* Wood near Aberdeen, *Mr. Jackson.* Selkirkshire, near the borders of Peeblesshire, *Mr. J. Stewart.*

Peduncles about an inch high, red, tuberculate, arising from a small brown, oblong, apparently scaly bulb; their scales, however, are really leaves, very minute, and cut into a number of capillary segments, membranous, without nerve, but strongly reticulated, and resemble the leaves of some *Jungermanniæ. Capsule* nearly plane above, gibbous beneath, inclined, having at its base a small cylindrical apophysis.

This is a most remarkable plant, having little resemblance to any other moss; and to me it is rendered more interesting, as I was, when a very young Botanist, the first discoverer of it, as a native of Britain. Yet, notwithstanding the labour I had bestowed, in drawing and describing it for the *Flora Londinensis*, I entirely overlooked the true nature of the scale-like processes upon the little bulbs at the base, which Mr. Brown has ascertained to be *leaves.* Noble specimens from Selkirkshire, some with 2 or more peduncles arising from the same bulb, have been communicated to me by the late Mr. J. Stewart of Edinburgh, a gentleman of high botanical attainments, from whom I had hoped to have received much assistance in the course of the present publication; but whose death, unfortunately for science, occurred ere the first sheet was sent to the press. He died at an early age, while on the eve of a voyage to South America, a victim to intense application to literary pursuits.

28. BARTRAMIA.

Fruitstalks terminal. *Capsule* subglobose. *Peristome* double; the *ext.* of 16 teeth; the *interior* of a membrane divided into 16 bifid segments. *Calyptra* dimidiate. *Musc. Brit. p.* 85. .3.

* *Fruitstalks long, straight (not curved).*

1. B. *pomiformis*, leaves patent subulate strongly serrated the nerve reaching to the summit twisted when dry. *Musc. Brit. p.* 85. *t.* 23. *Bryum pomiforme, Lightf. p.* 717.

α. *minor*, stems short, leaves flexuose. *B. pomiformis, Hedw.*
β. *major*, stems much lengthened and branched, leaves longer crisped especially when dry. *B. crispa, Swartz.*
Hab. Heaths and dry banks. β. Principally in subalpine countries.
2. B. *ithyphylla*, stems short, leaves rigid erecto-patent subulato-setaceous almost entire, the nerve half way up passing into the substance of the leaf, straight when dry, fruitstalks much elongated. *Musc. Brit. p.* 86. *t.* 23.
Hab. Dry banks, principally in mountainous situations. Ben Lomond; banks in Sutherland, and on Ben Lᵘyal, *Hook.* Ben Lawers, &c., *G.* and *D. Don.*
3. B. *gracilis*, stems elongated, leaves recurvo-patent lanceolate canaliculate serrated, fruitstalks lateral from innovations. *Musc. Brit. p.* 86. *t.* 23.
Hab. Rocks in alpine districts, not uncommon; especially in wet places, by cascades.
4. B. *fontana*, stems fastigiate, leaves closely imbricated rigid erect broadly ovate or lanceolate acuminated nearly plane serrated, fruitstalks lateral from innovations. *Musc. Brit. p.* 87. *t.* 23. *Mnium fontanum, Lightf. p.* 709.
α. *major*, stems from 3—6 inches in length, leaves broadly ovate acuminated. *B. fontana, Swartz.*
β. *marchica*, stems from half an inch to an inch in length, leaves lanceolate acuminated. *B. marchica, Swartz* and *E. B.*
Hab. Marshy and boggy places, frequent. β. Clova hills, *D. Don.*

** *Fruitstalks very short, curved.*

5. B. *Halleriana*, stems much elongated proliferous, leaves long subulate flexuose serrated above, fruitstalks lateral from innovations very short curved. *Musc. Brit. p.* 87. *t.* 23. *Bryum laterale, Lightf. p.* 727.
Hab. Crevices of rocks in alpine situations, abundant.
6. B. *arcuata*, stems much elongated proliferous, leaves horizontally patent ovato-lanceolate acuminated serrated striated, fruitstalks very short arcuate at length lateral, capsule nearly smooth. *Musc. Brit. p.* 88. *t.* 23.
Hab. Rocks and banks in the Highlands, not uncommon. Abundant along the shores of Loch Lomond. Ben Lawers and Clova, *G. Don.* Moist heathy ground, Lorn and Appin, *Capt. Carmichael.* Cathil Muir, Kinross-shire, rare in fr., *Mr. Arnott.* Pentland hills, without fr., *Mr. Greville.*

29. HOOKERIA (*Smith, not Schwægr.*).

Fruitstalks lateral. *Peristome* double; the *exterior* of 16 teeth, the *interior* of a membrane divided into 16 entire segments. *Calyptra* mitriform. *Musc. Brit. p.* 89. *t.* 3.

1. H. *lucens*, leaves broadly ovate entire obtuse nerveless. *Musc. Brit. p.* 89. *t.* 27. *Hypnum lucens*, *Lightf. p.* 743.

Hab. Moist banks in woods and among rocks.

Leaves with very large cellules. *Capsule* horizontally inclined, dark purple brown, reticulated. *Calyptra* pitted, almost white.

30. HYPNUM.

Fruitstalks lateral. *Peristome* double; the *ext.* of 16 teeth; the *interior* of a membrane cut into 16 equal segments, with filiform processes frequently placed between them. *Calyptra* dimidiate. *Musc. Brit. p.* 91. *t.* 3.

Div. I. *Stems (taken in conjunction with the leaves) plane.*

Sect. I. *Capsules erect.*

1. H. *trichomanoides*, leaves broadly scymetar-shaped serrated at the point, nerve reaching to the middle of the leaf, capsule ovate erect, lid rostrate. *Musc. Brit. p.* 91. *t.* 24.

Hab. Trunks of trees, not rare.

2. H. *complanatum*, leaves oblong apiculate entire nerveless, capsule ovate erect, lid rostrate. *Musc. Brit. p.* 91. *t.* 24. *Lightf. p.* 742.

Hab. Trunks of trees, common.

These two species have the habit of *Neckera*.

Sect. II. *Capsules cernuous or inclined.*

3. H. *riparium*, leaves ovato-lanceolate acuminated entire the nerve reaching nearly to the summit, capsules oblong cernuous, lid conical. *Musc. Brit. p.* 92. *t.* 24. *Lightf. p.* 760.

Hab. Banks of rivers and lakes, and spots occasionally overflowed with water.

4. H. *undulatum*, leaves ovate acute transversely undulated, with 2 faint nerves at the base, capsule oblong furrowed arcuato-cernuous, lid rostrate. *Musc. Brit. p.* 92. *t.* 24. *Lightf. p.* 744.

Hab. Woods and dry heathy places. Plentiful in the Highlands.

5. H. *denticulatum*, leaves ovate sometimes approaching to lanceolate more or less acuminated having 2 short nerves at the base, capsule oblongo-cylindraceous inclined, lid conical. *Musc. Brit. p.* 92. *t.* 24. *Lightf. p.* 741.

α. *angustifolium*, leaves ovato-lanceolate distant quite plane. *H. denticulatum*, *Linn.*

β. *obtusifolium*, leaves ovate more or less obtuse slightly concave. *H. Donianum*, *E. B.*

Hab. Principally in woods. β. Among the mountains, *G.* and *D. Don.* Cairn-gorum, *Mr. Winch.*

DIV. II. *Stems (taken in conjunction with the leaves) more or less cylindrical, never plane.*

SECT. I. *Leaves spreading on all sides of the stem*[a].

A. *Leaves uniform in their direction (not squarrose).*

a. *Nerve reaching to or beyond the point.*

* *Leaves without serratures.*

6. H. *medium*, leaves ovate obtuse concave entire, nerve reaching to the summit, capsule cylindrical nearly erect, lid conical. *Musc. Brit. p.* 93. *t.* 24.

HAB. Stumps of trees, &c., by the banks of rivers.

7. H. *tenellum*, leaves fasciculate erect lanceolato-subulate entire their nerve reaching to the summit, capsules ovate cernuous, lid rostrate. *Musc. Brit. p.* 93. *t.* 24.

HAB. Rocks and walls. Cave near Kirkcaldy, and Den of Dupplin, *Mr. Arnott.* Craig Lochart, near Edinb., *Mr. Greville.*

8. H. *serpens*, leaves ovato-lanceolate rather obtuse patent entire their nerve for the most part reaching to the summit (sometimes obsolete), capsule cylindrical curved cernuous, lid conical. *Musc. Brit. p.* 94. *t.* 24. *Lightf. p.* 763.

HAB. Moist banks, trunks of trees, on pales and decayed wood in various situations.

** *Leaves serrated.*

9. H. *populeum*, leaves lanceolate acuminated serrated the margin slightly reflexed, nerve reaching to the point, capsule ovate nearly erect, fruitstalks rough, lid conical. *Musc. Brit. p.* 94. *t.* 24.

HAB. Trees and rocks. Slateford, near Edinburgh, *Mr. Arnott.* Ben Lawers, Clova, &c., *G. Don.*

10. H. *reflexum*, leaves cordato-acuminate serrated their nerve reaching to the point their margin slightly reflexed, capsule ovate cernuous, fruitstalks rough, lid conical. *Musc. Brit. p.* 95. *t.* 24.

HAB. On the ground, Ben Nevis, near the base of the mountain.

b. *Nerves shorter than the leaf, or none.*

* *Leaves entire.*

† *Leaves ovate or elliptical.*

11. H. *molle*, leaves loosely imbricated rotundato-ovate obtuse concave entire faintly two-nerved at the base or with one short nerve, capsule ovate cernuous, lid conical. *Musc. Brit. p.* 95. *t.* 24.

HAB. Alpine rivulets, *Dickson, Hook.* In Angus-, Aberdeen-, and Inverness-shires, *G. Don.* Argyleshire, *Capt. Carmichael.*

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[a] In opposition to "*leaves secund.*"

12. H. *Schreberi*, leaves closely imbricated nearly erect elliptical apiculate concave entire faintly two-nerved at the base, capsule ovate cernuous, lid conical. *Musc. Brit. p.* 96. *t.* 24.

Hab. Woods and heaths, not uncommon.

13. H. *stramineum*, leaves loosely imbricated erecto-patent oblongo-ovate obtuse entire their nerve reaching half way, capsule oblongo-ovate curved cernuous, lid conical. *Musc. Brit. p.* 97. *t.* 24.

Hab. Wet bogs, among other mosses. Argyleshire, *Capt. Carmichael.*

14. H. *murale*, leaves nearly erect imbricated oval with a very short point concave entire nerve reaching about half way up, capsule ovate cernuous, lid rostrate. *Musc. Brit. p.* 97. *t.* 24.

Hab. Walls and stones, Angus-shire, *G. Don.* Banks of the Cart, near the mill, Glasgow, and on the Ochill hills, *D. Don.*

15. H. *purum*, leaves closely imbricated oval with a very short point very concave their nerve reaching half way up, capsule ovate cernuous, lid conical. *Musc. Brit. p.* 98. *t.* 24. *Lightf. p.* 758.

Hab. Woods, banks, &c. common.

Used by the fishermen in Lancashire to scour their worms, according to Dillenius, whence the specific name.

†† *Leaves lanceolate or subulate.*

+ *Leaves without striæ.*

16. H. *plumosum*, leaves erecto-patent, the upper ones sometimes secund, all of them ovato-lanceolate acuminated subserrated, the nerve reaching about half way, capsule ovate cernuous, lid conical. *Musc. Brit. p.* 98. *t.* 25.

Hab. Moist banks, rocks, &c. Pentland hills, Angus-shire, &c.

17. H. *pulchellum*, leaves loosely imbricated the upper ones subsecund all of them lanceolato-acuminate entire nerveless, capsules ovato-cylindrical nearly erect, lid conical. *Musc. Brit. p.* 99. *t.* 25.

Hab. Woods in alpine situations and among rocks. Caldron Linn and Habbie's How, *Mr. Arnott.* Argyleshire, *Capt. Carmichael.*

++ *Leaves striated.*

18. H. *rufescens*, leaves erecto-patent lanceolate acuminated entire striated faintly two-nerved at the base, capsule ovate nearly erect, lid conical. *Musc. Brit. p.* 99. *t.* 25.

Hab. Alpine districts, rare. Falls of Moness, *Mr. Borrer.* Argyleshire, *Capt. Carmichael.*

19. H. *sericeum*, leaves erecto-patent lanceolate acuminated entire striated, nerve running to three-fourths of the length, capsule ovato-cylindrical erect, lid conical. *Musc. Brit. p.* 100. *t.* 25. *Lightf. p.* 762.

Hab. Trunks of trees, walls, rocks, &c., common.

20. H. *lutescens*, leaves erecto-patent lanceolate acuminated en-

tire striated, nerve disappearing below the point, capsule ovate cernuous, fruitstalks rough, lid conico-acuminate. *Musc Brit. p.* 100. *t.* 25.

Hab. Banks and stems of trees, and bushes near the ground.

21. H. *nitens*, leaves erecto-patent narrow-lanceolate acuminated nearly entire striated, nerve running nearly to the summit, capsule oblongo-ovate curved cernuous, fruitstalks smooth, lid conical. *Musc. Brit. p.* 100. *t.* 25.

Hab. Bogs, *Dickson.* Argyleshire, *Capt. Carmichael.* Pentlands, in many spots, *Mr. Greville.*

22. H. *albicans*, leaves erecto-patent ovato-lanceolate acuminated striated entire, nerve reaching half way up, capsules ovate cernuous, fruitstalks smooth, lid conical. *Musc. Brit. p.* 101. *t.* 25.

Hab. Pentland hills, *Mr. Arnott* and *Greville.*

** *Leaves serrated.*

† *Stems below bare of leaves.*

23. H. *alopecurum*, stems erect below simple and naked fascicled above, leaves concave ovate elliptical acute serrated, nerve running nearly to the point, margin reflexed, capsule ovate cernuous, lid rostrate. *Musc. Brit. p.* 101. *t.* 25. *Lightf. p.* 757.

Hab. Woods and shady banks, frequent.

24. H. *dendroides*, stems erect below simple and naked fascicled above, leaves ovate often more or less lanceolate striated serrated at the point, nerve reaching nearly to the summit, capsule erect ovato-cylindrical, lid rostrate. *Musc. Brit. p.* 101. *t.* 25. *Lightf. p.* 756.

Hab. Woods and bushy places. Guillon Links, Edinburgh, in fr. *Mr. Arnott.*

†† *Stems leafy below.*

+ *Capsules erect.*

25. H. *myosuroides*, branches fascicled curved, leaves lanceolato-acuminate serrated, margins reflexed at the base their nerve disappearing near the middle, capsule ovato-cylindrical erect, lid rostrate. *Musc. Brit. p.* 102. *t.* 25. *Lightf. p.* 765.

Hab. Woods.

26. H. *curvatum*, branches fascicled curved, leaves ovato-elliptical concave serrated at the points, nerve disappearing beyond the middle, capsule ovate erect, lid rostrate. *Musc. Brit. p.* 102. *t.* 25. *H. sciuroides, Lightf. p.* 764.

Hab. Rocks, common.

+ + *Capsules cernuous.*

§ *Stems bi-tripinnate.*

27. H. *splendens*, stems tripinnate, leaves ovate with a suddenly acuminated serrated point concave faintly two-nerved at the base, margin below recurved, capsule ovate cernuous, lid rostrate. *Musc. Brit. p.* 103. *t.* 25. *H. parietinum, Lightf. p.* 750.

Hab. Heaths, woods, and hedge-banks.

28. H. *proliferum*, stems mostly tripinnate, leaves serrated papillose on the back, the cauline ones cordato-acuminate striated, with the nerve running nearly to the point, those of the branches more ovate with a single or double nerve at the base. *Musc. Brit. p.* 103. *t.* 25. *Lightf. p.* 750.

Hab. Woods, banks, heathy places, &c., common.

29. H. *prælongum*, stems subbipinnate, leaves distantly placed patent cordate or ovate acuminated serrated, nerve disappearing below the summit, capsule ovate cernuous, lid rostrate. *Musc. Brit. p.* 103. *t.* 25. *Lightf. p.* 751.

Hab. Shady banks, trunks of trees, &c., common.

§§ *Stems pinnated, or irregularly branched.*

30. H. *flagellare*, stems pinnate (or irregularly bipinnate), leaves thickly set cordato-acuminate serrated very faintly two-nerved at the base, capsule oblong cernuous, lid conical. *Musc. Brit. p.* 104. *t.* 25.

Hab. Ben Lawers, *G. Don.* Argyleshire, *Capt. Carmichael.*

31. H. *piliferum*, stems somewhat pinnated, leaves ovate with a long narrow acumination serrated, nerve disappearing below the middle, capsule ovate cernuous, lid rostrate. *Musc. Brit. p.* 105.

Hab. Banks, &c. In fruit at Braid hermitage, *Mr. Arnott.*

32. H. *rutabulum*, stems variously branched, leaves patent ovate acuminated serrated at the points striated their nerve reaching half way, capsule ovate cernuous, fruitstalk rough, lid conical. *Musc. Brit. p.* 105. *t.* 26. *Lightf. p.* 747.

Hab. Trees and banks, extremely common.

33. H. *velutinum*, stems variously branched, leaves erecto-patent ovate often approaching to lanceolate acuminated serrated striated, nerve reaching half way, capsule ovate cernuous, fruitstalk rough, lid conical. *Musc. Brit. p.*105. *t.* 26. *Lightf. p.* 763.

Hab. Woods and hedge-banks, common.

34. H. *ruscifolium*, stems variously branched, leaves loosely imbricated subpatent broadly ovate acute serrated concave, their nerve reaching nearly to their summit, capsule ovate cernuous, lid rostrate. *Musc. Brit. p.* 106. *t.* 26. *H. rutabulum* β., *Lightf. p.* 747.

Hab. Stones in rivers, &c., common.

35. H. *striatum*, stems variously branched, leaves patent cordato-acuminate serrated striated, nerve reaching beyond the middle, capsule oblongo-ovate cernuous, fruitstalk smooth, lid rostrate. *Musc. Brit. p.* 106. *t.* 26.

Hab. Woods, stones, banks, &c.

36. H. *confertum*, stems variously branched, leaves erecto-patent ovate acuminated concave serrated, their nerve reaching half

way, capsule ovate cernuous, fruitstalk smooth, lid rostrate. *Musc. Brit. p.* 106. *t.* 26.

Hab. Trunks of trees, old rails, and banks. Slateford, *Mr. Arnott.* Trees, not unfrequent, *D. Don.*

B. *Leaves squarrose.*

37. H. *cuspidatum*, leaves loosely set ovate concave nerveless entire the lower ones squarrose those at the summit closely imbricated into a cuspidate point, capsule oblong curved cernuous, lid conical. *Musc. Brit. p.* 107. *t.* 26. *Lightf. p.* 761.

Hab. Bogs, common.

38. H. *cordifolium*, leaves loosely set squarrose cordato-ovate obtuse concave entire, their nerve running very nearly to the point, capsule oblong curved cernuous, lid conical. *Musc. Brit. p.* 107. *t.* 26.

Hab. Marshes and bogs. Fruit rare about Edinburgh. In fruit, in Lismore, Argyleshire, *Capt. Carmichael.*

39. H. *stellatum*, leaves loosely set squarrose cordate much acuminated entire nerveless, capsule oblongo-ovate curved cernuous, lid conical. *Musc. Brit. p.* 108. *t.* 26.

α. *majus. H. stellatum, Schreb.*

β. *minus. H. squarrosulum, E. B.*

Hab. α. In marshes. β. On rocks and loose stones.

40. H. *loreum*, leaves recurved squarrose lanceolate much acuminated concave serrated striated faintly two-nerved at the base, capsule globoso-ovate cernuous, lid conical. *Musc. Brit. p.* 108. *t.* 26.

Hab. Woods, heaths, and among bushes, common.

41. H. *triquetrum*, leaves squarrose cordato-acuminate gradually tapering nearly plane striated faintly two-nerved at the base, capsule ovato-globose, lid short conical. *Musc. Brit. p.* 108. *t.* 26 (*excluding the var.* β.). *Lightf. p.* 746.

Hab. Woods, abundant.

Five or six inches long, very stout.

42. H. *brevirostre*, leaves squarrose broadly ovate concave without striæ acuminated suddenly and with an evident contraction so as to terminate in a long hair-like point minutely serrated two-nerved at the base, capsule ovate, lid conical. *H. brevirostre, Ehrh.* (*not E. B.*) *H. triquetrum* β., *Musc. Brit. p.* 108.

Hab. Woods in Argyleshire, *Capt. Carmichael.*

A recent examination of this handsome species has satisfied me of its being quite distinct from *H. triquetrum*, with which I had formerly confounded it. Besides the characters above given, I may add, it is not half the size, it is more straggling, branches slender, leaves vastly smaller, and more serrated.

43. H. *squarrosum*, leaves squarrose widely cordate very much

acuminated and recurved serrated faintly two-nerved at the base, capsule ovato-globose cernuous, lid conical. *Musc. Brit. p.* 109. *t.* 26. *Lightf. p.* 755.

Hab. Woods and heaths, common.

Sect. II. *Leaves secund.*

A. *Leaves with a single nerve.*

44. H. *filicinum*, stems subbipinnated, leaves especially the upper ones falcato-secund broadly ovate acuminated serrated their nerve reaching to the point, capsule oblongo-ovate curved cernuous, lid conical. *Musc. Brit. p.* 109. *t.* 26. *Lightf. p.* 748.

Hab. Bogs and sides of rivulets.

45. H. *atro-virens*, stems variously branched procumbent, leaves all of them slightly secund broadly ovate with an attenuated obtuse point, nerve running nearly to the summit, capsule ovate cernuous, lid conical. *Musc. Brit. p.* 109. *t.* 26.

Hab. Trees, rocks, and banks. By the Clyde, near Blantyre Priory, *D. Don.*

46. H. *palustre*, leaves secund ovate somewhat acuminate concave entire the margins incurved above, nerve short often forked sometimes obsolete, capsule oblongo-ovate cernuous, lid conical. *Musc. Brit. p.* 110. *t.* 26.

Hab. Marshes, rivulets, &c., especially in the Highlands.

47. H. *fluitans*, leaves loosely imbricated the upper ones falcato-secund, all of them lanceolato-subulate scarcely serrated at their point nearly plane, the nerve disappearing just below the summit, capsule ovato-oblong curved cernuous, lid conical. *Musc. Brit. p.* 98. *t.* 24.

Hab. Marshy places; Pentland hills, *Mr. Greville.*

48. H. *aduncum*, leaves closely imbricated all of them falcato-secund narrow lanceolate concave or almost semicylindrical entire, the nerve disappearing above the middle, capsule oblongo-ovate curved cernuous, lid conical. *Musc. Brit. p.* 111. *t.* 26. *Lightf. p.* 753.

α. *revolvens*, leaves narrow very much falcated. *H. aduncum, Linn. H. revolvens, E. B.*

β. *rugosum*, leaves broader less falcate somewhat rugose. *H. rugosum, E. B.*

Hab. Bogs, common. β. Clova and Forfar; Campsie and Ochill hills, *G.* and *D. Don.*

49. H. *uncinatum*, leaves falcato-secund lanceolato-subulate serrated striated, nerve disappearing below the point, capsule cylindrical curved cernuous, lid conical. *Musc. Brit. p.* 111. *t.* 26.

Hab. Moors and rocks, among other mosses.

50. H. *commutatum*, stems pinnated, leaves falcato-secund cordate very much acuminated serrated their margins reflexed, nerve disappearing below the summit, capsule oblongo-ovate curved cernuous, lid conical. *Musc. Brit. p.* 112. *t.* 27.

Hab. Wet rocks. Pentland hills, &c., *Mr. Greville.*

B. *Leaves destitute of a nerve, or furnished with a very indistinct one at the base.*

51. H. *scorpioides*, leaves secund broadly ovate ventricose obtuse entire nerveless, capsules oblongo-ovate curved cernuous, lid conical. *Musc. Brit. p.* 112. *t.* 27. *Lightf. p.* 754.

Hab. Bogs, common.

52. H. *Silesianum*, leaves loosely imbricated secund narrow lanceolate acuminated serrated nerveless or very obscurely 2-nerved, capsule subcylindrical erecto-cernuous, lid conical obtuse. *Musc. Brit. p.* 113. *t.* 27.

Hab. Summit of Ben Luyal, in Sutherland, *Hook.*

53. H. *cupressiforme*, leaves closely imbricated more or less falcato-secund lanceolate acuminated entire except at the points which are usually serrated, very faintly 2-nerved at the base, capsule cylindrical erecto-cernuous, lid conical with a point. *Musc. Brit. p.* 113. *t.* 27. *Lightf. p.* 752.

α. *vulgaris*, stems broad semicylindrical, leaves falcato-secund. *H. cupressiforme, Linn.*

β. *compressum*, stems slender compressed, leaves falcato-secund. *H. compressum, Linn. Mant.*

γ. *tenue*, stems very slender, leaves very slightly curved narrow-lanceolate quite entire. *H. polyanthos, E. B.*

Hab. Banks and trunks of trees, every where. β. Abundant in woods. γ. Mostly on trees. Angus-shire, *D. Don.*

54. H. *Crista-castrensis*, stems closely pectinated, leaves falcato-secund ovato-lanceolate acuminated serrulate striated faintly 2-nerved at the base, capsule oblongo-ovate curved cernuous, lid conical. *Musc. Brit. p.* 114. *t.* 27.

Hab. On the ground, rare. Fir-wood, about Forfar, but without fr.; Forest of Bræmar, in fr., *G. Don.* Birch woods, of Bunaw, abundant, *Capt. Carmichael.*

55. H. *molluscum*, stems pectinated, leaves falcato-secund cordate much acuminated serrated not striated faintly 2-nerved at the base, capsule oblong-ovate curved cernuous, lid conical. *Musc. Brit. p.* 114. *t.* 27. *H. Crista-castrensis, Lightf. p.* 749.

Hab. Woods and rocks, plentiful.

31. BRYUM.

Fruitstalks terminal. *Peristome* double; the *exterior* of 16 teeth; the *interior* of a membrane cut into 16 equal segments, with filiform processes frequently placed between them. *Calyptra* dimidiate. *Musc. Brit. p.* 115. *t.* 3.

Div. I. *Capsules sulcated* (Mnium).

1. Br. *androgynum*, stems nearly simple, leaves lanceolate serrated their margins recurved, capsules nearly erect cylindrical sulcated, lid conical. *Musc. Brit. p.* 115. *t.* 28. *Mnium androg., Lightf. p.* 707.

Hab. Woods and on banks. Appin, *Capt. Carmichael.*

2. Br. *palustre*, stems much branched, leaves lanceolate obtuse entire their margins revolute, capsules ovate oblique sulcated, lid conical. *Musc. Brit. p.* 115. *t.* 28. *Mnium palustre, Lightf. p.* 708.

Hab. Bogs. Pentland hills, &c., *Mr. Greville.* Appin, *Capt. Carmichael.*

Div. II. *Capsules smooth (destitute of furrows).*

Sect. I. *Teeth of the external peristome shorter than the inner one* (Meesia).

3. Br. *trichodes*, stems somewhat branched, leaves linear obtuse entire reticulated, capsule ovate recurved subcernuous, fruit-stalk very long. *Musc. Brit. p.* 116. *t.* 28.

Hab. Highland mountains, in wet places. Bogs, &c.

4. Br. *dealbatum*, stems short, leaves lanceolate acute plane serrated at the points reticulated, capsules pyriform nearly erect. *Musc. Brit. p.* 117. *t.* 28.

Hab. Boggy mountains. Near Edinb., &c., *G. Don.* Ben Lawers, *Mr. Winch.* Guillon and Forfar Lochs, *Mr. Arnott.*

Sect. II. *Teeth of the exterior peristome as long as the interior one.*

* *Leaves subulate* (Webera).

5. Br. *pyriforme*, stems slightly branched, leaves subulato-setaceous flexuose serrated, nerve very broad, capsule pyriform pendulous. *Musc. Brit. p.* 118. *t.* 28.

Hab. Rocks, especially of sand or any soft stone. Dry Muir, on the Pentlands; also Ardvoirlich, near Loch Earn, *Mr. Arnott.* Fissures of rocks, Lismore, *Capt. Carmichael.* On the outsides of the garden pots, that are partly plunged in the water, in the hot-houses in the botanic garden at Glasgow; and there bearing fruit.

** *Leaves never subulate.*

† *Leaves without any thickened margin.*

+ *Leaves very obtuse.*

6. Br. *julaceum*, stems branched, leaves closely imbricated broadly ovate concave entire obtuse, nerve running nearly to a point, capsule obovato-cylindraceous, pendulous. *Musc. Brit. p.* 118. *t.* 28.

Hab. Highlands, principally on the elevated mountains.

++ *Leaves acuminate or acute.*

§ *Nerve of the leaf disappearing below the point.*

7. Br. *crudum*, stems simple, leaves rigid lanceolate the upper ones the narrowest and longest, all of them plane serrulate, the nerve disappearing below the summit, capsule oblongo-subpyriform cernuous. *Musc. Brit. p.* 119. *t.* 28. *Mnium crudum*, *Lightf. p.* 712.

Hab. Banks in mountainous situations, and the crevices of rocks. Craig Lochart, *Mr. Greville.* Mountains of Angus-shire, and on Ben Lawers, *G. Don.* Ben Voirlich, *Mr. Arnott.*

8. Br. *carneum*, stems simple, leaves lanceolate reticulated slightly serrulated at the point, nerve disappearing below the summit, capsule obovate pendulous. *Musc. Brit. p.* 119. *t.* 29.

Hab. Banks. Near Collington, *Mr. Greville.* Angus-shire, frequent, *D. Don.* Ditches, near Arlary, &c., *Mr. Arnott.*

9. Br. *argenteum*, stems branched, leaves closely imbricated broadly ovate suddenly and sharply acuminated subserrulate very concave, nerve disappearing below the point, capsule ovato-pyriform pendulous. *Musc. Brit. p.* 120. *t.* 29. *Lightf. p.* 735.

Hab. On the ground, walls, roofs of houses, &c.

10. Br. *Zierii*, stems branched, leaves closely imbricated more or less broadly ovate acuminulate very concave reticulated entire, nerve running nearly to the point, capsule clavate cernuous. *Musc. Brit. p.* 120. *t.* 29.

Hab. Highland mountains, not uncommon. Habbies' How, &c., *Mr. Greville.* Argyleshire, *Capt. Carmichael.*

§§ *Nerve of the leaf reaching to the point or beyond it.*

11. Br. *roseum*, leaves obovato-spathulate acute serrated undulate, nerve running to the point, capsule oblongo-ovate pendulous. *Musc. Brit. p.* 120. *t.* 29.

Hab. Banks and woods. Braid Hermitage, and Auchindenny woods. Lorn, *Capt. Carmichael. Fr.* rare.

12. Br. *capillare*, stems short, leaves obovate twisted when dry mostly entire, their nerve produced into a hair-like point, their margins slightly thickened, capsule oblong pendulous. *Musc. Brit. p.* 121. *t.* 29. *Lightf. p.* 737.

Hab. Heaths, rocks, &c., frequent.

13. Br. *cæspititium*, stems short, leaves ovate acuminated entire or very obscurely serrated at the points, the margins slightly recurved, the nerve reaching to or beyond the point, capsule between ovate and pyriform pendulous. *Musc. Brit, p.* 121. *t.* 29. *Lightf. p.* 736.

α. *major. Br. cæspititium, Linn.*

β. *minor. Br. bicolor, Dicks.*

Hab. Banks, walls, and roofs, common. β. Argyleshire, &c., *Capt. Carmichael.*

14. Br. *turbinatum*, stems short branched with innovations, leaves ovate acuminated nearly entire, the margins slightly recurved, the nerve running beyond the points, capsule elongato-pyriform pendulous. *Musc. Brit. p.* 122. *t.* 29.

Hab. Wet, sandy, and stony places, chiefly in mountainous situations, common.

15. Br. *nutans*, stems short, leaves erect lanceolate acuminated serrated above, nerve reaching to the point, capsule oblongo-pyriform pendulous. *Musc. Brit. p.* 123. *t.* 29.

Hab. Walls, rocks, and heaths.

16. Br. *elongatum*, stems short, leaves erect elongato-lanceolate acuminated serrated, nerve reaching to the point, capsule elongato-clavate inclined. *Musc. Brit. p.* 123. *t.* 30.

Hab. Mountains. Ben Lawers and Clova, *G. Don.* Hills of Lorn, *Capt. Carmichael.*

17. Br. *alpinum*, stems rigid elongated branched, leaves closely imbricated erect lanceolate somewhat obtuse subserrulate at the apex, margins revolute, nerve reaching to the point, capsules oblongo-ovate pendulous. *Musc. Brit. p.* 124. *t.* 28. *Lightf. p.* 738.

Hab. Rocks in subalpine situations, not uncommon.

18. Br. *ventricosum*, stems elongated branched with innovations, leaves oblong acuminated scarcely serrulated, margins recurved, nerve reaching beyond the point, capsule oblongo-ovate pendulous. *Musc. Brit. p.* 124. *t.* 30. *Mnium triquetrum*, *Lightf. p.* 715.

Hab. Marshy ground and in wet places in the crevices of the rocks.

†† *Leaves with their margins evidently thickened.*

§ *Leaves without denticulations.*

19. Br. *punctatum*, stems elongated, leaves obovato-rotundate very obtuse reticulated their margins thickened entire, nerve disappearing below the point, capsule ovate pendulous, lid shortly rostrate. *Musc. Brit. p.* 125. *t.* 30. *Mnium serpyllifolium* α., *Lightf. p.* 712.

Hab. Marshy places, plentiful.

§ *Leaves denticulated.*

20. Br. *ligulatum*, stems elongated, leaves undulate ligulate reticulated their margins thickened denticulate, nerve reaching a little beyond the point, capsule ovate pendulous, lid conical. *Musc. Brit. p.* 126. *t.* 30. *Mnium serpyllifolium* δ., *Lightf. p.* 715.

Hab. Moist banks and in woods.

21. Br. *rostratum*, stems elongated, leaves broadly ovate reticulated their margins thickened obtuse denticulated, the nerve reaching a little beyond the point, capsule ovate pendulous, lid rostrate. *Musc. Brit. p.* 126. *t.* 30.

Hab. Subalpine situations. Common in the ravines of Lorn, *Capt. Carmichael.*

22. Br. *marginatum*, stems elongated, leaves ovate acute reticulated their margins thickened serrated, nerve reaching a little beyond the point, capsule ovate pendulous, lid shortly rostrate. *Musc. Brit. p.* 126. *t.* 31.

Hab. Moist and wet places among rocks.

23. Br. *hornum*, stems elongated, leaves lanceolate acute reticulated, their margins thickened denticulate, nerve generally disappearing below the summit, capsule oblongo-ovate pendulous, lid hemisphærical mucronulate. *Musc. Brit. p.* 127. *t.* 31. *Mnium hornum*, *Lightf. p.* 711.

Hab. Marshes.

24. Br. *cuspidatum*, stems elongated, leaves obovate acute reticulated their margins thickened denticulated above, nerve running beyond the point, capsule ovate pendulous, lid conico-hemisphærical obtuse. *Musc. Brit. p.* 127. *t.* 31. *Mnium serpyllifolium* γ., *Lightf. p.* 715.

Hab. Moist shady woods, plentiful.

Order VII. FILICES. *Br. Mirb.*

Fructifications only of one kind on the same individual. *Capsules* spiked or racemed, or mostly collected into *clusters* of various shapes (*sori*) upon the back of the *leaf* or *frond*, naked or covered with an *involucrum*, often surrounded by an elastic *ring* and opening irregularly, or without a *ring* and opening with a regular *fissure*. *Seeds* or *sporules* minute.

There is, usually, a subterraneous horizontal *stem* or *caudex*. *Fronds*, before expansion, circinate; they are simple and entire, or variously divided and branched, and cut into *lobes* and *segments*, or *leaflets* of various forms. *Substance* varying from membranaceous to coriaceous. In the tropics the *caudex* forms a *trunk* resembling that of the palms. In their internal organization the *Ferns* (as well as probably the three following orders) differ remarkably from the rest of the *Acotyledons*; for they have, besides the cellular *structure*, longitudinal *tubes* or *vessels*, as we see in the monocotyledonous *stems*, and these frequently placed in *bundles*.

Div. I. Gyratæ, *Br.* (*Polypodiaceæ*). *Capsules* 1-*celled, furnished with an articulated, elastic, longitudinal* (*generally incomplete*) *ring, transversely and irregularly opening.*

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1. GRAMMITIS.

Sori oblong, sublinear, straight, scattered. *Involucre* none.

1. Gr. *Ceterach*, fronds pinnatifid covered with imbricating chaffy scales beneath, segments all coadunate ovate obtuse, scales entire. *Willd. Scolopendrium Ceterach*, *E. B. t.* 1244. *Asplenium Ceterach*, *Lightf. p.* 661.

Hab. Fissures of rocks. Hill of Kinnoul, Perth, *Lightf.*

2. POLYPODIUM.

Sori (or clusters of fructification) roundish. *Involucre* 0.

* *Fronds pinnatifid.*

1. P. *vulgare*, fronds deeply pinnatifid, the segments linear-lanceolate obtuse crenulate approximate, the superior ones gradually smaller, caudex chaffy. *Lightf. p.* 667. *E. B. t.* 1149.

** *Fronds bipinnatifid.*

2. P. *Phegopteris*, fronds bipinnatifid, the two lowermost pinnæ deflexed, their segments linear lanceolate obtuse entire ciliated, the lowermost ones adnato-decurrent, veins hairy, sori marginal. *Lightf. p.* 669. *E. B. t.* 2224.

Hab. Shady rocky places, in the Lowlands, frequent, *Lightf.*

*** *Fronds thrice compounded.*

3. P. *Dryopteris*, fronds ternate bipinnate patulous and deflexed, the segments obtuse subcrenated, sori marginal, root filiform. *Lightf. p.* 678. *E. B. t.* 616.

Hab. Dry stony places, not uncommon.

3. WOODSIA. *Br.*

Sori scattered, roundish, having beneath an *involucrum* which is cut at the edge into many capillary *segments*.

1. W. *hyperborea*, fronds lanceolate pinnated, pinnæ ovato-cordate inciso-pinnatifid hairy beneath, sori solitary at length confluent. *Br. in Linn. Trans. v.* 11. *t.* 11. *E. B. t.* 2023 (*Polypodium hyperboreum.*). *Acrostichum ilvense*, *Huds.*, *With.*, (*not of Linn. according to Sm.*)

Hab. Alpine rocks rare. Ben Lawers, *Dickson.* Clova mountains, *G. Don.*

4. ASPIDIUM.

Sori roundish, scattered. *Involucre* umbilicated, or opening on one side. *Willd.*

* *Fronds pinnated.*

1. A. *Lonchitis*, fronds pinnated, pinnæ lanceolato-falcate acute ciliato-serrate, the upper base acutely auricled the lower one cuneate, superior pinnæ bearing the fructifications, stipes chaffy. *E. B. t.* 796, and *Lightf. p.* 669 (*Polypodium Lonchitis*).

Hab. Shady clefts of rocks among the Highland mountains, not uncommon.

** *Fronds subbipinnate, or bipinnatifid.*

† *Involucres dimidiate, reniform.*

2. A. *Oreopteris*, fronds pinnate, pinnæ lanceolate glabrous resinoso-glandulose beneath pinnatifid, the segments lanceolate obtuse entire, lowermost ones longer, sori marginal. *E. B. t.* 1019 (*Polypodium Oreopteris*).

3. A. *Thelypteris*, fronds pinnate, pinnæ linear-lanceolate pinnatifid glabrous, the segments ovate acute entire, sori marginal contiguous at length confluent. *Polypodium Thelypteris, Lightf. p.* 674. *E. B. t.* 509.

Hab. Marshes and bogs, abundant.

4. A. *cristatum*, fronds pinnate, pinnæ subcordate oblong pinnatifid, the segments oblong obtuse dentato-serrate, stipes chaffy. *E. B. t.* 2125. *Hook. in Fl. Lond., with a figure.*

Hab. Native of Scotland, *Smith in E. B.*, under *t.* 1949.

5. A. *aculeatum*, fronds bipinnate, pinnules rigid ovate sublunate acuminate aristate oblique and cuneate at the base and decurrent, the margins faintly serrated spinulose, with a tooth near the base on the upper side, stipes and rachis chaffy. *E. B. t.* 1562 (*margin of the pinnule not good*). *Polypodium aculeatum, Lightf. p.* 675.

Hab. Woods, Rosslyn and Kinross-shire, *Mr. Arnott.* Bute, &c., *Mr. Murray.* Stobhall, &c., *Mr. Young.*

I describe this and the following from English specimens; and cannot be sure that the Scotch are the same. To me they appear decidedly distinct.

6. A. *lobatum*, fronds bipinnate, pinnules scarcely rigid ovate rather obtuse aristate truncate at the base which has a lobe on the upper margin shortly petiolate, the margin deeply serrated and spinulose, stipes and rachis chaffy. *E. B. t.* 1563 (*imperfect specimen*).

Hab. Rosslyn woods, *Maugh.* Appin, *Captain Carmichael.* With *A. aculeat., Mr. Murray* and *Mr. Young.*

This has the broadest frond, far less rigid; and besides the different shape of the *pinnules*, the present species may be recognised by the truly petiolated *pinnules* and their deeply serrated *margins.*

7. A. *Filix mas*, fronds bipinnate, pinnules oblong obtuse serrated, serratures muticous, sori near the central nerve, stipes and rachis chaffy. *E. B. t.* 1458, and 1949 (*Asp. cristatum*). *Polypodium Filix mas, Lightf. p.* 671.

Hab. Woods and shady banks, frequent.

8. A. *dilatatum*, fronds bipinnate, pinnules oblong distinct inciso-pinnatifid, segments mucronato-serrate, stipes chaffy. *E. B. t.* 1461, and *t.* 1460 (*A. spinulosum*). *Polypodium cristatum, Lightf. p.* 670.

Hab. Woods and wet rocky places, frequent.

†† *Involucres lateral.*

9. A. *Filix fœmina*, fronds bipinnate, pinnules oblongo-lanceolate inciso-serrate, serratures bi- or tridentate acute, sori oblong straight. *E. B. t.* 1459. *Polypodium Filix fœmina*, *Lightf. p.* 673.

Hab. Woods and shady places.

10. A. *fragile*, fronds bipinnate, pinnules oblong obtuse inciso-serrated, serratures obtuse denticulated, their rachis winged. *Willd. Cyathea fragilis*, *E. B. t.* 1587. *Polypodium fragile*, *Lightf. p.* 677.

Hab. Rocks and stony places, abundant.

11. A. *dentatum*, fronds pinnate, pinnules ovato-oblong pinnatifid, the segments oblong obtuse toothed. *Willd. Cyathea dentata*, *E. B. t.* 1588.

Hab. Rocks in the Highlands, *Dickson.* Ben Lawers, *G. Don.*

12. A. *regium*, "frond lanceolate bipinnate pinnatifid, its segments lobed obtuse and beardless, stalk slightly winged, involucre lacerated and turned to one side." *Sm. E. B. t.* 163 (*Cyathea incisa*).

Hab. Ben Lawers, *Maugh.*

This species even Sir James Smith, who first described it in *E. Bot.*, seems disposed to think may be a var. of *A. fragile.*

5. ASPLENIUM.

Sori linear, transverse, scattered. *Involucres* arising from the lateral *veins*, and opening towards the central *nerve* or *rib.*

1. A. *septentrionale*, fronds trifid on a long stipes, segments linear acutely jagged or generally tridentate near the point. *Acrostichum septentrionale*, *Lightf. p.* 657. *E. B. t.* 1017.

Hab. Clefts of rocks on Arthur's Seat, Edinb., *Lightf.* Rock of Stenton, near Dunkeld, *Mr. Arnott.*

2. A. *marinum*, fronds pinnate, pinnules oblong obtuse inciso-serrate, the superior base rounded and subauriculated, the lower one truncated. *E. B. t.* 392. *Lightf. p.* 664.

Hab. Rocks by the sea-side, especially on the western coast, in many places.

3. A. *Trichomanis*, fronds pinnate, pinnules roundish oblong obtuse crenate, truncato-cuneate at the base (stipes black). *Lightf. p.* 662. *E. B. t.* 576.

Hab. Rocks and walls, common.

4. A. *viride*, fronds pinnated, pinnules roundish ovate obtusely serrate cuneate at the base (stipes green). *Lightf. p.* 663. *E. B. t.* 2257.

Hab. Crevices of the rocks in the mountainous parts of the Highlands. Creg-a-chnocaen, between Ross-shire and Sutherland *Lightf.* Ben Lomond and Ben Nevis, *Mr. Murray.* Ben Lawers *Mr. Winch.* Appin, *Capt. Carmichael.*

5. A. *alternifolium*, fronds pinnate, pinnules alternate lanceolato-cuneate toothed at the apex, lower ones trifid and toothed. *E. B. t.* 2258. *A. germanicum, Willd.*

Hab. Sunny rocks in the south of Scotland, about two miles from Kelso, on the Tweed, *Dickson.* (In Switzerland it is quite an alpine plant.)

6. A. *Ruta-muraria*, fronds bipinnate at the base, pinnules cuneate obtusely toothed at the extremity. *Lightf. p.* 665. *E. B. t.* 150.

Hab. Walls and the fissures of rocks, frequent.

7. A. *Adiantum nigrum*, fronds bipinnate, pinnæ oblongo-lanceolate acute, pinnules oblong inciso-pinnatifid, the segments toothed at the apex, sori at length confluent. *Lightf. p.* 666. *E. B. t.* 1950.

Hab. Banks in shady places, and fissures of rocks, frequent.

6. SCOLOPENDRIUM.

Sori linear, transverse, scattered. *Involucre* double, occupying both sides of the *sorus*, superficial, and opening as it were by a longitudinal *suture*.

1. S. *vulgare. E. B. t.* 1150. *Asplenium Scolopendrium, Lightf. p.* 660.

Hab. Shady, rocky, or stony places.

Frond ligulate, acute, entire, cordate at the base.

7. PTERIS.

Sori continuous, linear, marginal. *Involucre* formed of the inflexed *margin* of the *frond* opening interiorly.

1. Pt. *crispa*, sterile fronds bipinnate, pinnules pinnatifid, the segments obovato-crenate inciso-dentate at the extremity, fertile fronds bipinnate tripinnate below, pinnules linear oblong rather obtuse entire narrow at the base. *E. B. t.* 116. *Osmunda crispa, Lightf. p.* 655.

Hab. Among rocks and stones in the Highland mountains. Ben-na-Caillich in Skye, *Lightf.* Salisbury craigs, *Mr. Stuart.* Birnam hill and near Cluny, *Mr. Arnott.* Goat-fell, in Arran, sparingly; on Ben Nevis, plentifully, *Mr. Murray.* Western Lomond Hill, Fifeshire; and near New Abbey, in Galloway, *Maugh.*

2. Pt. *aquilina*, frond tripartite, branches bipinnate, pinnæ linear-lanceolate, superior undivided, inferior pinnatifid, the segments oblong obtuse[a]. *E. B. t.* 1679. *Lightf. p.* 657.

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[a] I am happy in having the opportunity of publishing here some remarks upon the structure of the fructification of this plant, which have been kindly communicated to me in a letter from Thomas Smith, Esq. of the Temple, London. They allude to a real *involucrum* distinct from that formed by the involution of the margin of the *frond*. "This," Mr. Smith says, "will be found exactly opposite to that which is seen on the edge of the *frond*, and,

Hab. Woods, heaths, and rough stony soils, abundant.

Used as litter for cattle, and very frequently for the purpose of thatching cottages. The ashes are employed in the manufactories of soap and glass. Its astringent quality has recommended it in the dressing and preparing kid and chamois leather; the country people take it medicinally, to destroy worms, and a bed made of the green plant is esteemed a sovereign cure for the rickets in children, *Lightf.*

8. BLECHNUM.

Sori linear, longitudinal, continuous, parallel on each side of the rib of the frond. *Involucre* superficial, continuous, opening interiorly.

1. Bl. *boreale*, sterile fronds pinnatifid, the segments lanceolate rather obtuse parallel, fructiferous fronds pinnate, pinnæ linear acuminate. *E. B. t.* 1159. *Osmunda spicant*, *Lightf. p.* 654.

Hab. Woods, heaths, among rocks, &c., plentiful.

9. ADIANTUM.

Sori oblong or roundish. *Involucres* membranaceous, arising from distinct portions of the margin of the frond turned in, opening interiorly.

1. A. *Capillus Veneris*, frond bipinnate, pinnules obovato-cuneate inciso-sublobate, segments of the fertile pinnules terminated by a linear-oblong sorus, sterile ones serrated. *E. B. t.* 1564.

Hab. Banks of the Carron, a rivulet in Kincardineshire, *Prof. Beattie.*

10. HYMENOPHYLLUM.

Sori marginal. *Capsules* sessile, inserted upon a common cylindrical receptacle, within a 2-valved *involucre* of the same texture as the frond; *valves* plane, *exterior* one free. *Br.*

1. H. *tunbridgense*, fronds bipinnatifid glabrous, the segments

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between the two, the line of *capsules* is placed. It may be called the inner *involucre*, and much resembles the outer, having, like that, a ciliated edge; but instead of being flat it curls inwards, covering the *capsules* in their young state, and being itself covered by the outer one. It is best perhaps seen when the *capsules* are about half ripe: at which time it is nearly of the same breadth as the outer one, and is readily seen by the assistance of the microscope. In texture it seems to differ a little from the outer."

"" According to the principles upon which genera are formed in this order, the inner *involucrum* seems to afford a character which would justify the forming a new genus. I have found it in *Pteris caudata*, which is very nearly allied to *aqualina*: it also occurs in *Pt. esculenta*: and our mutual friend Brown authorizes me to say that it is found in a small group of the genus *Pteris*, the species of which agree in habit and are mostly extra-tropical, differing from the tropical species in having a thicker and harder *frond*, and not a thin filmy one which is found in most of the latter. It is perhaps not unworthy of remark, that this *involucrum* is never found, except when there is fructification. The outer one, it is well known, is almost always present whether there is fructification or not,—a circumstance, I believe, which does not generally take place in a true *Involucrum*." *Smith in letter, Aug.* 1819.

linear undivided or bifid, and, as well as the extremity of the axillary involucre, spinuloso-dentate. *Br. E. B. t.* 162. *Hook. in Fl. Lond. with a figure. Trichomanes tunbridgense, Lightf. p.* 681.

Hab. Wet rocks in the Highlands, abundant. In the greatest profusion on rocks near the road side along the shores of Loch Lomond.

Div. II. Osmundaceæ. *Capsules destitute of a ring, vasculoso-reticulate, pellucid, at the top, radiated or substriated, and hence longitudinally (and often externally) opening. Br.*

11. OSMUNDA.

Capsules subglobose, pedicellate, striated, half-bivalved, paniculated. *Involucre* none.

1. O. *regalis*, fronds bipinnate, pinnules lanceolate nearly entire the lower base somewhat auricled, the inferior ones opposite, fructifying panicle bipinnate at the extremity of the frond. *Willd. E. B. t.* 209. *Lightf. p.* 653.

Hab. Boggy places, especially near water; at the margins of lakes, not unfrequent.

2—3 feet high. The largest and handsomest of the British Ferns.

Div. III. Ophioglosseæ. *Capsules of one cell, adnate at the base, subglobose, coriaceous, opaque, destitute of a ring, not cellular (sometimes connate), semi-bivalved.*

12. OPHIOGLOSSUM.

Capsules naked upon an articulated distichous spike, connate, one-celled, transversely opening, two-valved. *Willd.*

1. O. *vulgatum*, spike cauline, frond ovate obtuse. *E. B. t.* 108. *Lightf. p.* 651. *Hook. in E. B. with a figure.*

Hab. Meadows and moist pastures, but not very common, as about Dunsinnane hill; in Gowrie, &c. *Lightf.* Woodhall, by Glasgow, *Hopk.* Old lee pasture at Possil, near the porter's lodge, Glasgow, *Mr. Murray.* Den of Rechip, *Mr. Arnott.* Appin, *Capt. Carmichael.*

13. BOTRYCHIUM.

Capsules subglobose, adnate with the racemed, compound rachis, distinct, naked, one-celled, valves two, connected behind, transversely opening. *Willd.*

1. Br. *Lunaria*, scape with a single frond above, frond pinnated, pinnæ lunate entire. *Willd. Hook. in Fl. Lond. with a figure. Osmunda Lunaria, Lightf. p.* 652. *E. B. t.* 318.

Hab. Mountain pasture. North of Linlithgow, *Sibbald.* West coast of Ross-shire and in Skye, *Lightf.* Pentland hills, Caroline Park, Cluny, &c. *Mr. Arnott.* Near Largs, Bute, Arran, and banks of the Clyde below Greenock, &c. *Mr. Murray.* Appin, *Capt. Carmichael.*

In some specimens gathered by Capt. Carmichael there were capsules produced round the lower segments of the fronds.

ORDER VIII.—LYCOPODINEÆ. *Sw.*

Fructification bracteated, axillary, or spiked. *Capsules* frequently of two kinds on the same plant, 1—3-celled, 2—3-valved, containing many minute *granules*; or a few, larger *corpuscules*. —*Roots* fibrous. *Stems* herbaceous or woody, simple or branched, often creeping. *Leaves* small, undivided, numerous, scattered, or alternate and distichous, often stipulated. *Mirb.*

14. LYCOPODIUM.

Capsules one-celled, axillary, sessile; some of them two-valved, filled with a farinaceous substance; others 3-valved, containing from 1—6 globose corpuscules. *Br.*

1. L. *clavatum*, stem creeping, branches ascending, leaves scattered incurved and hair-pointed, spikes geminate cylindrical pedunculate their scales ovate acuminate eroso-dentate. *Lightf.* *p.* 685. *E. B. t.* 224.

HAB. Mountainous and heathy pastures, plentiful.

The *seeds* are used to produce artificial lightning on the stage; and the Poles make a decoction of the plant to cure persons afflicted with that terrible disease, the *Plica polonica*.

2. L. *alpinum*, stems prostrate, branches dichotomous and fasciculated, leaves quadrifarious oblong convex acute appressed, spikes terminal solitary sessile short cylindrical. *Lightf. p.* 690. *E. B. t.* 234.

HAB. Upon the lofty Highland mountains, plentiful.

3. L. *annotinum*, stem creeping, branches ascending dichotomously branched, branchlets simple, leaves in 5 rows linear-lanceolate mucronate serrulate patent, spikes oblongo-cylindrical solitary sessile terminal. *Lightf. p.* 689. *E. B. t.* 1727.

HAB. Rough stony places by the sides of the Highland mountains, but not common, *Lightf.* Summit of Cairn-gorum, *Hook.*

4. L. *inundatum*, stem creeping, branches simple solitary erect with a single sessile leafy spike at its extremity, leaves linear scattered acute entire curved upwards. *Lightf. p.* 687. *E. B. t.* 239.

HAB. Wet heathy places and by the sides of lakes, but not common. About Blair in Athol, *Dr. Parsons.*

5. L. *selaginoides*, stem creeping, branches ascending simple, leaves scattered lanceolate subpatent ciliato-denticulate, spikes terminal solitary. *Lightf. p.* 686. *E. B. t.* 1148.

HAB. Boggy places by the sides of rivulets on the Highland mountains, frequent.

6. L. *Selago*, stems dichotomously branched erect fastigiate, leaves scattered in 8 rows linear-lanceolate acuminate entire imbricated rigid, capsules scattered (not spiked). *Lightf. p.* 687. *E. B. t.* 233.

HAB. Highland mountains, frequent.

Used in Raasay, near Skye, and some other places, instead of alum, to fix the colours in dyeing. The Highlanders employ it, in infusion, as an emetic and cathartic; but it operates violently, and, unless taken in a small dose, brings on giddiness and convulsions, *Lightf.*

Linnæus says, that the Swedes use a decoction of it to destroy lice on swine and other animals.

ORDER IX. MARSILEACEÆ. *Br.*

Fructifications radical. *Involucrum* subsphærical, not opening, coriaceous or membranaceous, one- or many-celled. Aquatics.

1. ISOETES.

Capsule membranaceous, not opening, immersed in the base of the frond, one-celled. *Seeds* angular, inserted upon many filiform receptacles.

1. I. *lacustris*, *Lightf. p.*683. *E. B. t.*1084.

HAB. Bottoms of the Highland lakes, not uncommon. In Jura and Skye, *Lightf.* Loch Tay, *Dr. Stuart.* Loch of Clunie, *Rev. Mr. M'Ritchie.* Loch Lomond, *Mr. Murray.* Loch Leven, *Mr. Arnott.* Shallow parts of the Lake of Monteith, *Mr. Young.*

Leaves all radical, 5—6 inches long, subulate, semicylindrical, fleshy.

2. PILULARIA.

Involucres imbricated, solitary, nearly sessile, globose, coriaceous, 4-celled. *Cells* containing two different kinds of bodies, *anthers?* and *capsules?*

1. P. *globulifera*, *Lightf. p.* 683. *E. B. t.* 521. *Hook. in Fl. Lond. with a figure.*

HAB. Damp places that are overflowed during the winter, but not common. Braid hill marshes, Pentland hills; Cuthel muir, &c. *Mr. Arnott.* Loch of Cluny, *Rev. Mr. M'Ritchie.* Loch Lomond, *Mr. Murray.*

Stems filiform, creeping. *Leaves* 2—3 inches long subulato-filiform, clustered. *Involucres* as large as peas, brown, scaly at the base of the leaves.

ORDER X. EQUISETACEÆ.

Fructification terminal, spicate, consisting of peltate polygonous scales, on the under side of which are from 4—7 involucres, which open longitudinally, and contain numerous naked (?) seeds, enfolded by four filaments bearing anthers (?) at their extremities.

Vegetation: stems rigid, leafless, jointed, striated, the articulations sheathed at the base, the branches whorled.

1. EQUISETUM.

1. E. *arvense*, sterile stems decumbent with simple branches,

which are roughish tetragonal, fertile ones erect simple their sheaths cylindrical inciso-dentate. *Lightf. p.* 647. *E. B. t.* 2020.

Hab. Wet meadows and corn-fields, frequent, flowering early in May. Considered very prejudicial to land, and injurious to cattle which occasionally eat it.

2. E. *fluviatile*, sterile stems with very numerous simple branches which are roughish octagonal, fertile ones simple, the sheaths infundibuliform lacerato-dentate, their teeth setaceous. *Lightf. p.* 649. *E. B. t.* 2022.

Hab. Shady marshes and the brinks of stagnant waters; flowering May, June. Three feet, or more, high, the stems very broad, the branches most numerous and erecto-patent.

3. E. *sylvaticum*, sterile and fertile stems with their branches compound roughish deflexed four-sided, branchlets subtriquetrous. *Lightf. p.* 646. *E. B. t.* 1874.

Hab. Woods, hedge-banks, and moist shady places.

4. E. *limosum*, stems branched upwards, with the branches about 12 in a whorl simple pentagonous smooth, spike or catkin terminal. *Lightf. p.* 648.

Hab. Lakes and ditches, frequent.

5. E. *palustre*, stems branched glabrous sulcate, branches simple pentagonous, spike terminal. *Lightf. p.* 648. *E. B. t.* 2021.

Hab. Ditches and wet soils, frequent.

6. E. *variegatum*, stems naked very rough branched at the base, sheaths black with white membranous lanceolate teeth, spike terminal. *E. B. t.* 1987.

Hab. Sands of Barry, in Angus-shire, *G. Don.*

7. E. *hyemale*, stems simple erect very rough bearing spikes at the extremity, sheaths whitish black at the base and summits, teeth aristate deciduous. *Lightf. p.* 650. *E. B. t.* 915.

All the *Equiseta* or *Horse-tails* are very rough to the touch; their bark abounds in silex, and they are thus admirably suited to the polishing of hard woods, ivory, brass, &c. This is, however, by far the most preferable kind, and is imported largely from Holland for that purpose, under the name of *Dutch rushes*. In Northumberland, Lightfoot tells us, the dairy-maids employ it to scour and clean their milk-pails.

Class II. MONOCOTYLEDONS. *Juss.*

(*Endorhizæ Rich. Monocotyledoneæ or Endogeneæ Decand.*)

Fruct. Embryo with one *Cotyledon;* or, if with two, then the additional *cotyledon* is smaller and alternate with the larger. *Plumule* usually inclosed in the body of the *Embryo*, which it perforates laterally as soon as germination commences, and gene-

rally considerably elongated before the *radicles* are protruded. The inferior end of the *Embryo* pierced by the radicles, which were inclosed in its substance, and remaining under the form of a *rim* or short *sheath* surrounding the base.

Vegetation. *Stem* cylindrical, increasing by addition to its centre with no perceptible difference of structure between the bark and the wood. *Leaves* alternate, often sheathing; with close parallel nerves, and minute transverse veins.

ORDER I. GRAMINEÆ. *Juss.*

Glume (*calyx Linn.*) 1—2- or many-flowered, mostly of 2 valves, rarely of 1 or wanting. *Perianth* (*corolla Linn.*) glumaceous, 1—2-valved. *Stamens* hypogynous. *Anthers* versatile. *Ovary* superior, with one *ovule*. *Styles* 2, rarely 1 or 3. *Stigmas* plumose. *Pericarp* a *Caryopsis*, or *Utriculus*. *Embryo* scutelliform, lateral, on the outside of the base of a farinaceous copious *albumen*. *Plumule* naked. *Stems* fistulose, generally simple and herbaceous, sometimes branched, rarely shrubby. *Leaves* one to each joint, with a *sheath* slit longitudinally on one side, having a membranous appendage (*ligule*) at its summit. *Flowers* small, panicled or spiked. *Br.*

SECT. I. PANICEÆ. *Br. in Flind. Voy. Glume with* 2—3 *flowers, of which the lowest is imperfect. Br.*

1. PANICUM.

Cal. of two valves, 2-flowered; the inferior *valve* very small. *Flowers* dissimilar; the *inferior* imperfect, of one or two valves; the *superior* perfect, 2-valved; *seed* invested with the permanent hardened *perianth*.

1. P. *sanguinale*, spike digitate, florets in pairs secund pubescent at the margins, leaves and sheaths slightly hairy. *p.* 21[a]. *Pastures, rare.*

2. ANTHOXANTHUM.

Glume of 2 valves, 3-flowered. *Inferior* flowers imperfect, of one valve, awned; *superior floret* 2-valved, perfect, awnless, *valves* minute. *Stam.* 2. *Caryopsis* free[b].

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[a] The pages thus referred to, after each specific character, throughout the *mono-* and *dicotyledonous* plants, are in the *first Part* of this *Flora*, where fuller descriptions and more particular habitats are given; both of which it was deemed unnecessary to repeat here.

[b] The character of this genus is so different from that which we have given of it in the first part of this work, that it will be unintelligible to students without some further explanation. It is therefore to be observed, that what are here termed the two lower imperfect florets, are in our character at p. 3, called the two outer valves of a double *perianth*, in conformity to the general mode of describing it, adopted by botanists of the Linnæan school.

1. A. *odoratum*, panicle spiked oblong, flowers upon short footstalks larger than the awns. *p.* 11.—*Pastures.*

3. HIEROCHLOE.

Glume of 2 valves, 3-flowered. *Perianth* of 2 valves; the lateral florets staminiferous, triandrous; terminal one perfect, diandrous. *Br.*

1. H. *borealis*, panicle subsecund, peduncles glabrous, florets awnless, outer valves of the perianth ciliated at the margin. *p.* 28. *Mountains, rare.*

Sect. II. Poaceæ. *Brown in Flind. Voy.* *Glumes* with one, two, or many flowers; either all perfect, or with the upper flower abortive. *Br.*

A. *Glume* 1-*flowered.*

4. NARDUS.

Glume none. *Perianth* of two valves. *Style* 1.

1. N. *stricta*, spike erect slender, the florets all pointing one way. *p.* 21.— *Heaths.*

5. ALOPECURUS.

Glume 2-valved, 1-flowered; *valves* nearly equal, united at the base, acute. *Perianth* of one valve, awned at the base.

1. A. *pratensis*, culm erect smooth, panicle spiked cylindrical obtuse, valves of the glume lanceolate acute hairy connate at the base, awn twice the length of the perianth. *p.* 22.—*Pastures.*
2. A. *alpinus*, culm erect smooth, panicle in an ovate spike, valves of the glume ovate abruptly acute hairy united at their base, awn scarcely longer than the perianth. *p.* 22.—*Alps.*
3. A. *agrestis*, culm erect scabrous above, panicle spiked cylindrical acuminate, valves of the glume acute almost glabrous united as far as the middle. *p.* 22.—*Fields.*
4. A. *geniculatus*, culm ascending bent at the joints, panicle spiked cylindrical obtuse, valves of the glumes united at the base truncated slightly hairy, awn twice as long as the perianth. *p.* 22. *Meadows.*

6. PHALARIS.

Glume 2-valved, 1-flowered; *flowers* with a double *perianth.* *Caryopsis* invested with the inner hardened perianth.

1. Ph. *canariensis*, panicle spiked ovate, valves of the glumes boat-shaped entire at the point, ext. perianth of 2-valves. *p.* 23. *Fields.*
2. Ph. *arundinacea*, panicle erect, branches patent, florets clustered secund, ext. perianth of two very minute hairy valves. *p.* 23.—*Margins of rivers, &c.*

7. PHLEUM.

Glume 2-valved, 1-flowered; *valves* nearly equal, acuminate or mucronato-aristate, including a single awnless perianth. *Caryopsis* free.

1. Phl. *pratense*, spike cylindrical, glumes truncate mucronato-aristate ciliated at the back longer than the awn. *p.* 23.—*Pastures.*
2. Phl. *alpinum*, spike ovato-oblong, glumes truncate mucronato-aristate ciliated at the back equal in length to the awn, *p.* 23. *Alps.*
3. Phl. *Michelii*, panicle spiked cylindrical, glumes lanceolate acuminate strongly ciliated at the back. *p.* 24.—*Alps.*
4. Phl. *arenarium*, panicle spiked oblongo-obovate, glumes lanceolate acute ciliated at the back. *p.* 24.—*Sandy sea-shores.*

8. MILIUM.

Glume 2-valved, 1-flowered; *valves* ventricose. *Caryopsis* invested with the permanent, hardened *perianth.*

1. M. *effusum*, flowers loosely panicled awnless. *p.* 24.—*Woods.*

9. AGROSTIS.

Glume 2-valved, 1-flowered; *valves* acute, compressed, awnless. *Perianth* shorter than the glume, slightly hairy at the base. *Caryopsis* free.

* *Outer valve of the Perianth awned.*

1. A. *canina*, branches of the panicle long slender erecto-patent, valves of the glume unequal lanceolate rough at the back, perianth of 1 valve with a dorsal awn from below the middle, leaves linear. *p.* 24.—*Heaths, &c.*
2. A. *setacea*, branches of the panicle short erect, valves of the glumes unequal lanceolate rough at the back, outer valve of the perianth with a longish awn from the base, inner one ovate very minute, leaves setaceous. *p.* 25.—*Heaths?*

** *Perianth awnless (or mostly so).*

3. A. *vulgaris*, branches of the panicle smoothish, branchlets diverging, outer valve of the perianth 3-nerved, ligule extremely short and truncate. *p.* 25.—*Pastures, &c.*
4. A. *alba*, branches of the panicle hispid, branchlets patent, outer valve of the perianth 5-nerved, ligule long. *p.* 25.—*Waste places.*

10. ARUNDO.

Glume of 2-valves, 1-flowered (in *A. Phragmites* many-fl.). *Perianth* surrounded with long hairs. *Caryopsis* free, but covered with the *perianth.*

* *Glume* 1-*flowered* (Calamagrostis).

† *Perianth awned.*

1. A. *Calamagrostis*, panicle erect diffuse, glumes acuminate, perianth with a small terminal awn shorter than the glume and the tuft of hairs. *p.* 27.— *Shady places.*
2. A. *stricta*, panicle erect close, glumes acute, perianth about as long as the glume longer than the tuft of hairs with a dorsal awn equal to it in length. *p.* 27.—*Marshes, rare.*

†† *Perianth awnless.*

3. A. *arenaria*, panicle spiked, glumes acute, perianth as long as the glume thrice as long as the tuft of hairs, leaves involute pungent. *p.* 27.—*Sandy sea-shores.*

** *Glume many-flowered* (Arundo).

4. A. *Phragmites*, glume about 5-flowered, florets longer than the glume. *p.* 27.—*Watery places.*

11. ROTTBOLLIA.

Glume of 2 valves, 1-flowered, *valves* lateral. *Flowers* alternate, ranged upon a jointed rachis.

1. R. *incurvata*, spike filiform or awl-shaped, glume 2-valved. *p.* 46.— *Sandy sea-shores.*

12. HORDEUM.

Glumes standing three together, 2-valved, 1-flowered; *valves* lateral; intermediate glumes perfect, lateral ones with anthers or pistils. *Perianth* 2-valved, awned.

1. H. *murinum*, valves of the glumes of the intermediate floret linear-lanceolate ciliated, those of the lateral florets setaceous scabrous. *p.* 46.—*Waysides.*
2. H. *pratense*, valves of the glumes all setaceous scabrous. *p.* 46. —*Pastures, rare.*
3. H. *maritimum*, valves of the glumes smoothish, the int. one of the lateral florets semi-lanceolate, the rest setaceous. *p.* 46. —*Sea-coast, rare.*

B. *Glume* 2-, *rarely* 3-*flowered.*

13. HOLCUS[a].

Glume 2-valved, 2-flowered, nearly equal. *Perianth* 2-valved. *Florets* dissimilar, polygamous, one awned, the other awnless, without any imperfect one between them. *Caryopsis* free or enveloped in the membranaceous *perianth.*

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[a] *Holcus* thus characterised is very different from the *Holcus* of Mr. Brown, and most of the Linnæan species, which constitute the genus *Sorghum* of Persoon, and do not belong even to this section, but to *Paniceæ.*

1. H. *avenaceus*, perfect floret superior scarcely awned, imperfect one antheriferous with a very long jointed awn, root knotted. *p.* 28.—*Pastures.*
2. H. *mollis*, perfect floret inferior and awnless, imperfect one antheriferous with a bent awn reaching beyond the glume, root creeping. *p.* 28.—*Hedges and pastures.*
3. H. *lanatus*, perfect floret inferior and awnless, imperfect one antheriferous with a curved awn included in the glume, root fibrous. *p.* 28.—*Pastures.*

14. AIRA.

Glume 2-valved, unequal, 2-flowered. *Perianth* 2-valved, the outer one awned above the base (rarely awnless). *Florets* without any imperfect ones between them. *Caryopsis* free, but covered with the perianth.

* *Perianth awnless.*

1. A. *cristata*, panicle spiked, florets longer than the acuminated glumes, leaves hairy, *p.* 29.—*Dry pastures, near the sea.*
2. A. *aquatica*, panicle spreading, glumes obtuse, florets longer than the glumes. *p.* 29.—*Watery places.*

** *Perianth awned.*

3. A. *cæspitosa*, panicle diffuse, branches scabrous, florets villous at the base rather longer than the glume, awn straight inserted near the base of and not exceeding the perianth, leaves plane. *p.* 29.—*Shady places.*
4. A. *alpina*, panicle subcoarctate, branches and pedicels perfectly smooth, florets villous at the base as long as the glume, awn inserted above the middle of and scarcely exceeding the perianth, leaves linear. *p.* 30.—*Alps.*
5. A. *flexuosa*, panicle (when flowering) diffuse, florets villous at the base as long as the glume, awn jointed inserted near the base much longer than the perianth, leaves setaceous. *p.* 30. —*Heaths.*
6. A. *caryophyllea*, panicle divaricate, florets scarcely villous at the base shorter than the glume, awn inserted below the middle jointed longer than the glume, leaves setaceous. *p.* 30.—*Dry pastures.*
7. A. *præcox*, panicle somewhat spiked, florets scarcely villous at the base about as long as the glume, awn twisted inserted below the middle longer than the glume, leaves setaceous. *p.* 30. —*Sandy pastures.*

15. MELICA.

Glume 2-valved, about 2-flowered, with the rudiment of a third *floret*. *Perianth* 2-valved, awnless. *Caryopsis* free, covered by the cartilaginous *perianth*.

1. M. *nutans*, panicle nearly simple racemed secund, spikelets drooping ovate 2-flowered. *p.* 30.—*Woods.*
2. M. *uniflora*, panicled branched slightly drooping, spikelets erect ovate with only one perfect floret. *p.* 31.—*Woods.*
3. M. *cærulea*, panicle erect subcoarctate, spikelets erect oblongo-cylindrical. *p.* 31.—*Moors.*

C. *Glume many-flowered.*

16. LOLIUM.

Glume of 1 valve, lateral, fixed. *Perianth* 2-valved, firmly enveloping the *Caryopsis*; *valves* lanceolate, ext. with or without an awn inserted below the extremity.

1. L. *perenne*, spikelets much longer than the glume, florets awnless linear-oblong compressed, root perennial. *p.* 45.—*Waste places.*
2. L. *arvense*, spikelets about as long as the glume, florets elliptical with very soft short awns, root annual. *p.* 45.—*Fields.*
3. L. *temulentum*, spikelets shorter than the glume, florets elliptical about as long as the rigid awn, root annual. *p.* 45.—*Fields.*

17. SESLERIA.

Glume 2—3-flowered, compressed, acute, somewhat awned. *Perianth* variously toothed or awned. *Caryopsis* free, but covered with the *perianth.*

1. S. *cærulea*, panicle spiked ovate bracteated, spikelets 2—3-flowered, ext. valve of the perianth aristate and toothed. *p.* 31.—*Mountains.*

18. POA.

Glume 2-valved, many-flowered; *valves* of the *perianth* subovate, somewhat acute, awnless. *Caryopsis* free, covered with the *perianth.*

1. P. *aquatica*, panicle erect very much branched, spikelets linear of about 6 obtuse florets which have 7 ribs. *p.* 32.—*Ditches, &c.*
2. P. *fluitans*, panicle nearly erect slightly branched, spikelets linear appressed of from 7—11 obtuse florets which have 7 ribs with short intermediate ribs at the base, root creeping. *p.* 32.—*Ditches.*
3. P. *maritima*, panicle erect subcoarctate (rigid), spikelets linear of about 5 obtuse flowers which are obsoletely 5-nerved, leaves convolute, root creeping. *p.* 33.—*Sea-coast.*
4. P. *distans*, panicle divaricate, branches at length deflexed, spikelets linear of about 5 obtuse flowers which are obsoletely 5-nerved, leaves plane, root fibrous. *p.* 33.—*Pastures near the coast.*

5. P. *procumbens*, panicle compact ovato-lanceolate disticho-secund (rigid), spikelets linear-lanceolate of about 4 flowers which are 5-ribbed. *p.* 33.—*Salt marshes.*
6. P. *rigida*, panicle lanceolate disticho-secund (rigid), spikelets linear acute of about 7 flowers which are almost ribless, root fibrous. *p.* 33.—*Walls and dry banks.*
7. P. *compressa*, panicle subsecund spreading (afterwards subco-arctate), spikelets oblongo-ovate of from 5—7 obtuse flowers connected by a web, culm compressed, root creeping. *p.* 34. —*Walls.*
8. P. *alpina*, panicle diffuse, spikelets ovate of 4—5 acute flowers hairy below (but not webbed), leaves broadly linear obtuse, ligule of the upper leaves oblong acute, of the lower ones short obtuse. *p.* 34.—*Alps.*
9. P. *laxa*, panicle contracted lax slightly drooping, spikelets ovate of about 3 flowers which are acute connected by a web, leaves linear acute narrow, ligules all lanceolate. *p.* 34.—*Alps.*
10. P. *cæsia*, " panicle spreading, spikelets ovate 5-flowered, glumes lanceolate silky-edged unconnected by any web, ligule very short and blunt." *p.* 34.—*Alps.*
11. P. *trivialis*, panicle diffuse, spikelets oblongo-ovate of about 3 flowers which are acute 5-nerved connected with a web, culms and sheath roughish, ligule oblong, root fibrous. *p.* 35. —*Meadows.*
12. P. *pratensis*, panicle diffuse, spikelets oblongo-ovate of about 4 flowers which are acute 5-nerved webbed, culm and sheaths smooth, ligule short, root creeping. *p.* 35.—*Meadows.*
13. P. *annua*, panicle subsecund divaricated, spikelets oblongo-ovate of about 5 flowers which are a little remote 5-ribbed destitute of web, culm ascending compressed, root fibrous. *p.* 35.—*Pastures.*
14. P. *nemoralis*, panicle slender slightly leaning one way lax attenuate, spikelets lanceolate of about 3 rather distant slightly webbed flowers, ligule short truncate, culms subcompressed and sheaths glabrous, root subrepent. *p.* 35.—*Woods and mountains.*
15. P. *decumbens*, panicle nearly simple contracted few-flowered, glume as long as the four-flowered spikelet, ligule a tuft of hairs. *p.* 36.—*Mountain pastures.*

19. BRIZA.

Glume 2-valved, many-flowered. *Perianth* 2-valved, ventricose, the *valves* cordate, obtuse, awnless. *Caryopsis* adnate with the *perianth.*

1. Br. *media*, spikelets broadly ovate of about 7 flowers, glume shorter than the florets. *p.* 37.—*Pastures.*

20. DACTYLIS.

Glume 2-valved, many-flowered; valves unequal, the larger one keeled. *Perianth* 2-valved; *valves* lanceolate, awnless. *Caryopsis* invested with the permanent, hardened *perianth*.

1. D. *glomerata*, panicle crowded secund, leaves plane. *p.* 37. —*Way-sides, &c.*

21. ELYMUS.

Glumes many-flowered, in pairs or ternate, lateral, the *valves* nearly equal. *Perianth* firmly enveloping the *caryopsis; valves* lanceolate, ext. acuminate or lengthened into an awn. (*Fl. spiked.*)

1. E. *arenarius*, spike upright dense, spikelets pubescent, flowers awnless as long as the glume, leaves involute rigid. *p.* 46.—*Sandy sea-shores.*

22. FESTUCA.

Glume 2-valved, many-flowered; *valves* unequal. *Perianth* of 2 valves, lanceolate, ext. one acuminate or awned at the extremity.

1. F. *ovina*, panicle subsecund subcoarctate, spikelets oblong of about 4—5 flowers with short awns, culms square (upward), leaves setaceous. *p.* 38.—*Dry pastures.*
2. F. *duriuscula*, panicle subsecund subcoarctate, spikelets oblong of about 6 flowers with short awns, stem leaves nearly plane, radical ones subsetaceous. *p.* 38.—*Dry pastures, especially near the sea.*
3. F. *bromoides*, panicle secund racemose, flowers shorter than the awn monandrous, culm above leafless. *p.* 39.—*Walls.*
4. F. *Myurus*, panicle secund elongate contracted, flowers shorter than the awn monandrous, culm leafy in its upper part. *p.* 39. —*Walls, &c.*
5. F. *gigantea*, panicle branched drooping towards one side, spikelets lanceolate compressed, flowers shorter than the awn, leaves linear-lanceolate ribbed. *p.* 39.—*Moist woods.*
6. F. *calamaria*, panicle subsecund much branched spreading nearly erect, spikelets oblong awnless 3—5-flowered, leaves linear-lanceolate. *p.* 40.—*Moist alpine woods.*
7. F. *foliacea*, raceme spiked distichous elongate, spikelets distant linear many-flowered, florets cylindrical awnless. *p.* 40. —*Pastures.*
8. F. *pratensis*, panicle patent branched, spikelets linear many-flowered, florets cylindrical awnless, leaves linear, root fibrous. *p.* 40.—*Meadows.*
9. F. *elatior*, panicle patent very much branched, spikelets ovato-lanceolate many-flowered, florets cylindrical subaristate,

leaves linear-lanceolate, root creeping. *p.* 40.—*Moist pastures.*

23. TRITICUM.

Glumes 2-valved, many-flowered; *valves* opposite, solitary, nearly equal. *Perianth* 2-valved; *valves* lanceolate; ext. one acuminated or lengthened into an awn. *Caryopsis* adnate with the *perianth.* *Rachis* zigzag, toothed. (*Flowers spiked.*)

1. Tr. *junceum,* valves of the glume obtuse much ribbed with 4—5 awnless flowers, leaves involute pungent, root creeping. *p.* 44.—*Sea-coast.*
2. Tr. *repens,* valves of the glume much nerved with from 4—8 awned (rarely awnless) flowers, leaves plane, root creeping. *p.* 44.—*Waste places.*
3. Tr. *caninum,* valves of the glume awned (mostly 3-) nerved with about 5 awned flowers, leaves plane, root fibrous. *p.* 44. —*Woods and banks.*
4. Tr. *cristatum,* valves of the glume subulate keeled aristate scarcely nerved of about 4 awned flowers, spikelets much crowded. *p.* 45.—*Sea-side, very rare.*
5. Tr. *loliaceum,* spike secund, valves of the glume indistinctly 3-nerved obtuse of many awnless flowers, root fibrous annual. *p.* 45.—*Sea-coast.*

24. BROMUS.

Glume of 2 valves, many-flowered. *Perianth* bivalved; *valves* lanceolate; ext. one awned below the extremity. *Caryopsis* adnate with the *perianth.* (Inner *valve* fringed. *Sm.*)

* *Awn terminal. Raceme spiked.*

1. Br. *sylvaticus,* raceme spiked slightly drooping, spikelets distichous linear erect remote, awns straight longer than the florets. *p.* 40.—*Woods.*

** *Awns from below the point of the perianth. Panicle branched.*

2. Br. *secalinus,* panicle spreading, peduncles but little branched, spikelets oblongo-ovate (ovate, *Sm.*) compressed of about 10 subcylindrical glabrous rather remote flowers longer than the awn. *p.* 41.—*Fields.*
3. Br. *velutinus,* panicle spreading, peduncles but little branched, spikelets oblongo-lanceolate compressed of about 12 cylindrical pubescent subimbricated florets, awns longer than the glume (at length patent). *p.* 41.—*Fields.*
4. Br. *mollis,* panicle erect close compound, spikelets ovate subcompressed, florets imbricated depressed pubescent, awn straight about as long as the glume, leaves very soft pubescent. *p.* 41.—*Pastures.*
5. Br. *racemosus,* panicle erect, peduncles simple, spikelets ovate

subcompressed glabrous, florets imbricated depressed, awns straight about as long as the glume, leaves slightly hairy. *p.* 41.—*Fields.*

6. Br. *squarrosus*, panicle drooping, peduncles simple, spikelets ovato-lanceolate subcompressed, florets nearly glabrous imbricated depressed, awn divaricating, leaves pubescent. *p.* 42.—*Fields?*

7. Br. *arvensis*, panicle spreading (at length drooping) peduncles branched, spikelets lanceolate compressed, florets imbricated depressed glabrous about as long as the straight awn, leaves hairy. *p.* 42.—*Fields.*

8. Br. *erectus*, panicle erect, spikelets linear-lanceolate compressed, florets subcylindrical remote glabrous longer than the straight awn, radical leaves very narrow ciliated. *p.* 42.—*Pastures.*

9. Br. *asper*, panicle branched drooping, spikelets linear-lanceolate compressed, florets remote subcylindrical hairy longer than the straight awn, leaves uniform the lower ones hairy. *p.* 42.—*Woods.*

10. Br. *sterilis*, panicle drooping slightly branched, spikelets linear-lanceolate, florets remote subcylindrical scabrous shorter than the straight awn, leaves pubescent. *p.* 43.—*Hedges.*

11. Br. *diandrus*, panicle erect slightly branched, spikelets linear-lanceolate, florets remote subcylindrical subscabrous about as long as the straight awn, stam. 2 (sometimes 3, *Schrad.*), leaves subglabrous. *p.* 43.—*Hedges.*

25. AVENA.

(*Glume* 2-valved, many-flowered. *Perianth* bivalved; *valves* lanceolate, firmly inclosing the *caryopsis; ext.* one bearin twisted *awn* on its back.

1. A. *fatua*, panicle erect, spikelets drooping of about 3 flowers, florets smaller than the glume hairy below, root fibrous (annual). *p.* 43.—*Fields.*

2. A. *pubescens*, panicle erect nearly simple, spikelets of about 3 flowers which are longer than the glume, their pedicels villous, leaves plane downy, edges smooth. *p.* 43.—*Hilly pastures.*

3. A. *planiculmis*, panicle erect slightly branched (subspicate), spikelets of about 5 flowers which are much longer than the glume, margins of the leaves and the sheaths scabrous, culms and sheaths compressed. *p.* 43.—*Alps.*

4. A. *pratensis*, raceme erect simple, spikelets of about 5 flowers which are longer than the glume, leaves glabrous finely serrated, lower ones involute. *p.* 44.—*Mountain pastures.*

5. A. *flavescens*, panicle much branched lax, spikelets of about

3 flowers which are longer than the very unequal valves of the glume, root creeping. *p.* 44.—*Pastures.*

26. CYNOSURUS.

Glume bivalved, 2—5-flowered, having a pectinated *involucrum*. *Perianth* with linear lanceolate valves; *ext.* awnless or awned below the extremity. *Caryopsis* incorporated with the *perianth*.

1. C. *cristatus*, raceme spiked linear, florets with a very short awn. *p.* 39.—*Pastures.*

Order II. CYPERACEÆ. *Juss. Br.*

Flowers supported by a chaffy *scale* (glume). *Perianth* none, or composed of bristles, rarely a membrane, 1—3-leaved. *Stam.* hypogynous, generally 3. *Anthers* inserted by their base. *Ovary* superior, with one erect *Ovule*. *Style* single, generally trifid, rarely bifid. *Stigmas* entire. *Achenium* crustaceous or bony. *Embryo* lenticular, inclosed in the base of a copious *albumen*. *Plumule* included in the substance of the *Embryo*. —*Stems* slender or triangular; sometimes with an indefinite number of angles, usually without joints, sometimes jointed and branched. *Leaves* with an entire *sheath*, which is sometimes fissile when old: the floral ones generally destitute of sheath. *Scales* disposed in spikes, those at the bottom without flowers. *Br.*

1. ERIOPHORUM.

Scales imbricating the spike on all sides. *Achenium* with very long silky hairs springing from the base.

* *Spike solitary.*

† *Culm naked.*

1. E. *alpinum*, culm triangular, leaves much shorter than the sheaths, spike oblongo-ovate. *p.* 20.—*Alps.*

†† *Culm leaf-bearing.*

2. E. *vaginatum*, culm above triangular, spike ovate. *p.* 20.—*Bogs.*
3. E. *capitatum*, culm rounded to the top, spike nearly sphærical. *p.* 20.—*Alps, rare.*

** *Spikes many on a culm, pedunculated.*

4. E. *gracile*, culms trigonous channelled, spikes longer than the involucre. *p.* 20.—*Alps.*
5. E. *angustifolium*, culms subtrigonous, leaves linear grooved, involucre longer than the flowering spikes. *p.* 21.—*Bogs.*
6. E. *polystachyon*, culms trigonous, leaves broadly linear plane, involucrum longer than the flowering spikes. *p.* 21.—*Bogs.*

2. SCHŒNUS.

cales imbricating the spike on all sides, the exterior ones smaller, without flowers. *Achenium* naked or with a few bristles at its base.

* *Culms leafy.*

Sch. *albus*, culm triangular, leaves linear-setaceous, flowers terminal subcorymbose as long as the involucrum. *p.* 16.—*Bogs.*

** *Culms naked.*

Sch. *nigricans*, culm rounded, spikelets of flowers collected into an ovate cluster, involucrum of two leaves, the exterior one longer than the flowers. *p.* 16.—*Bogs.*

Sch. *compressus*, culm roundish, spike distichous shorter than the monophyllous involucrum, spikelets many-flowered, leaves plane. *p.* 16.—*Bogs, rare.*

Sch. *rufus*, culm rounded, spike distichous longer than the involucrum, spikelets few-flowered, leaves setaceous channelled. *p.* 17.—*Wet moors.*

3. SCIRPUS.

ales imbricating the spike on all sides, one or two of the outer ones occasionally without flowers. *Achenium* naked, or with bristles at its base.

* *Spike solitary.*

† *Culms simple.*

Sc. *cæspitosus*, culm rounded, sheath terminating in the rudiments of leaves, two outer scales as long as the spike involucrate, stigmas 3. *p.* 17.—*Moors.*

Sc. *pauciflorus*, culm rounded, sheaths leafless, spike ovate naked, scales obtuse nearly equal, two outer ones the largest but shorter than the spike, stigmas 3. *p.* 17.—*Mountains.*

Sc. *palustris*, culm rounded, sheaths at the base leafless, spike oblongo-ovate naked, scales nearly equal in size, stigmas 2. *p.* 18.—*Marshes.*

Sc. *acicularis*, culm compressed grooved, sheaths leafless, spike ovate acute naked (no involucrum), scales acuminate, stigmas 3, fruit without bristles. *p.* 18.—*Marshes.*

†† *Culms branched.*

Sc. *fluitans*, culm rounded leafy flaccid, spikes ovate naked (no involucrum), scales rather obtuse, stigmas 2, fruit destitute of bristles. *p.* 18.—*Ditches.*

** *Spikelets many.*

† *Culms rounded.*

Sc. *lacustris*, upper sheaths leafy, cyme terminal twice compound, involucrum 2-leaved. *p.* 18.—*Sides of lakes.*

Sc. *setaceus*, culms setaceous rounded or very slightly com-

pressed, sheaths leafy, spikelets terminal geminate, involucrum 1-leaved. *p.* 19.—*Wet gravelly places.*

†† *Culms triangular.*

8. Sc. *maritimus*, culm leafy, spikelets terminal clustered pedunculate and sessile, involucre of many foliaceous leaflets, scales with a mucro between the acute segments of a notch. *p.* 19.—*Salt marshes.*
9. Sc. *sylvaticus*, culm leafy, cyme terminal many times compounded, involucrum of many foliaceous leaflets, scales entire acute. *p.* 19.—*Wet woods.*

4. CLADIUM.

Scales imbricating the spikelets on all sides; outer ones sterile. *Stam.* 2. *Style* 1. *Fruit* a *Nut* with a loose external coat (*Epicarp.*), destitute of bristles at its base.

1. Cl. *Mariscus*, panicle much divided leafy, spikelets capitato-glomerate, culm rounded leafy, margins of the leaves and keels rough. *p.* 11.—*Bogs, very rare.*

5. CAREX.

Generally monœcious. *Scales* imbricating the spikes on all sides. *Barren flowers. Perianth* 0. *Stam.* 3. *Fertile flowers* (in the same or on different spike). *Perianth* monophyllous, urceolate, surrounding and concealing the ovary. *Stigmas* 2—3. *Nut* or *Achenium* included in the enlarged perianth.

* *Spike simple, solitary, the upper part formed of sterile, the lower of fertile flowers* (except in *C. dioica* and *Davalliana*, which are diœcious).

1. C. *dioica*, spike simple diœcious, fruit ascending ovate shortly acuminated striated rough at the margin upwards. *p.* 260.—*Mountains.*
2. C. *Davalliana*, spike simple diœcious, fruit ovate much acuminated recurvato-deflexed smoothish at the margin. *p.* 20.—*Alpine bogs.*
3. C. *pulicaris*, spike simple androgynous, flowers few, fruit distant oblongo-lanceolate acuminate reflexed, stigmas 2. *p.* 261.—*Bogs.*
4. C. *pauciflora*, spike simple androgynous of very few flowers, fruit distant lanceolato-subulate patenti-reflexed, stigmas 3. *p.* 261.—*Alps.*

** *Culm divided upwards into several spikes, which are sessile, androgynous, with a subamplexicaul bractea at the base, and flowers with two stigmas.*

† *Spikelets sterile at their extremity* (except in *C. arenaria* and *C. intermedia.*).

5. C. *incurva*, spikelets sterile at their extremity collected int

a roundish head, fruit broadly rotundato-ovate shortly acuminated swelling on both sides nearly entire at the point, culm obtusely angular, leaves channelled. *p.* 261.—*Sandy sea-shores, rare.*

6. C. *arenaria*, lower spikelets fertile upper ones sterile all crowded, fruit with a membranous margin, bracteas membranaceous the lower ones subfoliaceous, culm triangular, leaves plane. *p.* 261.—*Sandy sea-shores.*
7. C. *intermedia*, inferior and terminal spikelets fertile, the intermediate ones sterile, fruit acutely margined, culms triangular. *p.* 262.—*Marshes.*
8. C. *divisa*, spikelets sterile at their extremity crowded into a somewhat ovate head, the lower ones simple or compound with a leafy erect bractea at their base, fruit roundish ovate convex on one side slightly concave on the other acutely angular cloven at the point. *p.* 262.—*Marshes.*
9. C. *muricata*, spikelets sterile at their extremities subcompounded collected into a rather long more or less interrupted spike, fruit convexo-plane ovato-acuminate acutangular divergent rough at the margin upward. *p.* 262.—*Marshes.*
10. C. *vulpina*, spikelets sterile at their extremities thrice compounded collected into a cylindrical crowded spike, fruit ovate acuminated convexo-plane acutangular divergent, stem very acutely triangular, leaves rather broad. *p.* 262.—*Watery places.*
11. C. *paniculata*, spikelets sterile at their extremity thrice compounded and collected into a panicled spike, fruit broadly ovate acuminated gibbous on both sides with a somewhat membranaceous margin towards the extremity. *p.* 262.—*Marshes.*

†† *Spikelets sterile at their base.*

12. C. *stellulata*, spikelets sterile at their base 3 or 4 distant, fruit ovate much attenuated convex or plane acutangular divaricated rough at the margins. *p.* 263.—*Moist heaths.*
13. C. *curta*, spikelets sterile at their base about 5 rather distant elliptical, bracteas very minute (except the lower one), fruit broadly ovate acute convex on one side and nearly plane on the other subobtusangular with 2 teeth at the extremity. *p.* 263.—*Bogs.*
14. C. *ovalis*, spikelets sterile at the base oval about 5 approximate, fruit as long as the scale ovato acuminate convex on one side concave on the other with a membranaceous margin, bifid at the point. *p.* 263.—*Marshes.*
15. C. *remota*, spikelets sterile at the base distant, fruit longer than the scale oblongo-ovate acuminate convexo-plane subacutangular obtuse at the margins the point bifid, bracteas very narrow reaching beyond the culm. *p.* 263.—*Woods.*

**** Sterile and fertile flowers upon distinct spikes on the same culm.*

† Sterile spikes mostly single.

← Stigmas 3.

16. C. *pendula*, sheaths elongated nearly equal to the flowerstalks, fertile spikes cylindrical very long and drooping, fruit ovate shortly acuminate bifid at the extremity closely imbricated, leaves broad. *p.* 264.—*Woods and shady places.*
17. C. *strigosa*, sheaths elongated equal to the flowerstalks, fertile spikes slender filiform nearly erect, fruit ovato-lanceolate nerved slightly recurved loosely imbricated, leaves rather broad. *p.* 264.—*Woods.*
18. C. *sylvatica*, sheaths half as long as the flowerstalks, fertile spikes filiform rather slender slightly drooping, fruit broadly ovate much acuminated cleft at the point, leaves narrow. *p.* 264.—*Woods.*
19. C. *depauperata*, sheaths much shorter than the flowerstalks, fertile spikes erect remote very few-flowered, fruit large nearly globose inflated terminating in a long beak bifid at the point. *p.* 264.—*Woods, rare.*
20. C. *Mielichoferi*, sheaths about half as long as the flowerstalks, fertile spikes 1—3 somewhat drooping, fruit scarcely longer than the scale lax especially the lower ones with a short beak bifid at the point. *p.* 265.—*Mountains.*
21. C. *capillaris*, common sheath half the length of the flowerstalks, fertile spikes few-flowered lax drooping, fruit as long as the ovate membranaceous deciduous scales oblongo-ovate acuminate. *p.* 265.—*Alps.*
22. C. *limosa*, sheaths extremely short scarcely any, fertile spikes oblongo-ovate pendulous, bracteas subsetaceous, scales acute as long as the elliptico-roundish striated shortly mucronated fruit. *p.* 265.—*Bogs in the mountains.*
23. C. *rariflora*, sheaths very short almost none, fertile spikes narrow oblong very few-flowered lax pendulous, bracteas subsetaceous, scales acute longer and broader than the ovate somewhat acute striated fruit. *p.* 265.—*Alps.*
24. C. *Pseudo-cyperus*, sheaths scarcely any (except, sometimes, to the lowermost bractea), fertile spikes upon long footstalks cylindrical pendulous, bracteas very leafy, scales setaceous, fruit oblong very much acuminated cloven at the tips striated. *p.* 265.—*Sides of lakes.*
25. C. *ustulata*, sheaths elongated shorter than the flowerstalks, fertile spikes pendulous, bracteas nearly leafless, fruit elliptical ovate beaked (black) bifid at the point. *p.* 266.—*Alps.*
26. C. *atrata*, sheaths scarcely any, fertile spikes pedunculated

ovate pendulous, the terminal one with sterile flowers at the base, bracteas subfoliaceous, fruit roundish ovate depressed with a short beak bifid at the point. *p.* 266.—*Alps.*

27. C. *pallescens*, sheaths scarcely any, fertile spikes pedunculated oblongo-cylindrical subpendulous, bracteas subfoliaceous, fruit ovato-elliptical tumid obtuse glabrous. *p.* 266.—*Marshes.*

28. C. *flava*, sheaths short about equal to the flowerstalks, bracteas long foliaceous, fertile spikes roundish-oval, fruit obovate with a long recurved beak bifid at the point. *p.* 266.—*Bogs and moist heaths.*

29. C. *fulva*, sheaths elongated shorter than the flowerstalks, bracteas foliaceous, spikes oblongo-ovate distant, fruit roundish ovate inflated rostrate bifid at the point, culm scabrous. *p.* 266. —*Hilly pastures.*

30. C. *extensa*, sheaths very short scarcely any with extremely long foliaceous bracteas, fertile spikes subsessile oblong, fruit ovate scarcely beaked striated bifid at the point, leaves very narrow, culm glabrous. *p.* 267.—*Pastures near the coast, rare.*

31. C. *distans*, sheaths elongated about equal to the flowerstalks, bearing foliaceous bracteas, fertile spikes oblong erect, scales mucronate, fruit ovate somewhat inflated subtriquetrous depressed with rather a short beak bifid at the point. *p.* 267.—*Marshes.*

32. C. *præcox*, sheaths short scarcely any equal to the flowerstalks, fertile spikes oblong approximate, scales elliptical-oblong, fruit obovate subtriquetrous acute pubescent. *p.* 267.—*Heathy pastures.*

33. C. *pilulifera*, sheaths none, bracteas small subfoliaceous, fertile spikes sessile roundish approximate, scales mucronate, fruit obovato-globose acute pubescent, culms weak scabrous. *p.* 267. —*Moors.*

34. C. *panicea*, sheaths elongated shorter than the flowerstalks, fertile spikes subcylindrical with distant flowers, bracteas foliaceous, fruit subglobose somewhat inflated obtuse glabrous entire at the point. *p.* 267.—*Marshes.*

35. C. *recurva*, sheaths short scarcely any, bracteas subfoliaceous, fertile spikes subcylindrical drooping, fruit obovato-globose obtuse rather downy entire at the point. *p.* 268.—*Moors.*

++ *Stigmas* 2.

36. C. *pulla*, sheaths none, bracteas foliaceous, fertile spikes ovate the lower one pedunculated, scales oblong, fruit subglobose apiculate with a short bifid beak. *p.* 268.—*Alps.*

37. C. *cæspitosa*, sheaths none, bracteas foliaceous auricled at the base, spikes sessile oblong or subcylindrical obtuse, fruit broadly elliptical. *p.* 268.—*Marshes and Alps.*

38. C. *stricta*, sheaths none, bracteas with small auricles at the base short subfoliaceous, fertile spikes nearly sessile cylindrical filiform acuminate, fruit ovate somewhat acute plane above on each side, culm acutely triangular straight. *p.* 268.—*Watersides.*

†† *Sterile spikes several on a culm* (*in* C. lævigata *mostly solitary*).

+ *Stigmas* 2.

39. C. *acuta*, sheaths none, bracteas long foliaceous, fertile spikes long cylindrical acuminate slender erect when in fr., fruit oval swelling subacuminate entire at the point, culm acutely angular scabrous. *p.* 269.—*Water-sides.*

++ *Stigmas* 3.

40. C. *paludosa*, sheaths none, bracteas very long foliaceous, scales of the sterile spike obtuse, fertile spikes cylindrical obtuse, fruit oblongo-ovate acute bifid at the point striated. *p.* 269.—*River-banks.*

41. C. *riparia*, sheaths none, bracteas very long foliaceous, scales of the sterile spike acuminate, fertile spikes scarcely pedunculated broadly cylindrical acute, fruit ovate subacuminated bifid at the point. *p.* 269.—*River-banks.*

42. C. *lævigata*, sheaths elongated shorter than the flowerstalks, bracteas foliaceous, fertile spikes drooping cylindrical, all the scales acuminated or mucronate, fruit ovate triangular with rather a long acuminated beak bifid at the point. *p.* 269.—*Marshes.*

43. C. *vesicaria*, sheaths none, bracteas foliaceous long, fertile spikes cylindrical slightly drooping, scales lanceolate, fruit broadly ovate inflated subulato-rostrate deeply bifid at the point. *p.* 269.—*Bogs.*

44. C. *ampullacea*, sheaths none, bracteas foliaceous, fertile spikes cylindrical long nearly erect, scales lanceolate, fruit crowded subglobose inflated setaceo-rostrate slightly bifid at the point. *p.* 270.—*Bogs.*

45. C. *hirta*, hairy, sheaths elongated nearly equal to the flowerstalks, bracteas long foliaceous, fertile spikes short cylindrical distant their scales cuspidate, fruit ovate with a long beak hairy. *p.* 270.—*Pastures and woods.*

46. C. *filiformis*, glabrous, sheaths scarcely any, bracteas long very narrow, fertile spikes shortly pedunculate oblongo-cylindrical, their scales subcuspidate, fruit ovate shortly beaked bifid at the point very pubescent. *p.* 270.—*Bogs.*

ORDER III. RESTIACEÆ. *Br. Prodr.*

Flowers glumaceous. *Perianth* 2—6-partite, seldom none. *Stam.* hypogynous, 1—6; when 2 or 3, in a 4—6-divided perianth, opposite the inner segments of the latter. *Ovary* superior,

with 1 or more cells; *ovules* solitary, pendulous. *Pericarp* capsular or nucamentaceous. *Seeds* inverted. *Embryo* lenticular, within the base of the copious *albumen.*—*Herbs* or *under-shrubs. Leaves* simple, narrow, or none. *Culms* naked, or, more usually, with sheaths slit on one side. *Flowers* generally monœcious or diœcious, in spikes or heads and separated by *scales* or *bracteas. Br.*

1. ERIOCAULON.

Flowers collected into a compact scaly head, monœcious. *Barren flowers* in the disk. *Perianth* 4-cleft, the two inner segments united nearly to their summit. *Stam.* 4—6. *Fertile Fl.* in the circumference. *Perianth* single, deeply 4-partite. *Style* 1. *Stigmas* 2—3. *Caps.* 2—3-lobed, 2—3-celled. *Cells* 1-seeded.

1. E. *septangulare*, scape striated longer than the cellular compressed ensiform leaves, head of flowers globose, its ext. scales without flowers glabrous, the interior ones as well as the perianths ciliato-pilose at the extremity, stam. 4. *p.* 270.—*Lakes in Skye.*

Order IV. JUNCEÆ. *Juss.*

Perianth 6-partite, subglumaceous. *Stam.* 6, inserted into the base of the segments, or sometimes 3, and then opposite the outer segments. *Ovary* superior, 1—3-celled, 1—many-seeded, or 1-celled and 3-seeded. *Style* 1. *Stigmas* usually 3, sometimes 1. *Pericarp* capsular, with 3 valves bearing the dissepiment in the middle, rarely closed and by abortion 1-seeded. *Embryo* cylindrical, at the base of a hard fleshy or cartilaginous *albumen. Br.* In conspicuous herbs with small flowers, which are often brown, rarely petaloid. *Leaves* grassy, sometimes wanting.

1. JUNCUS.

Perianth 6-partite, glumaceous. *Stam.* 6. *Caps.* 3-celled, 3-valved; valves bearing the partitions down the middle, to which the numerous seeds are fixed. (*Leaves* rounded, rarely plane, glabrous.)

* *Leaves none* (*flowers all lateral*).

1. J. *arcticus*, scapes smooth (soft), heads of flowers compact nearly sessile, leaves of the perianth ovato-lanceolate acute rigid rather shorter than the broadly obovate capsule. *p.* 104. *Sea-shore, rare.*
2. J. *glaucus*, scape deeply striated (rigid), panicle very much branched erect, leaves of the perianth lanceolate subulate membranous longer than the elliptical capsule. *p.* 105.—*Wet pastures.*

3. J. *effusus*, scapes very faintly striated (soft), panicle loose very much branched spreading, leaflets of the perianth lanceolate acuminate rather longer than the obovate obtuse capsule. *p.* 105.—*Wet pastures.*
4. J. *conglomeratus*, scapes very faintly striated (soft), panicle much branched very dense globular, leaflets of the perianth lanceolate acute about as long as the broadly ovate very obtuse capsule, stam. 3. *p.* 105.—*Wet pastures.*
5. J. *filiformis*, scapes filiform, panicle of very few flowers (from near the middle of the culm), capsules rotundato-ovate shorter than the perianth. *p.* 105.—*Stony margins of lakes.*

** *Leaves all radical (flowers terminal).*

6. J. *squarrosus*, leaves setaceous (rigid) grooved, panicle terminal elongate compound, capsules elliptical ovate. *p.* 105.—*Moors.*
7. J. *capitatus*, leaves filiform (soft) plane or grooved above, heads of flowers sessile terminal shorter than the bractea, leaflets of the perianth acuminato-aristate. *p.* 106.—*Alps.*
8. J. *triglumis*, leaves linear-subulate compressed, heads terminal erect of about three flowers sessile longer than the membranaceous involucre, leaflets of the perianth obtuse longer than the elliptical capsule. *p.* 106.—*Mountains.*
9. J. *biglumis*, leaves linear-subulate compressed, heads terminal a little leaning of two flowers one of them pedicellate shorter than the foliaceous involucre, leaves of the perianth obtuse longer than the turbinate emarginated capsule. *p.* 106.—*Alps.*

*** *Culms leafy.*

† *Leaves nearly plane, but grooved above.*

10. J. *castaneus*, leaves subulate grooved and laterally compressed, heads generally single sessile or pedunculate shorter than the bractea, capsules ovate, culm unifoliate. *p.* 107.—*Alps, rare.*
11. J. *trifidus*, sheaths fringed those at the base of the culm leafless, bracteas foliaceous very long grooved, heads of about 3 flowers terminal, culm unifoliate. *p.* 107.—*Alps.*
12. J. *bulbosus*, culm simple leafy compressed, leaves linear-setaceous grooved, panicle terminal compound subcymose generally shorter than the bractea, capsules rotundato-ovate longer than the obtuse incurved leaflets of the perianth. *p.* 107.—*Marshes.*
13. J. *bufonius*, culm dichotomous above panicled, leaves filiform setaceous grooved, flowers solitary unilateral mostly sessile, capsules elliptical ovate much shorter than the very acuminated leaflets of the perianth. *p.* 108.—*Wet gravelly places.*
14. J. *tenuis*, culm above shortly dichotomous panicled, leaves linear-setaceous grooved, flowers solitary but approximate mostly sessile, capsules nearly sphærical shorter than the very acuminated leaflets of the perianth. *p.* 108.—*Mountains, rare.*

15. J. *uliginosus*, " leaves setaceous grooved, flowers 3 together sessile, capsule obtuse longer than the perianth, culm bulbous rooting," *p.* 108.—*Marshes.*

†† *Leaves rounded or subcompressed, divided internally by partitions, which often, in a dry state, give a jointed appearance to the leaves.*

16. J. *subverticillatus*, cauline leaves subulate nodoso-articulate, panicle corymbose, heads of about 5 flowers fasciculato-verticillate, capsule obtuse as long as the striated perianth. *p.* 109.—*Marshes.*

17. J. *acutiflorus*, leaves nodoso-articulate subcompressed, panicle terminal very compound, leaves of the perianth lanceolate nearly as long as the narrow ovate subacuminate capsule. *p.* 109.—*Bogs.*

18. J. *lampocarpus*, leaves compressed, panicle terminal compound erect, three interior leaves of the perianth rather obtuse, capsule acute triquetrous shining. *p.* 109.—*Bogs.*

19. J. *obtusiflorus*, leaves rounded nodoso-articulate, panicle very much compounded spreading, leaflets of the perianth very obtuse as long as the capsule. *p.* 109.—*Marshes.*

20. J. *polycephalus*, leaves subulate rounded articulate, panicle terminal erect di-trichotomous, branches nearly simple, heads of many flowers lateral and terminal nearly sessile, leaflets of the perianth lanceolate acute rather shorter than the elliptical-ovate somewhat obtuse capsule. *p.* 110.—*Alps.*

2. LUZULA.

Perianth 6-partite, glumaceous. *Stam.* 6. *Caps.* 3-celled, 3-valved, valves without dissepiments, 1 *seed* in each cell, fixed to the bottom. (*Leaves* plane, generally pilose.)

1. L. *maxima*, leaves hairy, panicle subcymose doubly compound, peduncles elongate of about 3 flowers, leaflets of the perianth aristate as long as the capsule. *p.* 110.—*Woods.*

2. L. *pilosa*, leaves hairy, panicle subcymose, peduncles 1-flowered bent back, leaflets of the perianth acuminate rather shorter than the obtuse capsule. *p.* 110.—*Woods.*

3. L. *Forsteri*, leaves hairy, panicle subcymose but little branched, peduncles 1-flowered erect, leaflets of the perianth narrow acuminate a little longer than the acute capsule. *p.* 110.—*Woods.*

4. L. *campestris*, leaves hairy, spikes sessile and pedunculated, leaflets of the perianth acuminate longer than the obtuse capsule. *p.* 110.—*Pastures.*

5. L. *spicata*, spike drooping compound, spikelets shorter than their subdiaphanous mucronated bracteas, leaflets of the perianth acuminato-aristate about as long as the rotundate capsule. *p.* 111.—*Alps.*

3. NARTHECIUM.

Perianth 6-partite, coloured. *Stam.* 6; *filam.* hairy. *Caps.* 3-celled, 3-valved. *Seeds* numerous, ovato-oblong, appendiculate at each extremity.

1. N. *ossifragum. p.* 103.—*Moors.*

ORDER V. BUTOMEÆ. *Rich. in Mem. du Mus.*

Perianth with the 3 inner segments petaloid. *Stam.* hypogynous. *Ovaries* superior. *Follicles* polyspermous. *Seeds* ascending, attached to veins running like net-work over all the inside of the *capsule*. *Albumen* none. *Embryo* with the same direction as the *seed*. *Rich.*

1. BUTOMUS.

Perianth 6-partite. *Stam.* 9. *Ovaries* 6. *Styles* 6. *Caps.* 6, many-seeded.

1. B. *umbellatus. p.* 123.—*Ditches and lakes.*

ORDER VI. MELANTHACEÆ. *Br. Prodr.*

(*Colchicaceæ, Decand.*)

Perianth petaloid, 6-partite, or tubular by the cohesion of the claws of the segments, which are often rolled inwards before expansion. *Stam.* 6, perigynous. *Anthers* usually turned outwards. *Ovary* superior, with 3 cells and many *seeds*. *Style* partly or entirely divided into 3. *Stigmas* undivided. *Caps.* generally separable into 3 valves. Integument of the *seed* neither black nor crustaceous, but membranous. *Albumen* firm, fleshy. *Br.*

1. COLCHICUM.

Perianth tubular, very long, rising from a *spatha*; limb 6-partite, campanulate. *Ovary* 1. *Styles* 3, very long. *Capsule* 3-celled; *cells* united at the base.

1. C. *autumnale*, leaves plane broadly lanceolate erect. *p.* 114.—*Pastures, rare.*

2. TOFIELDIA.

Perianth 6-partite, with a small tripartite *involucre*. *Caps.* 3—6-celled, cells united at the base.

1. T. *palustris*, spike ovate, scape glabrous filiform naked, petals obovate obtuse, germen oblong 3-lobed, involucre at the base of the pedicel. *p.* 114.—*Alps.*

ORDER VII. ASPARAGEÆ. *Juss.*

(*Smilaceæ, Br.*)

Perianth 6- or 8-partite, or 6-cleft, petaloid, regular. *Stam.* 3—6 or 8, hypogynous or perigynous, the three opposite the outer segments usually of a different form. *Ovary* superior, 3—4-celled; *cells* 1—2- or many-seeded. *Style* 1. *Stigma* tripartite. *Fruit*, a berry. Integument of the *seeds* generally membranous. *Albumen* corneous.

1. ASPARAGUS.

Perianth 6-partite. *Stam.* 6. *Berry* 3-celled. *Cells* 2-seeded.

1. A. *officinalis*, unarmed, stem herbaceous erect rounded very much branched, leaves setaceous fasciculate flexible, peduncles jointed in the middle. *p.* 103.—*Sands, sea-side.*

2. RUSCUS.

Diœcious. *Barren Fl. Perianth* 6-partite. *Filaments* united into a tube. *Anth.* 3—6. *Fertile Fl. Perianth* 6-partite. *Nectary* tubular. *Style* 1. *Stigma* 1. *Berry* 3-celled; *cells* 2-seeded.

1. R. *aculeatus*, stem rigid branched, leaves ovato-acuminate very rigid bearing the solitary flower on its upper surface. *p.* 288. —*Woods, rare.*

3. CONVALLARIA.

Perianth campanulate or cylindrical, 6-cleft. *Berry* 3-celled. *Stigma* trigonous.

* *Flowers campanulate.*

1. C. *majalis*, scape semicylindrical, leaves ovato-lanceolate binous, flowers racemoso-spicate campanulate drooping on short footstalks. *p.* 103.—*Woods.*

** *Flowers cylindrical.*

2. C. *verticillata*, leaves lanceolate whorled. *p.* 103.—*Woods, rare.*
3. C. *multiflora*, leaves ovato-elliptical alternate half embracing the rounded stem with their base, peduncles axillary 1- or many-flowered, filaments hairy, style flexuose. *p.* 104.—*Woods.*

4. PARIS.

Perianth 8-partite, four inner segments somewhat coloured. *Stam.* 8. *Cells* of the *Anth.* fixed, one on each side the middle of a subulate *filament*. *Stigmas* 4. *Berry* 4-celled, 4-seeded.

1. P. *quadrifolia. p.* 122.—*Wet woods.*

ORDER VIII. ASPHODELEÆ. *Juss. Br.*

Perianth 6-partite, or 6-cleft, petaloid, regular. *Stam.* 6, either perigynous or hypogynous; the three opposite the outer

segments either of a different form or absent. *Ovary* superior, 3-celled; *cells* 1—2, many-seeded. *Style* 1. *Stigma* simple. *Capsule* 3-celled, 3-valved, bearing the septa in the middle. *Integument* of the *seed* black, crustaceous and brittle. *Albumen* fleshy or cartilaginous.

1. ORNITHOGALUM.

Perianth 6-partite. *Stam.* dilated at the base, hypogynous.

* *Flowers yellow.*

1. O. *luteum*, stem angular bearing two leaves (immediately below the umbel), flowerstalks forming an umbel undivided glabrous, leaves of the perianth lanceolate. *p.* 102.—*Woods, rare.*

** *Flowers white or greenish.*

2. O. *umbellatum*, flowers in a corymbus, peduncles longer than the bracteas, filaments subulate. *p.* 102.—*Banks.*

2. SCILLA.

Perianth 6-partite; segments spreading, deciduous. *Stam.* filiform, glabrous, perigynous. *Seeds* sphærical.

1. S. *verna*, root solid, corymb hemisphærical few-flowered, bracteas lanceolate obtuse, leaves linear channelled. *p.* 103.—*Rocks near the sea.*

3. HYACINTHUS.

Perianth tubular, 6-cleft or 6-partite, the extremities only spreading. *Stam.* filiform. *Caps.* obtusely triangular.

1. H. *non scriptus*, raceme cernuous, perianth 6-partite the extremities revolute. *p.* 102.—*Woods.*

4. ALLIUM.

Flowers umbellate, terminal, arising from a 2-leaved *spatha*. *Perianth* 6 partite, generally patent.

* *Cauline leaves plane. Stam. alternately tricuspidate.*

1. A. *arenarium*, umbels bearing bulbs compact sphærical, leaves linear with cylindrical sheaths, spatha short obtuse, petals roughish on the keel. *p.* 100.—*Sandy hills.*

** *Cauline leaves plane. Stam. all simple.*

2. A. *carinatum*, umbels bearing bulbs lax, leaves linear keeled, spatha very long unequal. *p.* 101.—*Mountains.*

*** *Cauline leaves rounded. Stam. alternately tricuspidate.*

3. A. *vineale*, umbel bearing bulbs, leaves fistulose. *p.* 101.—*Pastures.*

**** *Cauline leaves rounded. Stam. all simple.*

4. A. *oleraceum*, umbel bearing bulbs lax, leaves grooved above, spatha with two very long points. *p.* 101.—*Pastures.*

***** *Leaves all radical.*

5. A. *ursinum*, umbel nearly plane, leaves ovato-lanceolate on footstalks, scape triangular. *p.* 101.—*Woods.*
6. A. *Schœnoprasum*, leaves rounded subulato-filiform, scape rounded as long as the leaves. *p.* 101.—*Pastures.*

Order IX. LILIACEÆ. *Juss.*

(*Narcissorum, Sect. I. Juss. Hemerocallideæ, Br.*)

Perianth coloured, equal, 6-partite, or, by the cohesion of the claws of the segments into a tube, 6-cleft. *Stam.* 6, inserted either into the base of the segments, or the tube. *Ovary* superior, 3-celled, many-seeded. *Stigma* simple or 3-lobed. *Caps* 3-celled. *Seeds* flat, with a spongy, dilated, often winged, integument, neither black nor crustaceous. *Albumen* fleshy. *Embryo* with the same direction as the *seed.*—*Flowers* large, usually of vivid colours, often solitary. *Leaves* fleshy, cauline indistinctly nerved. *Root* bulbous. *Br.*

1. TULIPA.

Perianth campanulate, 6-partite. *Stigma* thick, sessile. *Caps.* triangular.

1. T. *sylvestris*, stem 1-flowered somewhat drooping, segments of the perianth ovato-acuminate bearded at the extremity, stam. hairy at the base, stigma obtuse. *p.*102.—*Pastures, rare.*

Order X. AMARYLLIDEÆ. *Br. Prodr.*

(*Narcissorum.* Sect. II. *Juss.*)

Perianth coloured, 6-partite or 6-cleft. *Stam.* 6, inserted into the segments; the *filaments* sometimes united by a membrane. *Anthers* turned inwards. *Ovary* inferior, 3-celled, many-seeded; or, in those whose fruit is fleshy, 1—2-seeded. *Style* 1. *Stigma* 3-lobed. *Pericarp* capsular; either dry with 3 valves, 3 cells, bearing the septa in their middle, and many *seeds;* or fleshy with 1—3 seeds. *Integument* of the *seed* not crustaceous. *Embryo* straight, in the axis of a fleshy *albumen*, having the same direction as the *seed.*—*Flowers* large, generally of a bright colour. *Leaves* fleshy, indistinctly nerved, all radical. *Roots* bulbous. *Br.*

1. NARCISSUS.

Flowers spathaceous. *Perianth* infundibuliform, the limb patent, 6-partite. *Crown* (*Nectary, Linn.*) at the mouth of the perianth, petaloid cylindrical or campanulate, entire or divided. *Stam.* inserted in the tube and concealed within the *crown.*

1. N. *pseudo-Narcissus*, spatha 1-flowered, crown campanulate erect curled at the margin obsoletely 6-cleft as long as the ovate segments of the perianth. *p.* 100.—*Woods.*

2. GALANTHUS.

Flowers spathaceous. *Perianth* 6-partite; the three interior segments shorter, emarginate.

1. G. *nivalis*. *p.* 100.—*Banks and pastures.*

Order XI. IRIDEÆ. *Juss.*

(*Ensatæ, Ker in Bot. Mag.*)

Perianth coloured, 6-cleft, or 6-partite; sometimes irregular. *Stam.* 3, inserted into the base of the outer segments; *filaments* sometimes united; *anthers* affixed by their base, turned outwards. *Ovary* inferior, 3-celled, many-seeded. *Style* 1. *Stigmas* 3, lamellated or dilated into the form of petals, rarely 2-lipped; sometimes 1 stigma obscurely 3-lobed. *Caps.* 3-celled, 3-valved; *valves* bearing the *septa* in the middle. *Seeds* round, hard. *Albumen* horny or firmly fleshy. *Embryo* with the same direction as the *seed*.—*Herbs*, rarely undershrubs. *Leaves* equitant, in two ranks, with their edges turned upwards (except in *Crocus*). *Flowers* spathaceous, terminal, either in a spike or corymbs or panicle; sometimes partly under ground. *Br.*

1. IRIS.

Perianth 6-cleft, petaloid, each alternate segment reflexed. *Stigmas* petaliform.

1. I. *Pseudacorus*, leaves ensiform, each alternate segment of the beardless perianth smaller than the stigma. *p.* 16.—*Ditches.*

Order XII. ALISMACEÆ. *Rich.*

Perianth with the three inner segments petaloid. *Stam.* hypogynous. *Ovaries* superior. *Pericarps* indehiscent. *Seeds* solitary, or two attached to the suture at a distance from each other, erect or ascending. *Albumen* none. *Embryo* curved like a horse-shoe, with the same direction as the seed.—*Aquatics*. *Leaves* radical, on long stalks, fleshy, with indistinct nerves. *Flowers* white, panicled. *Rich.*

1. ALISMA.

Stam. 6. *Ovary* and *styles* numerous. *Pericarps* numerous, clustered but distinct, 1-seeded.

1. A. *Plantago*, leaves ovate acute, fruit depressed, pericarps obtusely trigonal. *p.* 114.—*Banks of lakes.*

2. A. *ranunculoides*, leaves linear-lanceolate, fruit globose squarrose, pericarps acute. *p.* 115.—*Bogs and ditches.*

Order XIII. HYDROCHARIDEÆ. *Rich.*

Perianth 3—6-parted, the three inner segments petaloid. *Stam.* epigynous. *Ovary* inferior. *Stigmas* 3—6. *Berry* with one or more cells. *Embryo* straight, in a direction contrary to that of the *seed;* very rarely with a dilated base.—*Leaves* radical, often floating, rarely rigid and submersed. *Flowers* white. *Rich.*

1. HYDROCHARIS.

Flowers diœcious, with the three inner segments of the *perianth* the largest, petaloid. *Barren Fl. Stam.* 9, "the three interior filaments beaked." *Sm.*

Fertile Fl. Styles 6, each with two *stigmas. Berry* roundish, 6-celled, many-seeded.

1. H. *Morsus Ranæ. p.* 290.—*Ditches.*

2. STRATIOTES.

Spatha of two carinated leaves. Three interior segments of the *perianth* very large, petaloid. *Stam.* about 20. *Styles* 6, bifid. *Berry* angular, with 6 cells, many-seeded.

1. Str. *aloides*, leaves ensiform triangular aculeato-serrate. *p.*171.—*Ditches.*

Order XIV. ORCHIDEÆ. *Juss. Br.*

Perianth (*Corolla* of *authors*) 6-partite, with 1 segment (*labellum* or *lip*) of a different form from the others. Organs of fructification united into a *column. Anther* 1 or rarely 2. *Pollen* cohering in masses of a determinate figure, and usually falling out of its cells. *Capsule* 3- or 6-valved, with numerous minute *seeds* adhering to three parietal *receptacles.*—*Herbs* or *undershrubs. Root* tuberous or fibrous. *Stem* simple, rarely divided, leafy or sheathed. *Leaves* simple, entire, sheathing at the base. *Flowers* spiked, racemed, corymbose or solitary, rarely paniculated. *Pubescence,* when it exists, simple, acute, sometimes tipped with a glandular head. *Br.*

(*Monandrous*).

* *Anther adnate, nearly terminal, persistent. Pollen mass, composed of angular granules elastically cohering, fixed by its base. Br.*

1. ORCHIS.

Cor. ringent. *Lip* spurred on the underside at the base. *Glands*

of the *stalks* of the *pollen-mass* (1—2) contained in one common little *pouch*.

* *Tubers* 2, *undivided.*

1. O. *Morio*, lip 3-lobed the lobes crenate obtuse middle one emarginate, segments of the perianth ascending obtuse, spur conical ascending shorter than the germen. *p.* 250.—*Meadows.*
2. O. *mascula*, lip 3-lobed crenulate obtuse the middle lobe cleft, segments of the perianth acute the exterior ones reflexed, spur linear ascending compressed at the extremity rather longer than the germen. *p.* 250.—*Pastures.*
3. O. *pyramidalis*, lip 3-cleft the lobes equal entire with 2 longitudinal appendages on the upper side near the base, segments of the perianth lanceolate the two outer ones spreading, spur filiform longer than the germen. *p.* 251.—*Dry pastures.*

** *Tubers* 2, *palmated.*

4. O. *latifolia*, lip slightly 3-lobed the side reflexed, 3 inner segments of the perianth connivent, the spur cylindrical shorter than the germen, bracteas longer than the flowers. *p.* 251.—*Marshes.*
5. O. *maculata*, lip plane 3-lobed crenate, the 3 inner segments of the perianth connivent the lateral ones patent, spur cylindrical shorter than the germen, bracteas as long as the germen. *p.* 251.—*Dry pastures.*

2. GYMNADENIA.

Cor. ringent; *lip* spurred at the base beneath. *Glands* of the *stalks* of the *pollen-mass* naked, approximate. *Br.*

1. G. *conopsea*. *p.* 251.—*Pastures.*

3. HABENARIA.

Cor. ringent; *lip* spurred on the upper side at the base beneath. *Glands* of the *stalk* of the *pollen-mass* naked, distinct, with the cells of the *footstalks* adnate or separated.

1. H. *viridis*, spur very short somewhat 2-lobed, lip linear tridentate, middle tooth very small, bracteas much longer than the flower, tubers palmate. *p.* 252.—*Dry pastures.*
2. H. *albida*, spur obtuse much shorter than the germen, lip 3-cleft, lobes acute, middle one longest. *p.* 252.—*Highland pastures.*
3. H. *bifolia*, spur filiform twice as long as the germen, lip linear entire, radical leaves binous oblongo-ovate attenuated at the base. *p.* 252.—*Marshes.*

** *Anther parallel with the stigma. Pollen mass farinaceous, or composed of angular granules, fixed to the stigma by its extremity.* Br.

4. GOODYERA.

Cor. ringent, with the 2 exterior or lateral *segments* of the *perianth* placed beneath the *lip*, which is gibbous at the base, and undivided at the extremity. *Column* free. *Pollen* angular. *Br.*

1. G. *repens*, radical leaves ovate, lips and petals lanceolate. *p.* 253.—*Woods.*

5. LISTERA.

Cor. irregular. *Lip* 2-lobed. *Column* wingless. *Anther* fixed by its base. *Pollen* farinaceous. *Br.*

1. L. *ovata*, stem with only a pair of ovato-elliptical opposite leaves, column of fructification having an appendage in which the anther is placed. *p.* 253.—*Woods.*
2. L. *cordata*, stem with only 2 cordate opposite leaves, column without any appendage behind, lip with 2 teeth at the base. *p.* 253.—*Highland pastures.*
3. L. *Nidus Avis*, stem with sheathing scales leafless. *p.* 253. —*Shady woods.*

*** *Anther terminal, inserted, persistent. Mass of pollen either pulverulent or composed of angular granules, fixed by its base or below the extremity.* Br.

6. EPIPACTIS.

Lip ventricose below, the extremity either undivided or 3-lobed, the middle lobe the largest, connected, as it were, by a joint. *Pollen* farinaceous. *Br.*

1. E. *latifolia*, leaves ovate amplexicaul, lower bracteas longer than the flowers, flowers drooping, lip entire acuminated shorter than the petals. *p.* 254.—*Woods.*
2. E. *palustris*, leaves lanceolate amplexicaul, bracteas shorter than the flower, flowers slightly drooping, lip crenate obtuse rather longer than the perianth. *p.* 254.—*Bogs.*
3. E. *pallens*, leaves ovato-lanceolate sessile, bracteas longer than the flower, lip obtuse shorter than the perianth. *p.* 254.— *Woods.*
4. E. *ensifolia*, leaves lanceolate much acuminated subdistichous, bracteas very minute subulate, flowers erect, lip obtuse much shorter than the perianth. *p.* 255.

**** *Anther terminal, moveable, deciduous. Mass of Pollen at length becoming waxy.* Br.

7. MALAXIS.

Lip plane, undivided, sessile, (often exterior,) 5 *segments* of the

perianth narrower, spreading, or deflexed. *Masses* of *pollen* 4, parallel with each other, fixed to the *stigma* by their extremities. *Br.*

1. M. *paludosa*, leaves about 4 at the base of the stem scabrous at the extremity, scape pentagonal, lip concave acute. *p.* 255. —*Marshes.*

8. CORALLORRHIZA.

Lip produced behind, adnate with the spur, or free. *Column* free. *Masses* of *pollen* 4, oblique (not parallel). *Br.*

1. C. *innata*, spur abbreviated adnate. *p.* 255.—*Marshy woods, rare.*

ORDER XV. AROIDEÆ. *Juss.*

Flowers spathaceous on a *spadix;* sometimes with the *anthers* and *pistils* separated, and then generally naked; sometimes perfect, with a 4—6-rarely 3-partite *perianth*, the latter not petaloid. *Stam.* very numerous in those with naked *flowers:* in the genera with a *perianth* usually opposite, and equal in number to the *segments* of the latter. *Anthers* turned outwards. *Ovaries* superior, solitary, or numerous, 1—3-celled, 1—many-seeded: *ovules* erect, sometimes pendulous or parietal. *Style* none. *Stigma* 1. *Pericarp* indehiscent, baccate or capsular. *Embryo* in the axis of a fleshy *albumen*, with the same direction as the *seed*; rarely with a contrary direction, having a cleft on its side for the emission of the *plumule.*—"*Herbs* or *undershrubs*. *Root* often tuberous or incrassated. *Leaves* sheathing, simple or compound, often all radical. *Spadix* terminal, or lateral, or radical, often solitary and surrounded with a *spatha*, sometimes naked." *Br.*

SECT. I. AROIDEÆ. *Anthers and pistils separated. Perianth* 0. *Fruit a berry.*

1. ARUM.

Spatha monophyllous, cucullate, convolute at the base. *Spadix* naked at the extremity, staminiferous in the middle, with the *anthers* in many *rows;* pistilliferous at the base. *Berry* 1-celled, many-seeded.

1. A. *maculatum*, leaves all radical hastato-sagittate, lobes deflexed, spadix club-shaped obtuse shorter than the spatha. *p.* 272.—*Woods.*

SECT. II. PISTIACEÆ. *Rich. in Humb. Nov. Gen. Spadix 2-flowered, in a cucullate spatha. Flowers with anthers and pistils separate. Capsule or Utriculus.—Floating plants.*

2. LEMNA.

Male and female *flowers* collateral. *Stamens* 2. *Utriculus* 1—5-seeded[a].

1. L. *trisulca*, fronds thin elliptico-lanceolate caudate at one extremity at the other serrate, roots solitary. *p.* 10.—*Stagnant waters.*
2. L. *minor*, fronds nearly ovate compressed, roots solitary. *p.* 11.—*Stagnant waters.*
3. L. *polyrrhiza*, fronds obovato-rotundate compressed, roots numerous clustered. *p.* 11.—*Stagnant waters.*
4. L. *gibba*, fronds obovate nearly plane above hemisphærical beneath, roots solitary. *p.* 11.—*Stagnant waters, rare.*

SECT. III. TYPHINÆ. *Juss. Flowers monœcious, but surrounded by a perianth. Stam.* 3. *Ovary* 1-*seeded*; *ovule pendulous. Fruit an achenium.*

3. SPARGANIUM.

Flowers collected into sphærical, dense heads, which are staminiferous or pistilliferous. *Barren Fl. Perianth* of 3 leaves. *Fertile Fl. Perianth* of 3 leaves. *Drupe* dry, with 1 seed.

1. S. *ramosum*, leaves triangular at the base their sides concave, common flower-stalk branched, stigma linear. *p.* 260.—*Stagnant waters.*
2. S. *simplex*, leaves triangular at the base their sides plane, common flowerstalk simple, stigma linear. *p.* 260.—*Still waters.*
3. S. *natans*, leaves floating plane, common flowerstalk simple, stigma ovate very short, head of sterile flowers mostly solitary. *p.* 260.—*Ditches.*

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[a] The first, and, we believe, only botanist who has ventured to place *Lemna* and *Pistia* next each other is Linnæus; who could have had a very imperfect knowledge of the latter, and a far from complete acquaintance with the former. Notwithstanding the different manner in which *Pistia* and *Lemna* have been described, it is in these descriptions only that they really disagree, and not in natural affinity. Suppose what is called *perianth* at *p.* 10, Part I. to be a *spatha*; and we have a *spadix* reduced to a point bearing two naked *flowers*, of which the superior is male and diandrous, the inferior female. Let this account be compared with M. Kunth's character of *Pistia* in the *Nova Genera et Species Plantarum* of Baron Humboldt, and it will be found to be absolutely the same, except in the single particular of *capsule*. Nor can we perceive any other than generic differences between the two genera, as far as it is possible to judge of *Pistia* from Roxburgh's account of it. We ought to add, that Mr. Brown first remarked to us that *Lemna* was a reduced *Aroidea*.

4. TYPHA.

Flowers collected into long cylindrical very dense *spikes*, which are staminiferous or pistilliferous. *Barren Fl. Perianth* 0. *Stam.* 3 together upon a chaffy or hairy *receptacle*, and united below into one common *filament*. *Fertile Fl. Perianth* 0. *Achenium* pedicellate, surrounded at its base with *hairs* resembling a *pappus*.

1. T. *latifolia*, leaves linear nearly plane, sterile and fertile spikes close together. *p.* 259.—*Lakes.*
2. T. *angustifolia*, leaves linear convex below, sterile and fertile spikes a little distant from each other. *p.* 259.—*Lakes.*

Order XVI. JUNCAGINEÆ. *Rich.*

Perianth uniform, rarely none, not petaloid. *Stam.* hypogynous. *Ovaries* superior. *Ovules* solitary, or two approximated at their base, erect. *Pericarps* indehiscent. *Embryo* without *albumen*, having the same direction as the *seed*; with a lateral *cleft* for the emission of the *plumule*.—Rigid *herbs* with narrow radical *leaves*. *Flowers* spiked, not coloured. *Rich.*

1. TRIGLOCHIN.

Perianth of 6 *leaves*, deciduous, the *leaflets* concave, 3 interior *ones* inserted higher up. *Stam.* 6, very short. *Anthers* with their anterior side turned outward, subsessile. *Ovaries* 3—6, one-seeded. *Styles* short. *Stigmas* adnate. *Caps.* 3—6, valveless. *Seeds* erect. *Br.*

1. Tr. *palustre*, fruit 3-celled nearly linear. *p.* 115.—*Marshes.*
2. Tr. *maritimum*, fruit 6-celled ovate. *p.* 115.—*Salt marshes.*

Order XVII. FLUVIALES. *Rich.*

(*Part of Naiades. Juss.*)

Flowers unisexual or bisexual. *Ovary* 1 or more, superior. *Seed* solitary, pendulous, or suspended. *Embryo* without *albumen* having a contrary direction to the *seeds*, with a lateral *cleft* for the emission of the *plumule*.—*Floating herbs* with very vascular *leaves* and *stems*. *Flowers* inconspicuous.

1. RUPPIA.

Flowers 2, perfect, on a *spadix* arising from the sheathing *bases* of the *leaves*. *Stam.* 4, sessile. *Ovaries* 4. *Perianth* 0. *Drupes* 4, pedicellate, their *nuts* 1-seeded.

1. R. *maritima*. *p.* 59.—*Marine ditches.*

2. ZOSTERA.

Stam. and *pistils* separated, inserted in two *rows* upon one side of a *spadix*. *Spatha* foliaceous. *Perianth* 0. *Barren Fl. Anthers* ovate, sessile, alternating with the *germens* and upon the same *spadix*. *Fertile Fl. Ovary* 1, ovate. *Style* bifid. *Drupe* with 1 *seed*.

1. Z. *marina*, leaves entire somewhat 3-nerved, stem roundish. *p.* 259.—*Sea-shores.*

3. ZANNICHELLIA.

Monœcious. *Barren Fl. Perianth* 0. *Stam.* 1. *Fertile Fl. Perianth* single, of 1 *leaf*. *Ovaries* 4 or more. *Style* 1. *Stigma* peltate. *Caps.* sessile.

1. Z. *palustris*, anthers 4-celled, stigmas entire, pericarps toothed on the back. *p.* 258.—*Stagnant waters.*

4. POTAMOGETON.

Flowers perfect, on a *spadix* arising from a *spatha*. *Perianth* (*involucre*, *Rich.*?). *Anthers* 4, sessile, alternating with the divisions of the *perianth*. *Ovaries* 4. *Nuts* 4, 1-seeded, sessile.

* *Upper leaves floating.*

1. P. *natans*, upper leaves floating coriaceous oblongo-ovate petiolate, lower ones membranous lanceolate gradually tapering into a footstalk. *p.* 57.—*Lakes.*
2. P. *heterophyllum*, upper leaves coriaceous elliptical petiolate floating, lower ones membranous linear-lanceolate sessile (peduncle clavate, *Sm.*). *p.* 57.—*Lakes.*
3. P. *fluitans*, upper leaves floating subcoriaceous ovato-lanceolate tapering into a rather short footstalk, lower ones long lanceolate sessile. *p.* 57.—*Ditches and lakes.*

** *Leaves all submersed.*

4. P. *perfoliatum*, leaves cordate embracing the stem. *p.* 58.—*Rivers and lakes.*
5. P. *densum*, leaves (all) opposite crowded ovato-acuminate sessile, stem forked, spike of about 4 flowers. *p.* 59.—*Ditches.*
6. P. *lucens*, leaves ovato-lanceolate petiolate. *p.* 58.—*Rivers and lakes.*
7. P. *crispum*, leaves lanceolate tapering sessile remarkably waved and crisped serrate. *p.* 58.—*Ditches.*
8. P. *lanceolatum*, leaves linear-lanceolate tapering at the base sessile. *p.* 58.—*Lakes.*
9. P. *gramineum*, "leaves linear-lanceolate alternate sessile broader than the stipules, stem rounded subdichotomous." *p.* 58.—*Ditches.*

10. P. *compressum*, leaves linear very obtuse sessile, stem spikes about 4-flowered. *p.* 58.—*Ditches*.
11. P. *pusillum*, leaves linear opposite and alternate distinct spreading from the base, stem cylindrical. *p.* 59.—*Ditches*.
12. P. *pectinatum*, leaves distichous setaceous alternate sheathing, stipules scarcely any, spike of flowers interrupted. *p.* 59. —*Rivers and salt water ditches*.

Class III. DICOTYLEDONS.

Embryo with 2 or more *cotyledons*. *Plumule* in the centre of their point of junction: the inferior end of the *embryo* itself elongated into a *radicle*, and not containing any secondary *radicles* in its substance.

Stem increasing by external layers or additions; with an evident distinction between bark and wood. *Leaves* usually veined, rarely nerved.

Div. I. *Perianth, or floral covering, if any, single* (*calyx of Juss.*).

Order I. CONIFERÆ. *Juss.*

Flowers usually amentaceous, with the anthers and pistils in distinct flowers, mostly naked. *Barren fl.* 1—many-celled, sessile, on scale-like bracteæ, or on the axis of the amentum. *Fertile fl. Cupule* 1-flowered, almost closed, shaped like a pistil. *Perianth* adherent, membranous. *Ovary* 1. *Stigma* sessile, simple. *Nuts* 1-celled, 1-seeded, either solitary or by pairs within the unexpanded *cupule*, or covered by imbricated enlarged bracteæ or peduncles forming a *cone* (*strobilus*). *Seed* pendulous, albuminous. *Embryo* with two or many *cotyledons*. *Radicle* superior.

Monœcious or *diœcious trees*, generally abounding with resin. *Leaves* simple, acerose, opposite or whorled or fascicled. *Mirb.*

1. PINUS. *Decand.*

Monœcious. Barren fl. Aments (or *Catkins*) racemose, compact and terminal, scaly, the scales bearing stamens at the extremity. *Stam.* 2. *Anthers* 1-celled. *Fertile fl. Aments* simple, imbricated, the scales acuminated. *Ovaries* 2. *Stigmas* glandulose. Scales of the *cones* oblong, clavate, woody at the apex, umbilicated and angular. *Nuts* geminate, 1-seeded, covered with an appendiculated membrane. *Cotyledons* digitato-partite. *Leaves* binous, or many from the same sheath. *Decand.*

1. P. *sylvestris*, leaves in pairs rigid, cones conico-ovate acute as long as the leaves generally in pairs. *p.* 275.—*Woods*.

2. JUNIPERUS.

Diœcious, rarely *monœcious*. *Barren fl. Aments* ovate; the scales verticillate, peltato-pedicellate. *Anth.* 4—8, 1-celled. *Fertile fl. Aments* globose; scales 3, concave, coadunate. *Stigma* gaping. *Berry* with 3 bony 1-seeded *Nuts*, surrounded with the united and fleshy scales. *Decand.*

1. J. *communis*, leaves ternate patent mucronate longer than the berry, *p.* 290.—*Woods and moors.*

3. TAXUS.

Flowers diœcious or monœcious, surrounded with many scales. *Barren fl. Stam.* 8—10, their filaments monadelphous. *Anth.* peltate, 6—8 celled; *cells* dehiscent beneath. *Fertile fl. Style* 0. *Stigma* concave. *Drupe* fleshy, open at the extremity. *Nut* 1-seeded. *Decand.*

1. T. *baccata*, leaves approximate. *p.* 290.

Order II. CORYLACEÆ. *Mirb.*

(*Cupuliferæ* Rich.)

Flowers amentaceous, with the *anthers* and *pistils* in distinct flowers. *Barren fl. Perianth* sometimes wanting. *Stam.* 5—20 on each bractea or scale. *Fertile fl. Cupule* 1- or many-flowered. *Perianth* adherent, multidentate. *Ovary* single, many-celled, and with many ovules. *Style* 2—3 or many-cleft. *Nuts* 1 or more, by abortion 1-celled, 1-seeded. *Seed* pendulous. *Radicle* superior. *Albumen* none.

Shrubs or trees with alternate simple leaves and stipules. *Mirb.*

1. CORYLUS.

Monœcious. *Barren fl.* in a cylindrical catkin; its scales 3-cleft. *Perianth* 0. *Stam.* 8. *Anthers* 1-celled. *Fertile fl. Perianth* almost obsolete. *Ovaries* several, surrounded by a scaly involucre. *Stigmas* 2. *Nut* 1-seeded, surrounded at the base with the enlarged united coriaceous scales of the *involucre*, forming the *cupule*.

1. C. *Avellana*, stipules oblong obtuse, leaves roundish-cordate pointed, involucre of the fruit campanulate rather spreading torn at the margin. *p.* 275.—*Woods.*

2. QUERCUS.

Monœcious. *Barren fl.* in a lax catkin. *Perianth* single, somewhat 5-cleft. *Stam.* 5—10. *Fertile fl. Cupule* cup-shaped, scaly. *Perianth* 6-lobed. *Ovary* 3-celled, 2 of the cells abortive. *Style* 1. *Stigmas* 3. *Nut* (*acorn*) 1-celled, 1-seeded, surrounded at the base with the scaly cupule.

1. Q. *Robur*, leaves deciduous dilated towards the extremity obovato-oblong sinuated and lobed, their sinuses rather acute, their lobes obtuse, fruitstalks elongated. *p.* 273.—*Woods.*
2. Q. *sessiliflora*, leaves deciduous petiolate oblong sinuated and lobed, the sinuses rather acute, the lobes obtuse, fruit sessile, *p.* 273.—*Woods.*

3. CASTANEA.

Monœcious. Barren fl. in a very long cylindrical catkin. *Perianth* single, of 1 leaf, 6-cleft. *Stam.* 5—20. *Fertile fl.* 3, within a 5-lobed thickly muricated *involucre* or *cupule*. *Perianth* 5—6-lobed, having the rudiments of 12 *stam.* *Ovaries* 6-celled, with the cells 2-seeded, 5 of them mostly abortive. *Styles* 6. *Nut* 1—2-seeded, invested with the enlarged *involucre*.

1. C. *vulgaris*, leaves oblongo-lanceolate acuminate mucronato-serrate glabrous on each side. *p.* 273.—*Plantations.*

4. FAGUS.

Monœcious. Barren fl. in a globose catkin. *Perianth* campanulate, 6-cleft. *Stam.* 5—12. *Fertile fl.* within a four-lobed prickly *involucre* or *cupule*. *Perianth* with 4—5 minute lobes. *Ovaries* 3-celled, 2 of the cells becoming abortive. *Styles* 3. *Nuts* 1-seeded, invested with the enlarged *involucre*.

1. F. *sylvatica*, leaves ovate glabrous obsoletely dentate their margins ciliated. *p.* 274.—*Woods.*

5. CARPINUS.

Monœcious. Barren fl. in a cylindrical catkin; its scales roundish, ciliated at the base. *Stam.* 8—20. *Fertile fl.* in a lax catkin; its scales large, foliaceous, 3-lobed, 1-flowered. *Perianth* urceolate, adherent with the 2-celled *ovary*, of which 1 cell is abortive. *Styles* 2. *Nut* ovate, striated, 1-seeded.

1. C. *Betulus*, scales or bracteas of the fruit oblong serrated with 2 smaller lateral lobes. *p.* 274.—*Woods.*

Order III. SALICINÆ. *Mirb.*

Flowers amentaceous, with the *anthers* and *pistils* in distinct flowers. *Barren fl. Perianth* either none, or bearing the *stam.* *Stam.* 1—3. *Fertile fl. Perianth* simple, free and persistent, or none. *Ovary* 1. *Style* simple. *Stigmas* 2—4. *Ovules* pendulous. Fruit a *capsule* or *achenium*, 1—2-celled, 1—many-seeded. *Seeds* pendulous. *Albumen* none. *Radicle* superior.

Shrubs or *trees* with alternate simple leaves and stipules. *Mirb.*

1. SALIX.

Diœcious. Barren fl. Scales of the catkin single-flowered, imbricated, with a nectariferous gland at their base. *Perianth* 0.

Stam. 1—5. *Fertile fl. Scales* of the catkin single-flowered. *Perianth* 0. *Stigmas* 2, often cleft. *Caps.* 1-celled, 2-valved, many-seeded. *Seeds* comose.

* *Leaves serrated, smoothish, especially above.*

1. S. *purpurea*, monandrous decumbent, leaves lanceolate broadest upwards serrated glabrous, germens ovate very pubescent sessile, stigma nearly sessile. *p.* 277.—*Marshes.*
2. S. *Helix*, monandrous erect, leaves lanceolate broadest upwards serrated glabrous, germens oblongo-ovate very pubescent sessile, style short, stigma small 2-lobed. *p.* 278.—*Marshes.*
3. S. *Lambertiana*, monandrous erect, leaves lanceolate broadest upwards serrated glabrous, germens shortly ovate very pubescent sessile, stigma nearly sessile. *p.* 278.—*Marshes.*
4. S. *rubra*, stam. 2 united at the base, leaves linear-lanceolate serrated glabrous green on both sides, capsules oblongo-ovate very pubescent sessile, style elongated, stigmas rarely 2-lobed linear. *p.* 278.—*Osier-grounds.*
5. S. *Croweana*, " monadelphous, leaves elliptical" (obovato-elliptical acute) " subserrated quite glabrous glaucous beneath." *p.* 278.—*Marshes.*
6. S. *triandra*, leaves oblongo-lanceolate acute serrated glabrous, germens pedicellate oblongo-ovate glabrous as well as the scale, stigmas sessile bifid. *p.* 278.—*Marshes.*
7. S. *lanceolata*, triandrous, leaves lanceolate acuminate serrated glabrous, germens pedicellate oblongo-ovate glabrous, style elongated, stigmas bifid, scales very villous. *p.* 278.—*Marshes.*
8. S. *amygdalina*, triandrous, leaves oblongo-lanceolate acute serrated glabrous, germens pedicellate ovate glabrous, stigmas sessile bifid, scales glabrous or a little pubescent at the base. *p.* 279.—*Marshes.*
9. S. *decipiens*, " leaves lanceolate serrated very glabrous, petioles subglandular, germens attenuated pedicellated, branches smooth and highly polished." *p.* 279.—*Woods.*
10. S. *Russelliana*, leaves lanceolate tapering at each extremity strongly serrated glabrous, germens pedicellate oblongo-subulate glabrous, style elongate, stigmas bifid, scales lanceolate very narrow slightly ciliated or pubescent. *p.* 279.—*Marshes.*
11. S. *fragilis*, leaves ovato-lanceolate acute serrated glabrous, germens shortly pedicellate oblongo-ovate glabrous, style elongated, stigmas bifid, scales pubescent and much ciliated. *p.* 279.—*Marshes.*
12. S. *pentandra*, pentandrous, leaves obovato-elliptical shortly acuminate glanduloso-serrated glabrous, germens oblongo-ovate glabrous nearly sessile, style elongated, stigmas bifid, scale almost as long as the germen glabrous or slightly pilose. *p.* 279. —*River-banks.*

13. S. *nigricans*, leaves mostly obovate acute crenato-serrate glaucous and often downy beneath, germens pedicellate lanceolato-subulate very silky, styles elongated, stigmas mostly entire, scales villous. *p.* 280.—*Marshes.*
14. S. *bicolor*," leaves elliptical acute denticulato-serrate smoothish glaucous beneath, germens pedicellate lanceolate silky." *p.* 280.—*Woods.*
15. S. *petiolaris*, leaves lanceolate serrated glabrous glaucous and often silky beneath, germens pedicellate ovate silky, stigmas sessile 2-lobed. *p.* 280.—*Marshes.*
16. S. *radicans*, leaves obovato- or elliptico-lanceolate with often wavy serratures glabrous glaucous beneath, germens lanceolate pedicellate very silky as well as the scales, style elongated, stigmas entire or bifid. *p.* 280.—*River-banks.*
17. S. *phylicifolia*, leaves oblong shortly attenuated at each extremity with often wavy serratures glabrous and glaucous beneath, germens pedicellate subulate glabrous, style much elongated, stigmas bifid. *p.* 281.—*Mountains.*
18. S. *Arbuscula*, leaves lanceolate obsoletely denticulato-serrate glabrous glaucous beneath, germens oblongo-ovate very silky pedicellate, style elongated, stigmas entire. *p.* 281.—*Alps.*
19. S. *livida*, " leaves oblong nearly entire glabrous livid beneath, germens pedicellate somewhat silky, stigmas nearly sessile 2-lobed." *p.* 281.—*Mountains.*
20. S. *vitellina*, leaves lanceolate with cartilaginous serratures glabrous above more or less silky beneath, germens lanceolate sessile glabrous, style short, stigmas bipartite, scales lanceolate as long as the germen glabrous. *p.* 281.—*Marshes.*
21. S. *tenuifolia*," leaves elliptical acute serrated smoothish glaucous beneath, stipules obsolete, capsules very smooth." *p.* 282. —*Mountains.*
22. S. *myrsinites*, leaves oval serrated veined shining quite glabrous, germens nearly sessile lanceolate slightly downy, style elongated, stigmas bifid. *p.* 282.—*Alps.*
23. S. *prunifolia*, leaves ovate serrated more or less veiny glabrous glaucous beneath, germens sessile oblongo-ovate extremelysilky, style short, stigmas notched. *p.* 282.—*Alps.*
24. S. *carinata*, leaves ovate serrated glabrous glaucous beneath frequently folded so as to form a keel, germens sessile oblongo-ovate extremely silky, style short, stigmas notched. *p.* 282.—*Alps.*
25. S. *Dicksoniana*, " leaves elliptical acute slightly toothed glabrous glaucous beneath, young branches very glabrous, catkins ovate short erect silky." *p.* 282.—*Alps.*
26. S. *herbacea*, leaves orbicular serrated glabrous shining veined, germens sessile lanceolate glabrous, stigmas sessile bifid, catkins of few flowers. *p.* 283.—*Alps.*

** *Leaves subentire, more or less hairy or silky.*

27. S. *reticulata*, leaves nearly elliptical-orbicular mostly glabrous remarkably reticulated with veins glaucous beneath, germens sessile oblongo-ovate downy, style short, stigmas bifid. *p.* 283.—*Alps.*

28. S. *arenaria*, leaves oblongo-lanceolate entire downy especially beneath, germens sessile lanceolate downy with a very long style, stigmas linear often entire. *p.* 283.—*Alps.*

29. S. *glauca*, leaves ovato-lanceolate entire downy white and very silky beneath, germens sessile narrow-elliptical ovate very downy, stigmas nearly sessile bifid. *p.* 283.—*Alps.*

30. S. *repens*, monadelphous, leaves elliptical-lanceolate acute entire somewhat downy glaucous and generally very silky beneath, germens upon a long footstalk lanceolate very silky, styles short, stigmas bifid, stems more or less procumbent. *p.* 284.—*Heaths.*

31. S. *cinerea*, leaves obovato-elliptical approaching to lanceolate generally slightly downy above, beneath pubescent and reticulated with veins glaucous, the margins slightly recurved, stipules semicordate, germens pedicellate lanceolate subulate silky, style short, stigmas mostly entire. *p.* 284.—*Woods.*

32. S. *aurita*, leaves obovate repando-dentate rugose with veins more or less pubescent very downy beneath their margins recurved tipped with a small recurved point, stipules roundish semicordate, germens lanceolato-subulate pedicellate silky, style very short, stigmas generally entire. *p.* 285.—*Woods.*

33. S. *rupestris*, leaves obovate approaching to lanceolate subserrated pubescent and subsilky beneath veined, stipules small semicordate, "germens pedicellate lanceolato-subulate, style short, stigmas mostly entire." *p.* 285.—*Alps.*

34. S. *Andersoniana*, leaves elliptical-oblong acute faintly crenato-dentate the upper ones chiefly subpubescent all glaucous beneath, stipules small subovate, branches minutely downy, germens pedicellate linear subulate glabrous, style elongated, stigmas bifid, scales fringed with a few long silky hairs. *p.* 285.—*Mountains.*

35. S. *Forsteriana*, "leaves elliptical-obovate acute notched slightly downy glaucous beneath, stipules vaulted, branches minutely downy, germen stalked silky, stigmas undivided. *p.* 285.—*Bushy places.*

36. S. *cotinifolia*, leaves elliptical-orbicular obsoletely dentate slightly pubescent above more so and veiny beneath, germens slightly silky pedicellate, style elongated, stigmas bifid. *p.* 286.—*Bushy places.*

37. S. *sphacelata*, "leaves entire elliptical plane pubescent on both sides, somewhat withered at the point, stipules obsolete, capsules subulate." *p.* 286.—*Alps.*

38. S. *caprea*, leaves ovato-elliptical acute serrated and undulated at the margin downy beneath, stipules semicordate, germens pedicellate lanceolato-subulate silky, stigmas sessile undivided. *p.* 286.—*Woods.*

39. S. *acuminata*, "leaves lanceolato-oblong pointed waved slightly toothed downy beneath, stipules kidney-shaped, capsules ovate tapering." *p.* 286.—*Moist woods.*

40. S. *stipularis*, leaves lanceolate very indistinctly crenate white and downy beneath, stipules large semicordate acute, "germens shortly pedicellate ovate downy, style a little elongated, stigmas long awl-shaped recurved entire, nectary cylindrical." *p.* 286.—*Willow-grounds.*

41. S. *mollissima*, leaves lanceolate obscurely crenate white and covered with silky pubescence beneath, stipules rather small semicordate acute, germens lanceolato-subulate very silky shortly pedicellate, style elongated, stigmas long linear mostly entire. *p.* 287.—*Willow-grounds.*

42. S. *viminalis*, leaves linear lanceolate obscurely crenate white and silky beneath, stipules very small sublanceolate, branches straight and twiggy, germens upon very short footstalks silky lanceolato-subulate, style elongated, stigmas long linear mostly entire.—*p.* 287.—*Willow-grounds, &c.*

43. S. *alba*, leaves elliptical lanceolate regularly glanduloso-serrate acute silky beneath often so above, germens ovato-acuminate nearly sessile glabrous, stigmas nearly sessile short recurved bifid, scales short pubescent at the margin. *p.* 287.—*Meadows and hedges.*

2. POPULUS.

Diœcious. *Catkins* cylindrical; scales lacerated. *Barren Fl. Anth.* 8—30 arising from a turbinate, oblique, entire, single perianth. *Fertile Fl. Perianth* turbinate (entire)? *Stigmas* 4. *Caps.* superior, 2-celled, 2-valved, many-seeded. *Seeds* comose.

1. P. *alba*, leaves roundish cordate lobed toothed glabrous above downy and very white beneath, fertile catkins ovate, stigmas 4. *p.* 288.—*Plantations.*

2. P. *tremula*, leaves nearly orbicular broadly toothed glabrous on both sides, petioles compressed, "stigmas 4, auricled at the base." *Sm. p.* 289.—*Moist woods.*

3. P. *nigra*, leaves deltoid acute serrated glabrous on both sides, fertile catkins cylindrical lax, "stigmas 4." *Sm. p.* 289.—*Plantations.*

3. ALNUS.

Monœcious. *Barren Fl.* with long cylindrical *catkins;* their scales 3-lobed, 3-flowered. *Perianth* 4-partite. *Stam.* 4. *Fertile Fl.* with ovate *catkins*; their scales subtrifid with 2 flowers. *Perianth* 0. *Styles* 2. *Fruit* a *Nut*, compressed.

1. A. *glutinosa*, leaves roundish cuneiform obtuse lobed at the margin and serrated somewhat glutinous downy in the axils of the leaves beneath. *p.* 271.—*Bogs.*

4. BETULA.

Monœcious. Catkins cylindrical. *Barren Fl.* ternate upon the scale. *Perianth* 0. *Stam.* 8—10. *Fertile Fl. Scale* of the catkin imperfectly 3-lobed, 3-flowered. *Perianth* 0. *Styles* 2. *Ovaries* compressed, 2-celled, 1 abortive. *Nuts* compressed, with a membranaceous margin, 1-seeded.

1. B. *alba*, leaves ovato-deltoid acute doubly serrated glabrous. *p.* 274.—*Woods.*
2. B. *nana*, leaves orbicular crenate. *p.* 274.—*Alpine bogs.*

5. MYRICA[a].

Dicœcious. Catkins ovate, their scales lunulate. *Barren Fl. Stam.* 4—6. *Anthers* 4-valved. *Fertile Fl. Ovary* 1. *Stigmas* 2. *Drupe* 1-celled, 1-seeded. *Decand.*

1. M. *Gale*, leaves lanceolate broader upwards serrated, stem shrubby. *p.* 288.—*Marshes and wet moors.*

Order IV. ULMACEÆ. *Mirbel.*

Flowers perfect, or imperfect by abortion. *Perianth* single, bearing the stam., free, 4—6-toothed. *Stam.* 4—6. *Ovary* 1. *Styles* 2. *Stigmas* double. *Achenium* or *Drupe* 1 seeded. *Seed* pendulous, with or without *albumen*. *Embryo* straight or rolled up. *Radicle* superior.

Trees or *Shrubs* .*Leaves* simple, rough, alternate, with stipules. *Flowers* axillary. *Mirbel.*

1. ULMUS.

Perianth persistent, 4—6-cleft. *Fruit* membranous, compressed, 1-seeded.

1. U. *campestris*, leaves doubly serrated scabrous unequal at the base, flowers nearly sessile 4-cleft, with 4 stam., fruit oblong naked. *p.* 85.—*Woods and hedges.*
2. U. *glabra*, leaves doubly serrated smooth unequal at the base, flowers nearly sessile 5-cleft, fruit obovate naked cloven. *p.* 85.—*Woods and hedges.*
3. U. *montana*, leaves doubly serrated pointed rough unequal at the base, flowers on short stalks effuse 5—6-cleft with 5—6 stam., fruit roundish naked. *p.* 85.—*Woods.*

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[a] This genus is considered the type of the order *Myriceæ* by M. Richard.

Order V. URTICEÆ.

Flowers perfect, or with the *anthers* and *pistils* distinct. *Perianth* free, 3—5-cleft, persistent. *Stam.* 3—5, hypogynous, usually with an elastic filament. *Ovary* 1. *Style* simple or double or none. *Stigma* simple or double. *Achenia*, or little *Drupes*, covered with the persistent *perianth*, solitary or united on a dilated fleshy receptacle. *Seeds* pendulous, with or without *albumen*. *Embryo* straight, curved or spiral. *Radicle* superior.

Stems herbaceous or woody. *Leaves* alternate or opposite, generally with stipules. *Flowers* either in heads or racemes. *Mirb.*

1. URTICA.

Monœcious or *diœcious*. *Barren Fl. Perianth* of 4 leaves, containing the cup-shaped rudiments of a germen. *Fertile Fl. Perianth* of 2 leaves. *Achenium* 1-seeded, shining.

1. U. *urens*, leaves opposite elliptical with about 5 ribs, clusters of flowers nearly simple. *p.* 271.—*Waste places.*
2. U. *dioica*, leaves ovate acuminate cordate at the base, clusters of flowers much branched in pairs mostly diœcious. *p.* 271.—*Hedges.*

2. PARIETARIA.

Flowers often imperfect, surrounded by a many-cleft involucrum. *Perianth* 4-cleft. *Stam.* 4. *Filaments* at first incurved, then expanding with an elastic force. *Ovary* 1. *Style* 1. *Achenium* 1-seeded, inclosed in the enlarged *perianth.*

1. P. *officinalis*, leaves ovato-lanceolate, involucre of many ovate leaflets. *p.* 56.—*Walls.*

3. HUMULUS.

Diœcious. Barren Fl. Perianth single, 5-partite. *Stam.* 5. *Anthers* with 2 pores at the extremity. *Fertile Fl.* amentaceous. *Scales* of the catkin large, persistent, concave, entire, single-flowered. *Perianth* 0. *Styles* 2. *Seed* 1.

1. H. *Lupulus. p.* 288.—*Hedges.*

Order VI. ARISTOLOCHIÆ.

Perianth of 1 piece, adherent. *Stam.* definite, epigynous. *Style* simple, very short. *Stigma* many-lobed in a radiating manner. *Ovary* many-celled. *Cells* many-seeded. *Capsule* dry or berried. *Seeds* very numerous. *Embryo* very minute, entire, at the base of the corneous *albumen. Mirb. Br.*

1. ASARUM.

Perianth 3-cleft. *Stam.* 12, placed upon the *ovary*. *Anthers* adnate with the middle of the filaments. *Capsule* 6-celled.

1. A. *europæum*, leaves binate reniform obtuse. *p.* 146.—*Woods, rare.*

Order VII. EUPHORBIACEÆ. *Juss.*

Anthers and *Pistils* in distinct flowers, naked, or with a free 3- or more cleft *perianth*. *Barren Fl. Stam* 1—12. *Anthers* didymous. *Fertile Fl. Ovary* 1. *Styles* 2—3. *Stigmas* 2—3, bipartite or 2-lobed. *Capsule* elastically splitting into 2—3 one- or two-seeded *Cocci*. *Seeds* suspended. *Embryo* in the axis of a fleshy *albumen*. *Radicle* superior. *Cotyledons* flat.

Stems herbaceous or woody. *Leaves* alternate opposite or whorled.

1. MERCURIALIS.

Diœcious. *Perianth* tripartite. *Barren Fl. Stam.* 9—12. *Fertile Fl. Styles* 2.

1. M. *annua*, stems branched, leaves glabrous, flowers spicato-glomerate. *p.* 290.—*Woods.*
2. M. *perennis*, stem quite simple, leaves rough, flowers upon long footstalks. *p.* 289.—*Waste places.*

2. EUPHORBIA.

Monœcious, rarely furnished with a *perianth*. *Involucre* monophyllous, calyciform, inclosing a number of pedicellated *flowers*, of which one is pistilliferous, the rest consisting each of one *stamen*.

1. E. *Peplus*, umbel of 3 forked rays, bracteas ovate and as well as the obovate shortly petiolated leaves entire, nectaries crescent-shaped horned. *p.* 148.—*Waste places.*
2. E. *exigua*, umbel of 3 forked rays, bracteas lanceolate and as well as the linear-lanceolate leaves entire. *p.* 148.—*Corn-fields.*
3. E. *helioscopia*, umbel of 5 forked rays, bracteas obovate and as well as the cuneate leaves serrated. *p.* 148.—*Corn-fields.*
4. E. *Esula*, umbel of many forked rays, bracteas somewhat heart-shaped and as well as the linear obovate leaves entire. *p.* 148.—*Woods.*
5. E. *Cyparissias*, umbel of many forked rays, bracteas broadly

cordate and as well as the linear mucronated leaves entire. *p.* 148.—*Woods.*

Order VIII. RESEDACEÆ. *Decand.*[a]

Flowers sterile and perfect, in heads. *Perianth* scutelliform, oblique. *Stam.* definite, perigynous. *Anthers* oblong, innate. *Ovary* 1-celled, 3-lobed, with three parietal many-seeded *receptacles*. *Stigma* 1 to each lobe, simple, sessile. *Capsule* open at the summit, 1-celled, many-seeded. *Seeds* suspended, reniform. *Embryo* curved, without *albumen*. *Radicle* superior. *Stems* herbaceous, rough with little minute transparent papillæ. *Leaves* mostly compound, alternate, without stipules. *Flowers* with an *involucre*.

1. RESEDA.

Flowers capitate. External *florets* sterile, the central one perfect.

1. R. *Luteola*, leaves lanceolate entire plane. *p.* 147.—*Waste places.*
2. R. *lutea*, leaves pinnated, upper ones with 3 segments. *p.* 147.—*Waste places.*

Order IX. THYMELEÆ.

Perianth free, tubular, persistent, often coloured. *Stam.* 8, in two rows, included in the perianth; 4 opposite the segments and 4 alternate with them. *Style* simple, inserted beneath the apex of the ovary. *Stigma* simple. *Drupe* or *Achenium* 1-seeded. *Seed* pendulous. *Embryo* surrounded by a small quantity of albumen. *Radicle* superior. *Cotyledons* fleshy. *Shrubs* with simple, entire, alternate leaves. *Flowers* solitary or aggregate, terminal or axillary. *Mirb.*

1. DAPHNE.

Perianth tubular, 4-lobed. *Stam.* 8. *Style* short. *Berry* 1-celled, 1-seeded.

[a] In adopting the order *Resedaceæ* of M. Decandolle, we have taken an entirely new view of the structure of the very curious plants of which it is composed. It would occupy more space than we can at present spare to explain all the motives by which we have been influenced. But we are sure that in point of affinity it will be evident to any one that it approaches *Euphorbiaceæ* much more nearly than either *Droseraceæ* or *Capparideæ*, to which it appears to us to have no sort of resemblance; except indeed in its parietal mode of placentation. *Ochradenus* of Delile is the only other genus of the order with which we are acquainted.

1. D. *Laureola*, racemes axillary of about 5 flowers, leaves lanceolate glabrous evergreen. *p.* 119.—*Woods.*

Order X. POLYGONEÆ.

Perianth free, 4—6-cleft, often coloured, persistent. *Stam.* definite, hypogynous, or nearly so. *Anth.* bursting longitudinally. *Style* 2—4-partite. *Stigmas* simple. *Achenium* or *Nut* 1-seeded. *Seed* erect. *Embryo* straight or bent, on one side of the farinaceous *albumen*. *Radicle* superior. twards, *Herbs* or rarely *Shrubs*. *Leaves* when young rolled ouspiked. alternate, sheathing at their base. *Flowers* panicled or *Mirb. Br.*

1. POLYGONUM.

Perianth 4—6-partite, coloured, persistent. *Stam.* 5—9, often 8. *Styles* 2—3. *Achenium* or small *Nut* often triangular.

* *Leaves ovate or lanceolate.*

† *Spikes of flowers terminal. Nut triquetrous.* (Bistorta.)

1. P. *Bistorta*, stem simple bearing one spike, leaves ovate waved, the radical ones running down into a footstalk. *p.* 120.—*Meadows.*
2. P. *viviparum*, stem simple bearing one spike, leaves linear-lanceolate, the lower ones elliptical petiolate their margins revolute. *p.* 120.—*Mountains.*

†† *Flowers spiked, terminal, or axillary. Nuts ovate.* (Persicaria.)

3. P. *amphibium*, flowers pentandrous, styles forked, spike oblongo-ovate, leaves petiolate cordato-lanceolate rough at the margins.—*α. aquaticum; β. terrestre. p.* 121.—*Lakes and their margins.*
4. P. *Persicaria*, flowers hexandrous, styles forked, leaves lanceolate (often spotted), spikes oblong erect their peduncle smooth, stipules fringed. p. 121.—*Waste places.*
5. P. *lapathifolium*, flowers hexandrous with 2 distinct styles, leaves ovato-lanceolate shortly petiolate, spikes oblong erect their peduncle rough, stipules not fringed. *p.* 121.—*Fields.*
6. P. *Hydropiper*, flowers hexandrous, styles forked, leaves lanceolate waved and spotless, spikes lax filiform drooping, stem erect. *p.* 121.—*Margins of lakes.*
7. P. *minus*, flowers hexandrous, style undivided, leaves linear-lanceolate plane very shortly petiolate, spikes slender erect, stem rooting at the base. *p.* 121.—*Moist fields, rare.*

††† *Flowers axillary.* (Polygonum.)

8. P. *aviculare*, flowers axillary, leaves elliptico-lanceolate rough

at the margin, nerves of the stipules distant, stem procumbent herbaceous. *p.* 122.—*Way-sides.*

** *Leaves cordate.* (Fagopyrum.)

9. P. *Fagopyrum*, leaves cordato-sagittate, stem nearly upright without prickles, angles of the fruit even. *p.* 122.—*Fields.*
10. P. *Convolvulus*, leaves cordato-sagittate, stem twining angular, segments of the perianth bluntly keeled. *p.* 122.—*Fields.*

2. RUMEX.

Perianth of 6 *leaves*. *Stam.* 6. *Styles* 3. *Nut* triquetrous, covered by the 3 interior valviform *leaves* of the *perianth*.

* *Flowers all perfect; valves graniferous.* (Lapatha.)

† *Valves entire.*

1. R. *aquaticus*, valves ovate entire bearing small grains, leaves lanceolate acute, the lower ones cordate at the base. *p.* 112. —*River sides.*
2. R. *crispus*, valves very large cordate entire reticulated bearing grains, leaves lanceolate waved acute. *p.* 112.—*Way-sides.*
3. R. *sanguineus*, valves oblong (small) entire, one at least bearing a grain, leaves lanceolate somewhat heart-shaped. *p.* 112. —*Woods.*

†† *Valves toothed.*

4. R. *acutus*, valves oblong somewhat toothed all bearing grains, leaves cordato-oblong acuminate, whorls leafy. *p.* 112.—*Pastures.*
5. R. *pulcher*, valves oblong toothed one of them principally bearing a grain, radical leaves panduriform, stem smooth diffuse. *p.* 113.—*Way-sides.*
6. R. *obtusifolius*, valves ovate toothed one principally bearing a grain, radical leaves ovato-cordate obtuse, stem roughish. *p.* 113.—*Way-sides.*
7. R. *maritimus*, valves deltoid fringed with setaceous teeth bearing grains, leaves linear, whorls much crowded. *p.* 113. —*Salt marshes.*
8. R. *palustris*, valves lanceolate with short setaceous teeth near the base bearing grains, leaves linear-lanceolate, whorls distant. *p.* 113.—*Marshes.*

** *Flowers polygamous; valves graniferous.*

9. R. *alpinus*, flowers polygamous, valves 1—2 graniferous, leaves ovato-cordate obtuse wrinkled. *Decand.*—*Mountains, rare*[a].

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[a] This species, I am recently informed by Mr. Maughan, has been found truly wild by *Mr. G. Don* on the Ochill-hills, Clackmannanshire, far from any cultivated ground.

**** Flowers diœcious; valves grainless.* (Acetosa.)

10. R. *Acetosa*, leaves oblongo-sagittate their segments bent towards the petiole. *p.* 113.—*Pastures.*

11. R. *Acetosella*, leaves lanceolato-hastate their acute lobes spreading or even recurved. *p.* 113.—*Dry pastures.*

3. OXYRIA.

Perianth of 4 leaves, two inner ones longer. *Stam.* 6. *Styles* 2. *Nut* triquetrous, with a broad, winged, membranous *margin*. *Embryo* erect, inverted.

1. O. *reniformis*. *p.* 111[a].—*Moist alpine rocks.*

Order XI. CHENOPODEÆ, *Decand.* (*Atriplices, Juss.*)

Perianth of 1 piece, free, persistent, mostly with deep divisions, and with an imbricated æstivation. *Stam.* definite, opposite the segments, into the base of which they are inserted. *Style* 2—4-cleft, or none. *Stigmas* simple. *Achenium* or *Utriculus* inclosed by the persistent *perianth*. *Seeds* erect. *Embryo* curved round a farinaceous *albumen*, or spiral; rarely without *albumen*. *Panicle* inferior.

Herbs or *Shrubs*. *Leaves* simple, alternate, without stipules. *Flowers* generally perfect. *Br.*

1. CHENOPODIUM.

Flowers perfect. *Perianth* 5-cleft, closing upon but not wholly enveloping the *fruit*. *Stam.* 5. *Styles* 2.

** Leaves semicylindrical, fleshy.*

1. Ch. *maritimum*, leaves glabrous subulate semicylindrical fleshy, flowers clustered axillary sessile. *p.* 83.—*Sea-coast.*

*** Leaves plane, undivided, and entire.*

2. Ch. *olidum*, leaves ovato-rhomboid entire, flowers in dense clustered spikes, stem diffuse. *p.* 83.—*Waste places.*

3. Ch. *polyspermum*, leaves ovate entire, racemes subcymose divaricate leafless, stem decumbent or erect. *p.* 83.—*Waste places.*

**** Leaves plane, toothed, or lobed.*

4. Ch. *Bonus Henricus*, leaves triangular arrow-shaped entire, spikes compound terminal and axillary erect leafless.—*p.* 83.—*Way-sides.*

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[a] By mistake, in the first part of this work, this species is said to be *Donia sapida* of Brown, instead of *D. acida*.

5. Ch. *urbicum*, leaves triangular toothed, racemes long erect approaching the stem subsimple nearly leafless. *p.* 84.—*Waste places.*
6. Ch. *rubrum*, leaves rhomboido-triangular deeply toothed and sinuated, racemes erect compound leafy. *p.* 84.—*Dunghills, &c.*
7. Ch. *murale*, leaves ovate approaching to rhomboid acute toothed shining, racemes much branched subcymose leafless. *p.* 84.—*Under walls, &c.*
8. Ch. *hybridum*, leaves cordate angulato-dentate acuminate, clusters very much branched subcymose divaricated leafless. *p.* 84.—*Waste places.*
9. Ch. *album*, leaves ovate inclining to rhomboid entire at the base, upper ones oblong perfectly entire, racemes branched somewhat leafy, fruit smooth. *p.* 84.—*Waste places.*

2. ATRIPLEX.

Flowers polygamous. *Perfect fl. Perianth* single, 5-partite. *Stam.* 5. *Style* 2-partite. *Fruit* depressed, covered by the calyx. *Female fl. Perianth* 2-partite. *Stam.* 0.

1. A. *portulacoides*, stem shrubby, leaves obovato-lanceolate entire silvery white. *p.* 291.—*Muddy places.*
2. A. *laciniata*, stem herbaceous diffuse, leaves ovato-deltoid dentato sinuate very mealy beneath. *p.* 291.—*Sea-shores.*
3. A. *patula*, stem herbaceous spreading, leaves triangular hastate glabrous above, irregularly toothed the upper ones entire, perianth of the fruit more or less tuberculated at the sides. *p.* 291.—*Waste places.*
4. A. *angustifolia*, "stem herbaceous spreading, leaves lanceolate entire the lower ones somewhat hastate, cal. of the fruit hastate slightly tuberculated at the sides." *Sm. p.* 291.—*Waste places and dunghills.*
5. A. *littoralis*, stem herbaceous erect, leaves all linear entire or toothed, perianth of the fruit sinuated and muricated on the back. *p.* 291.—*Sea-shore.*

3. BETA.

Flowers perfect. *Perianth* half-adherent, 5-partite. *Stam.* 5. *Styles* 2. *Achenium* subreniform, imbedded in the fleshy enlarged *base* of the *perianth.*

1. B. *maritima*, stems procumbent at the base, flowers solitary or in pairs, segments of the perianth entire. *p.* 84.—*Sea-shore.*

4. SALSOLA.

Flower perfect. *Perianth* 5-cleft, persistent, enveloping the *fruit* with its *base*, and crowning it with its enlarged scariose *limb*. *Stam.* 5. *Styles* 2. *Embryo* spiral.

1. S. *Kali*, stem herbaceous prostrate, leaves subulate spinous scabrous, segments of the perianth margined scariose. *p.* 85. —*Sea-shores.*

5. SALICORNIA.

Perianth single, turbinate, fleshy, closed. *Stam.* 1—2. *Style* bi-trifid. *Utricle* included in the enlarged *perianth.*

1. S. *herbacea*, stem herbaceous (annual) erect, articulations compressed and somewhat thickened upwards notched, spikes cylindrical slightly tapering at the extremity. *p.* 1.—*Salt marshes.*
2. S. *radicans*, stem woody (perennial) procumbent and rooting, articulations cylindrical spreading and notched at the top, spikes oblong obtuse. *p.* 1.—*Salt marshes.*

Order XII. PLANTAGINEÆ. *Juss.*

Flowers perfect, rarely monœcious. *Cal.?* 4-partite, persistent (3-cleft in *Littorella*). *Cor.?* monopetalous, tubular, hypogynous, scariose, persistent, 4-cleft (urceolate and almost entire in *Littorella*). *Stam.* 4, inserted into the *tube*, and alternate with the *segments* of the *Cor.* *Filaments* flaccid. *Anth.* versatile. *Ovary* without a surrounding *disk.* *Style* simple, slender. *Stigma* simple or bifid. *Pyxis* membranous, 2—4-celled. *Seeds* definite or indefinite, attached by their middle. *Testa* mucilaginous. *Embryo* transverse, in the axis of a cartilaginous *albumen.* *Radicle* inferior.

Herbs with or without a stem. *Leaves* mostly radical in tufts, often many-nerved. *Flowers* spiked, rarely solitary.

1. PLANTAGO.

Flowers perfect. *Capsule* 2—4-celled. *Seeds* definite or indefinite.

* *Dissepiment of the capsule plane, each cell many-seeded.*

1. Pl. *major*, leaves broadly ovate mostly on longish footstalks, scape rounded, spikes long cylindrical. *p.* 53.—*Pastures.*

** *Dissepiment of the capsule plane, each cell one-seeded.*

2. Pl. *media*, leaves ovate mostly with very short footstalks, scape rounded, spike cylindrical. *p.* 53.—*Pastures.*
3. Pl. *lanceolata*, leaves lanceolate, scape angular, spike ovate. *p.* 54.—*Meadows and pastures.*
4. Pl. *maritima*, leaves linear grooved fleshy woolly at the base, scape rounded, spike cylindrical. *p.* 54.—*Sea-coast.*

*** *Dissepiment with* 4 *angles* (*thus forming* 4 *cells*), *seed in each cell.*

5. Pl. *Coronopus*, leaves linear pinnatifid, scape rounded. *p.* 54. —*Gravelly places.*

2. LITTORELLA.

Monœcious. *Barren fl.* *Cal.* 4-partite. *Cor.* tubular, 4-fid. *Fertile fl.* *Cal.* 0, unless 3 bracteæ (?) can be so called. *Cor.*

urceolate with the contracted mouth subtridentate. *Style* very long. "*Caps.* transversely opening." *Juss.*

1. L. *lacustris. p.* 271.—*Margins of lakes.*

Div. II. *Perianth or floral Covering double. Calyx and Corolla.*

Sect. I. *Corolla monopetalous, hypogynous (or not attached to the calyx).*

Order XIII. PLUMBAGINEÆ. *Juss.*

Calyx tubular, plaited, persistent. *Cor.* monopet. equal, or (rarely) pentapetalous. *Stamens* definite, hypogynous in the monopetalous genera, epipetalous in the polypetalous ones. *Ovary* 1, superior, 1-seeded. *Ovule* pendulous from the end of a seed-stalk arising from the base of the ovary. *Styles* 5, rarely 3—4. *Stigmas* the same number. *Utriculus* generally closed. *Seed* pendulous. *Testa* simple. *Embryo* straight. *Radicle* superior.

Herbs or *Undershrubs. Leaves* alternate or scattered, undivided, somewhat sheathing at the base. *Flowers* in spikes or heads. *Br.*

1. STATICE.

Cal. infundibuliform, plaited, scariose. *Pet.* 5, persistent. *Stam.* 5, inserted on the petals. *Styles* 5. *Pericarp* indehiscent.

1. S. *Armeria*, leaves linear, scape simple bearing a round head of flowers. *p.* 97.—*Sea-shores and highest mountains.*
2. S. *Limonium*, scape panicled rounded branched, leaves glabrous ovato-lanceolate undulate obtuse nerveless tipped with a small point. *p.* 97.—*Salt-marshes.*
3. S. *reticulata*, scape repeatedly dichotomous zigzag, the lower branches sterile, leaves spathulate acute glabrous. *p.* 97.—*Sea-side, rare.*

Order XIV. PRIMULACEÆ. (*Lysimachiæ Juss. Anagallideæ Rich.*)

Calyx regular, persistent, divided. *Cor.* monopetalous, hypogynous, regular. *Stam.* inserted into the corolla, opposite the segments of its limb and equal to them in number. *Ovary* 1, tubular. *Style* 1. *Stigma* capitate. *Caps.* with a central free receptacle. *Seeds* numerous, peltate. *Embryo* transverse, surrounded by albumen.

Herbs. Leaves usually opposite, sometimes whorled and scattered. *Br.*

1. ANAGALLIS.

Cal. 5-partite. *Cor.* rotate, 5-lobed. *Stam.* 5, hairy. *Caps.* bursting all round transversely.

1. A. *arvensis*, leaves ovate sessile dotted beneath, cor. broadly and very obtusely crenate piloso-glandulose. *p.* 72.—*Fields.*
2. A. *cærulea*, leaves ovate sessile dotted beneath, cor. dentate scarcely at all glandulose. *p.* 73.—*Fields.*
3. A. *tenella*, stem creeping filiform, leaves ovate or roundish petiolate. *p.* 73.—*Bogs.*

2. LYSIMACHIA.

Cal. 5-partite. *Cor.* 5-fid, rotate. *Stam.* 5. *Caps.* globose, ten-valved.

* *Peduncles many-flowered.*

1. L. *vulgaris*, leaves ovato-lanceolate opposite ter- or quaternate, panicle terminal. *p.* 72.—*Marshes.*
2. L. *thyrsiflora*, leaves opposite lanceolate, racemes pedunculate lateral. *p.* 72.—*Marshes, rare.*

** *Peduncles* 1-*flowered.*

3. L. *nemorum*, leaves ovate acute, stem creeping, peduncles solitary, calycine segments linear-subulate, stam. smooth. *p.* 72.—*Woods.*
4. L. *Nummularia*, leaves subcordate obtuse, stem procumbent, peduncles solitary, calycine segments ovate acute, stam. glandular. *p.* 72.—*Banks.*

3. PRIMULA.

Calyx 5-toothed. *Cor.* hypocrateriform, the *tube* cylindrical, its orifice naked. *Stam.* 5, not exserted. *Stigma* globose. *Caps.* opening with 10 teeth.

1. Pr. *vulgaris*, leaves dentate rugose, scape 1-flowered, limb of the cor. plane. *p.* 71.—*Woods.*
2. Pr. *elatior*, leaves dentate rugose contracted below the middle, scape umbellate, limb of the cor. plane. *p.* 71.—*Woods.*
3. Pr. *Veris*, leaves dentate rugose contracted below the middle, scape umbellate, flowers drooping, limb of the cor. concave. *p.* 71.—*Pastures.*
4. Pr. *farinosa*, leaves crenate smooth mealy beneath, scape umbellate, flowers erect, limb of the cor. plane. *p.* 71.—*Subalpine pastures.*

4. CENTUNCULUS.

Cal. 4-lobed. *Cor.* tubular, 4-cleft. *Stam.* 4, short. *Caps.* globose, of 1 cell, many-seeded, opening all round transversely.

1. C. *minimus*. *p.* 54.—*Moist gravelly places.*

5. TRIENTALIS.

Calyx 7-partite. *Cor.* rotate in 7 segments, regular and flat. *Berry* dry, opening at the sutures.

1. Tr. *europæa. p.* 115.—*Woods.*

(*Allied to Primulaceæ.*)

6. SAMOLUS.

Cal. half-adherent, 5-fid. *Cor.* subhypocrateriform, 5-lobed. *Stam.* 5, antheriferous, opposite the segments of the cor., 5 (scales) alternate with them, sterile. *Caps.* half inferior, ovate, with 5 short valves, 1-celled. *Receptacle* central, free. *Seeds* numerous, fixed near each extremity. *Embryo* included, albuminose. *Radicle* turned towards the *hilum* of the seed.

Leaves alternate, entire. *Flowers* terminal, subracemose or corymbose, white; with the pedicels bracteated at the base or middle. *Br.*

Differ from *Primulaceæ*, in having the *ovary* with its base at least inferior, in the seeds umbilicated near each extremity, and in the 5 sterile *stamens*. *Br.*

1. S. *Valerandi*, leaves obtuse, racemes many-flowered, pedicels with a small bractea. *p.* 80.—*Marshes.*

7. GLAUX.

Cal. campanulate, 5-lobed, coloured. *Cor.* none. *Stam.* 5. *Caps.* globose, 5-valved, 5-seeded.

1. G. *maritima. p.* 82.—*Salt marshes.*

ORDER XV. LENTIBULARIÆ. *Rich.*

(*Utriculinæ Hoffm.* and *Link. Lysimachiæ*, part of, *Juss.*)

Calyx persistent, divided. *Cor.* monopetalous, irregular, spurred, bilabiate. *Stam.* 2, included, inserted at the base of the *Cor.* *Anthers* simple, sometimes contracted in the middle. *Ovary* 1-celled. *Style* 1, very short. *Stigma* 2-lipped. *Caps.* 1-celled, many-seeded, with a large central receptacle. *Seeds* small, without albumen. *Embryo* sometimes undivided. *Br.*

Aquatics or Marsh *Herbs. Leaves* radical. *Flowers* usually with one bractea; rarely with none. *Br.*

1. UTRICULARIA.

Cal. 2-partite, lips undivided, nearly equal. *Cor.* personate, with the lower lip spurred at the base. *Stam.* 2, with the filaments internally, at the extremity, antheriferous. *Stigma* 2-lipped. *Br.*

1. U. *vulgaris*, spur conical, upper lip as long as the projecting palate, leaves pinnato-multifid. *p.* 8.—*Pools.*

2. U. *intermedia*, spur conical, upper lip twice as long as the palate, leaves tripartite their segments linear dichotomous. *p.* 9. —*Pools.*

3. U. *minor*, spur extremely short obtuse keeled, upper lip as long as the palate, leaves subtripartite the segments linear dichotomous. *p.* 9.—*Pools.*

2. PINGUICULA.

Cal. 4—5-cleft. *Cor.* ringent, spurred at the base beneath. *Stigma* two-lipped.

1. P. *vulgaris*, spur cylindrical acute as long as the veinless petal, upper lip two-lobed, lower one in three unequal obtuse segments. *p.* 8.—*Marshes.*

2. P. *Lusitanica*, spur obtuse curved shorter than the cor., divisions of the petals nearly equal, leaves and scape hairy. *p.* 8. —*Marshes on the W. coast.*

Order XVI. VERBENACEÆ. *Juss.*

(*Pyrenaceæ Vent., Vitices, Juss.*)

Cal. tubular, persistent. *Cor.* hypogynous, monopetalous, deciduous, usually irregular. *Stam.* usually didynamous, rarely equal, sometimes 2. *Ovary* 2—4-celled. *Ovules* erect, solitary, or in pairs. *Style* 1. *Stigma* bifid or entire. *Fruit* a *Drupe* or *Berry*. *Embryo* straight with little or no *albumen*. *Radicle* inferior.

Trees or *Shrubs*; rarely *Herbs*. *Leaves* generally opposite, without *stipules*. *Br.*

1. VERBENA. *Juss.*

Cal. 5-fid. *Cor.* infundibuliform; *limb* unequal, 5-cleft. *Stam.* 4, didynamous. *Pericarp* thin, evanescent. *Seeds* 4. *Flowers* paniculato-spicate. *Br.*

1. V. *officinalis*, tetrandrous, spikes slender panicled, leaves much cut, stem erect solitary. *p.* 190.—*Waste places, rare.*

Order XVII. MELAMPYRACEÆ. *Rich. in Analyse du Fruit.*

(*Pediculares, part of, Juss.*)

Cal. divided, deciduous. *Cor.* personate, monopetalous, hypogynous. *Stam.* 4, didynamous. *Stigma* simple. *Caps.* naked, 2-celled, 2-seeded. *Seeds* erect, rostellate, with a minute embryo at the opposite end of the seed to the point of insertion. *Albumen* fleshy. *Radicle* superior.

Herbs with opposite leaves. *Flowers* in spikes, half covered with crested bracteæ.

1. MELAMPYRUM.

Cal. tubular, 4-fid. *Cor.* tubular, compressed; lips turned back at the margin; lower one trifid. *Stam.* 4, didynamous. *Caps.* oblong, 2-celled, oblique, opening on one side. *Cells* 1-seeded. *Seeds* gibbous at the base.

1. M. *pratense*, flowers axillary secund, leaves in distant pairs, cor. 4 times as long as the cal. closed, the lower lip protruded, upper bracteas pinnato-dentate. *p.* 187.—*Woods.*
2. M. *sylvaticum*, flowers axillary secund, leaves in distant pairs, cor. half as long again as the cal. open, the lower lip equal in length to the upper one, bracteas entire. *p.* 187.—*Alpine woods.*

Order XVIII. LABIATÆ. *Juss.*

Cal. tubular. *Cor.* monopetalous, hypogynous, irregular. *Stam.* mostly 4, didynamous, 2 sometimes sterile or wanting. *Style* 1. *Stigma* two-lobed. *Caryopsides* (*naked seeds Linn.*) four, inclosed in the *cal.* *Seed* solitary, erect. *Embryo* erect. *Albumen* none.

Leaves opposite. *Stem* square. *Br.*

Div. I. *Stam. two, fertile.*

1. LYCOPUS.

Cal. tubular, 5-cleft, mouth naked. *Cor.* tubular, nearly equal, 4-lobed, upper segment broader and notched. *Stam.* distant, simple.

1. L. *europæus*, leaves deeply sinuato-serrate. *p.* 9.—*Ditch-banks.*

2. SALVIA.

Cal. subcampanulate, two-lipped; upper lip tridentate, the lower one bifid. *Cor.* ringent. *Filaments* two, fertile, bifid, one lobe ascending with a dimidiate *anther*, the other sterile. *Br.*

1. S. *verbenaca*, leaves serrated sinuated, cor. narrower than the cal. *p.* 10.—*Pastures, rare.*

Div. II. *Stam.* 4, *didynamous, fertile.*

Sect. I. *Cal.* 5- *or* 10-*cleft, subregular.*

3. AJUGA.

Upper *lip* of the *Cor.* very minute, notched; lower one 3-lobed, middle lobe the largest, obcordate. *Stam.* exserted. *Anthers* reniform, 1-celled.

* *With creeping scions.*

1. A. *reptans*, glabrous, stem solitary throwing out creeping scions. *p.* 179.—*Woods, &c.*

** *Without creeping scions.*

2. A. *pyramidalis*, hairy, whorls crowded into a pyramidal and tetragonal form, radical leaves very large obovate more or less crenate. *p.* 179.—*Mountains.*

3. A. *alpina*, leaves nearly glabrous unequally toothed all nearly of a size, whorls of flowers rather distant. *p.* 180.—*Alps.*

4. TEUCRIUM.

Upper *lip* of the *Cor.* abbreviated, bipartite; lower one 3-lobed, its middle lobe the largest. *Stam.* projecting through the cleft in the upper lip.

1. T. *Scorodonia*, leaves cordate petiolate pubescent crenate, flowers in lateral and terminal racemes secund, stem erect. *p.* 180.—*Dry woods, &c.*
2. T. *Chamædrys*, leaves ovate tapering into a footstalk inciso-serrate, flowers axillary in threes, stem subprocumbent rounded hairy. *p.* 180.—*Walls.*

5. NEPETA.

Upper *lip* of the *Cor.* notched; the lower one 3-lobed; its middle lobe the largest, crenate; lateral ones very short, reflexed.

1. N. *cataria*, flowers in spiked subpedunculated whorls, leaves petiolate cordate dentato-serrate. *p.* 180.—*Waste places.*

6. MENTHA.

Cor. nearly regular, 4-lobed; its broadest lobe notched. *Stam.* erect, distant.

1. M. *hirsuta*, flowers capitate or whorled, leaves petiolate ovate serrated pubescent, cal. hairy, pedicels with reflexed hairs. *p.* 180.—*Marshes.*
2. M. *rubra*, flowers whorled, leaves petiolate ovate serrated subglabrous, "stem upright zig-zag" (*Sm.*), pedicels and lower part of the cal. quite glabrous, teeth hairy. *p.* 180.—*Sides of ditches.*
3. M. *gentilis*, flowers whorled, leaves petiolate ovate serrated subglabrous, "stem much branched spreading" (*Sm.*), pedicels and lower part of the cal. glabrous, teeth hairy. *p.* 181.—*Sides of rivers.*
4. M. *arvensis*, flowers whorled, leaves ovate hairy serrated, calyx campanulate and clothed with spreading hairs. *p.* 181.—*Corn-fields.*
5. M. *Pulegium*, flowers whorled, leaves downy ovate obtuse subcrenate, stem prostrate, flowerstalks slightly, and calyx very, pubescent, teeth of the latter fringed. *p.* 181.—*Among rubbish.*

7. GLECHOMA.

Upper *lip* of the *Cor.* bifid; lower one trifid, with the intermediate lobe emarginate. *Anthers* approaching each other in pairs and forming a cross.

1. G. *hederacea*, leaves reniform crenate. *p.* 181.—*Hedges.*

8. LAMIUM.

1. L. *album*, leaves cordato-acuminate deeply serrated petiolate, whorls of about 20 flowers. *p.* 181.—*Borders of fields.*
2. L. *maculatum*, leaves cordato-acuminate inciso-serrate petiolate, whorls of about 10 flowers. *p.* 181.—*Woods.*
3. L. *purpureum*, leaves cordate obtuse crenato-serrate petiolate, the uppermost crowded together, " cor. with the tube bearded within." (*Sm.*)—*Hedges.*
4. L. *incisum*, leaves broadly cordate obtuse inciso-crenate petiolate, the uppermost crowded, " cor. with the tube glabrous within." (*Sm.*)—*Hedges.*
5. L. *amplexicaule*, leaves broadly cordate very obtuse deeply inciso-crenate petiolate, the floral ones sessile embracing the stem. *p.* 182.—*Sandy fields, &c.*

9. GALEOPSIS.

Cal. teeth acuminate. Upper *lip* of the *Cor.* vaulted, notched; lower *lip* with 3 unequal lobes, having 2 teeth on its upper side.

1. G. *Ladanum*, stem not swollen below the joints, leaves lanceolate subserrate hairy, upper lip of the cor. slightly crenate. *p.* 182.—*Limestone rubbish.*
2. G. *Tetrahit*, stem hispid incrassated below the joints, leaves ovate hispid serrated, cor. twice as long as the cal., upper lip nearly straight. *p.* 182.—*Corn-fields.*
3. G. *versicolor*, stem hispid incrassated below the joints, leaves ovate hispid serrated, cor. thrice as long as the cal., upper lip inflated. *p.* 182.—*Corn-fields.*

10. GALEOBDOLON.

Cal. teeth unequal, acuminate. Upper *lip* of the *Cor.* vaulted, entire; lower one in 3 acute segments.

1. G. *luteum*. *p.* 183.—*Woods.*

11. BETONICA.

Cal. teeth acuminate. Upper *lip* of the *Cor.* ascending; lower 3-cleft, its tube cylindrical.

1. B. *officinalis*, spike interrupted, middle segment of the lower lip notched. *p.* 183.—*Woods.*

12. STACHYS.

Cal. acuminate. Upper *lip* of the *Cor.* vaulted; lower one 3-lobed, with the 2 lateral lobes reflexed. *Stam.*, when old, bent downwards.

1. S. *sylvatica*, whorls of 6 flowers, leaves cordato-ovate acute petiolate, " stem solid." (*Sm.*) *p.* 183.—*Woods.*

2. S. *ambigua*, whorls of 6 flowers, leaves oblongo-cordate acute petiolate, stem hollow. (*Sm.*) *p.* 183.—*Fields.*
3. S. *palustris*, whorls of 6 flowers, leaves linear-lanceolate semi-amplexicaul. *p.* 183.—*Marshes.*
4. S. *arvensis*, whorls of 6 flowers, stem weak, leaves heart-shaped obtuse crenate slightly hairy, cor. scarcely longer than the cal. *p.* 183.—*Corn-fields.*

13. BALLOTA.

Cal. with 10 ribs and 5 teeth. Upper *lip* of the *Cor.* concave, notched; lower one trifid; middle lobe the largest, emarginate.

1. B. *nigra*, leaves ovate undivided serrated, calyces dilated upwards subtruncated, the teeth patent. (*Sm.*) *p.* 184.—*Waste places.*

14. MARRUBIUM.

Cal. with 10 ribs and 5 or 10 spreading teeth. Upper *lip* of the *Cor.* cloven, linear, straight; lower one trifid; middle segment the largest, emarginate.

1. M. *vulgare*, stem erect, leaves roundish ovate toothed wrinkled, cal. with 10 setaceous hooked teeth. *p.* 184.—*Waste places.*

15. LEONURUS.

Cal. with 5 angles. Upper *lip* very hairy above, entire; lower one reflexed, 3-partite. *Anthers* sprinkled with shining dots.

1. L. *Cardiaca*, leaves petiolate, the lower ones crenato-lanceolate 3-lobed, upper ones entire. *p.* 184.—*Among rubbish.*

SECT. II. *Calyx 2-lipped.*

16. CLINOPODIUM.

Involucre (bracteas of many linear-acuminate leaflets placed under the *cal.* Upper *lip* of the *cor.* erect, emarginate; lower one the largest, emarginate.

1. Cl. *vulgare*, leaves ovate obscurely serrated, whorls hairy, bracteas setaceous, pedicels branched. *p.* 184.—*Banks.*

17. ORIGANUM.

Calyces collected, by imbricated bracteas, into a spicate, quadrangular cone. Upper *lip* of the *cor.* straight, notched; the lower one in 3 nearly equal lobes.

1. O. *vulgare*, spikes roundish panicled conglomerate glabrous, bracteas ovate longer than the cal., leaves ovate entire. *p.* 185.—*Bushy places.*

18. THYMUS.

Cal. closed with hairs at the mouth. *Cor.* shortly 2-lipped; upper one notched; the lower one the largest, subemarginate.

1. Th. *Serpyllum*, flowers capitate, stems branched decumbent, leaves plane ovate obtuse entire petiolate more or less ciliated at the base. *p.* 185.—*Hills.*
2. Th. *Acinos*, flowers on simple stalks about 6 in a whorl, stem ascending branched, leaves oblong shortly petiolate acute serrated, cal. gibbous at the base. *p.* 185.—*Dryhills.*

19. SCUTELLARIA.

Lips of the *cal.* closing over the fruit; upper *lip* with a vaulted process.

1. S. *galericulata*, leaves cordato-lanceolate crenate, flowers axillary in pairs. *p.* 185.—*Marshes.*
2. S. *minor*, leaves cordato-ovate entire, flowers axillary in pairs. *p.* 185.—*Marshes.*

20. PRUNELLA.

Upper *lip* of the *cal.* with 3 very short teeth. *Filaments* forked at the extremity, one point bearing the *Anther*. *Stigma bifid.*

1. Pr. *vulgaris*, leaves petiolate oblongo-ovate somewhat toothed at the base. *p.* 185.—*Pastures.*

ORDER XIX. SCROPHULARINÆ. *Br.*

(*Scrophulariæ and Pediculares Juss. Rhinanthaceæ Decand. Fl. Fr. Antirrhineæ Decand. th.*)

Cal. persistent. *Cor.* monopetalous, hypogynous, generally irregular, deciduous, with an imbricated æstivation. *Stam.* generally 4, didynamous, rarely equal, sometimes 2. *Style* 1. *Stigma* 2-lobed, rarely undivided. *Caps.* (very rarely a *Berry*) 2-celled, 2—4-valved; the valves entire or bifid, with a dissepiment either double from the inflexed margin of the valves, or simple, parallel and entire, or opposite and bipartible. *Receptacle* of the *seeds* central, united to the dissepiment, or eventually separate. *Seeds* numerous. *Embryo* straight, inclosed in the axis of a fleshy *albumen.*

Herbs (sometimes *shrubs*) usually with opposite *leaves.* Inflorescence various. *Br.*

DIV. I. *Stam.* 4, *didynamous.*

SECT. I. *Calyx* 4-*fid.*

* *Calyx* 4-*cleft.*

1. EUPHRASIA.

Cal. tubular, 4-toothed. Upper *lip* of the *cor.* divided; lower one of 3 notched lobes. *Anthers* with their lobes mucronated at the base. *Caps.* ovato-oblong, 2-celled. *Seeds* striated.

1. E. *officinalis*, leaves ovate deeply toothed, veins furrowed. *p.* 186.—*Pastures.*

2. BARTSIA.

Cal. mostly coloured. *Cor.* ringent, with a contracted orifice; upper *lip* concave, longest, entire; lower one in 3, equal, reflexed lobes. *Caps.* ovate, compressed, with 2 cells and many angular *seeds.*

1. B. *alpina*, leaves opposite cordato-ovate obtusely serrated, flower subspicate, anthers hairy. *p.* 186.—*Mountain pastures, rare.*
2. B. *viscosa*, leaves lanceolate serrated, the upper ones alternate, flowers lateral and distant, anthers hairy. *p.* 186.—*Marshes.*
3. B. *Odontites*, leaves lanceolate, upper ones alternate, flowers racemed secund, anthers subglabrous, stem branched. *p.* 186. —*Corn-fields.*

3. RHINANTHUS.

Cal. inflated, 4-toothed. Upper *lip* of the *cor.* compressed; lower one plane, 3-lobed. *Caps.* of 2 cells, obtuse, compressed, and with many imbricate plane *seeds.*

1. Rh. *Crista Galli*, upper lip of the cor. arched, calyx glabrous, leaves lanceolate serrated. *p.* 187.—*Marshes.*

** *Calyx 5-cleft.*

4. PEDICULARIS.

Cal. inflated, (mostly) 5-cleft. Upper *lip* of the *cor.* compressed, arched; lower one plane, 3-lobed. *Caps.* oblique, compressed, 2-celled. *Seeds* angular.

1. P. *palustris*, stem solitary branched, cal. ovate hairy ribbed 2-lobed and crenate. *p.* 187.—*Marshes.*
2. P. *sylvatica*, stems many from the same root spreading, cal. oblong angular glabrous in 5 unequally notched segments. *p.* 188.—*Marshes.*

5. ANTIRRHINUM.

Cal. 5-partite. *Cor.* personate, with a deflexed prominence or spur at the base. *Caps.* 2-celled, opening at the extremity with minute valves.

* *Cor. spurred. Leaves broad. Stem lax.*

1. A. *Cymbalaria*, leaves cordate 5-lobed alternate glabrous, stems procumbent. *p.* 189.—*Walls.*

** *Cor. spurred. Leaves narrow. Stem erect.*

2. A. *repens*, leaves linear whorled or scattered, stem panicled, cal. glabrous the length of the spur, cor. striated. *p.* 188.—*Banks.*

3. A. *Linaria*, leaves linear-lanceolate scattered crowded, spikes terminal, flowers imbricated, cal. glabrous shorter than the spur. *p.* 188.—*Borders of fields, &c.*
4. A. *minus*, leaves linear-lanceolate obtuse mostly alternate pubescent, stem much branched spreading, cal. longer than the spur. *p.* 188.—*Sandy fields.*

*** *Cor. merely gibbous at the base.*

5. A. *majus*, leaves lanceolate alternate those of the branches opposite, flowers spiked, segments of the cal. ovate obtuse. *p.* 129.—*Walls.*

6. SCROPHULARIA.

Cor. subglobose; *limb* contracted, shortly 2-lipped; upper *lip* 2-lobed (with a scale or abortive stam. frequently within), lower 3-lobed. *Caps.* 2-celled.

1. S. *nodosa*, leaves cordate acute serrated glabrous, stem with 4 rather obtuse angles. *p.* 189.—*Moist woods.*
2. S. *aquatica*, leaves elliptical cordate at the base obtuse serrated glabrous decurrent, stem winged at the angles. *p.* 189.—*Sides of rivers.*
3. S. *vernalis*, leaves broadly cordate doubly serrated pubescent acute, peduncles axillary solitary dichotomous leafy. *p.* 189.—*Waste places, rare.*

7. DIGITALIS.

Cal. 5-partite. *Cor.* campanulate, inflated beneath; *limb* obliquely 5-lobed, unequal. *Caps.* ovate, of 2 cells and many *seeds.*

1. D. *purpurea*, segments of the cal. ovate acute, cor. obtuse, its upper lip undivided, leaves ovate crenate downy. *p.* 189.—*Hilly pastures.*

8. LIMOSELLA.

Cor. shortly campanulate, 5-cleft, equal. *Caps.* semibilocular, 2-valved.

1. L. *aquatica*. *p.* 190.—*Muddy places.*

Div. II. *Stamina* 2. *Caps.* 2-*celled. Br.*

9. VERONICA.

Cal. 4-, rarely 5-partite. *Cor.* subrotate. *Tube* shorter than the *calyx;* its *limb* 4-partite, unequal, with undivided lobes. *Stam.* 2, antheriferous, sterile ones none. *Caps.* with the valves bearing the dissepiments in the middle, or bipartible.

Herbs or *Shrubs. Leaves* opposite, sometimes whorled or alternate, frequently dentate or cut. *Inflorescence* various. *Calyces* without bracteæ. *Br.*

* *Spikes or racemes terminal (plants perennial).*

1. V. *serpyllifolia*, racemes spiked many-flowered, leaves ovate slightly crenate, caps. broadly obcordate as long as the style. *p.* 4.—*Pastures.*

β. *alpina*, stems prostrate, racemes shortly spiked.—*Alps.*

2. V. *alpina*, raceme corymbose, leaves elliptico-ovate subserrate, capsule ovato-cordate longer than the style. *p.* 4.—*Alps.*
3. V. *saxatilis*, raceme lax few-flowered corymbose, upper leaves oblongo-obovate subserrate, stems spreading, capsule ovate longer than the calyx. *p.* 5.—*Alps.*
4. V. *fruticulosa*, raceme many-flowered subspicate, upper leaves oblong serrate, stems procumbent, capsule ovate scarcely longer than the calyx. *p.* 5.—*Alps.*

** *Spikes or racemes axillary (plants perennial).*

5. V. *scutellata*, racemes alternate, pedicels divaricated, leaves linear somewhat toothed, stem nearly erect. *p.* 6.—*Bogs.*
6. V. *Anagallis*, racemes opposite, leaves lanceolate serrate, stem erect. *p.* 6.—*Ditches.*
7. V. *Beccabunga*, racemes opposite, leaves elliptical obtuse subserrate glabrous, stem procumbent throwing out roots at the base. *p.* 6.—*Ditches.*
8. V. *officinalis*, flowers spiked, leaves broadly ovate serrate rough with short thick pubescence, stem procumbent very pubescent, capsule obcordate deeply notched. *p.* 6.—*Woods, &c.*
9. V. *hirsuta*, flowers spiked, leaves ovato-lanceolate acute slightly serrated with a few scattered hairs, stem procumbent glabrous near the base, capsule obcordate entire. *p.* 6.—*Dry heathy places, rare.*
10. V. *montana*, racemes few-flowered, leaves cordato-ovate petiolate serrate, stem hairy on all sides. *p.* 6.—*Woods.*
11. V. *Chamædrys*, flowers racemed, leaves ovate obtuse sessile inciso-serrate, stem bifariously hirsute. *p.* 7.—*Woods.*
12. V. *Allionii*, flowers densely spiked, leaves ovate subserrated rigid and, as well as the procumbent stem, perfectly glabrous. *p.* 7.—*Mountains of Angus.*

*** *Flower axillary, solitary (plants annual).*

13. V. *agrestis*, leaves (all) petiolate cordato-ovate inciso-serrate shorter than the flowerstalks, stem procumbent. *p.* 7.—*Fields.*
14. V. *arvensis*, leaves cordato-ovate serrate, the lower ones petiolate, floral leaves sessile lanceolate longer than the flowerstalk, stem nearly erect. *p.* 7.—*Walls, &c.*
15. V. *hederifolia*, leaves cordato-ovate mostly 5-lobed, calycine segments cordate ciliated, stem procumbent. *p.* 7.—*Fields and banks.*

ORDER XX. OROBANCHEÆ. *Rich. in Pers.*

(*Allied to Pediculares, Juss.*)

Cal. and *Cor.* 5-cleft, persistent; the latter irregularly monopetalous, hypogynous. *Stam.* didynamous. *Stigma* 2-lobed. *Caps.* 1—2- or many-celled, 2-valved. *Seeds* small, with a minute round embryo at the base of a fleshy *albumen*.

Parasitical, leafless *Herbs*.

1. OROBANCHE.

Cal. of 2 (generally) lobed, lateral segments. *Cor.* ringent. *Caps.* 1-celled, 2-valved, with many seeds. A *gland* at the base of the germen beneath.

1. O. *major*, stem simple, cor. tubular, its upper lip undivided, lower one in 3 nearly equal segments, their lateral ones acute, the terminal one largest obtuse, stam. glabrous, style downy. *p.* 190.—*Roots of plants.*
2. O. *rubra*, stem simple, cor. tubular, its upper lip 2-lobed, lower one in 3 equal obtuse lobes, stam. partially glandulosopilose, style glabrous. *p.* 191.—*Basaltic rocks.*

2. LATHRÆA.

Cal. 4-cleft. *Cor.* tubular, 2-lipped. A depressed *gland* at the base of the suture of the germen. *Caps.* 1-celled.

1. L. *squamaria*, stem simple, flowers pendulous, their lower lip 3-cleft. *p.* 187.—*Woods.*

ORDER XXI. SOLANEÆ. *Juss.*

Cal. 5- (rarely 4-) partite, divided, persistent. *Cor.* monopetalous, hypogynous; its limb 5-cleft, equal, or somewhat unequal, deciduous; with a plicate æstivation. *Stam.* inserted into the *cor.*, alternate with its segments, and equal to them in number, sometimes 1 abortive. *Ovary* 1—2—4-celled, many-seeded. *Style* 1. *Stigma* obtuse, rarely lobed. *Pericarp* 2—4-celled; either a capsule with a parallel double dissepiment, or a *berry* with the *receptacles* united to the dissepiments. *Seeds* numerous. *Embryo* included in a fleshy *albumen*, more or less bent; often out of the axis. *Radicle* opposite the hilum.

Herbs or *Shrubs*. *Leaves* alternate, without *stipules*, sometimes opposite, beneath the flowers. *Br.*

DIV. I. *Fruit capsular.*

1. VERBASCUM.

Cal. 5-partite. *Cor.* rotate, 5-lobed, unequal. *Stam.* 5, declined, often hairy. *Caps.* 2-valved, ovate or globose.

1. V. *Thapsus*, leaves decurrent woolly on both sides, stem simple, 2 stam. longer glabrous. *p.* 78.—*Waste places.*
2. V. *Lychnitis*, leaves oblong wedge-shaped nearly glabrous on the upper side, stem angled paniculate. *p.* 78.—*Road-sides.*
3. V. *pulverulentum*, leaves ovato-oblong subserrate pulverulento-tomentose on both sides, stems rounded panicled. *p.* 78.—*Waste places.*
4. V. *nigrum*, leaves oblongo-cordate petiolate crenate subpubescent. *p.* 78.—*Banks and hedges.*

2. HYOSCYAMUS.

Cal. tubular, 5-cleft. *Cor.* infundibuliform, irregular, its lobes obtuse. *Stam.* 5. *Stigma* capitate. *Capsule* ovate, operculated at the extremity.

1. H. *niger*, leaves amplexicaul sinuated, flowers nearly sessile. *p.* 78.—*Waste places.*

Div. II. *Fruit berried.*

3. ATROPA.

Cal. 5-cleft. *Cor.* campanulate, 5-lobed, equal. *Stam.* 5, distant. *Berry* globose, 2-celled.

1. A. *Belladonna*, stem herbaceous, leaves ovate undivided. *p.* 78.—*Waste places.*

4. SOLANUM.

Cal. 5-cleft. *Cor.* rotate, 5-fid, patent. *Anthers* 5, erect, connivent, opening with 2 pores at the extremity. *Berry* subglobose, 2- rarely 4-celled. *Embryo* curved.

1. S. *Dulcamara*, stem without thorns shrubby climbing, leaves cordate glabrous superior ones hastate, corymbs opposite the leaves drooping. *p.* 79.—*Hedges.*
2. S. *nigrum*, stem without thorns herbaceous, leaves ovate bluntly toothed and waved, umbels lateral drooping. *p.* 79.—*Waste places.*

Order XXII. BORAGINEÆ. *Juss.*

Cal. 5- (rarely 4-) partite, persistent. *Cor.* hypogynous, monopetalous, most frequently regular, 5-cleft, sometimes 4-cleft, with imbricated æstivation. *Stam.* inserted into the *cor.*, alternate with its segments, and equal to them in number, rarely more. *Ovary* 4-partite, 4-seeded, or simple, 2—4-celled. *Ovules* definite, pendulous. *Achenia* 4, distant, or united at the base; or a 4-celled *drupe*; or a *berry* with 2—4 stones. *Seeds* without, or nearly without, *albumen*. *Radicle* superior.

Herbs or *Shrubs*. *Leaves* alternate, without stipules, usually scabrous. *Flowers* usually in one-sided, more or less compound spikes or racemes. *Br.*

1. MYOSOTIS.

Cal. 5-cleft. *Cor.* hypocrateriform, the segments very obtuse, its orifice closed with short connivent scales.

(*Seeds naked.*)

1. M. *sylvatica*, leaves oblongo-lanceolate with soft hairs, racemes very long lax, pedicels (in fruit) divergent patent longer than the 5-fid connivent cal., limb of the cor. expanded longer than the tube. *p.* 66.—*Woods*.
2. M. *alpestris*, leaves oblongo-lanceolate hairy, racemes short, pedicels (in fruit) patent rather longer than the connivent 5-fid cal., limb of the cor. expanded longer than the tube. *p.* 66.—*Alps*.
3. M. *palustris*, leaves oblongo-lanceolate rough with short mostly depressed hairs, racemes rather short, peduncles (in fruit) divergent twice as long as the 5-toothed patent cal., limb of the cor. expanded longer than the tube. *p.* 67.—*Ditch banks*.
4. M. *arvensis*, leaves oblongo-lanceolate hairy, racemes very long, pedicels (in fruit) patent twice the length of the 5-cleft and closed cal., limb of the cor. erecto-patent about as long as the tube. *p.* 67.—*Waste places*.
5. M. *versicolor*, leaves oblongo-lanceolate hairy, racemes very long, pedicels (in fruit) erecto-patent shorter than the 5-cleft acute closed cal., limb of the cor. patent shorter than the tube. *p.* 67.—*Dry waste places*.

2. LITHOSPERMUM.

Cal. 5-partite. *Cor.* infundibuliform, its orifice naked.

1. L. *officinale*, stem erect very much branched, leaves broadly lanceolate acute nerved rough above hairy beneath, tube of the cor. as long as the cal., nuts smooth. *p.* 68.—*Waste places*.
2. L. *arvense*, stem erect branched, leaves lanceolate acute hairy, cal. a little shorter than the cor., its segments patent when containing the ripe rugose nuts. *p.* 68.—*Corn-fields*.
3. L. *maritimum*, glabrous, stem procumbent branched, leaves ovate obtuse fleshy glaucous. *p.* 68.—*Sea-shores*.

3. ANCHUSA.

Cal. 5-cleft, or 5-partite. *Cor.* infundibuliform, its orifice closed with convex connivent scales. *Seeds* (or *Nuts*) hollowed out at the base.

1. A. *sempervirens*, leaves ovate nearly entire lower ones upon

long footstalks, peduncles axillary, flowers subcapitate accompanied by two leaves. *p.* 68.—*Banks.*

4. CYNOGLOSSUM.

Cal. 5-cleft. *Cor.* (short), infundibuliform, its orifice closed with convex connivent scales. *Seeds* (or *Nuts*) depressed, fixed to the style by their inner margin.

1. C. *officinale*, stem leaves lanceolate attenuate at the base sessile downy, stamen shorter than the cor. *p.* 69.—*Waste places.*
2. C. *sylvaticum*, stem leaves lanceolate broad at the base shining sessile slightly hairy and scabrous especially beneath, stamens shorter than the cor. *p.* 69.—*Waste places.*

5. PULMONARIA.

Cal. prismatic, 5-cleft. *Cor.* infundibuliform, its orifice naked.

1. P. *officinalis*, leaves scabrous, radical ones ovato-cordate petiolate, superior ones of the stem sessile ovate. *p.* 69.—*Woods.*

6. SYMPHYTUM.

Cal. 5-cleft. *Cor.* ventricose, its orifice closed with connivent subulate scales.

1. S. *officinale*, stem winged above, leaves ovato-lanceolate attenuate at the base and very decurrent. *p.* 69.
2. S. *tuberosum*, stem simple, leaves ovato-oblong attenuate at the base, upper ones only very slightly decurrent. *p.* 69.—*Meadows.*

7. BORAGO.

Cal. 5-cleft. *Cor.* rotate, having at its orifice 5 obtuse emarginate teeth.

1. B. *officinalis*, lower leaves obovate attenuate at the base, segments of the cor. ovate acute spreading. *p.* 70.—*Road-sides.*

8. ASPERUGO.

Cal. 5-cleft, unequal, with alternate smaller teeth. *Cor.* (short), infundibuliform, its orifice closed with convex connivent scales. *Seeds* (or *Nuts*) covered with the conduplicate and compressed *cal.*

1. A. *procumbens*. *p.* 70.—*Waste places.*

9. LYCOPSIS.

Cal. 5-cleft. *Cor.* infundibuliform, with an incurved tube, its orifice closed with convex connivent scales.

1. L. *arvensis*, leaves lanceolate repando-denticulate very hispid, cal. erect while in flower. *p.* 70.—*Corn-fields and banks.*

10. ECHIUM.

Cor. irregular, its orifice open and naked. *Stigma* bipartite.

1. E. *vulgare*, stem herbaceous simple hispid with tubercles,

leaves linear-lanceolate hispid, flowers in lateral spikes, stamens longer than the cor. *p.* 70.—*Corn-fields and waste places.*

Order XXIII. CONVOLVULACEÆ. *Juss.*

Cal. 5-partite, persistent. *Cor.* monopetalous, hypogynous, deciduous, with a regular 5-lobed, often plaited limb. *Stam.* 5, inserted into the base of the *cor.*, and alternate with its segments. *Ovary* simple, 2—4-celled, rarely nearly 1-celled; sometimes 2—4-parted, surrounded with an hypogynous disk. *Ovules* definite, erect. *Style* usually divided at the top, sometimes almost to the base. *Stigmas* obtuse or acute. *Caps.* 1—4-celled; *valves* with their margins opposite the angles of the free dissepiment, which bears its seeds at its base; sometimes not opening, or splitting transversely. *Embryo* curved and surrounded with mucilaginous albumen. *Cotyledons* wrinkled. *Radicle* inferior.

Herbs or *Shrubs* usually climbing and lactescent. *Leaves* alternate with stipules. *Flowers* axillary or terminal. *Br.*

1. CONVOLVULUS. *Jacq. Br.*

Cal. 5-partite, naked or imbricated with 2 smaller bracteas. *Cor.* campanulate, with 5 plaits. *Stam.* shorter than the limb. *Ovary* 2-celled (rarely 3?); cells 2-seeded. *Style* undivided. *Stigmas* 2, filiform. *Caps.* valved. *Br.*

1. C. *arvensis*, stem climbing, leaves sagittate, their lobes acute, peduncles mostly 1-flowered, bracteas minute remote from the flower. *p.* 73.—*Fields.*
2. C. *Sepium*, stem climbing, leaves sagittate, the lobes truncate, peduncles 4-sided single-flowered, bracteas large heart-shaped close to the flower. *p.* 74.—*Hedges.*
3. C. *Soldanella*, stem prostrate, leaves reniform fleshy, peduncles 1-flowered 4-sided, their angles winged. *p.* 74.—*Sandy sea-shores.*

2. CUSCUTA.

Cal. 5-, rarely 4-cleft. *Cor.* globoso-urceolate; limb 4—5-cleft, marcescent. *Ovary* 2 cells; *cells* 2-seeded. *Capsule* 2-celled, opening all round transversely. *Embryo* spiral.

Leafless *Herbs* climbing, parasitic.

1. C. *europæa*, flowers sessile, cor. 4—5-cleft without any scale at the base of the stam., stigmas simple. *p.* 86.—*On nettles, &c., parasitic.*
2. C. *Epithymum*, flowers sessile, cor. mostly 4-cleft, with a small fringed scale at the base of each stam., stigmas simple. *p.* 86.—*On furze, &c., parasitic.*

ORDER XXIV. POLEMONIACEÆ. *Juss.*

Cal. 5-partite, persistent. *Cor.* monopetalous, hypogynous, regular, 5-lobed. *Stam.* 5, inserted into the middle of the tube of the *cor.*, and alternate with its segments. *Style* 1. *Stigma* simple. *Caps.* 3-celled, 3-valved, many-seeded; *valves* having in their middle the dissepiments, which are opposite to the angles of the distinct receptacles. *Seeds* numerous. *Embryo* in the axis of a fleshy albumen.

Herbs or *Shrubs*. *Leaves* alternate or opposite. *Flowers* terminal or axillary. *Juss.*

1. POLEMONIUM.

Cal. urceolate, 5-cleft. *Cor.* rotate, the tube short, the limb 5-lobed. *Stam.* 5; filaments broader at the base, inserted upon the 5 teeth or valves, which close the orifice of the *cor.* *Anth.* incumbent.

1. P. *cæruleum*, leaves pinnated, flowers erect, cal. longer than the tube of the cor. *p.* 74.—*Woods and banks, rare.*

ORDER XXV. GENTIANEÆ. *Juss.*

Cal. 1-leaved, divided, persistent. *Cor.* 1-petalous, hypogynous, generally regular, withering or deciduous; limb equal, with the same number of divisions as the cal., generally 5, sometimes 4—8, with an imbricated æstivation. *Stam.* inserted into the cor., alternate with its segments to which they are equal in number; some rarely abortive. *Ovary* single, 1—2-celled, many-seeded. *Style* 1 or 2. *Stigma* 1 or 2. *Capsule* (sometimes *Berry*) many-seeded, 1—2-celled, generally 2-valved; *valves* with their margins bent inwards, in the unilocular genera bearing the seeds; in the bilocular genera inserted into the central receptacle. *Seeds* small. *Embryo* straight, in the axis of a soft fleshy albumen. *Radicle* opposite the hilum.

Herbs, rarely *Shrubs*. *Leaves* opposite, without stipules. *Flowers* terminal or axillary. *Br.*

1. GENTIANA.

Cal. 4—5-cleft. *Cor.* infundibuliform and hypocrateriform, 4—5-cleft, with the orifice naked. *Stigma* 2-lobed. *Caps.* 1-celled. *Seeds* without any margin.

* *Mouth of the cor. naked, not ciliated.*

1. G. *nivalis*, cor. 5-cleft infundibuliform, branches alternate 1-flowered, cauline leaves lanceolate. *p.* 86.—*Alps.*

** *Mouth of the cor. ciliated.*

2. G. *amarella*, cor. 5-cleft hypocrateriform bearded in the orifice, cal. 5-cleft, segments equal. *p.* 86.—*Pastures.*
3. G. *campestris*, cor. 4-cleft hypocrateriform bearded in the orifice, cal. of 4 leaflets two outer ones very large. *p.* 86.—*Pastures.*

2. ERYTHRÆA.

Cal. 5-cleft. *Cor.* infundibuliform, with the limb short, marcescent. *Anthers* after flowering spiral. *Style* erect. *Stigmas* 2, roundish. *Capsule* 1-celled, linear.

1. E. *Centaurium*, stem nearly simple, leaves ovato-oblong, flowers sessile (or nearly so) fasciculato-paniculate, cal. half as long as the tube of the cor. *p.* 79.—*Dry pastures.*
2. E. *pulchella*, stem very much branched, leaves ovato-oblong, flowers pedicellate in lax panicles, cal. as long as the tube of the cor. *p.* 79.—*Sea-shores.*
3. E. *littoralis*, stem simple or much branched, leaves ovato-oblong, flowers sessile capitato-paniculate, cal. as long as the tube deeply cleft. *p.* 80.—*Sea-shores.*

3. MENYANTHES.

Cal. 5-partite. *Cor.* infundibuliform; its limb patent, 5-lobed, equal, hairy within. *Stam.* 5. *Style* 1. *Stigma* capitate. *Caps.* 1-celled, with the axis of the valves seminiferous.

1. M. *trifoliata*. *p.* 71.—*Marshes.*

Order XXVI. APOCINEÆ. *Br.*

Cal. 5-partite, persistent. *Cor.* 1-petalous, hypogynous, regular, 5-lobed, deciduous, with an imbricated æstivation. *Stam.* inserted into the *cor.*, and alternate with its segments. *Filaments* distant. *Anth.* 2-celled, bursting longitudinally. *Pollen* granular, applied immediately to the stigma. *Ovaries* 2—1, 2-celled, in most many-seeded. *Styles* 2 or 1. *Stigma* 1. *Fruit* a *Follicle*, *Capsule*, *Drupe*, or *Berry*, double or single. *Embryo* leafy, usually with albumen. *Plumule* inconspicuous.

Trees or *Shrubs* often milky. *Leaves* opposite, rarely scattered, often having fringes or glands between their stalks. *Br.*

1. VINCA.

(*Seeds naked, not comate.*)

Cal. 5-cleft. *Cor.* hypocrateriform; the tube long; the orifice prominent, pentagonal; the limb plane, obtusely 5-lobed. *Anthers* approximate. *Style* 1. *Stigma* capitate, annulated at the base.

1. V. *minor*, stems procumbent, leaves oblongo-lanceolate, their margins as well as the small lanceolate teeth of the cal. glabrous. *p.* 82.—*Woods.*
2. V. *major*, stems suberect, leaves ovato-subcordate, their margins as well as those of the elongated subulate segments of the cal. ciliated. *p.* 83.—*Woods.*

Order XXVII. OLEINEÆ. *Hoffm. and Link.*

(*Jasmineæ, part of, Juss.*)

Flowers perfect, or polygamous. *Cal.* 1-leaved, divided, persistent. *Cor.* hypogynous, monopetalous, 4-cleft, rarely of 4 petals, the petals being connected in pairs by the filaments, with a somewhat valvular æstivation; rarely none. *Stam.* 2, alternate, with the segments. *Anthers* 2-locular; the cells longitudinally bursting. *Ovary* simple, without disk, 2-celled. *Cells* 2-seeded. *Ovules* pendulous, collateral. *Style* 1 or none. *Stigma* 2-fid or undivided. *Drupe* or *Berry*, or *Capsule*, by abortion, often 1-seeded. *Embryo* in the midst of a fleshy albumen. *Cotyledons* leafy. *Radicle* superior.

Trees or *Shrubs*. *Leaves* opposite. *Flowers* in racemes or panicles, terminal or axillary; their *stalks* opposite, each with one bractea. *Br.*

1. FRAXINUS.

Cal 0, 3—4-cleft. *Cor.* 0, or of 4 *petals*. *Stam.* 2. *Caps.* 2-celled, 2-seeded, compressed and foliaceous at the extremity. *Seed* solitary, pendulous (*Flowers polygamous*).

1. F. *excelsior*, leaflets lanceolate acuminate serrated, flowers destitute of perianth. *p.* 3.— *Woods and hedges.*

2. LIGUSTRUM.

Cal. minute, 4-toothed. *Cor.* with the tube short; the limb 4-fid, patent. *Stam.* 2. *Berry* 1-celled, 2—4-seeded.

1. L. *vulgare*, leaves elliptico-lanceolate somewhat acute, panicle compact. *p.* 3.—*Hedges.*

Order XXVIII. ERICEÆ. *Juss.*

(*Rhododendra, Juss. Rhodoraceæ, Decand. Mirb.*)

Cal. inferior, persistent, 4—5-cleft. *Cor.* monopetalous, perigynous, 4—5-cleft, sometimes of 5 petals, usually withering, with an imbricated *æstivation*. *Stamens* definite, twice as many, or, rarely, equal in number to the *segments* of the *flower*, hypogynous, or inserted into the *petals*. *Anthers* 2-celled, frequently furnished with an *appendage* at their *base*, and emitting their *pollen* through a *pore* or *cleft*. *Ovary* surrounded

by a *disk*, or secreting *glands*, many-celled; *ovules* numerous. *Style* 1. *Stigma* simple or toothed. *Capsule* many-celled, many-seeded, sometimes a *berry*; *dissepiments* attached to the edge or middle of the *valves*, or distinct from them. *Seeds* minute, attached by one extremity to central *receptacles*. *Embryo* cylindrical in the axis of a fleshy *albumen*.

Shrubs. *Leaves* entire, without *stipules*, alternate or whorled, or opposite. *Pedicels* with 2 or many *bracteas*. *Br. Mirb.*

1. ERICA.

Cal. 4-partite. *Cor.* of 1 *petal*; *limb* 4-fid. *Stam.* 8. *Anthers* before flowering connected by two lateral *pores*. *Caps.* 4-celled, 4-valved; *dissepiments* from the middle of the *valves*.

1. E. *cinerea*, anthers with two serrated appendages at the base, style a little exserted, stigma capitate, leaves ternate. *p.* 119.—*Heaths.*
2. E. *Tetralix*, anthers with two awns at the base, style as long as the ovate cor., leaves in fours ciliated, flowers capitate. *p.* 119.—*Moorish grounds.*

2. CALLUNA.

Cal. double, 4-partite, inner one coloured. *Caps.* with the *dissepiments* opposite the *margins* of the *valves*, and separating from them.—The rest as in *Erica*.

1. C. *vulgaris*. *p.* 119.—*Heaths and moors.*

3. MENZIESIA.

Cal. deeply 5-cleft. *Cor.* ovate, 4—5-cleft. *Stam.* 8—10. *Anthers* awnless. *Caps.* 4—5-celled, the *partitions* formed by the inflexed *margins* of the *valves*.

1. M. *cærulea*, leaves scattered numerous linear toothed, flower-stalks terminal aggregate simple, flowers 5-cleft decandrous. *p.* 126.—*Mountains.*

4. AZALEA.

Cor. campanulate, 5-cleft, unequal. *Stam.* 5, inserted upon the *receptacle*.

1. A. *procumbens*[a], stems spreading procumbent, leaves opposite elliptical glabrous, their margins revolute. *p.* 73.—*Dry heathy ground.*

5. ANDROMEDA.

Cal. deeply 5-cleft. *Cor.* ovate. *Stam.* 10. *Anth.* with two

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[a] This plant has, with much propriety, been separated from the true *Azaleæ* by M. Desvaux in the *Journal de Botanique*, and under the name of *Loiseleuria* the following character has been attributed to it: "*Cal.* 5-partite, its *segments* equal. *Cor.* subcampanulate, 5-fid, unequal. *Stam.* 5, inserted at the base of the *cor.*, straight, included. *Anth.* opening longitudinally. *Style* erect, included. *Caps.* 2-celled, opening at the extremity. *Flowers* terminal, cymose, with a broad *bractea*."

horns. *Caps.* superior, 4—5-celled, the partitions from the middle of the valves.

1. A. *polifolia*, leaves alternate lanceolate, their margins revolute glaucous beneath, flowers on short racemes terminal. *p.* 125.—*Peat bogs.*

6. ARBUTUS.

Cal. 5-cleft. *Cor.* ovate, its base pellucid. *Stam.* 10. *Berry* 5-celled.

1. A. *alpina*, stem procumbent, leaves rugose serrated. *p.* 126.—*Mountains.*
2. A. *Uva Ursi*, stems procumbent, leaves entire (evergreen). *p.* 126.—*Heathy, rocky places.*

Order XXIX. VACCINEÆ. *Decand. Théorie, ed.* 1. 216.

(*Ericeæ, part of, Juss.*)

Cal. adherent, persistent, 4—5-cleft. *Corolla* monopetalous, perigynous, 4—5-cleft, deciduous. *Stamens* definite, epigynous. *Anthers* 2-celled, emitting their pollen through a pore or cleft. *Ovary* 5-celled. *Ovules* many. *Style* 1. *Stigma* simple or toothed. *Berry* many-seeded, crowned by the persistent *calyx*. *Seeds* minute, attached to central receptacles. *Embryo* cylindrical, in the axis of a fleshy *albumen*.

Shrubs. *Leaves* alternate, shining, entire, without stipules. *Flowers* usually racemose; sometimes solitary.

1. VACCINIUM.

Cal. adherent, 4-dentate. *Cor.* campanulate, 4-fid. *Stam.* 8. *Anthers* with 2 pores. *Berry* globose, 4-celled, many-seeded.

* *Leaves deciduous.*

1. V. *Myrtillus*, peduncles 1-flowered, leaves serrate ovate deciduous, stem angular. *p.* 118.—*Woods and heathy places.*
2. V. *uliginosum*, peduncles 1-flowered, leaves obovate entire veined deciduous, stems rounded. *p.* 118.—*Highlands.*

** *Leaves persistent, evergreen.*

3. V. *Vitis Idæa*, racemes terminal drooping, leaves evergreen obovate dotted beneath, their margins revolute nearly entire. *p.* 118.—*Heaths, mountains, and woods.*
4. V. *Oxycoccos*, flowerstalks terminal single-flowered, leaves ovate evergreen glaucous beneath, their margins revolute and entire, cor. 4-partite revolute, stem filiform. *p.* 119.—*Peat bogs.*

Order XXX. MONOTROPEÆ. *Nutt. Gen.* 1. 272.

Calyx inferior, 5-leaved or none. *Corolla* monopetalous or po-

lypetalous. *Stamens* double the number of the segments of the *cor.*, hypogynous. *Ovary* 4—5-celled, many-seeded. *Style* one. *Stigma* obscurely 4—5-lobed. *Capsule* 4—5-celled, 4—5-valved; valves bearing the dissepiments in the middle. *Seeds* very numerous and minute, winged. *Embryo* very minute at one end of a fleshy *albumen*.

Herbs often destitute of verdure. *Flowers* in racemes, nodding.

1. PYROLA.

Cal. minute, 5-cleft. *Cor.* deeply 5-partite, almost of 5 petals. *Stam.* 10. *Anthers* opening with 2 pores. *Caps.* 5-celled. *Seeds* numerous, invested with a long arillus.

* *Stalk with a single flower.*

1. P. *uniflora*, stalks bearing a solitary flower, leaves suborbicular. *p.* 127.—*Fir woods, rare.*

** *Flowers racemed, secund.*

2. P. *secunda*, flowers all leaning one way, leaves ovate serrated. *p.* 127.—*Shady woods.*

*** *Flowers racemed, pointing in various directions.*

3. P. *rotundifolia*, leaves obovato-rotundate slightly crenate, style bent down much longer than the ascending stam. *p.* 127.—*Dry woods.*
4. P. *media*, leaves ovato-rotund crenate, stam. erect much shorter than the straight or slightly decurved style, stigma with 5 erect points. *p.* 127.—*Woods.*
5. P. *minor*, leaves ovato-rotundate crenate, stam. erect as long as the very short straight style, stigma large with five divergent rays. *p.* 128.—*Woods.*

2. MONOTROPA.

Perianth single, of 4—5 leaves, cucullate at the base. *Stam.* 8—10. *Anth.* 1-celled, bilabiate. *Caps.* 4—5-celled, 4—5-valved. *Seeds* numerous, invested with a long arillus.

1. M. *Hypopitys*, lateral flowers with eight, terminal one with 10, stamens. *p.* 125.—*Beech and fir woods.*

SECT. II. Corolla monopetalous or polypetalous, perigynous (*inserted into the calyx*).

ORDER XXXI. CAMPANULACEÆ. *Juss.*

Calyx superior, 5-cleft. *Corolla* regular or irregular, 5-cleft. *Stamens* 5, distinct or syngenesious. *Style* simple. *Stigma* 1—2—3-cleft, naked, or surrounded by a ring of hairs. *Disk* epigynous. *Capsule* 2—3—5-celled, bursting either at the

summit or by the sides. *Seeds* numerous. *Embryo* in the axis or at the end of a fleshy albumen.

Herbs often milky. *Leaves* simple. *Inflorescence* various. *Mirb.*

1. CAMPANULA.

Cal. 5-cleft. *Cor.* campanulate, 5-cleft. *Stam.* 5, with the filaments broader at the base. *Stigma* trifid. *Caps.* 3—5-celled, opening with lateral pores.

1. C. *rotundifolia*, glabrous, radical leaves subrotundo-cordate crenate, cauline ones linear entire. *p.* 74.—*Hilly pastures.*
2. C. *persicifolia*, glabrous, radical leaves obovate lengthened into a petiole, those of the stem linear-lanceolate subserrate sessile remote. *p.* 74.—*Woods, rare.*
3. C. *latifolia*, leaves ovato-lanceolate scabrous toothed, stem quite simple rounded, flowers solitary peduncled erect, calyx glabrous, fruit drooping. *p.* 75.—*Sides of rivulets.*
4. C. *rapunculoides*, leaves cordato-lanceolate scabrous crenate, stem branched, flowers solitary secund drooping axillary forming a spike, segments of the cal. patent. *p.* 75.—*Woods.*
5. C. *Trachelium*, stem angular, leaves petiolate cordato-lanceolate acutely serrated hispid as well as the cal., peduncles few-flowered axillary. *p.* 75.—*Shady places.*
6. C. *glomerata*, stem angular simple nearly smooth, leaves scabrous crenate oblongo-lanceolate, radical leaves petiolate, cauline ones semiamplexicaul, flowers sessile mostly in a terminal cluster. *p.* 75.—*Dry mountainous pastures.*
7. C. *hederacea*, stem lax filiform, leaves all cordate angulato-dentate glabrous. *p.* 75.—*Moist shady places.*

2. JASIONE.

Cal. 5-cleft. *Cor.* rotate, 5-cleft. *Stam.* 5. *Anthers* united at the base. *Stigma* clavate. *Caps.* 2-celled, opening at the top. (*Flowers* aggregate on a common receptacle and surrounded by an involucre.)

1. J. *montana.* *p.* 76.—*Dry hilly pastures.*

3. LOBELIA.

Cor. irregular, cleft longitudinally on the upper side, two-lipped. *Stam.* 5. *Anthers* united into a tube. *Caps.* 2—3-celled.

1. L. *Dortmanna*, leaves linear 2-celled entire, scape nearly naked, flowers racemed. *p.* 76.—*Margins of lakes.*

ORDER XXXII. COMPOSITÆ. *Linn.*

Calyx adherent with the *ovary*, the limb entire or toothed, or mostly expanded into a pappus which crowns the fruit. *Cor.*

regular or irregular, its divisions edged with a nerve. *Stamens* 5, syngenesious. *Ovary* one. *Style* one, sheathed by the tube of the anthers. *Stigma* simple or bifid. *Fruit* an achenium. *Seed* erect, without albumen. *Embryo* straight. *Radicle* opposite the hilum.

Stems (in the British genera) herbaceous. *Leaves* opposite or alternate. *Flowers* capitate, inserted into a broad receptacle and surrounded by an involucre.

DIV. I. CICHORACEÆ. *All the florets ligulate and perfect.*

1. TRAGOPOGON.

Involucre simple, of many leaves. *Receptacle* naked. *Pappus* feathery, stipitate. *Pericarps* longitudinally striated.

1. Tr. *pratensis*, involucre about as long as the cor., leaves undivided glabrous acuminated channelled, peduncles cylindrical. *p.* 226.—*Pastures.*
2. Tr. *porrifolius*, involucre much longer than the cor., leaves undivided straight, peduncle thickened upwards. *p.* 226.—*Meadows, rare.*

2. PICRIS.

Cal. double, the inner segments equal, the outer lax. *Receptacle* naked. *Pappus* feathery. *Pericarps* transversely striated. (*Picris and Helminthia, Decand.*)

1. P. *hieracioides*, exterior scales of the involucre short lax, leaves very rough lanceolate toothed, stem scabrous, pappus sessile. *p.* 226.—*Road-sides.*

3. SONCHUS.

Involucre imbricated, swelling at the base. *Receptacle* naked. *Pappus* simple, sessile.

1. S. *cæruleus*, "peduncles and involucre hispid racemose, leaves sublyrate, terminal lobe deltoid very large," *Sm. p.* 226.—*Alps.*
2. S. *arvensis*, peduncles and involucre hispid subumbellate, leaves runcinate dentato-ciliate cordate at the base. *p.* 226.—*Corn-fields.*
3. S. *oleraceus*, peduncles subtomentose umbellate, involucre glabrous, leaves runcinate dentato-ciliate amplexicaul at the base. *p.* 227.—*Waste places.*

4. LACTUCA.

Involucre imbricated, cylindrical; its scales with a membranous margin. *Receptacle* naked. *Pappus* simple, stipitate.

1. L. *virosa*, leaves oblong toothed horizontal, their keel prickly, their apex obtuse. *p.* 227.—*Banks, rare.*

5. PRENANTHES.

Involucre with scales at the base. *Receptacle* naked. *Pappus* simple, sessile. *Florets* few.

1. Pr. *muralis*, florets 5, leaves lyrato-pinnatifid and toothed, the terminal lobe with about 5 angles. *p.* 227.—*Walls, &c.*

6. LEONTODON.

Involucre imbricated with scales that are frequently lax and flaccid. *Receptacle* naked. *Pappus* simple, stipitate.

1. L. *Taraxacum*, outer scales of the involucre reflexed, leaves runcinate glabrous toothed. *p.* 227.—*Pastures.*
2. L. *palustre*, outer scales of the involucre erect appressed, leaves sinuato-dentate nearly glabrous. *p.* 227.—*Marshes.*

7. APARGIA.

Involucre imbricated, with scales at the base. *Receptacle* naked, dotted. *Pappus* feathery, sessile, unequal.

1. A. *hispida*, scape single-flowered, leaves dentate scabrous, florets hairy at their orifice glandular at the tip. *p.* 228.—*Meadows.*
2. A. *hirta*, scape single-flowered, leaves dentate scabrous, involucre nearly glabrous, outer pericarps with a scaly pappus. *p.* 228.—*Dry pastures.*
3. A. *Taraxaci*, scape single-flowered thickened upwards, leaves glabrous runcinato-dentate, involucre very hairy. *p.* 228.—*Mountains.*
4. A. *autumnalis*, scape branched scaly upwards, leaves lanceolate toothed or pinnatifid subglabrous, peduncles swelling beneath the involucre. *p.* 228.—*Pastures.*

8. HIERACIUM.

Involucre ovate, imbricated. *Receptacle* nearly naked, dotted. *Pappus* simple, sessile.

* *Scape naked (or rarely with one leaf), single-flowered.*

1. H. *alpinum*, scape 1-flowered, leaflets hairy as well as the oblongo-lanceolate entire leaves, involucre thickly covered all over with long silky hairs. *p.* 228.—*Rocks or mountains.*
2. H. *Halleri*, scape 1-flowered with 1 or rarely 2 leaves hairy as well as the spathulato-lanceolate toothed leaves, involucre with rather long silky hairs principally near the margins of the scales. *p.* 229.—*Mountains.*
3. H. *Pilosella*, scape 1-flowered naked, leaves entire elliptico-lanceolate hairy downy beneath, scions creeping. *p.* 229.—*Banks.*

** *Scape naked (or rarely with a single leaf), many-flowered.*

4. H. *dubium*, scape many-flowered naked (or with one small leaf),

leaves entire elliptico-lanceolate with only a few scattered hairs, scions creeping. *p.* 229.—*Banks?*

5. H. *aurantiacum*, scape nearly naked simple hairy bearing a corymb of many flowers, leaves obovato-lanceolate entire rough with longish hairs. *p.* 229.—*Woods.*

*** *Scape with few* (1—2) *leaves, many-flowered.*

6. H. *Lawsoni*, stem more or less branched upwards where it is the most hairy and the hairs mixed with black glands having 1—2 sessile leaves, radical leaves ovato-lanceolate petiolate entire or toothed towards the base hairy especially on the petioles, involucres with hairs which are black at the base mixed with black pedunculated glands. *p.* 230.—*Alps.*
7. H. *murorum*, stem branched upwards subcorymbose downy especially beneath the involucre, where are a few black glands, having 1 petiolated leaf, radical leaves ovate or lanceolate entire or dentate at the base hairy, as well as the longish petioles, involucre downy. *p.* 230.—*Woods and rocks.*

**** *Stem with many leaves, many-flowered.*

8. H. *sylvaticum*, stem many-leaved branched upwards and subcorymbose slightly hairy and more or less downy beneath the involucre, leaves ovato-lanceolate or lanceolate toothed with the sharp teeth pointing upward somewhat hairy, involucre with very short pubescence. *p.* 231.—*Mountain woods.*
9. H. *denticulatum*, "stem erect many-flowered solid, leaves sessile elliptic-lanceolate finely toothed smoothish glaucous beneath, flowerstalks glandular and cottony," *Sm.* *p.* 231.—*Banks.*
10. H. *molle*, stem panicled fistulose, leaves lanceolate obsoletely toothed semiamplexicaul, lower ones petiolate very obtuse. *p.* 232.—*Woods.*
11. H. *paludosum*, glabrous, stem panicled fistulose, leaves ovato-oblong acute toothed embracing the stem with their heart-shaped base, scales of the involucre with black hairs or bristles. *p.* 232.—*Wet places.*
12. H. *cerinthoides*, stem corymbose hairy above, leaves hairy very slightly toothed, radical ones oblongo-obovate petiolate, cauline ones oblong semiamplexicaul, involucre hairy. *p.* 232.—*Rocks.*
13. H. *amplexicaule*, glanduloso-pilose, stem corymbose, leaves toothed, radical ones oblongo-ovate petiolate, cauline ones cordate at the base amplexicaul. *p.* 232.—*Walls and rocks.*
14. H. *prænanthoides*, "stem erect many-flowered, leaves amplexicaul somewhat toothed rough at the margin, lower ones oblong, peduncles downy," *Sm.* *p.* 232.—*Banks.*

15. H. *sabaudum*, "stem erect many-flowered, leaves ovato-lanceolate dentato-serrate half embracing the stem hairy beneath, the lower ones elliptico-lanceolate," *Sm.* *p.*233.—*Rocky places.*
16. H. *umbellatum*, stem erect simple very leafy, leaves linear-lanceolate subglabrous slightly toothed, flowers subumbellate, peduncles downy, involucres glabrous. *p.* 233.—*Stony places.*

9. CREPIS.

Involucre surrounded with deciduous scales and at length swelling into protuberances. *Receptacle* roughish. *Pappus* sessile.

1. C. *pulchra*, "leaves pubescent toothed those on the stem subsagittate, stem panicled corymbose, involucre pyramidal glabrous," *Sm.* *p.* 233.—*Rocks.*
2. C. *tectorum*, leaves glabrous runcinate, the upper ones linear-sagittate amplexicaul, stem glabrous, panicle subcorymbose, involucre pubescent. *p.* 233.—*Pastures.*

10. HYPOCHÆRIS.

Involucre oblong, imbricated. *Receptacle* chaffy. *Pappus* feathery, stipitate or sessile.

1. H. *maculata*, stem almost leafless solitary, leaves ovato-oblong undivided toothed (spotted above). *p.* 234.—*Woods.*
2. H. *glabra*, nearly glabrous, involucre oblong imbricated, stem branched somewhat leafy, radical leaves dentato-sinuate. *p.* 234.—*Dry pastures.*
3. H. *radicata*, stem branched leafless glabrous, peduncles with small scales, leaves runcinate obtuse scabrous. *p.*234—*Pastures.*

11. LAPSANA.

Involucre with scales at the base. *Receptacle* naked (its inner leaves equal, channelled, *Sm.*). *Pericarps* destitute of pappus (deciduous).

1. L. *communis*, involucre of the fruit angular, stem panicled, peduncles slender, leaves ovate petiolate angulato-dentate. *p.* 234.—*Waste places.*
2. L. *minima*, scape branched very thick and fistulose upwards, leaves obovato-oblong toothed. *p.* 234.—*Corn-fields.*

12. CICHORIUM.

Involucre surrounded with scales or smaller leaflets. *Receptacle* naked or slightly hairy. *Pappus* sessile, scaly, shorter than the *pericarp.*

1. C. *Intybus*, flowers sessile axillary in pairs, leaves runcinate. *p.* 234.—*Waste places.*

DIV. II. CINAROCEPHALÆ. *Corollas all tubular and spreading.*

13. ARCTIUM.

Involucre globose, each of its scales with an incurved hook at the extremity. *Receptacle* chaffy. *Pappus* simple.

1. A. *Lappa*, leaves cordate petiolate. *p.* 235.—*Waste places.*

14. SERRATULA.

Involucre cylindrical, imbricated with scales that are not spinous. *Receptacle* chaffy. *Pappus* roughish or feathery, rigid, persistent.

1. S. *tinctoria*[a], leaves sharply serrated glabrous pinnatifid the terminal lobe the largest, flowers in a small clustered umbel. *p.* 235.—*Woods.*
2. S. *alpina*, leaves ovato-lanceolate attenuated at the base undivided toothed cottony beneath, involucre hairy, flowers in a clustered umbel. *p.* 235.—*Alpine rocks.*

15. CARDUUS.

Involucre swelling, imbricated with spinous scales. *Receptacle* hairy. *Pappus* deciduous, roughish.

* *Leaves decurrent.*

1. C. *nutans*, leaves decurrent spinous, flowers drooping, scales of the involucre lanceolate cottony, outer ones spreading. *p.* 235.—*Waste places.*
2. C. *acanthoides*, leaves decurrent sinuated spinous, involucre globose nearly sessile, its scales linear slightly recurved. *p.* 236. —*Way-sides.*
3. C. *tenuiflorus*, leaves decurrent, sinuated spinous somewhat cottony beneath, involucres nearly cylindrical clustered sessile, their scales lanceolate erect. *p.* 236.—*Waste places.*

** *Leaves sessile.*

4. C. *marianus*, leaves amplexicaul waved spinous, the radical ones pinnatifid, scales of the involucre subfoliaceous recurved spinous at the margin. *p.* 236.—*Waste places.*

16. CNICUS.

Involucre swelling, imbricated with spinous scales. *Receptacle* hairy. *Pappus* deciduous, feathery.

* *Leaves decurrent.*

1. Cn. *lanceolatus*, leaves decurrent hispid pinnatifid, their segments generally 2-lobed spreading spinous, involucres ovate

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[a] This species is observed, by Mr. Brown in his paper on *Compositæ*, published in the *Linn. Trans.*, to be polygamous. One sex is figured in the *English Botany*, another in *Fl. Danica.*

tomentose, their scales lanceolate spreading. *p.* 236.—*Way-sides.*

2. Cn. *palustris*, leaves decurrent scabrous pinnatifid spinous, involucres ovate clustered, their scales ovato-lanceolate mucronate appressed. *p.* 236.—*Meadows.*

** *Leaves sessile.*

3. Cn. *arvensis*, leaves sessile pinnatifid spinous, stem panicled, involucre ovate, scales appressed mucronated. *p.* 237.—*Fields.*
4. Cn. *eriophorus*, leaves sessile pinnatifid every other segment pointing upwards spinous scabrous, involucres sphærical woolly. *p.* 237.—*Road-sides.*
5. Cn. *heterophyllus*, leaves amplexicaul lanceolate ciliato-dentate undivided or laciniated white and downy beneath, flowers mostly solitary. *p.* 237.—*Marshy places in the mountains.*
6. Cn. *pratensis*, leaves sessile lanceolate waved at the edge and unequally spinous pubescent cottony beneath, flowers mostly solitary. *p.* 237.—*Pastures.*
7. Cn. *acaulis*, stemless, involucre glabrous. *p.* 237.—*Dry pastures.*

17. ONOPORDUM.

Involucre swelling, its scales spreading and spinous. *Receptacle* cellular. *Pappus* deciduous, rough.

1. O. *Acanthium*, scales of the involucre spreading subulate, leaves ovato-oblong sinuated and spinous decurrent woolly on both sides. *p.* 238.—*Waste places.*

18. CARLINA.

Involucre swelling, the *ext. scales* with numerous spines; the *inner ones* coloured, scariose. *Receptacle* chaffy. *Pappus* feathery.

1. C. *vulgaris*, stem many-flowered corymbose pubescent, leaves lanceolate unequally spinous and sinuated downy beneath. *p.* 238.—*Dry hills.*

19. CENTAUREA.

Involucre scaly. *Receptacle* bristly. *Corollas* of the ray sterile, infundibuliform, irregular, longer than those of the disk. *Pappus* simple.

1. C. *Jacea*, scales of the involucre scariose torn, the lower ones pinnatifid, leaves linear lanceolate, the lower ones broader and toothed. *p.* 248.—*Woods and pastures, rare.*
2. C. *nigra*, scales of the involucre ovate ciliated with capillary teeth, lower leaves angulato-lyrate, upper ones ovate. *p.* 248.—*Pastures.*
3. C. *Cyanus*, scales of the involucre serrated, leaves linear entire the lowermost toothed. *p.* 249.—*Cornfields.*
4. C. *Scabiosa*, scales of the involucre ciliated ovate pubescent,

leaves pinnatifid roughish, the segments lanceolate acute. *p.* 249. —*Pastures and fields.*

DIV. III. CORYMBIFERÆ. *Florets all tubular, erect and parallel, or with those of the circumference ligulate.*

I. DISCOIDEI. *Florets tubular, erect, crowded, parallel, nearly plane at the top.*

20. BIDENS.

Involucre of many *leaves*, with many foliaceous *bracteas* at the *base*. *Receptacle* plane, chaffy. *Cor.* sometimes radiant. *Pericarps* crowned with from 2—5 persistent *awns*, which are rough with minute deflexed *bristles*.

1. B. *cernua*, flowers drooping, bracteas lanceolate entire (longer than the involucre), leaves lanceolate serrated undivided, bristles of the pericarp about 4 erect. *p.* 238.—*Sides of ditches.*
2. B. *tripartita*, leaves tripartite, leaflets lanceolate deeply serrated, bristles of the pericarp 2—3. *p.* 238.—*Marshes.*

21. EUPATORIUM.

Involucre imbricated, oblong. *Florets* few. *Receptacle* naked. *Pappus* rough.

1. E. *cannabinum*, leaves opposite subpetiolate tri-quinque-partite, their segments lanceolate deeply serrated. *p.* 238.—*River-banks.*

22. TANACETUM.

Involucre hemisphærical, imbricated. *Receptacle* naked. *Florets* of the *ray* trifid, obsolete, sometimes wanting. *Pericarps* crowned with a membranous *margin* or *pappus*.

1. T. *vulgare*, leaves bipinnatifid inciso-serrate. *p.* 239.—*Borders of fields.*

23. ARTEMISIA.

Involucre ovate or rounded, imbricated. *Receptacle* naked (or downy, *Sm.*). *Florets* of the *ray* subulate. *Pericarps* crowned with a membranaceous *pappus*.

1. A. *maritima*, "leaves downy pinnated, the uppermost undivided, racemes drooping, receptacle naked, flowers oblong sessile," *Sm.* *p.* 239.—*Sea-shore.*
2. A. *gallica*, "leaves downy pinnated, radical ones capillary, upper ones undivided, racemes erect, receptacle naked, flowers oblong," *Sm.* *p.* 239.—*Sea-shore.*
3. A. *Absinthium*, leaves bi-tripinnatifid clothed with short silky down, segments lanceolate, flowers hemisphærical drooping, receptacle hairy. *p.* 239.—*Way-sides.*
4. A. *vulgaris*, leaves pinnatifid, their segments cut downy beneath, flowers somewhat racemed ovate, receptacle naked. *p.* 240.—*Waste places.*

24. GNAPHALIUM.

Involucre imbricated, with (often) coloured membranous scales. *Receptacle* naked. *Florets* of the *ray* subulate; some of the *disk* occasionally abortive. *Pappus* rough.

* *Flowers diœcious.*

1. Gn. *dioicum*, shoots procumbent, stems simple, corymbs crowded, radical leaves spathulate, flowers diœcious, inner scales of the involucre elongated obtuse coloured. *p.* 240.—*Mountain heaths.*

** *Flowers perfect.*

2. Gn. *sylvaticum*, stem simple nearly erect downy, flowers axillary forming a distant leafy spike, leaves linear lanceolate downy. *p.* 240.—*Dry subalpine pastures.*
3. Gn. *supinum*, stem decumbent branching only from the base, flowering stems erect, flowers solitary or racemed, leaves linear downy on both sides. *p.* 240.—*Alps.*
4. Gn. *uliginosum*, stem very much branched diffuse woolly, leaves linear lanceolate downy, flowers in terminal crowded clusters which are shorter than the leaves. *p.* 240.—*Wet places.*
5. Gn. *gallicum*, stem erect dichotomous, leaves linear acuminate downy, flowers crowded axillary and terminal, clusters much shorter than the leaves. *p.* 240.—*Dry banks.*
6. Gn. *minimum*, stem erect branched, branches spreading, leaves lanceolate acute cottony, flowers conical clustered lateral and terminal, clusters longer than the leaves. *p.* 241.—*Sandy hills.*
7. Gn. *germanicum*, stem erect proliferous at the summit, leaves lanceolate downy acute, flowers capitate in the axils of the branches and terminal. *p.* 241.—*Sandy ground.*

25. CONYZA.

Involucre roundish, imbricated. *Receptacle* naked. *Florets* of the *ray* 3-cleft. *Pappus* rough.

1. C. *squarrosa*, leaves pubescent ovato-lanceolate serrated, the upper ones entire, stem herbaceous corymbose, scales of the involucre recurved leafy. *p.* 242.—*Dry soils, rare.*

II. RADIATI. *Flowers rayed, or with the florets of the circumference ligulate.*

26. ERIGERON.

Involucre imbricated. *Receptacle* naked. *Florets* of the *ray* numerous, very narrow (mostly of a different colour from the *disk*). *Pappus* simple.

1. E. *acre*, peduncles alternate (scarcely racemose) single-flower-

ed, pappus as long as the florets of the ray, leaves lanceolate obtuse. *p.* 242.—*Mountain pastures.*

2. E. *alpinum*, stems with usually only one flower, pappus much shorter than the florets of the ray, leaves lanceolate. *p.* 242. —*Alpine rocks.*

27. TUSSILAGO.

Involucre simple, equal, submembranaceous, swelling. *Receptacle* naked. *Pappus* simple.

* *Flowers rayed. Scape single-flowered.*

1. T. *Farfara*, scape single-flowered imbricated with scales, leaves cordate angular toothed downy beneath. *p.* 242.—*Clayey fields.*

** *Flowers all tubular. Scapes many-flowered.*

2. T. *Petasites*, thyrsus ovato-oblong, leaves cordate unequally toothed with the lobes approximate downy beneath. *p.* 243.—*River-sides.*

28. SENECIO.

Involucre subcylindrical, equal, scaly below; the scales withered at the *tip*. *Receptacle* naked. *Pappus* simple.

* *Florets all tubular.*

1. S. *vulgaris*, leaves semiamplexicaul pinnatifid toothed, flowers in clustered corymbs destitute of a ray. *p.* 243.—*Waste ground.*

** *Flowers rayed, with the ray rolled back.*

2. S. *viscosus*, ray revolute, leaves pinnatifid and viscid, scales of the involucre lax hairy. *p.* 243.—*Hedge banks.*

3. S. *lividus*, " ray revolute, leaves amplexicaul lanceolate pinnatifid and toothed, ovate scales of the involucre very short acute not discoloured, "*Sm.* *p.* 243.—*Hilly places, rare.*

4. S. *sylvaticus*, ray revolute, leaves sessile pinnatifid lobed and toothed, scales of the involucre very short glabrous, stem erect straight corymbose. *p.* 244.—*Dry soils.*

*** *Flowers rayed, with the ray patent. Leaves pinnatifid.*

5. S. *Jacobæa*, ray spreading, leaves lyrate bipinnatifid divaricated toothed glabrous, stem erect, pericarps hairy. *p.* 244.—*Way-sides.*

6. S. *aquaticus*, ray spreading, leaves lyrate serrated glabrous, the lowermost obovate and undivided, involucre hemisphærical, pericarps glabrous. *p.* 244.—*Wet marshes.*

**** *Flowers rayed. Leaves undivided.*

7. S. *saracenicus*, ray spreading, leaves lanceolate sharply serrated nearly glabrous, corymbs of rather few flowers. *p.* 244. —*Moist pastures.*

29. ASTER.

Involucre imbricated, its lowermost *scales* spreading (except in

A. tripolium). *Receptacle* naked. *Florets* of the *ray* more than 10. *Pappus* simple.

1. A. *Tripolium*, stem glabrous corymbose, leaves linear-lanceolate fleshy obscurely 3-nerved, scales of the involucre lanceolate membranous obtuse imbricated. *p.* 244.—*Salt marshes.*

30. SOLIDAGO.

Involucre imbricated, its *scales* connivent. *Receptacle* naked. *Florets* of the *ray* (of the same colour as the *disk*) about 5. *Pappus* rough.

1. S. *Virgaurea*, cauline leaves lanceolate, the lower ones elliptical, racemes panicled erect crowded. *p.* 245.—*Mountain pastures.*

31. INULA.

Involucre imbricated. *Receptacle* naked. *Florets* of the *ray* very numerous, linear. *Anthers* with 2 *bristles* at the *base*. *Pappus* sometimes simply composed of *hairs*, sometimes double; the *ext.* membranous.

1. I. *Helenium*, leaves amplexicaul somewhat toothed ovate rugged downy beneath, scales of the involucre downy. *p.* 245.—*Waste places about buildings.*
2. I. *dysenterica*, leaves oblongo-cordate amplexicaul rugged downy, stem woolly panicled, scales of the involucre setaceous. *p.* 245.—*Moist places.*
3. I. *crithmoides*, leaves linear fleshy generally 3-pointed. *p.* 245.—*Sea-shore.*

32. DORONICUM.

Scales of the *involucre* in 2 equal rows, longer than the *disk*. *Receptacle* naked. *Pericarps* of the *disk* crowned with a simple *pappus*, those of the *ray* without a *pappus*.

1. D. *Pardalianches*, leaves cordate repando-dentate, radical ones petiolate, cauline ones amplexicaul. *p.* 245.—*Fields and hedges.*

33. BELLIS.

Involucre hemisphærical, its *scales* equal. *Receptacle* naked, conical. *Pappus* none.

1. B. *perennis*, scape naked single-flowered, leaves obovate crenate. *p.* 246.—*Pastures.*

34. CHRYSANTHEMUM.

Involucre hemisphærical, imbricated with *scales* whose *borders* are membranous. *Receptacle* naked. *Pappus* none.

1. Ch. *Leucanthemum*, leaves amplexicaul oblong obtuse cut pinnatifid at the base, radical ones obovate petiolate, stem erect branched. *p.* 246.—*Dry pastures.*
2. Ch. *segetum*, leaves amplexicaul glaucous inciso-serrate above toothed at the base. *p.* 246.—*Corn-fields.*

35. PYRETHRUM.

Involucre hemisphærical, imbricated with *scales* whose *borders* are membranous. *Receptacle* naked. *Pericarps* crowned with a membranous *margin*.

1. P. *Parthenium*, leaves petiolate flat bipinnate, the segments ovate cut, peduncles branched corymbose, stem erect, involucre hemisphærical pubescent. *p.* 246.—*Waste places.*
2. P. *inodorum*, leaves sessile bipinnatifid with the segments capillary, stem branched spreading, pappus entire. *p.* 246.—*Way-sides.*
3. P. *maritimum*, leaves bipinnatifid, the segments linear fleshy awnless, stem diffuse branched, pappus lobed. *p.* 246.—*Sea-coast.*

36. MATRICARIA.

Involucre hemisphærical or almost plane, imbricated with *scales* whose *borders* are membranous. *Receptacle* naked, almost cylindrical. *Pappus* none.

1. M. *Chamomilla*, leaves glabrous bipinnatifid the segments capillary, involucre nearly plane its scales obtuse. *p.* 246.—*Waste grounds.*

37. ANTHEMIS.

Involucre hemisphærical; its *scales* nearly equal, their *margins* scariose. *Receptacle* convex, chaffy. *Pericarps* crowned with a membranous *border* or *pappus*.

1. A. *nobilis*, leaves bipinnate, the segments linear subulate a little downy, scales of the receptacle membranous scarcely longer than the disk. *p.* 247.—*Waste places.*
2. A. *arvensis*, leaves bipinnatifid, their segments linear lanceolate pubescent, receptacle conical, its scales lanceolate, pericarps crowned with an entire pappus. *p.* 247.—*Corn-fields.*
3. A. *Cotula*, leaves bipinnatifid glabrous, their segments subulate, receptacle conical, its scales setaceous. *p.* 247.—*Waste places.*
4. A. *tinctoria*, leaves bipinnatifid serrated downy beneath, stem erect branched subcorymbose. *p.* 247.—*Road-sides.*

38. ACHILLEA.

Involucre ovate, imbricated, unequal. *Receptacle* plane, chaffy. *Florets* of the *ray* 5—10, roundish-obcordate. *Pericarps* naked.

* *Flowers white, or rarely reddish.*

1. A. *Ptarmica*, leaves linear lanceolate acuminate sharply serrated. *p.* 248.—*Pastures.*
2. A. *Millefolium*, leaves bipinnate slightly hairy, their segments linear toothed acute, stems furrowed. *p.* 248.—*Way-sides.*

** *Flowers yellow.*

3. A. *tomentosa*, leaves bipinnatifid woolly, the segments crowded linear acute, corymbs repeatedly compound. *p.* 248.—*Hilly pastures.*

Order XXXIII. DIPSACEÆ. *Juss.*

Cal. adherent with the *ovary*, naked or calyculated. *Cor.* regular or irregular, 4—5-cleft. *Anthers* free. *Ovary* 1. *Style* simple. *Stigma* simple or trifid. *Pericarp* indehiscent, 1-celled, 1-seeded. *Seed* pendulous. *Embryo* straight, surrounded by a thin *albumen*.

Stems herbaceous. *Leaves* usually opposite, sometimes whorled. *Flowers* generally capitate. *Receptacle* paleaceous. *Mirb.*

1. DIPSACUS.

Involucre many-leaved. *Cal.* double; *ext.* very minute; *int.* cup-shaped, entire. *Cor.* 4-lobed. *Stam.* 4. *Receptacle* chaffy, spinous. *Pericarp* angular, crowned with the double *cal.*

1. D. *Fullonum*, leaves subconnate, scales of the receptacle hooked at the extremity, involucres spreading (reflexed, *Sm.*). *p.* 49.—*Waste places, rare.*
2. D. *sylvestris*, leaves opposite rarely connate, scales of the receptacle straight, involucres curved upward. *p.* 49.—*Waste places.*
3. D. *pilosus*, leaves petiolate with a small leaflet at the base on each side, involucres short deflexed. *p.* 49.—*Hedges.*

2. SCABIOSA.

Involucre many-leaved. *Cal.* double, variously cut. *Cor.* 4—5-lobed. *Stam.* 4-5. *Receptacle* chaffy or naked. *Pericarp* crowned with the enlarged double *cal.*, of which the *ext.* is membranaceous; the *int.* feathery or bristly.

1. S. *succisa*, corollas 4-cleft, their segments equal, cauline leaves subdentate, head of flowers nearly globose. *p.* 49.—*Pastures.*
2. S. *arvensis*, corollas 4-cleft radiating, stem hispid branched, stem-leaves pinnatifid (often) cut. *p.* 50.—*Corn-fields.*
3. S. *columbaria*, corollas 5-cleft radiating, stem hairy, radical leaves oblongo-ovate and crenate or lyrate, those of the stem pinnatifid with linear segments. *p.* 50.—*Dry pastures.*

Order XXXIV. VALERIANEÆ. *Decand.*

Cal adherent with the *ovary*, sometimes pappose and rolled inwards, sometimes toothed and erect. *Cor.* tubular, 5-lobed,

generally irregular. *Stam.* 1—5. *Anth.* distinct. *Style* 1. *Stigma* 1—3. *Pericarp* indehiscent, 1—3-celled, 1—3-seeded. *Seeds* pendulous. *Embryo* straight, without *albumen*. *Herbs*. *Leaves* opposite. *Flowers* in *corymbs* or *panicles*. *Decand.*

1. VALERIANA.

Cal. with its *limb* involute, at length unfolding into a feathery *pappus*. *Cor.* 5-cleft, gibbous or spurred on one side at the base. *Stam.* 1—3; sometimes 2 abortive. *Pericarp* crowned with the feathery *pappus*. *Seed* 1.

* *Cor. spurred. Stam.* 1. (Centranthus.)

1. V. *rubra*, leaves ovato-lanceolate. *p.* 14.—*Walls.*

** *Cor. gibbous at the base. Stam.* 3. (Valeriana, *Decand.*)

2. V. *officinalis*, leaves all pinnated, leaflets lanceolate nearly uniform serrated. *p.* 15.—*Marshy places.*
3. V. *pyrenaica*, leaves dentato-serrate heart-shaped petiolate, upper ones with one or two pair of small lanceolate leaflets. *p.* 15.—*Woods, rare.*
4. V. *dioica*, flowers diœcious, radical leaves spathulato-ovate undivided, stem leaves pinnatifid. *p.* 15.—*Marshes.*

2. FEDIA.

Cal. toothed. *Cor.* 5-cleft, gibbous on one side at the base. *Stam.* 2. *Pericarp* 3-celled, 2 of the *cells* generally abortive.

1. F. *olitoria*, fruit tridentate ovato-rotundate inflated glabrous, flowers capitate. *p.* 15.—*Corn-fields.*
2. F. *dentata*, fruit subtridentate obpyriform glabrous, flowers corymbose with a single flower between the upper divisions of the stem. *p.* 15.—*Banks and fields.*

ORDER XXXV. RUBIACEÆ.

(SECT. 1. *of Rubiaceæ. Juss.*)

Cal. adherent with the *ovary*, entire or toothed at the margin. *Cor.* regular, 4—5-lobed. *Stam.* 4—5 between the divisions of the *cor.* *Ovary* 1. *Style* 2-partite or bifid. *Stigma* double. *Disk* epigynous, composed of 2 semicircular *glands*. *Pericarp* dicoccous, 2-seeded; the *cocci* indehiscent and separating from a central *receptacle*. *Seeds* peltate. *Embryo* buried in the axis of a corneous albumen. *Radicle* inferior. *Herbs* with whorled entire *leaves*. *Flowers* axillary and terminal. *Mirb.*

1. SHERARDIA.

Cor. infundibuliform, 4-fid. *Fruit* crowned with the segments of the *cal.*

1. S. *arvensis*, leaves about 6 in a whorl, flowers terminal sessile umbellate. *p.* 51.—*Corn-fields.*

2. ASPERULA.

Cor. infundibuliform, 3—4-fid. *Fruit* not crowned with the segments of the *cal.*

1. A. *odorata*, leaves about 8 in a whorl lanceolate, flowers paniculate on longish stalks. *p.* 50.—*Woods.*

3. GALIUM.

Cor. rotate, 4-cleft. *Fruit* a dry *Nut*, crowned with the segments of the *cal.*

* *Fruit glabrous. Flowers yellow.*

1. G. *verum*, leaves about 8 in a whorl linear grooved, flowers in dense panicles. *p.* 50.—*Banks.*
2. G. *cruciatum*, leaves 4 in a whorl ovate hairy, flowers polygamous clustered lateral, peduncles 2-leaved. *p.* 51.—*Hedges.*

** *Fruit glabrous. Flowers white.*

3. G. *palustre*, leaves 4—6 in a whorl oblongo-lanceolate obtuse unequal in size, stem lax spreading branched, branches patent. *p.* 51.—*Sides of lakes, &c.*
4. G. *Witheringii*, "leaves about 5 in a whorl reflexed (horizontal in fig. in *E. B.*) lanceolate aristate ciliated, stem nearly erect simple scabrous." *p.* 51.—*Woods and hills.*
5. G. *uliginosum*, leaves 6 in a whorl lanceolate mucronate, the margins rough with reflexed prickles. *p.* 51.—*Ditch banks.*
6. G. *saxatile*, leaves 6 in a whorl obovate mucronate, stem very much branched procumbent glabrous. *p.* 51.—*Hills and heaths.*
7. G. *erectum*, leaves about 8 in a whorl lanceolate mucronate, their margins rough with prickles pointing forwards, panicle much branched trichotomous, stem glabrous flaccid. *p.* 52.—*Banks.*
8. G. *diffusum*, "leaves about 8 in a whorl linear aristate glabrous, their margins obsoletely serrated" (rough with prickles pointing forwards) "panicle corymbose, stems diffuse very much branched." *p.* 52.—*Banks?*
9. G. *verrucosum*, leaves 6 in a whorl lanceolate, their margins rough with prickles pointing forwards, peduncles axillary 3-flowered, fruit warted drooping. *p.* 52.—*Corn-fields.*
10. G. *spurium*, leaves 6—8 in a whorl, their margins as well as the stem rough with reflexed prickles, peduncles axillary many-flowered, fruit smooth spreading. *p.* 52.—*Corn-fields.*

11. G. *pusillum*, " leaves about 8 in a whorl linear-lanceolate mucronate entire subpubescent, peduncles dichotomous, fruit very smooth." *p.* 52.—*Hilly pastures.*
12. G. *Mollugo*, leaves about 8 in a whorl elliptical mucronate rough at the margin, flowers panicled spreading. *p.* 53.—*Hedges.*

** *Fruit hispid.*

13. G. *boreale*, leaves 4 in a whorl lanceolate 3-nerved glabrous, stems erect, fruit muricated. *p.* 53.—*Banks and rocks.*
14. G. *Aparine*, leaves 6—8 in a whorl linear-lanceolate hispid, their margins, keel, and the stem rough with reflexed prickles, stem weak, fruit hispid. *p.* 53.—*Hedges.*

ORDER XXXVI. CAPRIFOLIACEÆ[a]. *Juss.*

Cal. adherent with the *ovary*, generally with *bracteæ* at its base. *Cor.* various; its *tube* either long and slender, or very short, sometimes polypetalous. *Stam.* 4—5, between the *segments*. *Ovary* 1. *Style* simple or none. *Stigmas* 1—3. *Berry*, *Capsule*, or *Drupe*, with one or more cells. *Seeds* pendulous. *Embryo* in the base or axis of a fleshy albumen. *Radicle* superior.

Herbs, *Shrubs*, or *Trees*. *Inflorescence* various. *Leaves* almost always opposite. *Mirb.*

* *Cal. bracteated. Style simple. Cor. monopetalous.*

1. LINNÆA.

Cal. 5-cleft, surrounded at the base with a persistent involucre of 2 leaves. *Cor.* campanulate, 5-cleft, equal. *Stam.* 4, 2 shorter. *Berry* dry, 3-celled, only 1 bearing a single perfect *seed*.

1. L. *borealis*. *p.* 190.—*Fir woods.*

2. LONICERA.

Cal. 5-toothed. *Cor.* tubular, campanulate or infundibuliform, 5-cleft, irregular. *Stam.* 5. *Berry* 1-, 2-, 3-celled; *cells* many-seeded.

1. L. *Caprifolium*, flowers ringent whorled terminal sessile, upper leaves connato-perfoliate. *p.* 80.—*Woods, rare.*
2. L. *Periclymenum*, flowers ringent capitate terminal, leaves all distinct. *p.* 80.—*Woods and hedges.*

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[a] This is perhaps the most unnatural of all Jussieu's orders; and it will certainly be eventually much altered. Mr. Brown has already proposed *Lonicereæ*, containing *Lonicera*, *Linnæa*, &c., as a separate order; an arrangement which would gladly have been adopted here, had any characters been published.

** *Cal. bracteated. Style none. Stigmas* 3. *Cor. monopetalous.*

3. VIBURNUM.

Cal. small, 5-fid. *Cor.* of 1 petal 5-lobed. *Stam.* 5. *Berry* 1-seeded.

1. V. *Lantana*, leaves elliptico-cordate serrate veiny downy beneath. *p.* 96.—*Woods.*
2. V. *Opulus*, leaves glabrous 3-lobed acuminate and serrate, petioles with glands. *p.* 96.—*Woods.*

4. SAMBUCUS.

Cal. very small, 5-fid. *Cor.* rotate, 5-lobed. *Stam.* 5. *Berry* 1-celled, 3-seeded.

1. S. *Ebulus*, cymes with 3 principal branches, leaflets lanceolate, stipules foliaceous, stem herbaceous. *p.* 96.—*Way-sides.*
2. S. *nigra*, cymes with 5 principal branches, leaflets ovate, stem arboreous. *p.* 96.—*Woods and hedges.*

*** *Cal. without bracteæ. Style* 1. *Cor. polypetalous.*

5. HEDERA.

Cal. 5-toothed. *Petals* 5. *Stam.* 5 alternate with the petals. *Berry* 5-seeded, crowned with the segments of the *cal.*

1. H. *Helix*, leaves 5-lobed the lobes angular, floral leaves ovate, the umbel erect. *p.* 82.—*Trunks of trees and rocks.*

6. CORNUS.

Cal. 4-toothed. *Pet.* 4. *Stam.* 4 alternate with the petals. *Drupe* not crowned; its *nut* with 2 cells; *cells* 2-seeded.

1. C. *sanguinea*, arborescent, branches straight, leaves opposite ovate green on both sides, cymes destitute of involucre. *p.* 55.—*Woods.*
2. C. *suecica*, herbaceous, leaves all opposite ovate glabrous, flowers few umbellate surrounded by a 4-leaved involucre and springing from the axil of the forked extremity of the stem. *p.* 55.—*Mountains.*

Order XXXVII. LORANTHEÆ. *Juss.*

(*Viscoideæ. Rich.*)

Cal. 1-leaved, adherent with the ovary, usually with another little calyx at its base; or with two bracteæ which supply its place. *Cor.* 0, or polypetalous. *Stam.* attached to the base of the lobes or parts of the cor.; generally equal to them in number; rarely twice as many. *Ovary* surmounted by 1 style and stigma. *Fruit* fleshy or dry with one seed attached to the top of its cell. *Embryo* cylindrical, in the axis of a fleshy albumen, beyond which the superior radicle is exserted.

Shrubs generally parasitical on trees. *Leaves* opposite or sometimes alternate, without stipules. *Flowers* terminal or axillary, solitary or in bunches. *Juss.*

1. VISCUM.

Monœcious or *diœcious*. *Cal.* with the margin entire or a little prominent. *Petals* 4, short, united at the base. *Barren fl. Anth.* 4, sessile, adnate with the petals. *Fertile fl. Ovary* crowned with the margin of the cal. *Stigma* 1. *Berry* (*Drupe*) globose, 1-seeded.

1. V. *album*, leaves lanceolate obtuse, stems dichotomous, heads of flowers axillary. *p.* 288.—*On trees, rare.*

ORDER XXXVIII. UMBELLIFERÆ. *Juss.*

Cal. adherent with the ovaries, 5-toothed; teeth generally deciduous, sometimes persistent. *Cor.* of 5 petals, bifid, usually obcordate, with an elongation beyond the sinus of the lobes, often radiating. *Stam.* 5, alternate with the petals, inserted into a thick epigynous disk, sometimes abortive. *Styles* 2. *Stigmas* capitate. *Caryopsides* 2[a], attached to a central stalked receptacle, separating when ripe. *Seed* solitary, pendulous. *Embryo* minute, in the base of a corneous albumen.

Herbs. *Leaves* alternate, generally compound and embracing the stem with their stalk. *Flowers* in umbels.

A. *Umbels with a partial and universal involucre.*

1. ERYNGIUM.

Flowers sessile, capitate. *Receptacle* conical, chaffy. *Fruit* bristly.

1. E. *maritimum*, radical leaves rounded plaited spinous, scales of the receptacle 3-cleft. *p.* 87.—*Sea-coast.*

2. HYDROCOTYLE.

Flowers in a simple umbel or capitate. *Cal.* 0. *Petals* ovate,

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[a] Each fruit has five prominent *ribs* (*costæ*), with as many sunken *intervals* (*valleculæ*) between them. Under the coat of the fruit appear *bands* (*vittæ*) which are ducts or reservoirs traversing the *intervals* longitudinally, and filled with the resinous or oily juices from which the aromatic smell of the fruit is derived. Where the fruit adheres to the receptacle is the *commissure* (*commissura* or *rapha*), which is flat or excavated, occasioned by the cohesion and mutual pressure of the two *caryopsides*, and generally traversed by bands. Upon modifications of these parts the generic characters of Hoffmann and Sprengel are founded, which have recently been applied to all the genera in a masterly manner by the latter author in the 6th vol. of *Römer and Schultes' Species Plantarum.*

acute, equal. *Fruit* without teeth (or calycine segments), suborbicular, laterally compressed, striated.

1. H. *vulgaris*, leaves peltate orbicular crenate, umbels of 5—8 flowers. *p.* 87.—*Boggy places.*

3. SANICULA.

Umbellules clustered, subcapitate, central *flowers* abortive. *Petals* obcordate. *Fruit* clothed with hooked bristles.

1. S. *europæa*, radical leaves simple, flowers all sessile. *p.* 87.—*Woods.*

4. CAUCALIS.

Involucres undivided. *Flowers* radiant, those of the disk abortive. *Fruit* subovate, striated, rough with rigid bristles.

1. C. *Anthriscus*, leaves bipinnate, leaflets ovato-lanceolate, umbels of many close rays, general involucre of many leaves, branches nearly upright. *p.* 87.—*Hedges.*
2. C. *infesta*, leaves pinnate, leaflets lanceolate almost pinnatifid, umbels of many close rays, involucre often wanting, branches spreading. *p.* 87.—*Cornfields.*
3. C. *nodosa*, umbels lateral simple subsessile, stem prostrate. *p.* 88.—*Road-sides.*

5. DAUCUS.

Involucres pinnatifid. *Flowers* somewhat radiant, those of the disk abortive. *Fruit* muricated.

1. D. *Carota*, stem hispid, leaves 2—3-pinnate, leaflets cut linear-lanceolate acute, fruit-bearing umbel concave, fruit bristly. *p.* 88.—*Borders of fields.*

6. BUNIUM.

Partial involucres setaceous (often wanting). *Petals* uniform. *Fruit* oblong, striated, with the interstices tuberculated.

1. B. *Bulbocastanum*, general involucre of scarcely 3 leaves, leaves tripinnate linear glabrous, fruit ovate. *p.* 88.—*Pastures.*

7. CONIUM.

Partial involucres of 3 leaves, all on one side. *Petals* nearly uniform. *Fruit* ovate, tumid, with 5 undulated ribs on each side.

1. C. *maculatum*, seeds without prickles, stem much branched polished and spotted. *p.* 88.—*Banks.*

8. SELINUM.

Involucres, general and *partial*, reflexed. *Petals* heart-shaped, nearly uniform. *Fruit* compressed, striated down the middle.

1. S. *palustre*, lactescent, leaflets pinnatifid, segments linear-lanceolate, stem solitary striated, rays of the umbels pubescent, styles after flowering divaricating. *p.* 88.—*Marshes, rare.*

9. PEUCEDANUM.

Gen. involucre very short. *Flowers* nearly uniform, those of the disk abortive. *Fruit* ovate, compressed, striated, bordered.

1. P. *Silaus*, leaves tripinnate, leaflets linear-lanceolate opposite, general involucres of 1—2 leaves. *p.* 89.—*Road-sides.*

10. CRITHMUM.

Cal. entire. *Petals* uniform, entire, broadest at the base, their extremities curved inwards. *Fruit* oval, striated.

1. Cr. *maritimum*, leaflets lanceolate fleshy. *p.* 89.—*Maritime rocks.*

11. HERACLEUM.

Involucres deciduous. *Flowers* radiant. *Petals* bifid. *Fruit* elliptical, dorsally compressed, striated.

1. H. *Sphondylium*, leaves pinnated, leaflets pinnatifid incised serrated. *p.* 89.—*Meadows.*

12. LIGUSTICUM.

Gen. involucre membranaceous. *Petals* uniform, incurved at the extremity, entire. *Cal.* of 5 teeth. *Fruit* oblong, furrowed.

1. L. *scoticum*, leaves biternate. *p.* 89.—*Rocky coasts.*
2. L. *Meum*, all the leaflets setaceo-multipartite. *p.* 89.—*Mountain pastures.*

13. ANGELICA.

Gen. involucre often wanting. *Petals* uniform, incurved, entire. *Fruit* roundish, with 3 wings on each side.

1. A. *sylvestris*, leaflets equal ovate serrated. *p.* 90.—*Moist woods.*

14. SIUM.

Involucres of many leaves. *Petals* heart-shaped, nearly uniform. *Fruit* nearly oval, laterally compressed and striated.

1. S. *latifolium*, stem erect, leaves pinnated, leaflets oblongo-lanceolate equally serrated, umbels terminal. *p.* 90.—*Sides of lakes, &c.*
2. S. *angustifolium*, stem erect, leaflets unequally lobed and serrated, umbels pedunculate opposite the leaves. *p.* 90.—*Ditches.*
3. S. *nodiflorum*, stem procumbent, leaves pinnate, leaflets ovate subequally serrated, umbels sessile opposite to the leaves. *p.* 90. —*Sides of rivulets.*
4. S. *repens*, stem creeping, leaflets broadly ovate inciso-dentate, umbels pedunculate opposite the leaves. *p.* 90.—*Sides of rivers.*

15. SISON.

Gen. and *partial involucre* of about 4 leaves (the former wanting in S. *inundatum*). *Petals* nearly uniform, inflexed. *Fruit* ovate, striated.

1. S. *verticillatum*, leaflets all capillary in whorled segments. *p.* 90.—*Moist pastures.*
2. S. *inundatum*, stem creeping, inferior leaves capillaceo-multipartite superior pinnatifid, umbels generally of 2 rays. *p.* 91. —*Inundated places.*
3. S. *segetum*, stem erect, leaves pinnate, leaflets broadly ovate serrated, radical ones lobed, umbels at first drooping, their rays unequal. *p.* 91.—*Fields.*

16. ŒNANTHE.

Flowers radiant, those of the disk sessile and abortive. *Fruit* crowned with the *cal.* and *styles*, corky.

1. Œ. *fistulosa*, root creeping stoloniferous, stem leaves pinnated, their main petiole as well as the stem cylindrical tubular, umbels of very few rays. *p.* 91.—*Ditches.*
2. Œ. *pimpinelloides*, leaflets of the radical leaves wedge-shaped cloven, those of the stem linear entire very long, gen. involucre of several linear leaves. *p.* 91.—*Salt marshes.*
3. Œ. *crocata*, all the leaflets wedge-shaped cut nearly equal, involucre of many leaves. *p.* 91.—*Ditch banks.*

B. *Umbels with a partial involucre; universal none.*

17. PHELLANDRIUM.

Flowers of the disk smallest. *Fruit* ovate, smooth, crowned with the *cal.* and *styles.*

1. Ph. *aquaticum*, segments of the leaves divaricated. *p.* 92.—*Ditches and pools.*

18. CICUTA.

Fruit subovate, furrowed.

1. C. *virosa*, umbels opposite to the leaves, sheaths of the leaves obtuse. *p.* 92.—*Sides of lakes.*

19. ÆTHUSA.

Partial involucre of 3 leaves, all on one side, pendulous.

1. Æ. *Cynapium. p.* 92.—*Fields and gardens.*

20. SCANDIX.

Fruit terminated with a very long rough beak. *Partial involucre* cut or pinnated.

1. S. *Pecten-Veneris*, leaflets cut into many linear segments, fruit and beak roughish. *p.* 92.—*Cornfields.*

21. ANTHRISCUS.

Fruit ovate, hispid, with a short glabrous beak. (*Pers.*)

1. A. *vulgaris*, bristles of the fruit hooked, stem smooth, umbels mostly lateral. *p.* 93.—*Waste places.*

22. CHÆROPHYLLUM.

Partial involucre of about 5, reflexed, concave leaves. *Fruit* linear-oblong, glabrous, smooth or striated.

* *Fruit smooth (not striated).*

1. Ch. *sylvestre*, stem a little swelling below each joint glabrous, umbels on long stalks. *p.* 93.—*Hedges, &c.*
2. Ch. *sativum*, umbels lateral sessile, fruit a little swelling below. *p.* 93.—*Hedges and about gardens.*

** *Fruit striated.*

3. Ch. *temulentum*, stem rough (spotted) swelling below each joint. *p.* 93.—*Hedges.*
4. Ch. *odoratum*, seeds deeply sulcate (very large). *p.* 93.—*Orchards, &c.*
5. Ch. *aureum*, pubescent, stems slightly swelling below the joints, leaflets very acuminate inciso-pinnatifid, seeds coloured furrowed. *p.* 94.—*Fields, rare.*
6. Ch. *aromaticum*, leaflets ovato-oblong subacuminate serrate undivided. *p.* 94.—*Road-sides, rare.*

23. IMPERATORIA.

Fruit nearly elliptical, compressed, bordered, swelling in the middle with 3 ribs on each side.

1. I. *Ostruthium. p.* 94.—*Near old buildings, in waste places.*

C. *Umbels without involucres; rarely general, never partial ones.*

24. SMYRNIUM.

Petals acute, keeled, incurved. *Fruit* ovato-globose, gibbous. *Seeds* (*Akenia*) reniform, angular.

1. S. *Olusatrum*, cauline leaves ternate petiolate serrate. *p.* 94. —*Waste places near the coast.*

25. CARUM.

Gen. involucre of 1 or very few leaves. *Petals* inflexo-emarginate. *Fruit* ovato-oblong, striated.

1. C. *Carui. p.* 95.—*Pastures and rocks.*

26. PIMPINELLA.

Petals inflexed. *Stigmas* subglobose. *Fruit* ovato-oblong, striated.

1. P. *Saxifraga*, radical leaves pinnate, leaflets roundish sharply serrate, those of the stem bipinnate linear. *p.* 95.—*Dry pastures.*

27. APIUM.

Petals uniform. *Fruit* roundish, ribbed.

1. A. *graveolens*, stem leaves with their leaflets wedge-shaped, stem furrowed, umbels frequently sessile. *p.* 95.—*Salt marshes.*
2. A. *Petroselinum*, leaves of the stem with their leaflets linear, umbels all pedunculate. *p.* 95.—*Walls and maritime rocks.*

28. ÆGOPODIUM.

Petals unequal. *Stigmas* simple. *Fruit* ovato-oblong, ribbed.

1. Æ. *Podagraria*. *p.* 95.—*Waste places.*

Order XXXIX. SAXIFRAGEÆ. *Juss.*

Calyx superior or inferior, 4—5-cleft. *Cor.* perigynous, of 4—5 petals; sometimes wanting. *Stamens* 8—10, half opposite, half alternate with the petals. *Ovary* 1. *Styles* 2—5. *Disk* encircling the mouth of the calyx. *Capsule*, or *Berry*, many-seeded. *Embryo* in the axis of a fleshy albumen.

Herbs. *Flowers* usually alternate, sometimes opposite. *Mirb.*

1. SAXIFRAGA.

Cal. adherent or free, the limb 5-partite. *Cor.* of 5 petals. *Stam.* 10. *Caps.* with 2 beaks, 2-celled, many-seeded, opening between the beaks.

* *Leaves all radical undivided.*

1. S. *stellaris*, leaves oblongo-cuneiform angulato-serrate, scape branched, petals oblong acute, capsule superior. *p.* 128.—*Rivulets.*
2. S. *nivalis*, leaves obovate subpetiolate acutely crenate, scape (rarely branched) terminated by a dense cluster of flowers, capsule half inferior. *p.* 129.—*Mountains.*
3. S. *umbrosa*, leaves obovate petiolate subretuse with cartilaginous acutely crenate margins, scape panicled, capsule superior. *p.* 129.—*Woods.*

** *Stem leafy, leaves undivided.*

4. S. *oppositifolia*, leaves ovate opposite imbricated ciliated, flowers solitary terminal. *p.* 129.—*Rocky places.*
5. S. *aizoides*, lower leaves numerous crowded, the rest scattered linear-lanceolate sub-ciliate, stem ascending. *p.* 129.—*Springy places.*

*** *Stem leafy, leaves variously divided (especially the radical ones).*

6. S. *granulata*, radical leaves reniform on long footstalks obtusely lobed, those of the upper part of the stem nearly sessile acutely lobed, stem panicled, root granulated. *p.* 129.—*Banks.*

7. S. *cernua*, radical leaves reniform on long footstalks palmato-lobate, superior ones nearly sessile subtrifid, stem simple bulbiferous with one terminal flower. *p.* 130.—*Rocks.*
8. S. *rivularis*, leaves upon very long footstalks palmate, floral one obovate, stem weak of about 2 flowers. *p.* 130.—*Mountains.*
9. S. *tridactylites*, radical leaves spathulate entire and cuneiform trifid, upper cauline ones undivided, stem panicled, petals entire or longer than the cal. *p.* 130.—*Rocks and walls.*
10. S. *muscoides*, radical leaves aggregate linear obtuse entire and trifid, stem nearly naked few flowered, petals oblong obtuse (buff coloured) a little longer than the cal. *p.* 130.—*Highlands.*
11. S. *hypnoides*, radical leaves 3—5-cleft those of the long sterile shoots (mostly) linear-lanceolate acute all nearly glabrous, flowering stem panicled.

β. petals larger with the superior leaves (only) on the procumbent shoots undivided. *p.* 131.—*Highland mountains.*

12. S. *cæspitosa*, radical leaves 3- or mostly 5-cleft those of the sterile shoots mostly 3-, rarely and only below 5-cleft, all more or less hairy, flowering stem subpubescent panicled.

β. shoots long, leaves dark green ciliated only at the base.

γ. shoots rather short, leaves ciliated only, especially near the base, 1—3 flowers upon the stem.

δ. shoots very short, leaves dense ciliated only at the base, flowering stem short 1—2-flowered. *p.* 131.—*Rocks.* β. *Scotch Alps.* γ. *Rivulets.* δ. *Mountains.*

13. S. *pedatifida*, lower leaves and those of the rather short sterile shoots upon very long footstalks, divided into 3 deep linear lanceolate acute spreading segments, the lateral ones bifid, the superior leaves of the much branched flowering stem linear undivided. *p.* 132.—*Rocks.*

2. CHRYSOSPLENIUM.

Cal. adherent with the ovary, somewhat coloured, 4—5-cleft. *Cor.* 0. *Stam.* 8—10. *Styles* 2. *Caps.* with 2 beaks, 1-celled, many-seeded.

1. C. *alternifolium*, leaves alternate, lower ones subreniform upon very long footstalks. *p.* 128.—*Rocks and springs.*
2. C. *oppositifolium*, leaves opposite cordato-rotundate. *p.* 128.—*Shady places.*

3. ADOXA.

Cal. adherent with the ovary, 3-cleft. *Cor.* 4—5-cleft. *Stam.* 8—10. *Styles* 4—5. *Berry* globose, 4—5-celled.

1. A. *moschatellina*. *p.* 123.—*Woods and shady places.*

ORDER XL. GROSSULARIÆ. *Decand.*

(Part of Cacti, Juss.)

Cal. superior, 5-cleft. *Corolla* 5-petaled. *Stamens* 5, opposite the petals. *Ovary* 1. *Style* 1. *Stigma* double. *Berry* 1-celled, many-seeded. *Placenta* parietal. *Seeds* with a minute centrifugal *embryo* in the base of a corneous *albumen*.

Shrubs with opposite leaves. *Flowers* bracteated, in bunches. *Mirb.*

1. RIBES.

Cal. urceolate, 5-cleft. *Petals* 5. *Stamens* 5. *Style* 2-fid.

** Without thorns.*

1. R. *rubrum*, without thorns erect, racemes glabrous pendulous, flowers nearly plane, petals obtuse. *p.* 81.—*Brushwood.*
2. R. *petræum*, without thorns erect, racemes when in flower erect in fruit pendulous slightly downy, flowers nearly plane, petals bluntish, bracteas shorter than the pedicel. *p.* 81.—*Woods.*
3. R. *alpinum*, without thorns erect, racemes erect both in flower and fruit, flowers plane shorter than the bracteas, leaves shining beneath. *p.* 81.—*Woods.*
4. R. *nigrum*, without thorns erect, racemes lax pubescent pendulous with a simple flowerstalk at their base, flowers campanulate, bracteas shorter than the pedicels, leaves punctato-glandulose beneath. *p.* 82.—*Woods.*

*** Thorny.*

5. R. *Grossularia*, branches prickly, leaves rounded and lobed, peduncles hairy, pedicels single-flowered with a pair of minute bracteas, fruit hairy. *p.* 82.—*Hedges and woods.*

ORDER XLI. HALORAGEÆ. *Br.*

(Hygrobiæ, Rich. Cercodeæ, Juss.)

Cal. superior, entire, or divided; or none. *Cor.* none. *Stamens* definite, inserted in the calyx. *Ovary* one- or few-celled. *Ovule* solitary, pendulous, or peltate. *Pericarp* indehiscent. *Embryo* in the axis of a fleshy albumen. *Radicle* superior.

Inconspicuous *Herbs* with opposite, usually whorled *leaves*. *Flowers* axillary.

1. HIPPURIS.

Cal. entire. *Stamen* 1. *Style* 1. *Pericarp* one-celled.

1. H. *vulgaris*, leaves whorled linear. *p.* 2.—*Ditches.*

2. MYRIOPHYLLUM.

Monœcious. Cal. 4-leaved. *Stam.* 8. *Stigmas* 4, sessile. *Pericarp* 4-celled.

1. M. *spicatum*, sterile flowers in interrupted leafless spiked whorls. *p.* 272.—*Ditches.*

3. CALLITRICHE [a].

Monœcious. Flowers naked. *Stamen* 1. *Styles* 2. *Pericarp* 4-celled.

1. C. *aquatica. p.* 259.—*Ditches.*

ORDER XLII. ONAGRARIÆ. *Juss.*

Cal. superior, 2—4-cleft. *Cor.* of 2—4 petals. *Stamens* definite; when equal in number to the petals alternate with them. *Style* 1. *Stigma* 2—4-cleft. *Capsule* 2—4-celled, 1—many-seeded. *Seeds* with or without albumen. *Embryo* straight. *Herbs* with alternate or opposite leaves. *Mirb.*

1. CIRCÆA.

Cal. 2-leaved. *Cor.* of 2 petals. *Stam.* 2. *Caps.* 2-celled. *Cells* with one seed.

1. C. *Lutetiana*, stem erect pubescent, leaves ovato-cordate denticulate. *p.* 4.—*Woods and coppices.*
2. C. *alpina*, stem ascending glabrous, leaves cordate toothed shining. *p.* 4.—*Woods and coppices.*

2. EPILOBIUM.

Cal. 4-partite, deciduous. *Pet.* 4. *Stam.* 8. *Caps.* elongate, obtusely 4-sided, 4-celled, 4-valved, many-seeded. *Seeds* comose.

* *Flowers irregular. Stam. bent down.*

1. E. *angustifolium*, leaves scattered linear lanceolate veined glabrous, flowers irregular subspicate, stam. declined. *p.* 116.—*Rocks.*

** *Flowers regular. Stam. erect. Petals doubly notched.*

2. E. *hirsutum*, leaves semiamplexicaul ovato-lanceolate dentato-serrate hairy, stem very much branched hairy, root creeping, stigma 4-cleft. *p.* 117.—*Ditches, rivers, and lakes.*
3. E. *parviflorum*, leaves sessile lanceolate slightly toothed downy

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[a] Mr. Brown has long ago suggested the propriety of referring this genus to HALORAGEÆ, notwithstanding the differences of its structure. The ovula are peltate, not pendulous; but the radicle is superior, and in the axis of a fleshy albumen like *Hippuris* and *Myriophyllum*; the mode of insertion of ovula is not in this instance, therefore, of its usual importance.

on both sides, stem nearly simple very downy, root fibrous, stigma 4-cleft. *p.* 117.—*Marshes and banks of rivers.*

4. E. *palustre*, leaves narrow lanceolate sessile nearly entire and as well as the rounded erect stem subglabrous, stigma undivided. *p.* 117.—*Bogs and lakes.*
5. E. *tetragonum*, leaves lanceolate sessile glabrous denticulate, stem with 4 angles nearly glabrous, stigma undivided. *p.* 117. —*Ditches.*
6. E. *montanum*, leaves ovato-acute shortly petiolate glabrous all toothed, stem round pubescent as well as the fruit, stigma 4-cleft. *p.* 117.—*Stony places.*
7. E. *alsinifolium*, leaves ovato-acuminate rather obtuse sessile glabrous lowermost ones entire the rest very slightly toothed, stem round glabrous as well as the fruit, stigma entire. *p.* 117. —*Highland mountains.*
8. E. *alpinum*, leaves elliptical glabrous on short footstalks nearly entire, stem nearly glabrous, and fruit entirely so, stigma undivided. *p.* 118.—*Wet places.*

Order XLIII. CUCURBITACEÆ. *Juss.*

Flowers unisexual. *Cal.* superior, 5-cleft. *Cor.* regular, 5-lobed, bearing the stamens. *Stamens* definite, united in 3 sets. *Anthers* linear, sinuous, either all syngenesious or only 4, the 5th being separate on a distinct filament. *Ovary* 1. *Placentas* 3—5-lobed, radiating from the sides of the ovary, and forming spurious dissepiments. *Style* 3-fid. *Stigmas* 3, 2-lobed. *Fruit* a berry (*Pepo*), spuriously 1—3—5—10-celled, its outside dry, inside pulpy. *Embryo* straight, surrounded by attenuated albumen. *Cotyledons* large, fleshy.

Stems climbing or decumbent, bearing *cirrhi*. *Leaves* rough, alternate, simple. *Mirb.*

1. BRYONIA.

Monœcious. *Barren Fl. Cal.* 5-toothed. *Cor.* 5-cleft. *Filam.* 3. *Anthers* 5. *Fertile Fl. Cal.* 5-toothed. *Cor.* 5-cleft. *Style* trifid. *Berry* few-seeded.

1. Br. *dioica*, leaves palmate rough on both sides, flowers diœcious. *p.* 272.—*Garden hedges.*

Order XLIV. SALICARIÆ. *Juss.*

(*Lythariæ, Mirb.*)

Cal. inferior, 6—12-cleft. *Cor.* of 6 petals or none. *Stam.* 6—12. *Ovary* 1. *Capsule* 2-valved, 2-celled, many-seeded.

Valves bearing the septa in their middle. *Embryo* straight, surrounded by a small portion of albumen.

Herbs with opposite or alternate leaves. *Flowers* axillary, often in a whorled spike. *Mirb.*

1. LYTHRUM.

Cal. cylindrical, with 12 teeth, alternately smaller. *Stam.* 12, in two rows. *Capsule* oblong.

1. L. *Salicaria,* leaves opposite cordato-lanceolate, flowers spiked with 12 stam. *p.* 147.—*Marshy places.*

2. PEPLIS.

Cal. campanulate, the teeth alternately reflexed. *Stam.* 6, short.

1. P. *Portula,* flowers axillary solitary, leaves obovate. *p.* 111. —*Marshes.*

ORDER XLV. ILLECEBREÆ. *Br.*

(*Paronychiæ Aug. Juss.*)

Cal. of one leaf, 5-parted or nearly so. *Pet.* 5 inserted into the cal., often resembling scales or barren filaments, sometimes wanting. *Stam.* definite, rarely more or less than 5, distinct. *Anthers* round. *Style* 1 and *Stigma* simple or divided; or *styles* and *Stigmas* several. *Fruit* capsular, sometimes 1-seeded, closed or opening at the top, sometimes 1-celled, many-celled, with many valves at the top. *Seeds* in the monospermous genera often suspended by a chord originating in the base of the capsule; in those with many seeds placed on a central, little elevated *placenta.* *Embryo* mostly curved and subcylindrical, placed on the outside of a farinaceous albumen, with a radicle ascending and pointing towards the hilum; in a few scarcely curved, with an inferior radicle.

Herbs or *Undershrubs,* with opposite branches. *Leaves* sometimes opposite with stipules and stalks; sometimes connate and sessile without stipules. *Flowers* terminal or axillary, naked or with scarious bracteæ. *Juss.*

1. SCLERANTHUS.

Cal. tubular, contracted at the neck, above 5-cleft. *Pet.* 0. *Stam.* mostly 10 placed in the top of the calyx. *Styles* and *Stigmas* 2. *Capsule* 1-seeded.

1. S. *annuus,* "cal. of the fruit spreading acute, stems patent." *p.* 133.—*Cornfields.*

2. S. *perennis,* "cal. of the fruit closed obtuse, stems procumbent." *p.* 133.—*Sandy places.*

ORDER XLVI. ROSACEÆ. *Juss.*

Cal. superior or inferior, divided. *Cor.* polypetalous, sometimes

wanting. *Stamens* indefinite, rarely definite, inserted into a disk encircling the mouth of the calyx. *Anthers* small, roundish. *Ovary* 1, many-celled, many-styled; or 1-celled, 1-styled; or *Ovaries* numerous, 1-celled, 1-styled. *Styles* lateral. *Fruit* an apple in those with an inferior ovary; in the rest an aggregation of *Achenia* or *follicles*, inclosed within the calyx tube, which is sometimes fleshy; attached to a more or less exserted *receptacle*. *Seeds* ascending or suspended. *Embryo* straight, without albumen. *Radicle* laterally opposite the hilum. *Cotyledons* broad.

Trees or *Herbs* with alternate leaves and stipules.

SECT. I. POMACEÆ. *Fruit inferior, seed ascending.*

1. PYRUS.

Cal. 5-cleft. *Apple* with from 2—5 two-seeded cells. *Testa* cartilaginous.

1. P. *Malus*, leaves ovate acute serrated, flowers in a sessile umbel. *p.* 151.—*Woods and hedges.*
2. P. *aucuparia*, leaves pinnated glabrous on both sides, flowers corymbose. *p.* 151.—*Woods.*
3. P. *Aria*, leaves ovate cut and serrated white and downy beneath, flowers corymbose. *p.* 152.—*Woods.*

2. CRATÆGUS.

Cal. persistent. *Fruit* closed, with from 2—5 2-seeded *nuts*. *Testa* membranous.

1. C. *Oxyacantha*, spiny, leaves glabrous cleft into three or five deep serrated segments the lower ones spreading, flowers corymbose, styles 1—2. *p.* 151.—*Woods and hedges.*

SECT. II. ROSACEÆ. *Achenia superior, inclosed in a fleshy urceolate tube of the calyx, and enveloped in the hairs of the receptacle. Seeds suspended. Stamens indefinite.*

1. ROSA.

* PIMPINELLIFOLIÆ. *Setigerous, with arms crowded, nearly uniform, or unarmed; mostly without bracteas. Leaflets ovate or oblong. Segments of the cal. connivent, persistent. Disk scarcely any.*

1. R. *rubella*, arms crowded equal, fruit elongate pendulous. *p.* 152.—*Banks of rivers.*
2. R. *spinosissima*, arms unequal, leaflets plane without pubescence simply serrated. *p.* 154.—*Pastures.*
3. R. *involuta*, arms very unequal and crowded, leaflets doubly serrated, petals convolute, fruit bristly. *p.* 154.—*Mountains.*
4. R. *Sabini*, bristles few and prickles unequal distant, leaflets doubly serrated tomentose, segments of the calyx compound.

β. *Doniana*, bristles scarcely any, prickles nearly straight. *p.* 155. —*Scotland.* β. *Mountains.*

** Villosæ. *Root-shoots straight, prickles nearly so. Leaflets ovate or oblong, with their serratures spreading. Leaflets of the calyx connivent, persistent; disk of the calyx thickened, closing over the mouth.*

5. R. *villosa*, leaflets elliptical obtuse, fruit very large with numerous rigid crowded bristles, segments of the calyx viscid hispid. *p.* 155.—*Woods.*

6. R. *tomentosa*, leaflets ovate rather acute, fruit hispid or naked.

α. *vera*, shoots bent, segments of the calyx compound.

β. *mollis*, shoots straight, segments of the calyx subsimple. *p.* 156.—α. *Sea-side.* β. *Banks of rivers.*

*** Rubiginosæ. *Prickles unequal, sometimes setiform, rarely (if ever) none. Leaflets ovate or oblong, glandular, with the serratures divergent. Segments of the calyx persistent. Disk incrassated. Shoots bent.*

7. R. *rubiginosa*, prickles hooked, leaflets rugose opaque, calyces and peduncles hispid.

α. *vulgaris*, prickles strong very unequal, styles hairy, fruit ovate or oblong.

ϑ. *inodora*, prickles very much hooked nearly equal, leaflets less glandular, segments of the calyx deciduous before maturity. *p.* 157.—α. *Hedges.* ϑ. *Edinburgh.*

**** Caninæ. *Prickles equal, hooked. Leaflets ovate, without glands; serratures connivent. Segments of the calyx deciduous. Disk incrassated, closing over the mouth of the tube. The larger shoots bent.*

8. R. *canina*, leaflets rigid ovate, ovaries 20—30.

ε. *dumetorum*, leaves hairy on both sides, segments of the cal. and peduncles smooth.

ζ. *cæsia*, leaflets cæsious hairy on both sides, tube of the calyx elliptical. *p.* 157.—*Hedges.* ζ. *Banks of rivers.*

***** Systylæ. *Styles cohering in a lengthened column. Stipules adnate. Habit much like that of the last division.*

9. R. *arvensis*, shoots flagelliform, prickles unequal falcate, leaflets glaucous beneath. *p.* 158.—*Hedges.*

10. R. *systyla*, shoots assurgent, prickles very stout hooked. *p.* 159.—*Hills.*

Sect. III. Potentilleæ. *Achenia superior, attached to an usually fleshy exserted receptacle. Seeds suspended. Stamens indefinite.*

1. GEUM.

Cal. 10-cleft; alternate segments minute. *Petals* 5. *Pericarps* with a long geniculated *awn*. *Receptacle* oblong.

1. G. *urbanum*, flowers erect, awns naked, cauline leaves ternate, radical ones lyrate pinnate. *p.* 165.—*Woods and hedges.*

2. G. *rivale*, flowers drooping, awns feathery, cauline leaves ternate, radical ones interruptedly pinnato-lyrate. *p.* 165.—*Marshes.*

2. AGRIMONIA.

Cal. 5-cleft, with a lobed appendage at its base. *Pet.* 5. *Stam.* 12. *Pericarps* 2 in the bottom of the calyx.

1. A. *Eupatoria*, cauline leaves interruptedly pinnate, terminal leaflet on a footstalk, fruit hispid. *p.* 147.—*Road-sides.*

3. RUBUS.

Cal. 5-cleft. *Fruit* composed of many juicy connate *drupes* on a dry *receptacle.*

1. R. *idæus*, leaves pinnate with 3 or 5 leaflets white and very downy beneath, footstalks channelled, stem nearly erect prickly. *p.* 159.—*Woods.*
2. R. *suberectus*, leaves pinnate with 5 or 7 ovate leaflets hairy beneath, upper ones ternate, stems nearly erect, prickles minute nearly straight. *p.* 159.—*Woods.*
3. R. *cæsius*, leaves ternate very pubescent or hairy beneath, the lateral ones much lobed externally, stem prickly rounded prostrate glaucous, cal. embracing the fruit. *p.* 160.—*Hedges and waste places.*
4. R. *corylifolius*, " leaves of about 5 ovate leaflets, hairy beneath, stems rounded diffuse with scattered nearly straight prickles." *p.* 160.—*Hedges.*
5. R. *fruticosus*, " leaves of about 5 petiolated leaflets hoary with pubescence beneath, prickly upon the angles of the stem, prickles hooked." *p.* 160.—*Woods.*
6. R. *saxatilis*, leaflets 3 slightly downy, runners creeping herbaceous, panicle of few flowers. *p.* 161.—*Mountainous places.*
7. R. *arcticus*, leaflets 3 glabrous obtusely serrated, stem without prickles bearing (mostly) 1 flower, petals roundish notched. *p.* 161.—*Mountainous places.*
8. R. *Chamæmorus*, diœcious, leaves simple lobed, stem without prickles and having a single flower. *p.* 161.—*Mountains.*

4. FRAGARIA.

Cal. 10-cleft; segments alternately smaller. *Pet.* 5. *Pericarps* inserted upon a large, pulpy, deciduous *receptacle.*

1. F. *vesca*, root with creeping scions, hairs of the pedicels appressed sericeous. *p.* 162.—*Woods.*
2. F. *elatior*, " cal. of the fruit reflexed, hairs of the petioles and peduncles all very patent and subdeflexed." *p.* 162.—*Road-sides.*

5. POTENTILLA.

Cal. 10-cleft; segments alternately smaller. *Petals* 5. *Pericarps* roundish, fixed to a small dry *receptacle.*

* *Leaves pinnate.*

1. P. *anserina*, leaves interruptedly pinnate deeply serrate silky beneath, stem creeping, peduncles axillary single-flowered. *p.* 162.—*Meadows.*

** *Leaves digitate.*

2. P. *argentea*, leaves quinate, leaflets cuneiform cut white and downy beneath, their margins revolute, stem decumbent. *p.* 162.—*Barren stony soils.*
3. P. *verna*, radical leaves quinate, leaflets obovate green on both sides sharply serrated hairy beneath and at the edges, petals obcordate longer than the cal., stem decumbent. *p.* 162.—*Rocky pastures.*
4. P. *opaca*, radical leaves of 7 or 5 oblongo-cuneiform deeply serrated hairy leaflets, petals obcordate a little longer than the cal., stem filiform decumbent. *p.* 163.—*Scotland.*
5. P. *aurea*, radical leaves quinate those of the stem ternate, leaflets wedge-shaped their margins with silky hairs deeply serrated at the extremity, petals obcordate larger than the cal., stem decumbent. *p.* 163.—*Mountains.*
6. P. *reptans*, leaves quinate, leaflets obovato-cuneiform serrated, peduncles axillary single-flowered longer than the leaf, stem filiform creeping. *p.* 163.—*Meadows and pastures.*

*** *Leaves ternate.*

7. P. *tridentata*, leaves ternate, leaflets oblongo-cuneiform three-toothed at the extremity glabrous above hairy beneath, petals ovate longer than the cal., stem ascending. *p.* 163.—*Rocks.*
8. P. *Fragaria*, leaves ternate, leaflets obovate deeply serrated silky on both sides (especially beneath), petals obcordate as long as the cal., stems procumbent. *p.* 164.—*Woods, banks, and pastures.*

6. TORMENTILLA.

Cal. 8-cleft; segments alternately smaller. *Petals* 4. *Pericarps* roundish, fixed to a small dry *receptacle.*

1. T. *officinalis*, leaves ternate all sessile, leaflets lanceolate inciso-serrate, stem nearly erect dichotomous. *p.* 164.—*Barren places.*
2. T. *reptans*, leaves ternate on footstalks, leaflets obovato-cuneiform inciso-dentate, stem prostrate. *p.* 164.—*Waste places.*

7. COMARUM.

Cal. 10-cleft; segments alternately smaller. *Petals* 5 less than the calyx. *Pericarps* inserted upon a large spongy villous permanent receptacle.

1. C. *palustre. p.* 165.—*Peat bogs and marshes.*

SECT. IV. SANGUISORBEÆ. *Achenia superior, inclosed in the calyx. Seed suspended. Stamens usually definite.*

1. ALCHEMILLA.

Cal. 8-cleft; segments alternately smaller. *Stam.* 1—5. *Pericarp* 1.

1. A. *vulgaris*, leaves uniform plaited many-lobed serrated.

α. *major*, leaves almost smooth.
β. *minor*, much smaller, leaves very pubescent. *p.* 56.—*Pastures.*
2. A. *alpina*, leaves digitate serrated at the extremity white and satiny beneath. *p.* 56.—*Mountains.*
3. A. *arvensis*, leaves trifid pubescent, lobes deeply cut, flowers sessile axillary. *p.* 56.—*Gravelly soils.*

2. DRYAS.

Cal. 8—10-cleft; segments equal. *Petals* 5—8. *Pericarps* with long feathery awns.

1. Dr. *octopetala*, petals 8, leaves simple serrated. *p.* 165.—*Mountains.*

3. POTERIUM.

Monœcious. Barren fl. Cal. of 4 leaves. *Cor.* 4-partite. *Stam.* 30—40. *Fertile fl. Cal.* of 4 leaves. *Cor.* 4-partite. *Pericarps* 2.

1. P. *Sanguisorba*, thorns none, stem somewhat angular, stamens much longer than the cal. *p.* 273.—*Pastures.*

4. SANGUISORBA.

Cal. 4-lobed, coloured, bracteate at the base. *Pericarps* 2, surrounded by the persistent base only of the *cal.*

1. S. *officinalis*, glabrous, spikes ovate, stamens about as long as the perianth. *p.* 54.—*Moist meadows.*

SECT. V. AMYGDALEÆ. *Drupe superior, solitary, naked. Seed suspended. Stamens indefinite.*

1. PRUNUS.

Nut of the *drupe* nearly smooth.

1. Pr. *Padus*, flowers in pendulous racemes, leaves obovate deciduous glabrous with two glands at the summit of the footstalk. *p.* 150.—*Woods.*
2. Pr. *Cerasus*, flowers in nearly sessile umbels, leaves ovato-lanceolate subpubescent beneath. *p.* 150.—*Woods and hedges.*
3. Pr. *domestica*, peduncles solitary or two together, leaves ovato-lanceolate subpubescent beneath, branches without spines. *p.* 150.—*Woods and hedges.*
4. Pr. *insititia*, peduncles in pairs, leaves ovato-lanceolate pubescent beneath, branches ending in a spine. *p.* 150.—*Hedges.*
5. Pr. *spinosa*, peduncles (mostly) solitary, leaves elliptico-lanceolate, subpubescent beneath, branches very spinose. *p.* 151.—*Hedges.*

SECT. VI. SPIRÆÆ. *Follicles superior, few-seeded. Stamens indefinite.*

1. SPIRÆA.

Cal. 5-cleft. *Pericarps* 3—12.

* *Shrubby.*

1. S. *salicifolia*, leaves ovato-lanceolate serrated glabrous, racemes terminal compound. *p.* 152.—*Woods.*

** *Herbaceous.*

2. S. *Filipendula*, leaves interruptedly pinnate, all the leaflets uniform deeply cut or serrated paniculato-cymose. *p.* 152.—*Pastures.*
3. S. *Ulmaria*, leaves interruptedly pinnate serrated downy beneath, terminal leaflet largest and lobed, flowers in compound (and as it were proliferous) cymes. *p.* 152.—*Meadows.*

Order XLVII. LEGUMINOSÆ. *Juss.*

Cal. inferior, 5-cleft or 5-toothed. *Cor.* of 5 petals, papilionaceous. *Stam.* 10, monadelphous, diadelphous or distinct. *Ovary* one, 1-celled. *Style* and *Stigma* 1. *Legumen* 2-valved, dehiscent, or indehiscent. *Placenta* marginal. *Seeds* with or without *albumen*, furnished with a *micropyle*. *Radicle* recurved on the cotyledons, which are large and thick.

Herbs or *Shrubs*. *Leaves* alternate, compound, furnished with general and partial stipules; jointed.

* *Stam. all connected or monadelphous, the tube often cleft above.*

1. GENISTA.

Cal. 2-lipped, upper one with 2, lower one with 3 teeth. *Standard* bent backwards from the rest of the flower. (*Genista* and *Spartium*, *Sm.*)

* *Branches unarmed.*

1. G. *scoparia*, leaves ternate and solitary oblong, flowers axillary shortly pedicellate, legumes hairy at the margin, branches angular. *p.* 211.
2. G. *tinctoria*, leaves lanceolate glabrous, branches rounded striated erect, flowers racemose, legumes glabrous. *p.* 212.

** *Branches spinose.*

3. G. *anglica*, leaves ovato-lanceolate glabrous, spines simple none on the flowering branches, flowers axillary subracemose, legumes glabrous. *p.* 212.

2. ULEX.

Cal. of 2 leaves, with a small scale at the base on each side. *Legume* turgid, scarcely longer than the *cal.*

1. U. *europæus*, cal. teeth obsolete connivent, bracteas ovate lax, branchlets erect. *p.* 212.
2. U. *nanus*, "teeth of the cal. lanceolate spreading, bracteas minute close-pressed, branches reclining," *Sm.* *p.* 212.

3. ONONIS.

Cal. 5-cleft, its divisions linear. *Standard* striated. *Legume* turgid, sessile. *Filaments* in one undivided set.

1. O. *arvensis*, stem hairy, branches at length spinous, flowers mostly solitary, leaves ternate below, the rest simple serrated entire at their base. *p.* 213.

4. ANTHYLLIS.

Cal. inflated, 5-toothed; inclosing the small, roundish, 1—3-seeded *legume*.

1. A. *vulneraria*, leaves pinnated unequal, heads of flowers in pairs. *p.* 213.

** *Stam. diadelphous, nine united and one free.*

† *Style more or less pubescent beneath the stigma.*

5. OROBUS.

Style linear, cylindrical, downy above. *Cal.* obtuse at the base, its upper segments deeper and shorter.

1. O. *tuberosus*, leaves pinnated with 3—4 pairs of lanceolate leaflets glaucous beneath, stipules semisagittate toothed at the base, stem simple erect. *p.* 213.
2. O. *niger*, leaves pinnated with 4—6 pairs of ovate or elliptical leaflets, stem branched angular erect[a].—*Rocks by the side of the Isla, den of Airly.*
3. O. *sylvaticus*, leaves pinnate hairy with 7—10 pairs of ovato-oblong acute leaflets, stipules semisagittate, stem branched decumbent hairy. *p.* 213.

6. LATHYRUS.

Style plane, downy above, broader upwards. *Cal.* with its 2 upper segments shortest.

1. L. *pratensis*, peduncles 2—8-flowered, tendrils with two lanceolate 3-nerved leaflets, stipules sagittate as large as the leaves. *p.* 213.
2. L. *sylvestris*, peduncle 4—5-flowered, tendrils with 2 ensiform leaflets, stem winged. *p.* 214.
3. L. *latifolius*, peduncles many-flowered, tendrils with 2 ovato-elliptical mucronated leaflets, stem winged. *p.* 214.
4. L. *palustris*, peduncles from 3—6-flowered, tendrils with 2—4 pairs of linear-lanceolate acute leaflets, stipules semisagittate lanceolate, stem winged. *p.* 214.

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[a] This has lately been communicated to me by Mr. Drummond of Forfar, who has had the good fortune to discover it, truly wild, at Airly, 10 miles west of Forfar.

7. VICIA.

Style bearded beneath the *stigma.*

* *Peduncles lengthened, many-flowered.*

1. V. *sylvatica*, peduncles many-flowered longer than the leaves, leaflets elliptico-oblong mucronate, stipules lunate deeply toothed at their base. *p.* 214.
2. V. *Cracca*, peduncles many-flowered longer than the leaves, flowers imbricated, leaflets lanceolate slightly hairy, stipules semisagittate nearly entire. *p.* 215.

** *Flowers axillary, nearly sessile.*

3. V. *sativa*, flowers sessile subbinate, legumes nearly erect, lower leaves retuse, stipule toothed impressed with a dark spot, seeds smooth. *p.* 215.
4. V. *lathyroides*, flowers sessile solitary, legumes glabrous, leaves generally in 3 pairs lower ones retuse, stipules entire, seeds tuberculated. *p.* 215.
5. V. *lutea*, flowers sessile solitary, legumes reflexed hairy, stem diffuse, stipules coloured, standard glabrous. *p.* 215.
6. V. *sepium*, flowers mostly in fours subpetiolate, legumes upright glabrous, leaflets ovate obtuse gradually smaller upwards upon the petiole. *p.* 215.

8. ERVUM.

Stigma capitate, hairy all over on the outside.

1. E. *hirsutum*, peduncles many-flowered, legumes hairy 2-seeded, leaflets linear oblong truncate. *p.* 216.
2. E. *tetraspermum*, peduncles 2-flowered, legumes glabrous 4-seeded, leaflets linear-oblong obtuse. *p.* 216.

† *Style glabrous.*

+ *Legume more or less jointed.*

9. ORNITHOPUS.

Legume jointed, curved, cylindrical.

1. O. *perpusillus*, leaves pinnated with 6—9 pairs of leaflets and a terminal one, flowers capitate bracteated, legumes curved upwards. *p.* 216.

10. HIPPOCREPIS.

Legume compressed, submembranaceous, with many deep notches in one of its edges.

1. H. *comosa*, legumes 5—8 clustered pedunculated curved scabrous sinuated at each margin. *p.* 216.

++ *Legume of 2 longitudinal cells, more or less complete.*

11. ASTRAGALUS.

Legume 2-celled, more or less gibbous.

* *Keel of the cor. terminating in a straight point; upper suture of the legume with its margins introflexed.* (*Oxytropis, Decand.*)

1. A. *uralensis*, silky, stem none, scape longer than the leaves, legumes erect ovato-cylindraceous inflated pubescent 2-celled, style persistent. *p.* 216.
2. A. *campestris*, somewhat silky, stemless, scape about the same length as the leaves, legumes erect ovate inflated pubescent semibilocular. *p.* 217.

** *Keel of the cor. obtuse. Legume with the lower suture having its margins introflexed.* (*Astragalus, Decand.*)

3. A. *hypoglottis*, stem prostrate, leaflets slightly emarginate, legumes erect capitate hairy their cells 1-seeded. *p.* 217.
4. A. *glycyphyllos*, stem prostrate, legumes somewhat triangular curved sessile glabrous, leaves longer than the peduncles, leaflets oval. *p.* 217.

\+++ *Legume of* 1 *cell, one- or many-seeded, not jointed.*

* *Flowers racemose* (*Melilotus, Decand.*).

12. TRIFOLIUM.

Legume (in general) shorter than the *cal.*, 1- or many-seeded, indehiscent, deciduous.

* *Flowers racemose.*

1. Tr. *officinale*, legumes racemed naked 2-seeded rugged, stipules lanceolato-subulate undivided, leaflets obovato-oblong toothed, stem erect. *p.* 217.

** *Flowers more or less capitate.*

† *Legumes naked, many-seeded.*

2. Tr. *ornithopodioides*, legumes naked subternate with about 8 seeds twice as long as the cal., leaflets obcordate toothed at the extremity, stems decumbent. *p.* 218.

†† *Legumes covered by the cal., many-seeded.*

3. Tr. *repens*, heads umbellate, legumes with 4 seeds, cal. teeth unequal, leaflets obcordate serrulate, stem creeping. *p.* 218.

††† *Legumes covered by the cal.,* 1*-seeded.*

\+ *Cal.* (*hairy*) *not inflated after flowering. Standard of the cor. deciduous.*

4. Tr. *pratense*, " heads dense ovate, lower tooth of the cal. shorter than the tube of the monopetalous unequal cor., leaflets oval nearly entire, stem ascending," *Willd.*
5. Tr. *medium*, " heads lax somewhat globose solitary, lower tooth of the cor. as long as the tube of the monopetalous nearly equal cor., leaflets elliptical minutely serrated and striated with veins, stem branched zigzag," *Willd.*

6. Tr. *arvense*, heads very hairy subcylindrical, cal. teeth setaceous longer than the cor., leaflets narrow-obovate. *p.* 219.
7. Tr. *scabrum*, heads terminal and axillary sessile ovate, cal. teeth unequal narrow lanceolate rigid at length recurved, leaflets obcordate serrulate. *p.* 219.
8. Tr. *striatum*, heads terminal and axillary ovate subsolitary subsessile, cal. striated hairy with unequal straight teeth, leaflets obcordate nearly entire pubescent. *p.* 219.

+-+ *Cal. remarkably inflated after flowering. Standard of the cor. deciduous.*

9. Tr. *fragiferum*, heads upon long stalks roundish, cal. after flowering inflated membranaceous pubescent 2 of the teeth setaceous reflexed, stems creeping, leaflets obcordate serrated. *p.* 219.

+-+-+ *Standard of the cor. persistent, scariose, enveloping the fruit. (Flowers yellow.)*

10. Tr. *procumbens*, "spikes oval imbricated, standard deflexed persistent sulcated, stems procumbent, leaflets obovate," *Sm.*
11. Tr. *minus*, "spikes capitate hemisphærical, peduncles straight, standards smoothish, stems procumbent, petiole lengthened upwards," *Sm. p.* 220.
12. Tr. *filiforme*, "heads lax of few flowers, peduncles capillary flexuose, standards smooth, stems procumbent, leaflets subsessile," *Sm.*

13. LOTUS.

Legume cylindrical, straight. *Wings* of the *cor.* cohering by their upper edge. *Filaments* dilated upwards.

1. L. *corniculatus*, heads depressed, stems decumbent, legumes cylindrical patent. *p.* 220.

14. MEDICAGO.

Legume falcate or spirally twisted, compressed, membranaceous.

1. M. *sativa*, peduncles racemed, legumes smooth spirally twisted, stipules entire, leaflets long toothed. *p.* 220.
2. M. *lupulina*, spikes oval, legumes reniform 1-seeded, stipules entire, leaflets obovate. *p.* 220.

ORDER XLVIII. RHAMNEÆ. *Juss.*

Cal. more or less inferior, 4—5-parted, with a valvular *æstivation*. *Petals* 4—5. *Stamens* 4—5, opposite to and often hooded by the cucullate *petals*. *Ovarium* 2—3-celled. *Ovulum* solitary, erect. *Fruit* baccate, capsular, or drupaceous. *Embryo* in the axis of a fleshy albumen.

Shrubs or *Trees*. *Leaves* simple, alternate, stipulate.

1. RHAMNUS.

Cal. urceolate, 4—5-cleft. *Berry* 2—4-celled, 2—4-seeded.

1. Rh. *catharticus*, spines terminal, flowers 4-cleft diœcious, leaves ovate sharply serrated. *p.* 80.—*Dumfries.*
2. Rh. *Frangula*, unarmed, flowers perfect, leaves obovate smooth entire. *p.* 81.—*Woods.*

Order XLIX. CELASTRINÆ. *Br.*

Cal. inferior, 4—5-parted, with an imbricate *æstivation*. *Petals* 4—5. *Stamens* as many, alternate with the *petals*, and having a doubtfully perigynous insertion. *Ovarium* 2—4-celled, 1—many-seeded; *ovules* erect, rarely pendulous. *Style* 1—4. *Pericarp* capsular or closed (baccate, drupaceous, or winged). *Seeds* with an *arillus* in the capsular genera. *Embryo* in the axis of a fleshy albumen.

Shrubs or *Trees*. *Leaves* simple (rarely compound), alternate, or opposite. *Stipules* generally minute, sometimes absent. *Br.*

1. EUONYMUS.

Cal. plane, 4—5-cleft. *Caps.* with 5 angles, 5-celled, 5-valved. *Seeds* covered by a coloured *arillus*.

1. E. *europæus*, flowers mostly tetrandrous, peduncles compressed, many-flowered, leaves ovato-lanceolate on short footstalks, branches smooth. *p.* 81.—*Hedges.*

2. ILEX.

Cal. 4—5-toothed. *Cor.* rotate, 4—5-cleft. *Stigmas* 4, sessile. *Drupe* sphærical. *Nuts* 4, 1-seeded. (Some flowers without *pistil.*)

1. I. *aquifolia*, leaves ovate acute spinous. *p.* 57.—*Woods.*

Sect. III. *Petals hypogynous.*

Order L. HYPERICINÆ. *Juss.*

Cal. 4—5-parted. *Pet.* 4—5. *Stam.* indefinite, polyadelphous. *Anthers* roundish. *Ovary* simple. *Styles* and *Stigmas* several. *Capsule* dry or baccate, 1- or many-celled, many-valved. *Cells* formed by the introflexed margins of the valves. *Seeds* very numerous, minute, attached to parietal or axile placentas. *Embryo* straight, without albumen. *Cotyledons* very short.

Herbs or *Shrubs*. *Leaves* opposite. *Flowers* in opposite corymbs, often terminal. *Juss.*

1. HYPERICUM.

Cal. 5-partite. *Pet.* 5. *Filaments* united at the base into 3—5 bundles. *Styles* 2—3—5. *Stigmas* as many. *Cells* of the fruit 2—3—5.

* *Styles* 5.

1. H. *calycinum*, styles 5, flowers solitary, segments of the cal. unequal obovate obtuse, leaves oblong, stem shrubby branched square. *p.* 221.—*Woods.*

+ *Styles* 3.

† *Cal. segments entire at the margins.*

2. H. *Androsæmum*, styles 3, capsule pulpy, stem shrubby compressed, cal. leaflets unequal, leaves ovate sessile. *p.* 221.—*Woods.*
3. H. *quadrangulum*, styles 3, stem herbaceous 4-angular somewhat branched, leaves ovate with pellucid dots, cal. leaves lanceolate. *p.* 221.—*Pastures.*
4. H. *perforatum*, styles 3, stem compressed, leaves elliptico-oblong obtuse with pellucid dots, cal. leaves lanceolate. *p.* 221. —*Woods.*
5. H. *dubium*, stem obsoletely quadrangular, leaves elliptical ovate obtuse destitute of pellucid dots, cal. leaves elliptical. *p.* 221.—*Woods.*
6. H. *humifusum*, styles 3, flowers terminal subcymose, stems compressed prostrate, leaves oblong obtuse glabrous. *p.* 222. —*Gravelly pastures.*

†† *Margins of the segments of the cal. fringed with glandular serratures.*

7. H. *montanum*, styles 3, flowers paniculato-corymbose, cal. with glandular serratures, stem erect rounded smooth, leaves ovate glabrous. *p.* 222.—*Mountainous woods.*
8. H. *barbatum*, styles 3, corymbs terminal, cal. fringed with long pedunculated glands, stem erect rounded, leaves ovate with (black) scattered dots beneath. *p.* 222.—*Woods.*
9. H. *hirsutum*, styles 3, cal. with (black) glandular serratures, stem erect rounded pubescent, leaves ovate slightly downy beneath. *p.* 222.—*Woods and thickets.*
10. H. *pulchrum*, styles 3, cal. with (black) glandular serratures, stem erect, leaves cordate glabrous amplexicaul. *p.* 222. —*Woods and heaths.*
11. H. *elodes*, styles 3, cal. with (reddish) glandular serratures glabrous, leaves roundish pubescent, stem rounded creeping. *p.* 223.—*Bogs.*

ORDER LI. ACERACEÆ. *Juss.*

Cal. monophyllous. *Pet.* definite, rarely none, inserted round

an hypogynous disk. *Stam.* definite, generally different in number from the petals, inserted into the middle of the same disk. *Ovary* simple, placed on the disk. *Style* and *Stigma* one; rarely double. *Fruit* of many cells or many capsules; the cells or capsules 3 or 2, each containing one or at the most 3 suspended seeds. *Embryo* without albumen, its *radicle* bent back upon the *cotyledons*.

Trees or *Shrubs*. *Leaves* opposite, without stipules. *Flowers* in racemes or corymbs. *Juss.*

1. ACER.

Cal. 5-cleft. *Pet.* 5. *Stam.* 8. *Ovary* 2-lobed. *Samaræ* 2, united at the base, 1-celled, 1—2-seeded.

1. A. *pseudo-Platanus*, leaves 5-lobed unequally serrated, racemes pendulous subtomentose. *p.* 120.—*Plantations.*
2. A. *campestre*, lobes of the leaves mostly 5 inciso-crenate, racemes upright subtomentose. *p.* 120.—*Woods.*

Order LII. TILIACEÆ. *Juss.*

Cal. 5-parted. *Pet.* 5. *Stamens* indefinite. *Ovary* 1, with 5 cells. *Ovules* definite, peltate. *Style* 1. *Stigma* obscurely 5-lobed. *Pericarp* by abortion with 1 cell and 1 seed. *Seeds* peltate. *Embryo* transverse in the axis of a farinaceous albumen. *Cotyledons* foliaceous, lobed. *Radicle* inferior.

Trees. *Leaves* alternate, with stipules. *Flowers* in corymbs. *Mirb.*

1. TILIA.

Cal. deciduous. *Pet.* 5. *Pericarp* coriaceous, 5-celled, without valves. *Cells* 2-seeded.

1. T. *europæa*, flowers destitute of nectary, leaves cordate acuminate serrated, pericarp ribbed woody. *p.* 170.—*Walks and avenues.*

Order LIII. MALVACEÆ. *Juss.*

Cal. 5-cleft, calyculate. *Cor.* of 5 petals, regular. *Stam.* indefinite, monadelphous, often bearing the petals on their base. *Anthers* reniform. *Ovary* 1. *Style* 1. *Stigmas* several. *Fruit* composed either of many cells and many valves which bear the septa in their middle, or of many capsules which are either dehiscent or indehiscent; united into a compact body or placed in a whorl round the base of the style. *Seeds* solitary, ascending. *Albumen* mucilaginous, not abundant. *Embryo* curved. *Cotyledons* foliaceous, plaited.

Herbs or *Shrubs* or *Trees*. *Leaves* alternate, with stipules. *Flowers* axillary. *Mirb. Juss.*

1. LAVATERA.

Cal. double, exterior 3-cleft. *Styles* many. *Capsules* numerous, circularly arranged, 1-seeded.

1. L. *arborea*, stem arborescent, leaves with about 7 angles downy plaited, peduncles axillary clustered single-flowered. *p.* 209.—*Rocks.*

2. MALVA.

Cal. double, exterior of 3 leaves. *Styles* many. *Capsules* numerous, circularly arranged, 1-seeded.

1. M. *sylvestris*, stem erect herbaceous, leaves with 7 rather acute lobes, peduncles and petioles hairy. *p.* 208.—*Waste places.*
2. M. *rotundifolia*, stem prostrate, leaves roundish cordate 5-lobed, fruitstalks bent down. *p.* 208.—*Waste places.*
3. M. *moschata*, stem erect, radical leaves reniform in 5 or 7 broad incised lobes, cauline one 5-partite pinnato-multifid, segments linear, cal. hairy, leaflets of the ext. cal. linear. *p.* 209.—*Meadows and pastures.*

3. ALTHÆA.

Cal. double, exterior of 9 leaves. *Styles* several. *Capsules* numerous, circularly arranged, 1-seeded.

1. A. *officinalis*, leaves oblongo-ovate slightly 3—5-lobed serrated. *p.* 208.—*Marshes.*

Order LIV. GERANIACEÆ. *Juss.*

Cal. inferior, 5-leaved. *Cor.* 5-petaled, regular or irregular. *Stamens* 10, sometimes monadelphous. *Ovary* 1. *Style* 1. *Stigmas* 5. *Capsule* 3-celled, 3-valved, valves separating with elasticity from their axis and remaining attached by their indurated persistent style. *Seeds* one in each cell, erect, without albumen. *Embryo* doubled.

Herbs with alternate stipulated leaves. *Mirb.*

1. ERODIUM.

Monogynous. *Cal.* of 5 leaves. *Cor.* of 5 petals. Nectariferous *glands* 5. Imperfect *filaments* 5, alternating with the 5 perfect *stamens*. *Fruit* beaked, separating into 5 1-seeded capsules, each with a long spiral awn bearded in the inside.

1. E. *cicutarium*, peduncles many-flowered, leaves pinnate, leaflets sessile pinnatifid and cut, petals longer than the cal., stem prostrate hairy. *p.* 205.—*Waste grounds.*

2. GERANIUM.

Monogynous. Cal. of 5 leaves. *Cor.* of 5 regular petals. Nectariferous *glands* 5. *Stamens* 10. *Fruit* beaked, separating into 5 monospermous capsules, each tipped with a long, naked, simple awn (neither spiral nor bearded).

* *Peduncles* 1-*flowered.*

1. G. *sanguineum*, peduncles 1-flowered, leaves nearly orbicular in 5—7 deep lobes each of which is trifid. *p.* 206.—*Rocks.*

** *Peduncles* 2-*flowered. Roots perennial.*

2. G. *Phæum*, peduncles 2-flowered opposite the leaves, cal. slightly awned, petals waved, capsules keeled hairy below wrinkled above, stem erect. *p.* 206.—*Woods.*
3. G. *sylvaticum*, peduncles 2-flowered, leaves subpeltate with 5 or 7 deep and acute lobes which are cut and serrated, stem erect corymbose, petals slightly notched, capsules keeled hairy (not wrinkled). *p.* 206.—*Thickets.*
4. G. *pratense*, peduncles 2-flowered, leaves 5-partite, lobes multipartite all the segments acute, capsules hairy smooth (not wrinkled). *p.* 206.—*Pastures.*
5. G. *pyrenaicum*, peduncles 2-flowered, leaves reniform 5—7-lobed, lobes oblong obtuse trifid and toothed at the extremity, stem erect branched, petals deeply notched twice as long as the cal. *p.* 206.—*Waste places.*

*** *Peduncles* 2-*flowered. Root annual.*

6. G. *lucidum*, peduncles 2-flowered, leaves roundish 5-lobed, lobes trifid and notched obtuse, calyces pyramidal angular dentato-tuberculate, capsules wrinkled. *p.* 207.—*Rocks and walls.*
7. G. *robertianum*, peduncles 2-flowered, leaves ternate or quinate, leaflets pinnatifid, segments mucronate, cal. angular hairy, capsules wrinkled. *p.* 207.—*Woods.*
8. G. *molle*, peduncles 2-flowered, leaves rounded or reniform lobed and cut downy, petals notched scarcely longer than the cal., capsules transversely wrinkled, seeds smooth. *p.* 207.—*Waste places.*
9. G. *rotundifolium*, peduncles 2-flowered, leaves rounded or reniform lobed and cut downy, petals entire the length of the cal., capsules smooth (not wrinkled) hairy, seeds punctate. *p.* 207.—*Waste places.*
10. G. *pusillum*, peduncles 2-flowered, flowers pentandrous, petals notched, leaves rounded or reniform in 5—7 deep lobes, lobes trifid, capsules smooth carinated downy with erect appressed hairs, seeds smooth. *p.* 207.—*Waste grounds.*
11. G. *dissectum*, peduncles 2-flowered, petals notched rather longer than the much awned cal., leaves 5-partite, lobes trifid

or laciniated linear, capsules smooth hairy, seeds punctate. *p.* 208.—*Hedges.*

12. G. *columbinum*, peduncles 2-flowered shorter than the leaves which are 5-partite, the lobes divided into many acute segments, petals entire as long as the much awned cal., capsules smooth glabrous, seeds punctate. *p.* 208.—*Pastures.*

Order LV. OXALIDEÆ. *Br.*

Cal. inferior, 5-leaved; imbricated in æstivation. *Petals* 5, regular, unguiculate. *Stamens* 10, monadelphous, alternately shorter. *Capsule* rostrate, 5-celled, 10-valved, 2—many-seeded. *Valves* cohering by the axis. *Seeds* suspended, thrown out of the capsule by the elastic rupture of the outer coat of the testa. *Embryo* in the axis of a fleshy albumen. *Cotyledons* flat.

Herbs with many parted, rarely simple leaves.

1. OXALIS.

Cal. 5-partite. *Cor.* of 5 petals. *Caps.* angular, 5-celled. *Cells* 2- or many-seeded. *Seeds* with an elastic arillus.

1. O. *Acetosella*, leaves all radical ternate inversely heart-shaped hairy, scape single-flowered, root squamose. *p.* 141.—*Woods and hedge-banks.*

2. O. *corniculata*, stem branched spreading, flowers single or subumbellate shorter than the petioles, leaves ternate obcordate pubescent. *p.* 141.—*Old walls.*

Order LVI. BALSAMINEÆ. *Juss.*

Cal. deciduous, 3-leaved, with one leaf larger than the rest, and elongated into a spur. *Petals* very unequal, the two lowest the largest. *Stamens* 5. *Anthers* cohering. *Ovary* 5-celled, many-seeded. *Stigma* sessile, simple. *Capsule* 5-celled, 5-valved, many-seeded. *Valves* bearing the dissepiments in their middle, and separating with elasticity when ripe. *Seeds* suspended. *Embryo* of the same form as the seed. *Cotyledons* thick, ovate, convex. *Radicle* very small, superior. *Albumen* none.

Herbs with opposite or alternate leaves. *Flowers* axillary.

1. IMPATIENS.

1. I. *Noli-me-tangere*, joints of the stem swelling, leaves ovate serrated petiolate, peduncles solitary many-flowered. *p.* 76.—*Moist groves.*

ORDER LVII. LINEÆ. *Decand. Théorie.*

Part of Caryophylleæ. Juss.

Cal. 5-cleft. *Pet.* 5. *Stamens* definite, often monadelphous. *Ovary* 1. *Styles* many, each with one stigma. *Stigmas* oblique. *Capsule* many-celled, many-valved. *Seeds* definite, pendulous. *Embryo* in the axis of an oleaginous albumen, straight. *Cotyledons* foliaceous. *Radicle* superior.

Herbs. Leaves opposite. *Flowers* usually terminal.

1. LINUM.

Cal. persistent. *Petals* 5. *Stamens* 5. *Styles* 5. *Caps.* globose, mucronate, 10-celled. *Seeds* ovate, compressed.

1. L. *usitatissimum*, leaves lanceolate alternate, cal. leaves acute 3-nerved, petals crenate, stem subsolitary. *p.* 97.—*Corn-fields.*
2. L. *catharticum*, leaves opposite oblong, stem dichotomous above, petals acute. *p.* 97.—*Dry pastures.*

2. RADIOLA.

Cal. many-cleft. *Pet.* 4. *Stam.* 4. *Styles* 2. *Capsule* 8-valved, 8-celled. *Seeds* solitary.

1. R. *millegrana. p.* 60.—*Moist gravelly soils.*

ORDER LVIII. CARYOPHYLLEÆ. *Juss.*

Cal. many-cleft. *Pet.* definite. *Stam.* definite, fewer than or equal in number to the petals, these alternate with them, or twice as many, those opposite them being inserted into the base of the petals. *Ovary* 1. *Styles* 2—5, each with one oblique stigma. *Capsule* 1-celled, many-valved, many-seeded. *Placenta* in the axis, or parietal. *Embryo* curved or spiral. *Albumen* farinaceous.

Herbs. Leaves opposite, connate or verticillate, rarely with stipules. *Flowers* often terminal, sometimes axillary.

DIV. I. CARYOPHYLLEÆ. *Cal. monophyllous, tubular, with 4—5 teeth.*

1. SAPONARIA.

Cal. monophyllous, tubular, 5-toothed, destitute of scales at the base. *Pet.* 5, clawed. *Stam.* 10. *Styles* 2. *Caps.* oblong, 1-celled.

1. S. *officinalis*, leaves ovato-lanceolate, calyces cylindrical glabrous. *p.* 134.—*Road-sides.*

2. DIANTHUS.

Cal. monophyllous, tubular, 5-toothed, with about 4 imbricated

opposite scales at the base. *Pet.* 5, clawed. *Stam.* 10. *Styles* 2. *Caps.* cylindrical, 1-celled.

* *Flowers clustered.*

1. D. *Armeria*, flowers clustered fascicled, calyx-scales lanceolate downy as long as the tube. *p.* 134.—*Fields.*

** *Flowers solitary, many on the same stem.*

2. D. *deltoides*, flowers solitary, cal. scales mostly 2 lanceolate acute, petals notched. *p.* 134.—*Rocks.*

3. SILENE.

Cal. monophyllous, tubular, often ventricose, 5-toothed. *Pet.* 5, clawed, mostly crowned at the mouth, and the limb generally notched or bifid. *Stam.* 10. *Styles* 3. *Caps.* 3-celled, 6-toothed, many-seeded.

* *Cal. glabrous.*

1. S. *inflata*, flowers panicled, cal. inflated glabrous reticulated with veins, leaves ovate. *p.* 134.—*Pastures and sea-coast.*
2. S. *acaulis*, cæspitose, leaves linear ciliated at the base, peduncles solitary single-flowered, petals slightly notched crowned. *p.* 135.—*Alps.*

** *Cal. pubescent.*

3. S. *nutans*, flowers panicled secund cernuous, petals deeply bifid their segments linear, leaves (of the stem) lanceolate pubescent. *p.* 135.—*Rocks, rare.*
4. S. *noctiflora*, cal. with 10 angles veined, teeth nearly as long as the tube, stem dichotomous. *p.* 135.—*Corn-fields.*

4. LYCHNIS.

Cal. monophyllous, tubular, 5-toothed. *Pet.* 5, clawed, crowned at the orifice, their limb divided. *Stam.* 10. *Styles* 5. *Caps.* opening with 5 or more teeth, 1- or 5-celled.

1. L. *Flos Cuculi*, flowers loosely panicled, petals 4-cleft, caps. roundish 1-celled. *p.* 141.—*Meadows.*
2. L. *Viscaria*, petals slightly notched at the extremity, caps. 5-celled, stem clammy at the joints. *p.* 142.—*Rocks, rare.*
3. L. *alpina*, glabrous, petals bifid, flowers corymboso-capitate, capsule 1-celled. *p.* 142.—*Alps, rare.*
4. L. *dioica*, flowers diœcious, caps. 1-celled. *p.* 142.—*Hedges.*

Div. II. Alsineæ. *Cal.* 4—5-*leaved, or* 5-*partite to the very base.*

5. AGROSTEMMA.

Cal. monophyllous, tubular, coriaceous, 5-cleft. *Pet.* 5, clawed, their limb undivided. *Caps.* opening with 5 teeth, 1-celled.

1. A. *Githago*, hairy, cal. much longer than the cor., petals entire destitute of a crown. *p.* 141.—*Corn-fields.*

6. SAGINA.

Cal. of 4 leaves. *Petals* 4 (shorter than the *cal.*). *Stam.* 4. *Styles* 4. *Caps.* of 1 cell, 4-valved.

1. S. *procumbens*, perennial glabrous, stems procumbent, leaves shortly mucronate, petals much shorter than the cal., caps. longer than the cal. *p.* 59.—*Gravelly soils.*
2. S. *apetala*, annual subpubescent, stems erect or procumbent only at the base, leaves aristate, petals much smaller than the cal., caps. longer than the cal. *p.* 60.—*Dry gravelly soils.*
3. S. *maritima*, annual glabrous, stems erect or procumbent only at the base, leaves fleshy obtuse, petals none, cal. rather longer than the caps. *p.* 60.—*Sea-coast.*

7. MŒNCHIA.

Cal. of 4 leaves. *Pet.* 4 (as long as the *cal.*). *Caps.* of 1 cell, opening with several teeth at the extremity.

M. *glauca*. *p.* 60.—*Gravelly pastures.*

8. SPERGULA.

Cal. 5-leaved. *Pet.* 5, undivided. *Stam.* 5—10. *Styles* 5. *Caps.* ovate, 5-celled, 5-valved.

1. S. *arvensis*, leaves whorled with minute membranaceous stipules at the base, stalk of the fruit reflexed, seeds more or less margined. *p.* 144.—*Corn-fields.*
2. S. *nodosa*, leaves subulate opposite glabrous connate, the lower ones sheathing, the upper ones bearing clusters of young leaves, petals much longer than the cal. *p.* 145.—*Wet sandy places.*
3. S. *subulata*, leaves subulate subciliated tipped with a bristly point, peduncles solitary very long, petals and capsule as long as the cal. *p.* 145.—*Dry pastures.*
4. S. *saginoides*, glabrous, leaves subulate acute awnless, peduncles solitary very long, flowers drooping, petals as long as the cal., caps. twice as long. *p.* 145.—*Mountains.*

9. CERASTIUM.

Cal. 5-leaved. *Pet.* 5, cloven. *Stam.* 10. *Styles* 5. *Caps.* bursting at the top with 10 teeth (5 in *Cer. aquat.*).

* *Petals not exceeding the cal. in length.*

1. C. *vulgatum*, hairy viscid suberect, leaves ovate, flowers capitate longer than their pedicels. *p.* 142.—*Road-sides, &c.*
2. C. *viscosum*, hairy viscid spreading, leaves oblongo-lanceolate, flowers somewhat panicled shorter than their pedicels. *p.* 142.—*Pastures, &c.*

3. C. *semidecandrum*, hairy viscid suberect, leaves oblongo-ovate, flowers somewhat panicled shorter than their pedicels, stam. 5, petals but slightly notched. *p.* 143.—*Hills and walls.*
4. C. *tetrandrum*, " hairy subviscid, flowers quadrifid tetrandrous, petals bifid shorter than the cal." *p.* 143.—*Walls and sea-shores.*

** *Petals longer than the cal.*

5. C. *arvense*, leaves linear-lanceolate more or less pubescent especially at the base, petals twice as long as the cal. *p.* 143. —*Gravelly pastures.*
6. C. *alpinum*, subglabrous or clothed with long white soft silky hairs, leaves elliptical ovate, flowers 1—3, capsule oblong curved. *p.* 144.—*Alps.*
7. C. *latifolium*, clothed with short rigid yellowish pubescence, leaves elliptical ovate, flowers 1—2, capsules ovate. *p.* 144. *Alps.*
8. C. *aquaticum*, upper leaves cordato-ovate sessile, flowers solitary, fruit pendulous. *p.* 144.—*Watery places.*

10. CHERLERIA.

Cal. of 5 leaves. *Pet.* 5, extremely minute, notched. *Stam.* 10. *Styles* 3. *Caps.* 1-celled, opening with 3 *valves*, many-seeded, *Sm.* (3-celled, *cells* 2-seeded, *Decand.*).

1. Ch. *sedoides*. *p.* 139.—*Alps.*

11. ARENARIA.

Cal. of 5 leaves. *Pet.* 5, undivided. *Stam.* 10. *Styles* 3. *Caps.* 1-celled, many-seeded.

* *Exstipulate. Leaves ovate.*

1. A. *peploides*, leaves ovate acute fleshy. *p.* 137.—*Sea-coast.*
2. A. *trinervis*, leaves ovate acute petiolate 3- (rarely 5-) nerved ciliated, flowers solitary, calyces rough on the keel with 3 obscure ribs. *p.* 137.—*Woods.*
3. A. *serpyllifolia*, leaves ovate acute subscabrous sessile, cal. hairy its outer leaves 5-ribbed. *p.* 138.—*Waste places.*

** *Exstipulate. Leaves subulate.*

4. A. *verna*, stems (numerous) panicled above, leaves subulate rather obtuse striated, petals obovate longer than the 3-nerved cal. *p.* 138.—*Mountain pastures.*
5. A. *tenuifolia*, stem more or less branched, branches panicled at their extremities, leaves subulate acute, petals lanceolate much shorter than the lanceolate very acuminated 3-nerved cal. *p.* 138.—*Walls and rocks, rare.*
6. A. *fastigiata*, stem erect straight, leaves fascicled subulato-setaceous erect, flowers fascicled, cal. much acuminated

(white) with 2 central (green) nerves twice as long as the ovate petals. *p.* 138.—*Mountain rocks, rare.*

**** Stipules at the base of each pair of leaves.*

7. A. *rubra*, stems prostrate, leaves narrow linear acute plane somewhat fleshy tipped with a very minute bristle, stipules ovate cloven, capsule as long as the cal., seeds compressed angular roughish. *p.* 138.—*Gravelly soils.*
8. A. *marina*, stems prostrate, leaves semicylindrical fleshy awnless, stipules ovate cloven, caps. longer than the cal., seeds compressed smooth with a broad membranous pellucid border. *p.* 139.—*Sea-coast.*

12. STELLARIA.

Cal. of 5 leaves. *Pet.* 5, deeply cloven. *Stam.* 10. *Styles* 3. *Caps.* 1-celled, opening with 6 teeth, many-seeded.

1. S. *Nemorum*, leaves petiolate cordate, upper ones ovate sessile, panicle dichotomous. *p.* 135.—*Woods.*
2. S. *media*, leaves ovate, stems procumbent with an alternate line of hairs on one side, petals bipartite, stam. 5—10.—*Waste places.*
3. S. *holostea*, stem nearly erect, leaves lanceolate much acuminated finely serrulate, petals inversely heart-shaped bifid twice as long as the nerveless cal. *p.* 136.—*Woods.*
4. S. *graminea*, stem nearly erect, leaves lanceolate acute entire, panicle much branched, petals very deeply cleft, segments linear scarcely longer than the 3-nerved leaves of the cal. *p.* 136.—*Dry pastures.*
5. S. *glauca*, stems nearly erect, leaves linear-lanceolate entire glaucous, flowers upon long solitary axillary footstalks, petals very deeply cleft, their segments linear much longer than the 3-nerved cal. *p.* 136.—*Marshes.*
6. S. *uliginosa*, stem decumbent ovato-lanceolate entire with a callous tip, flowers in dichotomous panicles, petals bipartite shorter than the cal. *p.* 136.—*Ditches.*
7. S. *cerastoides*, stems decumbent with an alternate hairy line, leaves oblongo-spathulate, peduncles 2—3 mostly terminal and as well as the cal. which is twice as long as the bifid cor. glanduloso-pilose. *p.* 136.—*Alps.*
8. S. *scapigera*, stem shorter than the flowerstalks, leaves linear-lanceolate crowded pubescenti-scabrous at the margin, cal. 3-nerved as long as the petals. *p.* 137.—*Mountains, rare.*

ORDER LIX. SEMPERVIVÆ. *Juss.*

(*Crassulaceæ, Juss.*)

Cal. inferior, of one piece, many-cleft. *Cor.* sometimes monopetalous. *Stamens* either equal in number to the petals and alternate with them, or twice as many, half alternate and half opposite. *Ovaries* equal in number to the *petals*. *Disk* hypogynous. *Follicles* many-seeded. *Seeds* small. *Embryo* in the axis of a fleshy more or less abundant *albumen*. *Radicle* opposite the *hilum*.

Herbs with fleshy opposite or alternate *leaves*. *Flowers* alternate, or in *spikes*, *corymbs*, or *cymes*. *Mirb.*

1. COTYLEDON.

Cal. 5-cleft. *Cor.* monopetalous, tubular, 5-fid. *Caps.* 5, with a nectariferous *scale* at their base.

1. C. *Umbilicus*, leaves peltate crenate depressed in the centre, stem spiked with the numerous racemes of pendulous flowers, upper bracteas minute entire. *p.* 139.—*Rocks and old buildings.*

2. SEMPERVIVUM.

Cal. 12-cleft. *Petals* 12. *Capsules* 12.

1. S. *Tectorum*, leaves ciliated, offsets spreading. *p.* 149.—*House-tops and walls.*

3. SEDUM.

Cal. 4—7-cleft. *Pet.* 5. *Caps.* 5, with a nectariferous *scale* at their base.

* *Leaves plane.*

1. S. *Telephium*, leaves flattish serrated, corymbs leafy, stem erect. *p.* 139.—*Borders of fields, hedges and waste places.*

** *Leaves rounded, fixed by their base.*

2. S. *dasyphyllum*, leaves opposite (alternate on the flowering stem) cordato-ovate obtuse fleshy, stem weak, panicle glutinous. *p.* 140.—*Rocks and walls.*
3. S. *album*, leaves scattered oblong cylindrical obtuse spreading, cyme much branched. *p.* 140.—*Rocks and walls.*
4. S. *villosum*, leaves scattered oblong plane above and as well as the peduncles and stems hairy and viscid. *p.* 140.—*Bogs and moist rocks.*

*** *Leaves rounded, produced below the point of insertion into a kind of spur, which is pressed to the stem.*

5. S. *anglicum*, leaves ovate gibbous fleshy produced at the base alternate, cyme bifid. *p.* 140.—*Walls and rocks.*
6. S. *acre*, leaves ovate gibbous fleshy produced at the base al-

ternate, cyme trifid leafy. *p.* 140.—*Rocks, walls, and stony places.*

7. S. *reflexum*, leaves scattered subulate fleshy produced at the base, flowers subcymose. *p.* 141.—*Walls, roofs of houses and thatched buildings.*

4. RHODIOLA.

Diœcious. *Barren fl. Cal.* 4-partite. *Pet.* 4. *Nectaries* 4, emarginate. *Fertile fl. Cal.* 4-partite. *Pet.* 4. *Nectaries* 4, emarginate. *Caps.* 4, many-seeded.

1. Rh. *rosea. p.* 289.—*Wet rocks.*

Order LX. PORTULACEÆ. *Juss.*

Cal. 2—5-cleft. *Cor.* of 5 *petals* or 5-cleft. *Stam.* definite or indefinite. *Ovary* 1. *Style* 1-, often many-cleft. *Stigmas* 2—5. *Pyxis* 1-celled, many-seeded. *Seeds* attached to a central placenta, albuminous. *Embryo* annular.

Herbs or *Under-shrubs. Leaves* alternate or opposite, often fleshy. *Mirb.*

1. MONTIA.

Cal. of 2 *leaves. Cor.* of 1 *petal. Stam.* 3. *Styles* 3. *Caps.* 3-valved, 3-seeded.

1. M. *fontana. p.* 47.—*Rills, springy and wet places.*

Order LXI. DROSERACEÆ. *Decand.*

(*Part of Capparides, Juss.*)

Cal. 5-cleft, persistent. *Pet.* 5, equal, unguiculate. *Stam.* definite. *Anthers* turned outwards, adnate, in æstivation rolled up with the *styles*. *Pollen* cohering in masses of from 3—5 *granules*. *Ovary* 1-celled, many-seeded. *Placentas* parietal, opposite to the angles of the *ovary*. *Stigmas* simple. *Caps.* 1-celled, half 3—5-valved, many-seeded. *Seeds* very small. *Embryo* round, minute, in the base of a fleshy *albumen*. *Radicle* opposite the *hilum*.

Herbs. Leaves radical. *Flowers* on scapes.

1. DROSERA.

Cal. 5-cleft. *Petals* 5. *Styles* 6. *Caps.* 1-celled, 3—5-valved, many-seeded.

1. D. *rotundifolia*, leaves radical orbicular spreading upon rather a short footstalk, scape with a simple raceme. *p.* 98.—*Bogs.*

2. D. *longifolia*, leaves radical obovate tapering below into a long footstalk erect, scape with a simple raceme. *p.* 98.—*Bogs.*
3. D. *anglica*, leaves radical oblongo-spathulate tapering down into a long footstalk erect, scape with a simple raceme. *p.* 98. —*Bogs.*

Order LXII. CISTEÆ. *Juss.*

Cal. 5-parted. *Petals* 5. *Stamens* indefinite. *Ovary* 1. *Style* and *Stigma* 1. *Capsule* many-seeded, many-valved; sometimes 1-celled, with the *placentas* in their middle; sometimes many-celled, with *dissepiments* proceeding from the middle of the *valves*. *Seeds* numerous, round. *Embryo* recurved or spiral, surrounded with a somewhat fleshy *albumen*. (*Radicle* at the opposite extremity of the *seed* to the *umbilicus*. *Br. MSS.*[a])

Shrubs or *Under-shrubs*. *Leaves* opposite, with or without *stipules*. *Flowers* in *racemes* or *corymbs*. *Mirb.*

1. CISTUS.

Cal. of 5 *leaves*, 2 smaller than the rest. *Pet.* 5. *Caps.* with 3 *valves* and many *seeds*.

1. C. *Helianthemum*, somewhat shrubby procumbent, leaves elliptical oblong somewhat hairy mostly white and pubescent beneath, the margin slightly revolute, stipules lanceolate. *p.* 170. —*Dry pastures.*

Order LXIII. VIOLACEÆ. *Vent.*

Cal. 5-cleft. *Pet.* 5, irregular. *Stam.* 5. *Anthers* often united. *Style* and *Stigma* 1. *Capsule* 1-celled, 3-valved, many-seeded. *Seeds* attached to the middle of the *valves*. *Embryo* in the axis of a fleshy *albumen*. *Radicle* opposite the *hilum*. *Herbs* with alternate *leaves* and *stipules*.

1. VIOLA.

Cal. 5-cleft, the segments produced at the base. Upper *petal* spurred at the base.

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[a] We are obliged to Mr. Brown for the knowledge of this important peculiarity in the structure of the seeds of *Cistus*. The true direction of the radicle had been previously overlooked by carpological botanists, (unless Gærtner intended to indicate it by the term "radicula centripeta" which he applies to *Cistus* and *Helianthemum*,) and, as Mr. Brown has remarked to us, offers, by this curious anomaly, a character by which not only the limits of *Cisteæ* can be positively defined, but which indicates the affinity of *Lechea* and *Hudsonia* to this order, in both which he has observed the same structure.

* *Stigma acute, recurved (stipules entire).*

1. V. *hirta*, stemless, leaves cordate rough, as well as the petioles and capsules, with hairs, cal. obtuse. *p.* 76.—*Woods.*
2. V. *odorata*, stemless throwing out runners, leaves heart-shaped glabrous, as well as the petioles, cal. obtuse. *p.* 77.—*Hedges and banks.*
3. V. *palustris*, stemless, leaves reniform quite smooth veiny beneath, cal. obtuse, spur very short. *p.* 77.—*Bogs.*
4. V. *canina*, stem at length ascending channelled, leaves cordate acute, stipules long dentato-ciliate, cal. acute. *p.* 77.—*Woods and banks.*
5. V. *lactea*, stem ascending, leaves ovato-lanceolate smooth, stipules dentate, cal. acute. *p.* 77.—*Pastures.*

** *Stigma erect, large and perforated (stipules deeply divided).*

6. V. *tricolor*, stem angled branched spreading, leaves oblong deeply crenate, stipules lyrate pinnatifid. *p.* 77.—*Cornfields.*
7. V. *lutea*, stem simple erect, leaves ovato-oblong crenate, stipules deeply lobed palmate. *p.* 77.—*Pastures.*

Order LXIV. POLYGALEÆ. *Juss.*

Cal. 5-parted, equal or unequal, with two segments larger than the rest and coloured. *Pet.* definite, 4, 3, 2, fastened on one side into one, split on the other. *Stam.* often 8, rarely fewer, generally diadelphous, in two equal bundles, inserted either into distinct petals, or into the monopetalous tube. *Anthers* generally 1-celled, opening by a pore at the top. *Style* 1. *Stigma* thickish. *Capsule* or *drupa* generally 2-celled; the capsule with two valves and a dissepiment opposite to them. *Cells* 1-seeded. *Seeds* pendulous usually with an arillus at the hilum. *Embryo* straight in the axis of a fleshy *albumen.*

Shrubs or *Herbs.* *Leaves* without stipules. *Flowers* terminal with bracteæ; rarely axillary. *Juss.*

1. POLYGALA.

Cal. of 5 leaves, two of them wing-shaped and coloured. *Caps.* compressed, obcordate.

1. P. *vulgaris*, flowers in a terminal raceme crested, wings of the cal. nerved obtuse longer than the cor., stem herbaceous procumbent, leaves linear-lanceolate. *p.* 211.—*Pastures.*

Order LXV. CRUCIFERÆ. *Juss.*

Cal. of 4 leaves. *Pet.* 4. *Stam.* 6, tetradynamous, alternate with

the petals; 2 solitary, 4 in 2 pairs. *Ovary* and *Style* 1. *Disk* in the form of hypogynous glands. *Pericarp* (a *Silicule* or *Siliqua*) 2-celled, 2-valved, many-seeded. *Placenta* like a dissepiment, parallel with the valves. *Seeds* without albumen, in two rows in each cell. *Embryo* recurved. *Radicle* opposite the hilum.

Herbs. *Leaves* alternate. *Flowers* in corymbs, spikes, or panicles. *Mirb.*

Div. I. Siliculosæ.

1. CAKILE.

Pouch of 2 single-seeded articulations; upper articulation with an erect sessile seed; the lower one with a pendulous seed (sometimes abortive).

1. C. *maritima*, articulations of the pouch two-edged the upper one sagittate, leaves pinnatifid subdentate fleshy. *p.* 193.

2. CRAMBE.

Pouch with the upper articulation subglobose; its seed inverted, fixed to the base of the cell by its (long, curved) seedstalk; the lower articulation abortive, resembling a pedicel.

1. Cr. *maritima*, the four longer filaments forked, pouch pointless, leaves roundish sinuated waved toothed glaucous and as well as the stem glabrous. *p.* 193.

3. CORONOPUS.

Pouch 2-lobed, without valves, wingless; cells 1-seeded. *Cotyledons* incumbent, linear.

1. C. *Ruellii*, pouch undivided crested with little sharp points. *p.* 193.

4. THLASPI.

Pouch compressed, emarginate; the valves keel-shaped (often winged) many-seeded. *Filaments* without teeth distinct. *Cal.* unequal in its insertion, patent.

1. Th. *arvense*, pouch orbicular, its wings dilated longitudinal, seeds concentrically striated, leaves oblong sagittate toothed glabrous. *p.* 194.
2. Th. *Bursa-Pastoris*, pouch obcordate without wings, radical leaves pinnatifid. *p.* 194.

5. TEESDALIA.

Pouch emarginate, the valves keel-shaped; cells 2-seeded. *Filaments* with a little scale on their inside.

1. T. *nudicaulis*. *p.* 194.

6. LEPIDIUM.

Pouch with 1-seeded cells, their valves keel-shaped. *Pet.* equal.

1. L. *latifolium*, leaves lanceolate undivided serrated or entire, pouch oval entire. *p.* 194.
2. L. *ruderale*, flowers diandrous apetalous, radical leaves pinnatifid those of the branches linear entire, pouch emarginate patent. *p.* 194.
3. L. *campestre*, pouch ovate emarginate winged rough with minute scales, style scarcely longer than the notch, cauline leaves sagittate toothed. *p.* 195.
4. L. *hirtum*, pouch ovate emarginate winged glabrous, style nearly half as long as the pouch, cauline leaves sagittate toothed. *p.* 195.

7. COCHLEARIA.

Pouch subovate, many-seeded, their valves turgid. *Seeds* not margined, their *cotyledons* accumbent. The shorter *filaments* without teeth. *Cal.* patent.

1. C. *officinalis*, pouch globose, radical leaves petiolate cordato-reniform entire or sinuated, cauline ones sessile oblong sinuated. *p.* 195.
2. C. *anglica*, pouch elliptical, radical leaves petiolate cordate entire, cauline ones mostly sessile oblong more or less toothed near the base. *p.* 195.
3. C. *danica*, pouch ovato-elliptical, leaves all petiolate deltoid. *p.* 196.
4. C. *Armoracia*, pouch oblong, stigma dilated nearly sessile, radical leaves oblong (on long footstalks) crenate, cauline ones elongato-lanceolate serrate or entire. *p.* 196.

8. SUBULARIA.

Pouch oval, pointless (*Silic. mutica*, *Br.*), many-seeded; valves turgid. *Cotyledons* incumbent, linear, bipartite (*bicrures*).

1. S. *aquatica*. *p.* 196.

9. DRABA.

Pouch entire, oval; valves plane, or a little convex; cells many-seeded. *Seeds* not margined; *cotyledons* accumbent. *Filaments* without teeth.

1. Dr. *verna*, scapes naked, petals bipartite, leaves lanceolate somewhat cut hairy. *p.* 196.
2. Dr. *rupestris*, scapes naked or with one leaf, petals undivided, pouch lanceolate pubescent, leaves plane lanceolate hairy. *p.* 196.
3. Dr. *hirta*, scape generally with 1 or 2 ovate dentate or entire leaves, petals undivided, pouch oblong and as well as the pedicels glabrous, leaves lanceolate plane hairy and stellato-pubescent. *p.* 197.
4. Dr. *incana*, cauline leaves numerous lanceolate dentate hoary with starry pubescence, pouch oblong somewhat twisted. *p.* 197.

5. Dr. *muralis*, stem branched, leaves ovate obtuse amplexicaul dentate, pouch patent glabrous. *p.* 197.

10. CAMELINA.

Pouch subovate, many-seeded; their valves turgid. *Cotyledons* incumbent. *Filaments* without teeth.

1. C. *sativa*, pouch obovate marginated, stigma simple, leaves lanceolate sagittate. *p.* 198.

Div. II. Siliquosæ.

11. CARDAMINE.

Pod linear, with the margins truncated; valves plane, nerveless (often bursting elastically), narrower than the dissepiment.

* *Leaves pinnated.*

1. C. *bulbifera*, stem quite simple, inferior ones pinnated, superior ones undivided. *p.* 198.
2. C. *amara*, leaves pinnated, radical leaflets roundish, cauline ones dentato-angulate, style oblique, stigma acute, stem rooting at the base. *p.* 198.
3. C. *pratensis*, leaves pinnate, radical leaflets roundish dentate, cauline ones lanceolate nearly entire, style straight, stigma capitate. *p.* 198.
4. C. *impatiens*, leaves pinnate, leaflets lanceolate somewhat cut or entire, stipules ciliated, petals linear or none. *p.* 199.
5. C. *hirsuta*, leaves all pinnated and without stipules, leaflets petiolate radical ones roundish, stam. (4—6) equal in length to the petals, stigma nearly sessile. *p.* 199.

** *Leaves undivided.*

6. C. *bellidifolia*, leaves simple ovate entire upon rather long footstalks. *p.* 199.

12. ARABIS.

Pod linear, crowned with the nearly sessile stigma; valves veined or nerved. *Seeds* in one row. *Cotyledons* accumbent. *Cal.* erect.

1. A. *hispida*, radical leaves sinuato-lyrate lengthened below into footstalks, cauline ones mostly undivided glabrous, fruit-bearing peduncles spreading half as long as the pods. *p.* 199.
2. A. *thaliana*, leaves subdentate pilose, radical ones subpetiolate oblong, stam. as long as the petals, stem branched, pods ascending. *p.* 199.
3. A. *ciliata*, leaves subdentate oval glabrous ciliated, radical ones nearly sessile obtuse, cauline ones semiamplexicaul, stem simple. *p.* 200.
4. A. *hirsuta*, leaves all hispid dentate, cauline ones semiamplexicaul, pods straight. *p.* 200.

5. A. *Turrita*, leaves amplexicaul, pods recurved flat and linear with the margins incrassated, bracteas foliaceous. *p.* 200.

13. TURRITIS.

Pod elongated, 2-edged; valves nerved and keeled. *Seeds* in 2 rows. *Cotyledons* accumbent.

1. T. *glabra*, radical leaves dentate hairy, cauline ones amplexicaul entire glabrous. *p.* 200.

14. BARBAREA.

Pod 4-edged. *Cotyledons* accumbent. *Seeds* in one row. *Cal.* erect. Small *glands* placed between the shorter filaments.

1. B. *vulgaris*, lower leaves lyrate the terminal lobe rounded the superior ones obovate toothed. *p.* 200.
2. B. *præcox*, lower leaves lyrate upper ones pinnatifid their segments linear oblong and entire. *p.* 201.

15. NASTURTIUM.

Pod rounded (sometimes short); valves concave, nerveless, not carinated. *Cotyledons* accumbent. *Cal.* patent.

1. N. *officinale*, leaves pinnate, leaflets ovate subcordate sinuato-dentate. *p.* 201.
2. N. *sylvestre*, leaves pinnate, leaflets lanceolate incised those on the uppermost leaves nearly entire. *p.* 201.
3. N. *terrestre*, leaves lyrato-pinnatifid unequally toothed glabrous, root simply fibrous, petals not longer than the cal. *p.* 201.
4. N. *amphibium*, leaves oblong pinnatifid or serrated, root simply fibrous, petals longer than the cal. *p.* 201.

16. SISYMBRIUM.

Pod rounded or angular. *Cotyledons* incumbent (sometimes obliquely), plane. *Cal.* patent (sometimes nearly erect).

1. S. *officinale*, pods subulate pubescent close pressed to the main stalk, leaves runcinate hairy, stem hispid. *p.* 202.
2. S. *Sophia*, leaves doubly pinnate a little hairy, pinnules linear terminal one the longest, petals shorter than the cal. *p.* 202.

17. ERYSIMUM.

Pod 4-sided. *Seeds* not margined. *Cotyledons* incumbent. *Stigma* capitate, sometimes notched, with the lobes patent. *Cal.* closed.

1. E. *cheiranthoides*, leaves lanceolate entire or slightly toothed with stellato-tripartite hairs, pods nearly erect their peduncles spreading, stigma undivided nearly sessile. *p.* 202.
2. E. *Alliaria*, leaves heart-shaped petiolate dentato-crenate. *p.* 202.

18. CHEIRANTHUS.

Pod compressed or 2-edged. *Cotyledons* accumbent. *Cal.* closed; opposite leaflets saccate at the base. *Stigma* placed upon a style, 2-lobed, with the lobes patent or capitate.

1. Ch. *fruticulosus*, leaves lanceolate acute hoary beneath, pubescence all simple and close pressed, stem somewhat shrubby, branches angular. *p.* 202.

19. HESPERIS.

Pod 4-sided or 2-edged. *Stigma* nearly sessile, with the lobes connivent. *Cotyledons* incumbent, plane. *Cal.* closed.

1. H. *matronalis*, stem erect, leaves ovato-lanceolate toothed, limb of the petals obovate, pods erect torulose their margins simple (not incrassated). *p.* 202.

20. BRASSICA.

Pod 2-valved (with an abortive or 1-seeded beak). *Cotyledons* conduplicate. *Cal.* closed.

1. Br. *Napus*, root caulescent fusiform, leaves smooth, upper ones cordato-lanceolate amplexicaul, lower ones lyrate toothed. *p.* 203.
2. Br. *Rapa*, root caulescent orbicular depressed fleshy, radical leaves lyrate scabrous those of the stem nearly entire smooth. *p.* 203.
3. Br. *oleracea*, root caulescent rounded fleshy, all the leaves glabrous glaucous waved and lobed. *p.* 203.
4. Br. *Monensis*, leaves pinnatifid, stem nearly leafless glabrous, pods smooth, beak monospermous. *p.* 203.
5. Br. *campestris*, root and stem slender, leaves cordate acuminate amplexicaul lower ones lyrate dentate subhispid. *p.* 203.

21. SINAPIS.

Pod 2-valved (sometimes of 2 articulations, of which the upper one is valveless). *Cotyledons* conduplicate. *Cal.* patent.

1. S. *arvensis*, pods with many angles turgid and knotty longer than the 2-edged beak, leaves ovate sublyrate. *p.* 204.
2. S. *alba*, pods hispid turgid shorter than the ensiform beak, leaves pinnatifid. *p.* 204.
3. S. *nigra*, pods appressed glabrous tetragonous, style short subulate, upper leaves linear-lanceolate entire glabrous. *p.* 204.
4. S. *tenuifolia*, pods linear glabrous shortly beaked erect, peduncles spreading, leaves lanceolate very acute pinnatifid or bipinnatifid, stem glabrous. *p.* 204.

22. RAPHANUS.

Pod valveless (torulose *Sm.*). *Cotyledons* conduplicate. *Cal.* closed.

1. R. *Raphanistrum*, leaves simply lyrate, pods of one cell jointed striated. *p.* 204.
2. R. *maritimus*, leaves interruptedly lyrate, pods of one cell jointed striated. *p.* 204.

Order LXVI. FUMARIEÆ. *Decand.*

Cal. (*bracteæ?*) of two leaves. *Petals* (*sepals?*) 4, irregular, in two series, the upper one saccate at the base. *Stamens* definite, in two bundles, opposite the outer *petals*. *Anthers* turned outwards. *Ovary* 1, 1-celled, 1- or many-seeded. *Style* simple. *Stigma* horned. *Fruit* either a little 1-seeded *drupe*, or a 2- or many-seeded *capsule*. *Seeds* attached by their middle. *Embryo* very minute, in the base of a fleshy *albumen*. *Radicle* opposite the *hilum*.

Herbs with climbing *shoots* and divided *leaves*. *Flowers* in *spikes*.

1. FUMARIA.

Cal. small, of 2 *leaves*. *Pet.* 4, irregular, one of them gibbous at the base. *Filaments* 2, membranaceous, each bearing 3 *anthers*.

* *Capsule sphærical, 1-seeded.*

(*Fumaria.*)

1. F. *officinalis*, spike lax, stem branched spreading, leaves bipinnate, leaflets almost linear. *p.* 210.—*Corn-fields.*
2. F. *capreolata*, spike lax, stem climbing by means of the tendril-like petioles, leaves triternate, leaflets obovato-cuneiform cut and lobed. *p.* 210.—*Hedges.*

** *Caps. linear, 2- or more seeded.*

(*Corydalis, Dec.*)

3. F. *claviculata*, spikes lax, stem climbing pinnate, leaflets 3—5-partite, lobes ovato-acute, petioles ending in tendrils. *p.* 211.—*Rocks.*

Order LXVII. PAPAVERACEÆ. *Juss.*

Cal. of 2—4 *leaves*, deciduous. *Cor.* of 4—8 *petals*. *Stamens* indefinite. *Ovary* 1. *Stigma* lobed. *Capsule* one-celled, many-seeded. *Placenta* parietal, 2- or many-parted. *Seeds* with a caruncule. *Embryo* in the base of a fleshy *albumen*.

Milky plants. *Leaves* alternate. *Flowers* spicate, umbellate, or solitary. *Mirb.*

1. PAPAVER.

Cal. 2-leaved, caducous. *Petals* 4. *Stigma* radiated. *Caps.* discharging its *seeds* by *pores* under the permanent *stigma.*

* *Capsules hispid.*

1. P. *Argemone,* capsules clavate hispid, stem leafy many-flowered. *p.* 168.—*Corn-fields.*

** *Capsules glabrous.*

2. P. *dubium,* capsules glabrous oblong, stem many-flowered hairy, bristles of the flowerstalks appressed, leaves pinnatifid. *p.* 168.—*Corn-fields.*
3. P. *Rhœas,* capsules glabrous nearly globose, stem many-flowered bristly, bristles of the flowerstalks (as well as of the stem) spreading, leaves pinnatifid. *p.* 168.—*Corn-fields.*
4. P. *somniferum,* capsule globose glabrous, stem many-flowered and as well as the glaucous amplexicaul leaves glabrous. *p.* 168.
5. P. *cambricum,* capsules glabrous oblong, stem many-flowered nearly glabrous, leaves pinnated, leaflets petiolate ovato-lanceolate cut. *p.* 168.—*Woods.*

2. CHELIDONIUM.

Cal. of 2 *leaves,* caducous. *Pet.* 4. *Stigma* 2-lobed. *Pod* linear, 1-celled, of two valves. *Seeds* numerous, crested, free.

1. Ch. *majus. p.* 167.—*Waste places.*

3. GLAUCIUM.

Cal. of 2 *leaves,* caducous. *Pet.* 4. *Stigma* 2-lobed. *Pod* linear, 1-celled, of 2 valves. *Seeds* numerous, dotted, imbedded in a spongy substance which fills the *pod.*

1. G. *luteum,* peduncles 1-flowered, leaves (of the stem) amplexicaul sinuate, stem glabrous. *p.* 167.—*Sea-coasts.*

ORDER LXVIII. NYMPHÆACEÆ. *Salisb.*

Cal. of 4—5 *leaves,* not articulated with the *receptacle. Pet.* and *stam.* disposed in many rows, alternate with the *sepals. Anthers* turned inwards, adnate. *Berry* many-celled, many-seeded. *Embryo* large, in the base of a fleshy *albumen.*

Water plants. Leaves on long stalks, their *nerves* radiating. *Peduncles* without *bracteæ,* 1-flowered.

1. NYMPHÆA.

Cal. of 4—5 *leaves. Pet.* numerous, inserted upon the *germen* beneath the *stamens. Berry* many-celled, many-seeded.

1. N. *alba*, "leaves cordate, stigma of 16 ascending rays." *p.* 169.—*Lakes and ditches.*

2. NUPHAR.

Cal. of 5—6 leaves. *Pet.* numerous, inserted as well as the *stam.* upon the *receptacle*. *Berry* superior, many-celled, many-seeded.

1. N. *lutea*, leaves cordate, their lobes approximate, cal. of 5 leaves, stigma expanded (entire) with from 14—20 rays. *p.* 169.—*Lakes, &c.*
2. N. *Kalmiana*, leaves cordate, their lobes subapproximate, stigma cut (toothed, *Sm.*) with from 8—12 rays. *p.* 169.—*Lakes.*

Order LXIX. BERBERIDEÆ. *Juss.*

Sepals in two rows, deciduous. *Petals* opposite the *sepals*. *Stamens* equal to the *petals* in number and opposite them. *Anthers* adnate, opening with a *valve* from the base upwards. *Ovary* 1. *Seeds* generally attached laterally. *Embryo* straight, in the axis of a fleshy *albumen*.

Shrubs or *Herbs*. *Leaves* alternate, generally compound; *flowers* in racemes, furnished with *bracteæ*. *Dec.*

1. BERBERIS.

Cal. of 6 *leaves*. *Cor.* of 6 *petals*. *Stam.* 6. *Berry* 2-seeded.

1. B. *vulgaris*, racemes pendulous, spines 3-forked, leaves obovate ciliato-serrate. *p.* 111.—*Hedges.*

2. EPIMEDIUM.

Cal. of 4 *leaves*, caducous. *Pet.* 4, with an inflated *nectary* on the upper side. *Stam.* 4. *Pod* of 1 *cell*, 2 *valves*, many *seeds*.

1. E. *alpinum*. *p.* 55.

Order LXX. RANUNCULACEÆ. *Juss.*

Cal. with many definite *sepals*, or many-parted. *Petals* definite or indefinite, sometimes wanting. *Stamens* indefinite. *Anthers* adnate, generally turned outwards. *Ovaries* many, 1-celled. *Seeds* attached to their inner side. *Embryo* minute, straight, placed in the base of a corneous *albumen*.

Herbs or *Undershrubs*. *Leaves* simple, variously lobed, usually alternate, with stalks more or less dilated at their base. *Dec.*

1. CLEMATIS.

Cal. (*Pet.*, *Sm.*) of 4—6 leaves. *Pet.* none. *Pericarps* terminated by a long, mostly feathery awn. (*caudate*).

1. Cl. *vitalba*, stem sarmentose, leaves pinnate, leaflets cordato-ovate inciso-lobate, petioles scandent, peduncles rather shorter than the leaves. *p.* 171.

2. THALICTRUM.

Cal. (*Pet.*, *Sm.*) of 4—5 leaves. *Pet.* none. *Pericarps* without awns (ecaudate).

1. Th. *alpinum*, stem simple nearly leafless, raceme simple terminal, flowers drooping, segments of the leaves glabrous. *p.* 171.
2. Th. *minus*, leaves tripinnate, leaflets trifid glaucous, flowers panicled drooping. *p.* 172.
3. Th. *majus*, "leaves tripinnate, leaflets lobed" (mostly trifid), "branches of the panicle subumbellate, flowers drooping." *p.* 172.
4. Th. *flavum*, stem erect branched furrowed, leaves bipinnate, leaflets wedge-shaped trifid, panicle much branched subcorymbose, flowers erect. *p.* 172.

3. ANEMONE.

Involucre of 3 divided leaves, distant from the flower. *Cal.* (*Cor.*, *Sm.*) petaloid, of 5—9 leaves. *Pet.* none. *Pericarps* with or without awns.

1. A. *nemorosa*, leaves ternate lobed and cut, involucre the same petiolate, stem single-flowered, capsules without awns. *p.* 171.

4. ADONIS.

Cal. of 5 leaves. *Pet.* 5—10, without any nectary. *Pericarps* without awns.

1. A. *autumnalis*, petals concavo-connivent scarcely longer than the glabrous cal., pericarps reticulate collected into an ovate head, stem branched. *p.* 172.

5. RANUNCULUS.

Cal. of 5 leaves. *Pet.* 5—10, with a nectariferous pore at the base. *Pericarps* without awns. (In R. *Ficaria* there are 3 cal. leaves and many petals.)

* *Pericarps transversely wrinkled. Petals white; claw yellow, with a nectariferous pore.* (Decand.)

1. R. *aquatilis*, stem floating submersed, leaves capillaceo-multifid, floating ones tripartite their lobes cut, petals obovate larger than the cal., pericarps glabrous or hispid. *p.* 173.

β. all the leaves capillaceo-multifid.

2. R. *hederaceus*, stem creeping, leaves roundish kidney-shaped with 3—5 rounded entire lobes, petals small scarcely longer than the cal., stam 5—10, pericarps glabrous. *p.* 173.

* *Pericarps smooth or echinated (not transversely wrinkled). Petals with a small scale at the base.* (Decand.)

† *Flowers white.*

3. R. *alpestris*, leaves glabrous orbicular deeply 3-lobed, lobes

at the extremity lobulato-crenate, stem mostly 1-flowered, petals obcordate *p.* 173.

†† *Flowers yellow. Leaves undivided.*

4. R. *Lingua*, leaves lanceolate subserrated sessile semiamplexicaul, stem erect glabrous. *p.* 173.
5. R. *Flammula*, leaves linear lanceolate nearly entire petiolate the lower ones ovato-lanceolate, stem declined rooting at the base.

β. much smaller, stem creeping filiform. *p.* 174.

6. R. *Ficaria*, leaves heart-shaped petiolate angular or crenate, cal. of 3 leaves, petals 9. *p.* 174.

††† *Flowers yellow. Leaves variously divided.*

+ *Root perennial. Capsules smooth.*

7. R. *auricomus*, leaves glabrous radical ones reniform 3-partite and cut, stem leaves divided to the base into linear subdentate segments, cal. pubescent shorter than the petals. *p.* 174.
8. R. *sceleratus*, leaves glabrous radical ones petiolate tripartite, lobes cut very obtuse upper ones into 3 linear incised segments, calyx glabrous, capsules collected into an oblong spike. *p.* 174.
9. R. *acris*, cal. spreading, peduncles rounded, (not furrowed,) leaves tripartite their segments acute 3-fid and cut upper ones linear. *p.* 174.

β. *minor*, stem 1—2-flowered.

10. R. *repens*, calyx spreading, flowerstalks furrowed, scions creeping, leaves cut into 3 petiolated leaflets which are 3-lobed or 3-partite and cut. *p.* 175.
11. R. *bulbosus*, calyx reflexed, peduncles furrowed, stem upright many-flowered, leaves cut into 3 petiolated leaflets, which are 3-lobed or 3-partite and cut, root bulbous. *p.* 175.

++ *Roots annual. Capsules tuberculate or muricated.*

12. R. *hirsutus*, cal. reflexed, stem erect many-flowered hairy, leaves 3-lobed or 3-partite, lobes obtuse cut, root fibrous, capsules margined and tuberculated. *p.* 175.
13. R. *arvensis*, cal. spreading, stem erect many-flowered, leaves three-cleft their segments generally again 3-cleft into linear entire or bi- tridentate segments, capsules muricated. *p.* 175.

6. MYOSURUS.

Cal. of 5-leaves, prolonged at the base, *pet.* 5, their claws tubular, filiform, *pericarps* collected upon a very small receptacle. *Stam.* 5 to 12.

1. M. *minimus*, *p.* 98.—*Fields.*

7. TROLLIUS.

Cal. (*Cor.*, *Sm.*) of 5, or many leaves. *Pet.* (*Nect.*, *Sm.*) 5

or many, minute, tubular at the base. *Capsules* cylindrical, many-seeded.

1. Tr. *europæus*, leaves of the cal. (*cor.*, *Sm.*) 15 concavo-connivent, petals (*nect.*, *Sm.*) as long as the stam. *p.* 176.

8. HELLEBORUS.

Cal. (*Cor.*, *Sm.*) of 5 petals, subcoriaceous, persistent. *Pet.* (*Nect.*, *Sm.*) 8—10, very small, tubular, somewhat two-lipped, nectariferous. *Capsules* compressed, nearly erect, many-seeded.

1. H. *viridis*, stem few-flowered leafy, leaves digitate, cal. spreading. *p.* 176.
2. H. *fœtidus*, stem many-flowered leafy, leaves pedate, cal. concavo-connivent. *p.* 176.

9. CALTHA.

Cal. (*Cor.*, *Sm.*) of 5 leaves, petaloid. *Pet.* none. *Caps.* several, compressed, spreading, with many seeds.

1. C. *palustris*, leaves cordate crenate. *p.* 176.

β. stem creeping, leaves cordato-triangular. *p.* 176.

γ. leaves cordate nearly entire. *p.* 176.

PLANTS OF WHICH THE SITUATION IS UNCERTAIN.

1. PARNASSIA.

Cal. 5-parted, persistent. *Pet.* 5, hypogynous, alternate with the calyx. *Scales* 5, inferior, inserted into the claws of the petals, fringed with cilia bearing a round gland at their end. *Stamens* 5, hypogynous, alternate with the petals. *Anthers* incumbent. *Ovary* 1. *Style* none. *Stigmas* 4, persistent, with a hole between them. (*Juss.*) *Capsule* 1-celled, 4-valved. *Valves* bearing the incomplete dissepiments in their middle. *Seeds* very numerous, winged on one side, attached to the margin of the dissepiments. *Albumen* none. *Embryo* cylindrical. *Cotyledons* very short, obtuse. *Radicle* long, straight, centrifugal. (*Gærtn.*)

1. P. *palustris*. *p.* 97.—*Bogs.*

It is much to be regretted, that so beautiful a plant as this should have no certain station assigned it in any natural arrangement; and the more so because its structure is completely understood. Probably it is, as Ventenat has supposed, one of those genera which constitute distinct orders of themselves; just as many solitary species constitute distinct genera. M. de Jussieu, in his *Genera Plantarum*, placed it next *Drosera* and *Reseda*, among the genera supposed to be akin to *Capparides*. Adanson arranged it among his *Cisti*. Sir James Smith has conjectured it might be related to *Saxifraga* and *Dionæa*; and we believe Mr. Brown is disposed to favour the opinion of its affinity to the former genus. There are others who consider it more near *Hy-*

pericinæ, an idea which its structure very much confirms, notwithstanding its difference in habit. The fringed bodies, which are conveniently enough called Nectaries, appear so very analogous to the bundles of stamens in *Hypericum*, that we confess we should have had little doubt in our own minds of its actually belonging to *Hypericinæ*, if the most learned botanist of his age had not formed an opinion to the contrary.

2. EMPETRUM.

Diœcious. Cal. 3-parted, persistent. ♂. *Petals* 3, withering. *Stamens* 3. *Filaments* long. *Anthers* 2-partite. ♀. *Ovary* superior depressed. *Style* none, or very short. *Stigmas* nine, reflexed, spreading. *Juss. Berry* round, 1-celled. *Seeds* 2—3 or more, erect, bony. *Embryo* upright, in the axis of a fleshy albumen. *Radicle* inferior. *Gærtn.*

1. E. *nigrum*, procumbent, leaves linear-oblong. *p.* 287.—*Mountainous heaths.*

Jussieu has placed this singular genus, along with *Hudsonia*, at the end of *Ericeæ*. Adanson arranged it with his *Cisti*. But we think Mr. Nuttall has taken a more correct view of its affinity, in placing it, as a distinct order which he proposes to call *Empetreæ*, at the end of *Coniferæ*. We quite agree with him in thinking that the principal resemblance between it and *Ericeæ* consists in the leaves.

3. CERATOPHYLLUM.

Monœcious. Cal. many-parted. *Cor.* 0. ♂. *Stam.* twice as many as the divisions of the calyx. *Anthers* oblong. ♀. *Ovary* 1, compressed. *Style* none. *Stigma* oblique. *Juss. Nut* bony, 1-celled, indehiscent. *Seed* erect. *Albumen* none. *Embryo* with 4 *cotyledons*, of which two are larger than the rest. *Plumula* of many leaves.

1. C. *demersum*, fruit armed with 3 spines. *p.* 272.—*Ditches.*

We suspect there is something still to discover, with respect to the male flowers at least, in this genus. Its affinity has scarcely been mentioned. For some time it floated among *Jussieu's Naiades*; till it was ascertained that it was a dicotyledonous plant. Since that time, the only author we are acquainted with who has noticed it is M. Richard, who has hinted at a resemblance existing between it and *Coniferæ*.

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