

The three first have the corolla white in the three last it is yellow. If you inquire after your favourite *Arabian jasmine* it belongs to another genus, *Nyctanthe* because it has the calyx and corolla divided into eight segments. The *Cape jasmine* of another class, the fifth; and of course has another name, *Gardenia*.

Several other trees and shrubs belong to this same first division. *Privet*, *Phillyrea*, *Olive*, and the *Lilacs*. These have all quadrifid corolla; and are distinguished by their fruit, which in privet is a *berry* with four seeds; in phillyrea a *berry* with one seed; in olive a *drupe*; in the lilacs a bicircular *capsule*. The common lilac has heart-shaped leaves; a circumstance sufficient to distinguish it from the Persian, which has lance-shaped leaves. As to the different colours of the flowers in the first—white, blue, and red, they form but varieties, colour being rarely permanent enough to constitute specific differences.

*Veronica*. In the second division is a genus, named from a female saint, *Veronica*: it is a very numerous one, containing no less than forty species. Here therefore Linnæus has done with the genus, as he did before with the order—he has thrown it into three principal divisions from the manner of flowering. 1. Such as bear the flowers in spikes. 2. Such as bear them in racemes or bunches. 3. Such as produce them singly.

This

This genus is easily known by the monopetalous, rotate, or wheel-shaped corolla, divided into four segments, the lowest of which is narrower than the rest; and the bilocular, heart-shaped, flattened capsule.

One species is very common among bushes, and in the edges of pastures. Its beautiful blue flowers have doubtless attracted your notice, and in falling off too easily, have given occasion perhaps to a lesson on the short duration of our enjoyments, or the fleeting nature of female charms, to your lovely daughter. If it be not already past flowering, for May is its season, you will find that it belongs to the second division; or even if it be, the oval, wrinkled leaves, indented about the edge, and sitting close to the stalk, together with the weak trailing stems, unless upheld by the bushes, will so clearly point out this humble plant to you, that you cannot well be mistaken<sup>o</sup>.

If this species however is out of blow, you will certainly find another<sup>p</sup> in dry pastures or heaths, especially upon old ant-hills: it may perhaps have escaped you; the flowers being small, and of a pale colour; not however without their beauty, on a nearer survey. This belongs to the

<sup>o</sup> *Veronica Chamædrys*. Wild Speedwell or Germander. Curtis, Lond. I. 2.—Pl. 8. f. 1.

<sup>p</sup> *Veronica officinalis*. Officinal Speedwell. Curtis, Lond. III. 1.

first division; having the flowers growing in spikes, coming out chiefly from the side of the plant, at some distance from the main stem; the leaves are opposite, and the stalks trail along the ground. It has the trivial name of officinal, because an infusion of it is sometimes used medicinally.

Other species are common by the sides of ditches and brooks, whence they have the name of *Water Speedwell*, or *Brooklime*; these are of the second division: and three species of the third division are abundant among corn, in the spring<sup>r</sup>.

I know not how it is, but there is a connexion between this class and the fourteenth. *Pinguicula* or *Butterwort* has a personate flower. Some species of *Vervain* have two stamens, others four of unequal lengths; among the latter is our common or officinal *Vervain*<sup>s</sup>; whence some authors have removed it to the class *didynamia*. *Sage*, *Rosemary*, and others, have labiate flowers, and in every respect so resemble the plants of the fourteenth class, that they should naturally be placed there; but having only two stamens, the artificial system ranges them in this class. *Sage* seems to form the connecting link between the two classes; for in this genus are rudiments of

Salvia.

<sup>s</sup> *Veronica Becabunga*. Curtis, Lond. II. 3. is one of these.

<sup>r</sup> *Veronica arvensis* Curtis, Lond. II. 2. *agrestis* Curtis, Lond. I. 1. *hederifolia* Curtis, Lond. II. 1.

<sup>s</sup> Curtis, Lond. I. 41.

another

another pair of stamens, but without anthers. The structure of the stamens in the sage is singular, and merits your observation. The two filaments are very short, but two others are fastened to these transversely by the middle; and at one end of these last is a gland, at the other an anther. This circumstance distinguishes the genus from all others, and is called its essential character. If you compare the flowers of sage and rosemary together, you will find them agree in most other particulars; but rosemary has not this character: it has very long filaments, bending towards the calque or upper lip of the corolla.

The genus *Salvia* or *Sage* has no less than fifty-two species. Our common garden sage<sup>t</sup>, of which there are several varieties, has the flowers growing in spikes, the segments of the calyx acute, and the leaves of an oblong ovate form, entire, and very slightly notched about the edges. There are two sorts commonly wild in Europe<sup>u</sup>, not very unlike each other; but rather *clarys* than *sages*: You will be at no loss to know them when you see them. To distinguish them from each other observe that *Meadow Clary*<sup>v</sup> has the leaves oblong-heart-shaped, and notched about the edges; the

<sup>t</sup> *Salvia officinalis* *Linnaei*. Pl. 8. f. 3. Ger. 764.

<sup>u</sup> *Salvia pratensis* & *verbenaca*; but the latter only is common in England.

<sup>v</sup> *Salvia pratensis*. Ger. 769. 3.



upper ones embracing the stalks; the flowers grow in almost naked whorls, and the upper lip of the corolla is glutinous. The *Wild Clary*<sup>w</sup> has the leaves serrate, sinuate and smoothish: the tube of the corolla very small in comparison with the calyx, which opens wide.

But enough for our second excursion especially as I propose that we should take a third very soon.

<sup>w</sup> *Salvia verbenaca*. Ger. 771. 1. The edition of Gerard's Herbal which is quoted here and elsewhere is that which received the additions of Johnson, and was printed in 1636.

## LETTER XIII.

### OF CORN AND GRASSES.

June the 24th, 1774.

I HAVE hastened this letter, dear cousin, lest the industrious mower should have spoiled our harvest. The brilliancy of the present season will perhaps have quickened his steps: but at the worst, he will have left you some gleanings about the hedges.

The tribe which I now recommend to your examination, is the most known and general of any; it is the most pleasant to the eye, and of the most extended use, since it furnishes man with the best portion of his nourishment, and at the same time is the whole support of many among the beasts, and of a large proportion of birds. The most rigid critic cannot accuse us of mispending our time, when we are engaged in the contemplation of so useful a tribe of plants as that which contains all the different species of corn and grasses.

The former being larger, requiring more care and culture, because they are annual, and being immediately necessary to the support of man, and the animals about him, in this and many other countries; the species

are universally known and distinguished. But this is not the case in the latter; grass vulgarly forms one single idea; and a husbandman when he is looking over his inclosure, does not dream that there are upwards of three hundred species of grass, which thirty or forty may be at present under his eye. They have scarcely had a name, besides the general one, till within these twenty years; and the few particular names that have been lately given, are far from having obtained general use: so that we may fairly assert that the knowledge of this most common and valuable tribe of plants is yet in its infancy\*.

Let us not however give more importance to Botany than it really has; but proceed quietly with our own business. The greater part of the world scarcely know that grass has a flower; or, if they are shown

\* The late excellent Mr. Stillingfleet first directed the public attention to *grasses*; and that most respectable and useful institution, the Society of Arts, &c. has done all in its power to promote an improvement in the culture of them; but without great effect. Nor can much be expected till economical gardens or public farms are instituted, for the purpose of experiments in this and other parts of husbandry. It is not enough to tell men of a good thing, and instruct them how it may be done; but they must actually see it put in execution, and be eye-witnesses of its good effects.—This has lately been done by some public-spirited gentlemen; particularly by Mr. Coke, of Norfolk. See *Young's Annals*.—Mr. Curtis's *Practical Observations on the British Grasses* are highly deserving of the attention of the public.—See also Mr. Swayne's *Gramina Pascua*.

it, will coldly ask, Is this all? And yet grass not only has a flower, but every constituent part of it; which is more than we can say of a tulip, and some others, that have engrossed almost all the attention of mankind: nay, there is such a variety in the parts, disposition, and manner of flowering, that we have sufficient marks in the fructification to distinguish above forty genera.

If you take up a spike <sup>y</sup> or panicle <sup>z</sup> of grass, you may perhaps be disappointed in your expectation of discerning the stamens and other parts; be assured then that the flower is not yet open, and continue your search till you find one with the parts expanded, the slender filaments hanging out, and large, oblong, double anthers playing freely about with the slightest motion. You will immediately perceive that your grass, having three of these stamens, must range under the third class, *triandria*, provided the flower has a pistil as well as stamens. Searching a little farther, you will easily detect two reflex styles, each terminated with a feathered stigma: you are at no loss therefore to determine that your grass belongs to the second order (*digynia*) of this third class <sup>a</sup>.

Having thus settled the class and the order, you will proceed to the other parts of

<sup>y</sup> Pl. 9. f. 1.    <sup>z</sup> Pl. 9. f. 2.    <sup>a</sup> See Plate 9, b, c.

the flower. The neglected chaff you will find to be double: the outer generally consisting of two leaflets; one large and gibbous, the other smaller and flat; the inner consisting also of two parts or valves, which you may call petals, for this is the corolla, and the former is the calyx. Nay this despised flower has even its *nectary*; which is a little oblong body composed of two leaflets, but so small as to require a glass to discern it well. Grasses have no *pericarp*, but one naked seed, with the shape of which we are well acquainted—it is oblong, and draws to a point towards each end. These characters you will find common to every grass you examine, and also to every species of corn; or however with very few exceptions: this then is called the *classical character*. As these small flowers grow frequently two or more close together, you have only to separate a single flower to avoid confusion in your examination.

But this tribe of plants does not agree in the parts of fructification only, as above described. The whole appearance, the general air, the manner of growth, is the same in all. A simplicity of structure runs through the entire class. Every one has a simple, unbranched, straight, hollow stem, strengthened with knots at certain intervals<sup>b</sup>. There is none but has a single leaf to

<sup>b</sup> Linnaeus names it *culmus*.

each knot, investing or sheathing the stem to some distance, and then spreading out into a long narrow surface, of equal breadth all the way, till it approaches the end, when it draws off gradually to a point<sup>c</sup>. It is also invariably entire in every species; and without veins or branching vessels, being only marked longitudinally with lines parallel to the sides, and to a nerve or ridge that runs the whole length of it. There is another curious circumstance, almost peculiar to this tribe of plants, and common to them all; namely, that the body of the seed does not split into two lobes, but continues entire<sup>d</sup>, till it has accomplished its purpose of giving the young plant its first nourishment, and then rots away: this you may easily observe as corn is springing up; or you may sow a little Canary grass seed, which you have for your birds, in a garden pot in your window, and thus make the observation at home. But though I may indulge you for once, you know I do not encourage this idle domestic manner of observing the operations of nature. You must go abroad and view her seated on her native throne: and in her court you have this advantage, which you will find in no other, that you are gathering health whilst you pay her homage.

<sup>c</sup> Linnæus calls this sort of leaf *linear*.

<sup>d</sup> Such plants are called *monocotyledonous*; the others, *dicotyledonous*.



If you are now mistress of all the circumstances in which this tribe of plants agree, you may proceed to those in which they differ, and thus separate them first into their genera, and then into their species. But the genera being numerous it may not be inconvenient, as we did once before, to throw the whole tribe into some general subdivisions; and that we can easily do from the manner in which the flowers are produced—either in a panicle or spike; and singly, or several together. Hence we shall get four subdivisions:

1. Flowers single — — 14 genera.
2. Flowers two together — 2 genera.
3. Flowers many together — 7 genera.

These are mostly paniced: in all, the flowers are irregularly disposed, or *wandering*, as Linnæus calls them.

4. Flowers in a spike, with a subulate receptacle — — — 6 genera.

Including wheat, rye, and barley.  
Oat is in the third division.

Phalaris.

Your pot of Canary seed, if you do not pull up all the plants to verify what I told you before, will serve for an instance of the first division. When it arrives at a state of perfection, you will observe that the two leaves of the calyx are flattened, boat-shaped, have a keel running along them, and are equal in length; the corolla is less than the

calyx, and shut up within it. This is the character of the genus. It is specifically distinguished by the form of the panicle resembling a spike, and being ovate, the chaffs being turgid and hairy, but the keel smooth. It is an annual grass: is found wild in the Canary Islands, whence its name of *Phalaris Canariensis*, and is cultivated in Europe for the food of Canary and other small birds.

Whilst your Canary-grass is growing, you must go out in search of other instances of this first division; for I must absolutely insist that you ransack the neighbouring meadows and pastures before the furious scythe has levelled all their honours.

Meadows of a good quality abound in *Fox-tail grass*<sup>e</sup>, which is indeed one of the earliest, as well as the most excellent, for hay and feeding cattle. This genus is an exception to one of the general characters; for though the calyx has two valves or leaves, the corolla has but one. You will readily discover the species by the cylindric shape and hoary appearance of the panicle, which, from its form, you will take for a spike, the erectness of the stalk, and the corollas not being bearded. Alopecurus.

*Cat's-tail grass*<sup>f</sup> is another of these; the spike has not the smooth hoary appearance of the last, but seems rough, and is known Phleum.

<sup>e</sup> *Alopecurus pratensis* Linnæi. Stillingfl. t. 9. Curtis, Lond. 5. 5. & obs. t. 2.

<sup>f</sup> *Phleum pratense*. Lin. Schreber t. 14.

at first sight by the truncated and forked termination of the calyxes, which are also linear, and sit close to the stem. The corolla is shut up within the calyx. The shape of the spike is cylindric; the keel of the chaffs is ciliate<sup>s</sup>, and the stalk is erect. The spike of Cat's-tail grass is sometimes four inches long in moist meadows; in dryer, poorer soils, it decreases in length, until it dwindles to half an inch; and even less in hard barren ground, such as way sides and heaths. In these last it cannot raise itself upright; and the roots not being able to spread themselves freely, grow knotty and bulbous. I mention these circumstances that you may be aware of the changes wrought in plants by soil and situation; and not suppose that a new species presents itself every time you meet with these and other slight variations. If you transplant from the heath into your garden, a dwarf, crooked, knobby-rooted plant, I dare engage that the stem will become erect, that the spike will lengthen, and the bulbous root change to a fibrous one. It is not however always easy to say what is a species, and what a variety only. A great deal of observation and experience is necessary in many cases to determine this with precision. Most varieties indeed are produced by culture, or a change from their

<sup>s</sup> Set with little hairs like eye-lashes.

native soil and situation: and, when they regain their natural state, will return to their pristine form: if this were universally so, there would be no difficulty to ascertain the species from the variety. But it sometimes happens that when accident has produced a variety, it continues permanent, and having once tasted a polished situation, refuses to return to a state of nature: our test therefore is not a certain one.

The second division of the grasses having only two genera, the distinction is easy: they are known from the rest by having two flowers growing together; and from each other by the rudiment of a third flower between the two others, in the *Melica*, of which there is no sign in the *Aira*.

Of the third division you will find abundance of grasses sufficiently common: *Briza* or ladies' hair, *Poa* or meadow grass, *Festuca* or fescue, *Brome* grass, oats with all the oat-grasses, and the reeds. The genera are thus distinguished:

Corolla cordate: valves turgid, - *Briza*.

Corolla ovate: valves rather sharp, *Poa*.

Corolla oblong: valves pointed, *Festuca*.

—————: valves bearded be-

low the point, - *Bromus*.

—————: beard writhed or

bent, - - - *Avena*.

Corolla woolly at the base: awn-

less, - - - *Arundo*.

Briza.

The *Brizas*, of which there are five sorts, are very pretty grasses; inasmuch that one of them is cultivated in gardens for its beauty and singular appearance. They flower early in the month of May, grow in a loose panicle, the foot-stalks of which are so slender as to be moved by every wind; whence they have obtained the name of *Quaking grasses*. By these circumstances, and their general air different from their other neighbours, you cannot fail of knowing them. The three sorts which you are likely to meet with are thus distinguished;

1. Spicules <sup>h</sup> triangular: calyx longer than the flower. *Little Briza*. Mor. 8. 6. 47.
2. Spicules ovate: calyx shorter than the flower. *Middle Briza*. Mor. 45. Ger. 86. 2.
3. Spicules cordate: 17 flowers. *Great Briza*. Jacq. Obs. 3. 60.

The second is the sort which is common in meadows, and the third is that which is cultivated in gardens: in this the flowers grow in a *raceme* rather than a panicle.

Poa.

The *Meadow-grasses* are numerous, there being no less than 33 sorts registered by Linnæus, and several of them are thrown abundantly from the lap of nature; for

<sup>h</sup> These are the little assemblages of flowers, or ultimate subdivisions of the panicle or whole.

perhaps

perhaps they are the best of all the grasses for pastures, the quantity of their produce being very great, their quality excellent both for green and dry food, and their verdure most fresh and pleasant. But we are not husbandmen, dear cousin, Botany is our pursuit.

There are four sorts of *Poa* very common in most meadows: which I shall distinguish by the names of 1. Great, 2. Trivial, 3. Narrow leaved, and 4. Annual. They all flower in a loose branching panicle. The stalks of the first sort are generally erect, and throw out runners: the leaves are rather blunt at the end, and the membrane at the bottom is short and blunt: the spicules are ovate, and on short footstalks; the flowers growing close together, most commonly five in number. Every part of this grass is smooth. The second sort is distinguished by the leaves being sharper at the end, and having the membrane at bottom long and pointed: the spicules consist of two or three flowers, very seldom four. The whole of this species is rough. The third has the stems more erect: the leaves sharp-pointed and roughish, but smooth where they sheathe the stalk: the panicle is more erect than the others;

1. Curtis, Lond. II. 5. observ. t. 3.
2. Curtis, Lond. II. 6. observ. t. 4.
3. Morison's hist. f. 8. t. 5. f. 19.
4. Curtis, Lond. I. 6. Stillingfl. t. 7.

the



the spicules on longer foot-stalks, with from one to six flowers, which are hairy at the base. These three are perennial. The fourth is annual, and smaller than the others; extremely universal, and in flower the greatest part of the year; it has a very loose spreading panicle growing all on one side<sup>i</sup>, the lower branches of it often coming out in pairs: the spicules producing 3 or 4 flowers: the stalk is oblique and compressed.

I must give you one caution in examining these and the rest of the panicked grasses, which is this—that you should take them at the time when they are arrived at full maturity; that is, when the panicle is completely expanded, and the flowers show their stamens: for, at different periods of their existence, these grasses put on such various appearances, that they have deceived many eminent botanists into forming several species out of one. To have the history of a plant complete, we ought to examine it every day during the whole time of its growth. What a work would such a history of ten thousand plants form! but the book of nature is inexhaustible.

*Festuca.*

The genus *Festuca* or *Fescue* grass, though less numerous than the last, yet contains 19 species. *Sheep's fescue*<sup>k</sup> is a well known grass, always to be found in dry pastures,

<sup>i</sup> This is what Linnæus calls *Panicula secunda*.

<sup>k</sup> *Festuca ovina*. Sillingfl. t. 8.

and sheep commons. It has a close contracted panicle, growing on one side; the spicules having from 3 to 6 flowers; the valves of the flowers are very sharp pointed, but seldom properly awned; the culm is rather square than round, almost naked, and the leaves are setaceous<sup>1</sup>.

Another Fescue<sup>m</sup>, extremely different from the former, grows in watery places, ponds, and ditches. It has a loose panicle of a considerable length, but little branching, growing on one side; the branches of the panicle are sometimes single and sometimes double; the spicules are round, linear, and awnless, almost an inch long, and pressed close to the stalk; varying in the number of flowers from 9 to 12. The leaves are not round like those of the last, but flat; and the culm is very long, procumbent, branching, and flattened. The seeds of this being large and sweetish are gathered for the table in Poland and some other countries, and appear there under the name of *Manna*.

In this grass we have another instance of the changes wrought by soil and situation. Three species having been made out of one, until experiment detected the truth, and informed us that the seeds of the *stote* Fescue sown in a dry soil, become the first

<sup>1</sup> Very narrow, like those of rushes.

<sup>m</sup> *Festuca fluitans*; *stote* Fescue. Curtis, Lond. I. 7.

year *spiked*, and the second *meadow*<sup>n</sup> Fescue-grass. Nay *tall* Fescue, a fourth species, has so many marks in common with the last, that it is matter of doubt whether this also may not be a variety only °.

**Bromus.** The *Bromes* are very nearly allied to the *Fescues*. They are distinguished however by being all bearded, and the beard or awn springing from the back, or below the tip of the chaff: whereas the *Fescues* are often beardless; and when the flowers have a beard, it is an elongation of the chaff itself.

No grass is more common in many pastures than *Field-Brome grass*. It has a loose unbranched panicle: the spicules are ovate, the flowers are obtuse, and the beards are straight. It is an annual plant: and varies so much as to have obtained the name of *polymorphus* or *many-formed*. The two principal varieties<sup>p</sup> are, 1. that which has a soft down all over the panicles, leaves and stalks; with larger, heavier spicules; 2. that which is smooth all over; with the spicules thinner, and not hanging down so much, but often rather erect. Between these are two other varieties, 1. with the leaves downy, and the panicle almost smooth;

<sup>n</sup> *Festuca pratensis*. Curt. obs. t. 5.

° See Hudson Flora Anglica, edit. 2. p. 47.

<sup>p</sup> *Bromus mollis* & *secalinus* Linnæi. Mr. Hudson, after Scopoli, has very judiciously made them one, under the title *polymorphus*. Curtis, Lond. I. 8. figures the *mollis*—Morison figures this in t. 7. f. 18; and *secalinus* in f. 16.

2. with the lower leaves only a little downy, and the panicle quite smooth. Other connecting links may easily be remarked by those who are industrious in hunting after varieties.

There are three very large species of this genus, to be met with in woods and hedges, but seldom in pastures<sup>1</sup>. They have great, branching, nodding panicles. *Barren Brome* is not very tall; but the *Giant* and *Wood Bromes* are three feet in height. Their size, added to the character and air of the genus, mark them out so well, that you will not easily mistake, when you see them.

You will get an idea of the *Oat grasses* *Avena*, from the corn of that name, which having the parts of fructification larger than in the grasses, gives you an advantage in the examination. *Bearded Oat grass*, vulgarly called *Wild Oats*, is also well known as a dreadful weed among corn. *Yellow Oat grass* is common in meadows and pastures: it is a neat pretty grass; and will discover itself to you by the fineness and yellowness of its panicle.

The characters of the above-mentioned species are these:

1. Two flowers in one calyx: the seeds smooth, and one of them bearded.  
*Cultivated Oats.*

<sup>1</sup> *Bromus sterilis*, Curtis I. 9. *giganteus* Curt. 5. 7. & *nemoralis*.

2. Three flowers in one calyx: hairy at the base; and all of them bearded. *Wild Oats.*
3. Panicle loose: three flowers in a short calyx; and all of them bearded. *Yellow Oat grass*<sup>r</sup>.

Arundo. The woollyness of the flowers in the *Reed* will show you this genus as soon as it unfolds its panicle. It is a grass, though vulgarly not regarded as such, because it is not used for the same purposes with the grasses. That however makes no difference to us, whose province it is not to regard the uses to which plants are put, but their structure. If husbandmen will not admit *Reed* to be a grass, they take in other plants to their idea of grass which we exclude, such as Clover, Lucerne, Saintfoin, &c. The reason is, that they consider grass as an herb adapted to feed cattle: whereas naturalists define it to be an herb which has generally three stamens and two pistils; always an unbranched, knotted, hollow stem, and simple linear leaves.

Though you are perfectly acquainted with the *Reed*<sup>s</sup>, it is perhaps rather by seeing it nodding its large panicles in the water at a distance; or else by the use which your gardener makes of the long light stems

<sup>r</sup> *Avena sativa, fatua & flavescens Linnæi.* Curtis, Lond. III. 5.

<sup>s</sup> *Arundo phragmitis Linnæi.* Moris, 8. 8. 1.

for hedges to guard his tender plants, than by its fructification. You will not therefore be displeased to be told that it is distinguished from the other species, which are six, by the looseness of its panicle, and by having five flowers growing together.

You are now arrived at the last division of corn and grasses, containing those whose fructification is always in a spike properly so called. Of these,

*Secale* or *Rie*, has two flowers included in the same calyx.

*Triticum* or *Wheat*, has several flowers in one calyx.

*Hordeum* or *Barley*, has a six-leaved involucre, containing three flowers; and the flowers simple.

*Lolium* or *Darnel*, has a one-leaved involucre, containing one flower only; but that flower compound.

*Cynofurus* or *Dog's-tail grass*, has a one-leaved lateral involucre, and a compound flower.

In *Rie*, the exterior valve or chaff of the *Secale*: corolla ends in a long beard or awn. The flowers are sessile, and there is frequently a third between these, which is less and pedunculate: the filaments hang out of the flower. Our cultivated species<sup>1</sup> is known by the rough hairs upon the chaff.

<sup>1</sup> *Secale cereale Linnæi.*



**Hordeum.** In *Barley* also the exterior valve of the corolla ends in a long awn. The flowers are sessile. The filaments being shorter than the corolla do not hang out, and therefore *Barley* is not liable to be damaged by rain as *Rie* and *Wheat*.

There are four sorts of *Barley*.

1. The *common*, distinguished by its two rows of erect beards; all the flowers being perfect and bearded.

2. The *long-eared*, having the grains regularly ranged in a long double row, lying close over each other; and flowers on the sides, without pistils or beards.—These two species have the chaff very thin.

3. *Sprat Barley*, with shorter, broader ears, longer beards, the grains placed closer, and the straw shorter and coarser. This also has imperfect flowers on the sides of the ear.

4. *Winter* or *Square Barley*, very distinct by having six rows of grains equally ranged, all furnished with awns, and perfect. The grain of this is large.

Besides these species of corn, the genus contains several grasses. *Wall Barley grass* is very common by way sides, and under

1. *Hordeum vulgare*.

2. *Hordeum zeocriton*.

3. *Hordeum distichon*.

4. *Hordeum hexastichon*;

called also *bea* and *big*.

" *Hordeum murinum* *Linnaei*. Curt. Lond. 5. 9. Fl. Dan. t. 629. Mor. hist. t. 6, f. 4.

walls :

walls: and *Meadow Barley grafs*<sup>v</sup>, which is very like it, only that it has a longer stalk, and a shorter spike, is found in moist meadows. The common name of this last is *Rie-grafs*; and indeed it resembles *Rie* more than *Barley*. I have seen it cultivated ~~alone~~; but the sort which is generally sown, and vulgarly called *Rie-grafs*, is in reality *Ray-grafs*, which will be announced to you presently. These two sorts, though apparently so alike, and thought to be but varieties by many, are however very distinguishable: the *Wall Barley-grafs* having the imperfect lateral flowers bearded, and the intermediate involucre ciliate; whereas the *Meadow Barley-grafs* has the same flowers beardless, and the involucre very narrow, like bristles, and rough.

In *Wheat* the exterior valve of the co- *Triticum*. rolla is sometimes bearded, but not always. There are generally three or four flowers in the same calyx, and the middle one is frequently imperfect. The filaments hang out, but not so much as in *Rie*.

1. *Common Wheat* has four flowers in one calyx, the chaffs are smooth, turgid, imbricate; sometimes it has short beards, but more often none: hence and from the colour, &c. are several varieties which husbandmen notice, and we have nothing to do with.

<sup>v</sup> *Hordeum pratense*. Fl. dan. t. 630. Mor. hist. t. 2, f. 6.

1. *Triticum hybernum*.

2. *Summer or Spring Wheat*, has also four flowers together, and agrees with the former in the other characters, except that it is always bearded.

3. *Gray Wheat* has villous, turgid, imbricate obtuse chaffs, containing four flowers. The ears are large, heavy, and nodding; the beards are very long, and drop off when the grain is full grown: the chaff being villous all over, gives the ear a gray appearance.

4. *Cone Wheat* has villous, turgid, imbricate chaffs; and the ear of a pyramidal form, ending in a slender point: the beards are long and rough.

5. *Polonian Wheat* has two flowers only in each calyx, naked, and having very long awns; with the teeth of the *rachis* or receptacle of the spike bearded. The ears are long and heavy.

6. *Spelt* has four flowers, but two only produce any grain; the outer ones are abortive, as the lower ones are in every ear: the outer chaff of the perfect flowers has a beard about an inch long. The flowers are more conical, and the grain is less than in wheat: the chaff also is adherent.

2. *Triticum æstivum*.

3. *Triticum turgidum*: called also *Gray Pollard*, *Duck-bill*, and *Fuller's Wheat*.

4. Not noticed by Linnæus.

5. *Triticum Polonicum*.

6. *Triticum Spelta*. I do not know that this sort is ever cultivated in England.

Few

Few plants are more universal than one grass of this genus: it is known by the name of *Dogs-grass*, and generally execrated by husbandmen under the name of *Couch*, or *Quich*, which is but a corruption of *Quick*, the ancient term for *living*. It well deserves this appellation, for it runs prodigiously at the root, and, like Hercules's hydra, the more you hack and cut it, the faster it propagates itself. It is distinguished from the several species of corn by the smallness of the ear and the grain, and also in the being perennial; whereas all sorts of corn are annual: from the other grasses of the same genus, by having many flowers, about five generally to one calyx, and those not bearded, but very sharp-pointed at the end<sup>w</sup>. There is another species, which has about four flowers in a calyx, and is bearded<sup>x</sup>. This grows in woods and hedges.

Before I quit this genus I must observe, as a singularity, that it is not known, with any degree of certainty, to what country we are originally indebted for the several species of corn, or whether they now grow wild in any. One says that Wheat came first from Africa; others, with more probability, that it travelled into Europe from

<sup>w</sup> *Triticum repens* *Linnaei*. Schreb. t. 26. Fl. dan. 748. Mor. hist. t. 1. f. 8. The number of flowers varies from 3 to 8. *Hudson*.

<sup>x</sup> *Triticum caninum* *Linnaei*. Mor. hist. t. 1. f. 2.

the East. Linnæus affirms that Rie grows naturally in Crete<sup>y</sup>; and Spring Wheat, with Sprat Barley (*Hordeum distichon*), in Tartary: but upon what authority I know not. A late traveller also found barley and oats in Sicily growing like weeds among the bushes, but he does not pretend to determine whether they grew there originally wild, or whether they were stragglers from the fields where they had been cultivated<sup>z</sup>.

*Lolium.*

*Lolium* or *Darnel-grass* is an exception to the general character; for it has only one chaff or leaf to the calyx. The reason of this is, that the spicules are sessile, and in the same plane with the culm, which by this position is enabled to perform the office of the deficient leaf of the calyx in protecting the seed. This single chaff contains several flowers. Of the two common species

<sup>y</sup> It is said also to be wild in Siberia.

<sup>z</sup> Voyage en Sicile, &c. Laufanne, 1773. Diodorus Siculus, from the report of others, and Pliny, assert that grain grew in the Leontine fields, and other parts of Sicily, spontaneously; but this was only during the reign of Ceres. Aristotle also says (de Mirabil. Aufcult.), that there is a wild Wheat in the neighbourhood of Mount Ætna. The passage in Homer's *Odyssey* is well known:

“ The soil untill'd a ready harvest yields,

“ With Wheat and Barley wave the golden fields.”

Wheat, Barley, Vetches, Sesame, &c. are said, by Berofus, to be wild in Babylonia, between the Tigris and Euphrates.

in this genus one is *perennial*<sup>a</sup>, the other *annual*<sup>b</sup>. The first is found naturally in meadows, pastures, and by way-sides. The distinctive marks of the species are, that the spicules in the first are longer than the calyx, and the flowers beardless: whereas in the second, which is a weed among the corn, the spicules are only of equal length with the calyx, and the flowers have short beards. Sometimes however it happens that the flowers of the perennial sort have little beards, and those of the annual none: but you may always know them, not only from their duration and place of growth, but because the second is larger in every respect; the stalk higher, the spike longer; the spicules also are much more remote, so that they do not touch each other, as they do in the first.

*Cynosurus*, or *Dog's-tail grass*, was the *Cynosu-*  
last-mentioned of this division. The *rus*.  
character of the genus is taken from a lateral leaf to each calyx, which Linnæus calls the receptacle, involucre or bracte: this

<sup>a</sup> *Lolium perenne* *Linnæi*. Schreb. t. 37. Fl. dan. 747. Mor. hist. t. 2. f. 2. Pl. 9. f. 1. This is the sort which has been long cultivated in England under the name of *Rie-grass*, which is a corruption of *Ray-grass*; and that is derived from the French *Yoray*, a name given to the second sort, from its quality of affecting the nerves, something like drunkenness: which makes it to be reputed a dangerous weed among Wheat.

<sup>b</sup> *Lolium temulentum* *Linnæi*. Schreb. t. 36. Fl. dan. 160.



gives the spike an air by which the genus is easily known from all others. There is an elegant species<sup>c</sup>, very general in parks and on commons, and found also in other pastures, which has these bracts pinnatifid, or toothed like a comb: the corolla does not open, but closely invests the seed, which therefore does not fall; the spicules have from three to five flowers, are all turned the same way, and do not fit close to the receptacle, or common stalk of the spike; one peduncle supports sometimes two or three of these spicules. The stalk is very erect and slim, and the leaves are narrow and smooth.

There remain still some grasses which militate against the artificial system, and are therefore not to be found in the third class of Linnæus's. But as we are not bound to follow him servilely, we will rather follow nature, who is a better guide.

Anthoxanthum.

Earlier than most of the rest flowers a grass, called from thence *Vernal Grass*<sup>d</sup>. Linnæus has named it *Anthoxanthum*, from the yellowness of its spike. This will serve at present to introduce it to your acquaintance, until you have an opportunity next spring to examine the flowers more minutely. It has obtained the epithet of

<sup>c</sup> *Cynosurus cristatus* Lin. Crested Dog's-tail, Schreb. t. 8. f. 1. Stillingfleet, t. 11. Curtis obs. t. 6.

<sup>d</sup> Curtis, Lond. I. 4. and observ. t. 1. Stillingfleet, t. 1.

*odoratum* from the sweet odour which it communicates to hay. This genus stands alone in the second order of the second class. Each calyx sustains but one flower; each valve of the corolla has an awn, one bent, and proceeding from the base, the other almost from the top: the two filaments are very long; and the two styles are filiform: the chaff of the corolla adheres to the seed. There are three species of the genus: ours is distinguished by the spike being of an oblong form; and the flowers growing on short peduncles, and being longer than the beards.

There is also one species of grass, called *Cinna*, in the second order of the first class.

But in the first order of the twenty-<sup>Holcus.</sup> third class<sup>e</sup> are several genera; of which the *Holcus* or *Soft grass*<sup>e</sup> is most likely to come under your observation. This, and all the others, have smaller imperfect flowers among the perfect ones; a circumstance which constitutes them of that class. They have all bivalvular chaffs for calyx and corolla; three stamens, two pistils, and one seed, together with the whole port or air of the plants we have been just considering; circumstances which plainly denominate them grasses. *Holcus* differs from its neighbours, in having two flowers inclosed in one calyx, which is beardless; whereas the

<sup>e</sup> Polygamia Monœcia,

outer valve of the corolla generally has a beard. The imperfect flowers have neither corolla, pistil, nor seed; but only three stamens within the bivalvular chaff of the calyx. The two common wild species are thus distinguished: *Meadow Soft grass*<sup>f</sup> has villous chaffs: the perfect flowers are beardless; the imperfect have a bent awn. *Creeping Soft grass*<sup>g</sup> has smoothish chaffs: the perfect flowers are beardless, but the imperfect have a jointed awn. They are very much alike, but the calyx is more acute in this than in the former, or indeed than in any of the species. The first grows in pastures; the second in corn-fields and hedges.

Since it is not uncommon to find incomplete or imperfect flowers among those which are perfect, in many of the grasses, which are ranged by Linnæus in his third class; you will perhaps ask me why he has not either put them also in the twenty-third, or else ranged them all together in the third. To this question I cannot return you a better answer, than that the imperfect flowers seem not so constant and regular in the one as in the other; or perhaps are to be met with only in one species of the genus.

<sup>f</sup> *Holcus lanatus* *Lin.* Curtis, Lond. IV. 11. Schreber, t. 20. f. 1.

<sup>g</sup> *Holcus mollis* *Lin.* Curtis, Lond. V. 8. Schreber, t. 20. f. 2.

We have now run through the grasses: there are many other plants very nearly allied to them; as *Schænus* or *Bog rush*, *Cyperus*, *Scirpus*, *Club rush* or *Bulrush*<sup>b</sup>, all three very numerous genera, *Eriophorum* or *Cotton grass*<sup>i</sup>, &c. in the first order of the third class. *Cat's-tail*<sup>k</sup>, *Bur-reed*<sup>l</sup>, and all the *Carices* or *Sedges*<sup>m</sup>, in the third order of the twenty-first. These have the manner of growth, the leaves, the appearance of grass; they have also three stamens: but the stalk is filled with a spongy substance, and the flower is destitute of petals. Finally the *Rushes* and some few others, in the first order of the sixth class, have a six-leaved calyx, a hexapetalous corolla, or none, six stamens, and the seeds in a triangular capsule.

I have not told you all this while that *Sugar*<sup>n</sup> is a grass of the first division, which perhaps you did not expect. But if you are not tired, dear cousin, I am; so adieu for the present.

<sup>b</sup> Curt. Lond. 4. 4. *S. maritimus*.

<sup>i</sup> Curt. Lond. 4. 9, 10.

<sup>k</sup> Curt. Lond. 3. 61, 62.

<sup>l</sup> Curt. Lond. 5. 66, 67.

<sup>m</sup> Some of the species are figured in Curtis, Lond. 3. 63. & 4. 60, 61, 62.

<sup>n</sup> *Saccharum officinarum*. *Lin.* Sloan. jam. t. 66. Rumph. amb. 5. t. 44.

## LETTER XIV.

OF OTHER PLANTS IN THE CLASS  
TRIANDRIA.

July the 1st, 1774.

**Y**OU are not to suppose that, because the last letter was engrossed wholly by Grasses, the third class therefore of the system contains no other plants. In truth there are no fewer than seventy-six genera, and six hundred and eighteen species, in the three orders of this class taken together. You see however, that though the grasses do not occupy the whole, they make a very large proportion of it.

There are some very beautiful genera in the first order of this class, particularly the *Ixia* and *Iris*, or *Fleur-de-lys*°. These with *Crocus*, *Gladiolus*, *Antholyza*, and a few others not easily met with, agree in having a *Spathe* or sheath instead of a calyx; a corolla of six petals, or at least cut into six parts; generally three stigmas, or one that is trifid; and a triangular, trivalvular, trilocular capsule to inclose the seeds: they have also long, narrow leaves, something resembling those of grass—Linnæus calls

° Corrupted into *Flower-de-luce*.

them

thence *Ensisiform*, or *sword-shaped*<sup>p</sup>. These plants are very nearly allied to the liliaceous tribe<sup>q</sup>, and are indeed enrolled in it by the generality<sup>r</sup> of authors who have aimed at framing a natural arrangement.

Take any species of *Iris*, either the *Iris* *blue*<sup>r</sup> or *white*<sup>r</sup> sorts, which you have so abundantly in the borders of your shrubberies and plantations; or else the *yellow*<sup>r</sup> one, common in wet places, and usually called *flag*. In the first place you will observe, that whether the flowers are open or closed, each has its own sheath, separating it from the others. The corolla at first seems to consist of six petals, but you will quickly see that the parts are all united at the base: the three outermost of these parts or petals are bent downwards, and thence are called *falls*; the three inner ones stand erect, and have the name of *standards*. In the centre of them are three other petals, as they seem to be; but in reality they are the stigma thus divided into three parts; and under each division you will detect a single stamen lurking, with the filament bent along with the stigma, and terminated by a large oblong, flattened anther:

<sup>p</sup> Hence in his *Natural Orders* he has kept these together, with the addition of some others, under the title of *Ensiferae*.

<sup>q</sup> See Letter I.

<sup>r</sup> *Iris Germanica* *Linnaei*. Blackw. t. 69.

<sup>r</sup> *Iris Florentina* *Linnaei*. Mill. fig. t. 154.

<sup>r</sup> *Iris pseudacorus* *Linnaei*, Curtis, Lond. III. 4.



for the germ you must search below the flower, and there you will find it a green oblong body; which when the flower faded and fallen, becomes in most species a three-cornered capsule, opening by three valves, and having the seeds ranged in three cells. We have not yet noticed a set of small bodies forming a villous line along the middle of the reflex petals; but this you perceive is not common to all the species your blue and white Iris having it, but not your yellow flag: it cannot therefore be a mark of the genus. However it may serve the purpose of subdividing it, or furnishing a specific character. When you have finished with the fructification, you will remark that the leaves are very narrow in proportion to their length; and that they are not unaptly termed ensiform from the similitude of their shape to that of a broadsword. If you can have the heart to pull one of these fine plants out of the ground, you will see that the roots are not fibrous, but oblong and fleshy: I guess however that you will take my word till the autumn, when the gardener will be removing some of them, or at least exposing their roots, when he digs his borders.

You may distinguish the *blue* or *German*, the *white* or *Florentine*, and the *yellow* or *marsh Iris*, specifically thus: The two first have the corollas bearded; the first and third have several flowers upon the stem; the

the second has only one or two flowers, and the peduncles are not so long as in the first; the third has the corollas beardless, and the interior petals less than the divisions of the stigma". But why all this parade, say you, when we know them by their hues; blue, white, and yellow? Trust not too much to colour, fair cousin. What if an Iris were to present itself with blue flowers, and only one or two on the stem, or without beards; or with the flowering stem shorter than the leaves, would such be of the same species, merely because the corolla is of a blue colour? No surely: and we pay more respect to these circumstances than to colour, not because we esteem them more, but because they are more certain and permanent.

The *Chalcedonian* Iris <sup>v</sup> has stems two feet and an half high, supporting one very large flower; the three standards are very broad and thin, with black and white stripes; the three falls are of a darker colour: this is one of the bearded sorts.

Among these handsome specious plants, let us not forget the humble *Persian* Iris <sup>w</sup>, seldom rising three inches from the ground, but beautiful in its colours, fragrant in its scent, and flowering at a time when few

<sup>v</sup> They are all three distinguished from some other species by the flowering stalk standing up superior to the tips of the leaves.

<sup>v</sup> *Iris fusiana* *Linnaei*. Curt. Magaz. 91.

<sup>w</sup> *Iris Persica* *Linnaei*.

beauties dare trust themselves to dubious skies and inclement air\*. One or two flowers come out together: the standards are of a pale sky blue; the falls are of the same colour on the outside, but the lip has a yellow streak running through the middle, and on each side are many dark spots with one large deep purple spot at the bottom: they have no beard. The leaves are hollowed like the keel of a boat, and are about six inches long. You will be glad to entertain this pretty dwarf, when there is little else to amuse you in this way beside Crocuses and Snowdrops.

I have sent you this little nosegay of handsome flowers, to make you amends for all the dry chaff and hay with which I fatigued you in my last.

\* February. This is figured in Curtis's Magazine, n. 1. And several other sorts are figured in that elegant work:—as *I. pumila* t. 9.—*variegata* 16.—*versicolor* 21.—*fibrica* 50.—*spuria* 58.—*ochroleuca* 61.—*fusiana* 91.—By this assemblage we are much helped in distinguishing the species.

## LETTER XV.

OF THE CLASS TETRANDRIA.

July the 8th, 1774.

CONSCIOUS, dear cousin, that the nosegay of my last was too small to employ you long, I have hasted to send you the fourth class, which is rather more numerous than the third in the genera, of which it contains eighty-five; but far less so in the species, there being no more of these than three hundred and ninety.

You will have some examples in this class of *aggregate* flowers, the general nature of which I explained to you before<sup>y</sup>; but you will be perfect mistress of it I am persuaded, when you have considered the structure of the *Teasel* and *Scabious*. These and all others of this natural order have monopetalous corollas, succeeded by one seed, to which they are superior. A number of these are included within one common calyx, as in the compound flowers, from which they differ, in having the stamens four in number, and totally distinct, with a calyx proper to each little flower; they might however easily be confounded

<sup>y</sup> In Letter VI.

with

with compound flowers, if the general form and appearance only were attended to.

*Dipfacus.* The two genera of *Teasel* and *Scabious* agree in having the common calyx polyphyllous, or consisting of many leaves. The first has chaffs between the flowers on the receptacle, or common base of them all; the form of which is conical. The second has these chaffs in some species, but in others the receptacle is naked; the form of it is convex: it is remarkable for a double calyx to each little flower, besides that which is common to the whole. The leaves of the calyx are very long in the *Teasel*, and in several rows in the *Scabious*.

Such are their principal generic distinctions. Common *Teasel* is separated from its congeners, by its sessile leaves, which are serrate or toothed about the edges. The conical head of the *Teasel* is furnished with stiff beards, which in the wild sort<sup>z</sup> are straight, but in the cultivated hooked<sup>a</sup>. This difference did not seem to Linnæus considerable enough to make them specifically distinct. Haller, Jacquin, and others, are of a different opinion; and it is now generally allowed that the cultivated *Teasel* is of a species distinct from the wild one.

*Scabiosa.* Of *Scabious* there are no less than thirty-

<sup>z</sup> *Dipfacus sylvestris*. Curtis, Lonl. III. 9. Ger. 1167. 2.

<sup>a</sup> *Dipfacus fullonum* Linn, Ger. 1167. 1. Mor. 7. 36. 1.

four species. The genus divides conveniently into such as have the corollas of the little flowers divided into four, and such as have them divided into five segments: of the first there are fourteen, of the second twenty species. Of our three wild sorts two are in the first division, and one in the last. The common field Scabious<sup>b</sup> is a large, tall plant; the stalk is hairy: the lower leaves are sometimes almost entire; sometimes they, as well as the leaves upon the stem, are pinnatifid. The outer flowers are larger, and have the corolla deeper cut than the middle ones, and the outer segments are also largest: they are of a pale purple colour.

The other species with quadrifid corollas is called *Devil's-bit*<sup>c</sup>, because it has a short tap root, which appears as if the end were bitten off. The stalks of this are not so high, nor are they branching as in the first: they generally send out two short peduncles from the upper joint, opposite to one another, each terminated by one small blue flower, as is the principal stalk by one larger; the little component flowers are not irregular as in the former. The leaves are simple and entire, (except some on the middle of the stem, which have a few teeth,) oblong and drawing to a point at each end. This species grows in pastures and woods,

<sup>b</sup> *Scabiosa arvensis* Lin. Curtis, Lond. IV. 13.

<sup>c</sup> *Scabiosa succisa* Lin. Curtis, Lond. III. 10.



and flowers later than the first, which is common in corn fields, and not uncommon in pastures.

Small Scabious<sup>d</sup>, besides having quinquefid corollas, is distinguished from the two others by having the leaves next the ground ovate and notched about the edges, whilst those upon the stem are pinnate; towards the bottom the pinnae are broader, but in the upper ones very narrow: there are about eight pairs of these, and the terminating leaflet is large. The aggregate flower is produced single, on a long peduncle, the outer little flowers larger, and very irregular, as in the first species, of a pale blue colour. It is common in pastures, especially where the soil is chalky.

Before you are got thus far, I am persuaded your own mind has suggested to you that a plant with dark purple flowers, and a strong sweet odour, which your gardener sows every year in the borders, is of this genus. The name of *Sweet Scabious* has not led you, who are not governed by mere names, to suppose this, but the evident similitude in the structure. An accurate examination of the flower will confirm your suspicion; and you will find it to be one of those which have quinquefid irregular corollas: the receptacle of these is oblong; the common calyx consists of

<sup>d</sup> Scabiosa columbaria *Lin.* Fl. dan. t. 314. Pl. 11. f. 1.

twelve linear folioles, of the length of the aggregate flower, and bent back: the leaves are finely cut \*. The colour of the corolla varies from black to pale purple, red and variegated, and sometimes the main flower is surrounded by a set of very small ones on slender peduncles, as in the *Hen and Chicken Daisy*; but all these are confessedly no other than feminal varieties: though now so common with us, this plant is originally from the Indies.

This class comprises another natural order of plants, entitled *Stellated*, from the manner in which the leaves grow upon the stem, several together in sets one above another, radiating like the points of a star, as it is commonly represented. I must observe to you, that though in this case, and in many others, a class or order takes its name from an obvious or striking circumstance in its structure, yet it does not follow that all plants which have that structure are to be looked for there, or that this is the only or even principal reason of their being kept together. When a plant of this or that general appearance presents itself, you may reasonably presume that it ranks in this or that order; but outward appearances must not carry you beyond presumption, and it is the structure of

\* *Scabiosa atropurpurea* Lin. Ger. 724. 16.

the fructification that must determine you at last<sup>f</sup>.

In the *Stellated* plants the structure is this: the calyx is extremely minute, divided into four parts, and permanent: the corolla is monopetalous divided into four segments; the stamens are four in number; the germ is double, and below the flower; the style is bifid; the fruit is globose, and contains two seeds. The stalk is quadrangular.

All the genera of this order resemble each other so much, that some authors have reduced them into one. *Madder* has a bell-shaped corolla, succeeded by two berries with one seed in each. *Sberardia* and *Wood-roof*<sup>g</sup> have funnel-shaped corollas: the first has a little crown to the seeds, the second has them globose, without any crown. *Galium* has a salver-shaped corolla, and two roundish seeds. This last genus has twenty-six species, twenty of which have the fruit smooth; in the remaining six it is rough. The number of leaves in each star or whorl, together with the shape of them, gives the principal specific distinctions.

<sup>f</sup> See what was said upon this subject with respect to the Elder in Letter V. I must add that use and practice is necessary to give the proper tact in natural objects as well as in works of art: the similitudes and analogies that ignorant persons find being usually truly ridiculous.

<sup>g</sup> *Asperula odorata*. Curtis, Lond. IV. 15.

*White Galium*, or *White Ladies Bedstraw* has four leaves in a whorl towards the bottom of the stem, and six narrower ones higher up. *Great Ladies Bedstraw*<sup>i</sup>, has eight, a little notched about the edges, ovate in form, and terminating in a point or little hook. *Yellow Ladies Bedstraw*<sup>k</sup> has also eight leaves, but they are very narrow, and furrowed; the flowering stalks are very short, and the corollas are yellow. The first grows in moist meadows, and by river sides; the second in hedges, and on heaths among the bushes; the third is very common in pastures, on balks, and by way sides. These three all have smooth seeds. The common *Galium*<sup>l</sup>, known by the name of *Goose-grass* or *Cleavers*, every body knows to have rough seeds, by their sticking to the clothes as we pass near the hedges. The leaves also are rough, lance-shaped, and eight in number. The flowers of all the species, and indeed of the whole tribe, are very small, but the plants are known at first sight by their air.

The *Plantains* are also of the first order *Plantago*. of this class *Tetrandria*: they are numerous, for there are twenty-four species of them. As a great number of small flowers grow together in a spike or oblong head, you

<sup>h</sup> *Galium palustre* Lin. Fl. dan. 423.

<sup>i</sup> *Galium Mollugo* Lin. Fl. dan. t. 455.

<sup>k</sup> *Galium verum* Lin. Curtis, Lond. n. 63. Mill. fig. t. 139. f. 1.

<sup>l</sup> *Galium Aparine*. Curtis, Lond. II. 9.

must separate one of them to examine the parts of the fructification distinctly. You will then find that each of these small flowers has a quadrifid calyx and corolla, with the border of the latter reflex: the filaments are remarkably long: and the seed-vessel is a bilocular capsule, opening horizontally, and placed above the receptacle.

The *Great*<sup>m</sup> and *Ribwort*<sup>n</sup> Plantains are doubtless well known to you; the first so common by way sides, and the second in pasture grounds. The *Great Plantain* is distinguished by its ovate, smooth leaves, and its round, naked, flowering-stalk<sup>o</sup> terminated by a long spike of flowers lying close over each other<sup>p</sup>. *Hoary Plantain*<sup>q</sup> is nearly allied to this, but the leaves are longer, and white with hairs; the spike is cylindric, but shorter and thicker than in the first. *Ribwort Plantain* has the leaves lance-shaped; a short, naked, ovate spike; the scape angular, and twisted. This, and the other species have the leaves marked lengthwise, with very prominent ribs or nerves.

By submitting to examine these plants, which you were already acquainted with, you will acquire a facility in discovering

<sup>m</sup> *Plantago major* *Lin.* Curtis, Lond. II. 11.

<sup>n</sup> *Plantago lanceolata* *Lin.* Curtis, Lond. II. 10. Pl. 11. f. 3.

<sup>o</sup> This Linnæus calls *scapus*, from its resemblance to the shaft of a column.

<sup>p</sup> Imbricate.

<sup>q</sup> *Plantago media* *Lin.* Curtis, Lond. IV. 14.

such as are strangers to you; for you have too much sense to despise them because they are common, or destitute of beauty: in confidence of this, I have been studious to select rather such plants as you may readily meet with, and are proper for examination, than those that are most rare and valuable. If you were in the neighbourhood of a famous botanic garden, I might be nicer in my choice, and at the same time present you with greater variety, but perhaps after all, I might not be more useful, or you more amused: at least I shall hope for the continuance of that indulgence a little longer with which you have hitherto honoured me<sup>r</sup>.

But to return to our business; there is a plant of this fourth class and first order, which I must not omit presenting to you, were it but for the name's sake. *Ladies Mantle* <sup>Alchemilla.</sup> has a calyx of one permanent leaf, <sup>milla.</sup> divided into eight segments, four of which are larger, and four smaller; it has no corolla; and only one little seed to each flower. There are three species of *Ladies Mantle*.  
 1. The Common, 2. The Alpine, and

<sup>r</sup> Students in Botany who live in or near London, or come occasionally to the great city, will be happy to profit by Mr. Curtis's excellent Garden, at Brompton, where a considerable number of plants is arranged and named, so that he that runs may read.

1. *Alchemilla vulgaris*. *Lin.* Mor. hist. f. 2. t. 20. f. 1. *Mill.* fig. pl. 18.

2. *Alchemilla alpina*. *Lin.* Fl. dan. t. 49.

M 4

3. The



3. The five-leaved. The first is known by its simple, lobate leaves, nicely serrated about the edge, and divided into from eight to twelve greater parts: before the leaf expands it is folded or plaited at each of these divisions, and hence the name. The flowers grow in bunches, are inconsiderable in point of size, and also of colour, for having no corolla they are only green, or what botanists call herbaceous. It is an humble, but an elegant plant, and grows in high pastures, but not common.

*Alpine Ladies Mantle* is much more elegant than this, with its shining silky leaves, which are digitate, and indented at the end: the folioles or component leaves vary in number from five to nine. The third species is very uncommon: it is a small plant, quite smooth, with digitate leaves, but each of its five folioles divided half way into several smaller ones.

The second order of this class has a singular plant, *Cuscuta* or *Dodder*. It is without leaves, has a stalk slender as a thread, which would trail along the ground did it not lay hold on some plant stronger than itself for support; not content with support, where it lays hold, there it draws its nourishment; and, at length, in gratitude for all this, strangles its entertainer! I imagine this account will not bespeak your af-

3. *A. pentaphyllea* Lin.

fection

fection for *Dodder*<sup>s</sup>. If you will be at the pains of disembarassing a poor suffering bean from its entangling stalks, you will see that the flowers come out in sessile knots; that each of these has a calyx divided half way into four or five parts; that the corolla is of one petal divided into four or five segments at the edge: and that the seed-vessel is a bilocular capsule. This parasite, as Linnæus justly calls such plants, fastens itself about beans, nettles, clover, flax, heath, &c. and feeds upon them by means of innumerable teats or glands which it inserts into the pores of it's supporter's bark.

The *Pondweeds*, which are many, and sufficiently common, will serve for an instance of the third order. If your own fish-ponds are kept too clean to furnish these plants, you may probably procure them from some of your neighbours; or, if they were worth the carriage, I could send you abundance from our moat. You will know them by the leaves lying flat upon the water; and by the stem's pushing up a spike of inconsiderable flowers, that have no calyx, a corolla of four deciduous petals, four germs terminated by obtuse stigmas, with-

<sup>s</sup> *Cuscuta Europæa* Lin. Fl. dan. 199. The divisions of the calyx, and corolla, and the stamens, are five in the British species; ours therefore is *C. Epithymum*, and according to the strict laws of the artificial system, should appear in the next class. It is figured in Fl. dan. 42.

out the interposition of any style, and becoming in time four roundish seeds.

The *broad leaved*<sup>t</sup> species is one of the most common, and is known by its oblong ovate leaves. *Perfoliate* Pondweed<sup>u</sup> has heart-shaped leaves embracing the stalk, and grows in running waters. *Curled* Pondweed<sup>v</sup> has lance-shaped, waving leaves, notched about the edges, and standing alternate upon the stem: this is found both in running and stagnant waters.

But of these enough—don't hazard getting wet, or catching cold, in search of them. If any of these plants which I have hitherto recommended to your notice, elude your search, or have passed their stated time of flowering before you find them, note them down for next year: so adieu, dear cousin.

<sup>t</sup> *Potamogeton natans*. *Lin.* Miller illustr. Ger. 821. 1.

<sup>u</sup> *P. Perfoliatum*. *Lin.* Fl. dan. 196. Ger. 822. 3.

<sup>v</sup> *P. Crispum* *Lin.* Curtis, Lond. 5. 15. Ger. 824. 2.

## LETTER XVI.

THE FIRST ORDER OF THE FIFTH CLASS,  
PENTANDRIA MONOGYNIA.

March the 25th, 1775.

MY indisposition of last autumn has given you ample leisure, dear cousin, to make yourself mistress of the general arrangement of plants, and of the first four classes in particular. Since it is your earnest desire, I have resumed my former prate as early as possible, that nothing may escape us this season. We have now a large class to encounter with, containing more than a tenth part of the vegetable world, for it has two hundred and sixty-one genera, and one thousand five hundred and five species. It includes, as you may suppose, several natural orders; and some species are even now ready for examination.

We will open the year, by your leave, *Primula*. with the *Primrose*, which has its name from being one of the first flowers that blow. This, with some others that resemble it, form a natural order, entitled, for the same reason, *Preciæ*<sup>w</sup>; and agreeing in having a monophyllous, quinquefid, permanent ca-

<sup>w</sup> *Præcoces*, early.

lyx; a monopetalous, quinquefid corolla and a capsule for a seed-vessel, superior inclosed within the calyx. The characters of the genus are, an involucre under the flower, or knot of flowers; the corolla funnel-shaped or salver-shaped, with the tube cylindric, and open at the top; the stigma globose: the capsule unilocular. The species<sup>x</sup> is distinguished by its pentagonal calyx, its cylindric oblong capsule, and the wrinkled surface, and indented edges of its leaves. The three principal varieties, they are but varieties, are thus commodiously separated. The *Primrose*<sup>y</sup> has one flower on a naked stem, and the corolla salver-shaped. The *Ox-lip*<sup>z</sup> has several flowers on one naked stem, and the corolla salver-shaped. The *Cowslip*<sup>a</sup> has many flowers on a naked stem and the corolla funnel-shaped. The yellow of the two first is very pale; the corolla of the *Primrose* is much the largest; that of the *Ox-lip* a middle size, between the two others: the simple unbranched flowering stem of the *Primrose* is weak, and rather peduncle than a stalk; the scape of the *Ox-lip* is sometimes near a foot high, and strong; that of the *Cowslip* is generally lower and weaker. I do not know whether

<sup>x</sup> Comprehending *Primrose*, *Ox-lip*, *Cowslip*, and *Polyanthus*.

<sup>y</sup> *Primula acaulis* *Lin.* vulgaris *Hudson.* Fl. dan. 194.

<sup>z</sup> *Primula vulgaris* *g. Hudf.* Fl. dan. 434.

<sup>a</sup> *Primula veris* *Lin. & Hudf.* Fl. dan. 433.

dare to tell you that all the beautiful sorts of *Polyanthus*, by you prized so much, are but an accidental variety of this species, which is certainly much disposed to vary even in its wild state. Thus the primrose has sometimes two flowers together, or changes to green, or to red, or doubles its corolla; the Ox-lip sometimes has very few flowers, and they are nearly as large as a Primrose; and the Cowslip has frequently red flowers, then much resembling a small *Polyanthus*.

See now by how many steps you arrive at a knowledge of these plants. You first determine their class and order, by seeing that they have five stamens, and one pistil; having still an hundred and fifty-five genera to encounter, you next settle what subdivision of the order they range under; and finding that the corolla is monopetalous, inferior, and succeeded by a vessel inclosing the seeds, you are reduced to seventy-three genera. Next you discover that they are of the natural order of *Preciæ*, which leaves you but ten genera to choose out of. You are now got within so small a compass that it cannot be very difficult to ascertain the genus, the species which are ten in number, and the subordinate varieties. I do not make all this parade, in order to enable you to discover a plant which you were perfectly acquainted with beforehand, but to shew you



you how you are to proceed with a plant you do not know, from this instance of one which you do.

Or you may take it thus—You have a plant in flower, which for the present I will suppose you to be unacquainted with. You first examine the stamens and pistil, and by the number of these you determine your plant to belong to the fifth class and the first order. You next consult the subdivisions of that order, and find it belonging to that which has monopetalous inferior corollas, with the seeds inclosed in a vessel. Seeing farther that your plant has a monophyllous calyx cut into five segments, that the corolla is also divided in the same manner: this added to the foregoing circumstances shows you that it ranges under the natural order of *Preciæ*. Here remarking an involucre under the flowers, the tube of the corolla cylindric, and open at top, and the capsule unilocular or one-celled, you are assured at length that your plant is of the genus *Primula*. But finding that the leaves, instead of being wrinkled, are perfectly smooth, fleshy, and either entire, or sharply notched about the edges, you are well assured that it is a distinct species; and upon inquiry discover it to be the *Auricula*, the elegant, the powdered *Auricula*, much esteemed by florists, and so varie-

• *Primula Auricula* Lin. Ger. 784, 5, 6.

in the size and colours of its corolla, when in a state of cultivation.

All the other plants of this natural order *Meadia*. are pretty, if not specious. *Meadia*, per-  
versely altered by Linnæus to *Dodecatheon*<sup>c</sup>, is an American plant, but flowers well and early in our climate. It has a rotate or wheel-shaped corolla with reflex petals: the stamens sit upon the tube; and the capsule has one cell only, and is oblong. This is sufficient for the complete detection of the plant, since there is only one known species. The leaves however are smooth; the flowering stems are naked, eight or nine inches high, and sustain many flowers, each of which has a long slender peduncle, which is recurved so that the flower hangs down; the corolla is of a beautiful light purple. If you have not this plant already in your garden, procure it against next spring; you will be pleased with the structure and appearance of it.

*Cyclamen* resembles *Meadia* in its wheel-  
shaped reflex corolla, but the tube is globu-  
lar, and remarkably short, with the neck prominent; the stigma, which was obtuse in that, is acute in this. The seed-vessel is roundish and fleshy, inclosing several angular seeds: Linnæus calls it a berry covered with a capsular shell. There are several species or varieties of *Cyclamen*; for it is doubtful whether they are positively dif-

<sup>c</sup> Curtis's Magaz. 12. Mil. fig. pl. 174. Pl. 12. f. 2.  
tinct

tinged or not. The most common<sup>d</sup> has heart-shaped angular leaves, marked with black in the middle. The flowers appear alone, before these, rising immediately from the root: when they fall, the peduncles twist up like a screw, inclosing the germ in the centre, and lie close to the ground among the leaves, which grow very thick together, and protect them all winter. The common colour of the corolla is red, but varies to purple and white. There is one sort which has the leaves purple underneath; and another which has the veins only purple, and the upper side veined and marbled with white: the flowers white with a purple base. The Persian sort has leaves like the last in colour, but quite entire about the edges, the flowers large, pale purple with a bright red or purple base. All these, and other differences, whether specific or not, make a most agreeable variety, and are very beautiful.

There are two wild plants of this natural order which I must recommend to your inspection for their beauty. They grow in the water, and therefore you must procure them by another hand.

Menyanthes.

*Marsh Trefoil, Buckbean or Bog-bean* will discover itself to you immediately by

<sup>d</sup> *Cyclamen Europæum* Lin. C. com. is figured in Curt. Magaz. t. 4.—*Perficum*, in t. 44.

<sup>e</sup> Miller's fig. pl. 115.

<sup>f</sup> *Menyanthes trifoliata* Lin. Curtis, Lond. IV. 17. the