the corolla being fringed all over; it is funnel-ſhaped, with a ſhort tube, and the border divided beyond the middle; the colour is white, but red on the outſide; the ſtigma bifid; and the ſeed-veſſel a capſule of one cell. The ſpecies is diſtinguiſhed by its ternate leaves; whence, and from its ſituation, it has the name of *Marſh-trefoil*; and becauſe each of the component leaves is of the ſize and ſhape of a bean-leaf, it is alſo called *Buckbean* or *Bogbean*. The flowers grow in a looſe ſpike at the top of the ſtem.

Water Violet[g] has a ſalver-ſhaped corolla not fringed, the tube longer than in the laſt, the colour white or faint purple, with a yellow eye: the ſtamens are placed upon the tube of the corolla; the ſtigma globoſe; and the ſeed-veſſel a capſule of one cell, as in the laſt. The leaves are wholly immerſed in the water, and finely pinnate; the flower-ſtem is naked, and riſes five or ſix inches above water; towards the top are two or three whorls of flowers, and it is terminated with a cluſter of them; the whole forming a kind of conical ſpike. Hottonia.

Another natural order of this claſs contains the plants entitled *Aſperifoliæ* or *rough-leaved*. Theſe are not ſo beautiful as the laſt; but you are by this time become too good a naturaliſt to be led away by gaudy colours or ſpecious appearances. Though roughneſs of the leaves and ſtem be a general

[g] Hottonia paluſtris *Lin.* Curtis, Lond. I. 11.

character of this order, yet it is more neceſſary that the following character ſhould be found in the fructification. The calyx is of one leaf divided into five ſegments, and permanent: the corolla is monopetalous, divided alſo into five ſegments, tubulous, and extending below the germs: the five ſtamens grow from the tube of the corolla: and there are four naked ſeeds to which the calyx ſerves as a capſule. We may remark farther, that the leaves are placed alternately, or without order on the ſtem; and that the ſpike of flowers, before they open, is reflex. With ſo ample a train of circumſtances to direct you, there cannot be much difficulty in knowing when you meet with one of this rough-leaved tribe of plants; eſpecially as they wear the ſame dreſs, and have a ſtrong family likeneſs.

Out of eighty-three ſpecies, which this order contains, you may perhaps know ſome of the following, and from them you will have an idea of the reſt. Heliotrope or Turnſole, Mouſe-ear Scorpion-graſs, Gromwell, Alkanet, Hound's-tongue, Pulmonaria, Comfrey, Cerinthe, Borage, Bugloſs, and Viper's Bugloſs. If you examine the corolla of theſe plants, you will obſerve that ſome of them have five ſcales in the tube of it, whilſt others have none; this circumſtance, together with the ſhape of the corolla, will furniſh the principal generic diſtinctions. Thus Gromwell, Pulmo-

naria, Cerinthe, and Viper's Bugloſs, have the tube of the corolla naked; the reſt have the five ſcales. Heliotrope and Mouſe-ear Scorpion-graſs have ſalver-ſhaped flowers; Gromwell, Alkanet, Hound's-tongue, Pulmonaria, and Bugloſs, have funnel-ſhaped flowers; in Comfrey and Cerinthe the corolla is ventricoſe, ſwells or bulges out towards the top; Borage has a rotate corolla; and in Viper's Bugloſs it is an irregular kind of bell-ſhaped corolla. Heliotrope has the ſcales; but the top of the tube is not cloſed by them, as it is in the Mouſe-ear Scorpion-graſs, Alkanet, Hound's-tongue, Comfrey, Borage. Hound's-tongue has flat ſeeds fixed to their ſtyle by their inner ſide only. Pulmonaria has a pentagonal or priſmatic calyx. Cerinthe has only two hard, ſhining bilocular ſeeds. Bugloſs has the tube of the corolla bent.

Common Turnſole [h] has the leaves ovate, entire, wrinkled, and covered with a nap; the lower ſpikes of flowers are ſingle, and the upper ones double. The colour of the corolla white, with a greeniſh eye, and ſometimes light red. This is an annual lant. Helio-tropium.

Peruvian Turnſole [i] has a ſhrubby ſtem; the leaves of a long ovate form, wrinkled and rough, on ſhort petioles; the flowers are produced at the end of the branches in

[h] Heliotropium Europæum *Lin.* Jacq. auſtr. 3. t. 207.
[i] Heliotropium Peruvianum *Lin.* Mill. fig. pl. 144.

ſhort ſpikes, growing on cluſters, the peduncles divide into two or three others, and theſe again into ſmaller ones, each ſuſtaining a ſpike of pale blue flowers, which have a peculiar odour.

Myoſotis. *Mouſe-ear Scorpion-graſs* [k] is common both in dry paſtures and heaths, and by the ſides of ditches and ſtreams; in the former it is hairy, in the latter ſmooth, with the flowers much larger, and extremely beautiful when ſeen ſufficiently near, of a moſt elegant blue with a yellow eye. Linnæus diſtinguiſhes this ſpecies by the ſmoothneſs of the ſeeds, and by the tips of the leaves being callous.

Litho-ſpermum. There are two ſorts of Gromwell wild. The *true* Gromwell [l], which name is a corruption from *Gray Millet*, is not very common; it affects dry ſoils, eſpecially chalk, and is found chiefly in woody places, or among buſhes. You will know it by its whitiſh, ſhining, oval, hard ſeeds; which latter quality gave occaſion to the Latin name, from the Greek, *Lithoſpermum* [m]. Or if it be not far enough advanced to ſhow the ſeeds, obſerve that it is a much larger and more branching plant than the next; the leaves are lance-ſhaped; the flowers are ſmall, and come out ſingle from the axils

[k] Myoſotis ſcorpioides *Lin.* Curtis, Lond. III. 13.

[l] Lithoſpermum officinale *Lin.* Mor. hiſt. ſ. 11. t. 31. f. 1. Ger. 609. 2.

[m] Stone-ſeed.

of

of the leaves on ſhort peduncles; the corolla is white or yellowiſh, with a greeniſh tube.

Corn Gromwell[n] is a common weed among corn, and differs from the former in its wrinkled, conical ſeeds; the leaves alſo are ovate, and ſharp-pointed; the flowers are chiefly on the top of the ſtem among the leaves; the corolla is white, with the tube ſwelling at top. Both ſpecies have the corollas ſcarcely extending beyond the ſegments of the calyx; and both have the roots tinged with red, whence the latter has the name of *Baſtard Alkanet.*

Hound's-tongue[o] is a large plant that grows common by hedges and way ſides; it has a ſtrong ſmell like that of mice. The corolla is of a dirty red, or the colour of blood that has ſtood ſome time. It is diſtinguiſhed from the other ſpecies by the ſtamens being ſhorter than the corolla; the leaves broad lance-ſhaped, nappy, and ſitting cloſe to the ſtem without petioles. Cynogloſſum.

Comfrey[p] is common by water ſides. The leaves are large, long, hairy, and ending in a point; from their baſe on each ſide runs a border down the ſtalk[q]. From the upper part of the ſtalk come out ſome ſide- Symphytum.

[n] Lithoſpermum arvenſe *Lin.* Fl. dan. 456. Mor. ſ. 7. Ger. 610. 4.

[o] Cynogloſſum officinale *Lin.* Curtis, Lond. IV. 16.

[p] Symphytum officinale *Linnæi.* Curtis, Lond. IV. 18.

[q] This is what Linnæus calls *decurrent.*

branches, with two ſmaller leaves, terminated by looſe bunches of nodding flowers the corolla of a yellowiſh white, in ſome places purple.

Cerinthe. Of *Cerinthe* there are two ſpecies only, diſtinguiſhed by the larger ſort[r] having obtuſe, open corollas; the leſs[s] having ſharp, cloſe corollas. The leaves of the firſt are ſea-green ſpotted with white; it varies with prickly and ſmooth leaves, with yellow and purpliſh red corollas. It grows wild in Italy, the ſouth of France, Germany, and Switzerland. The ſecond has more ſlender ſtalks; the calyx large, the corolla ſmall and yellow. This is found naturally in the Alps. Both are not uncommon in gardens.

Borago. *Borage*[t] is an annual plant, which comes up in your kitchen garden, without the care of the gardener. The whole plant is rough; the leaves are large, and broad lance-ſhaped. The flowers came out in looſe, naked bunches, on long peduncles, at the end of the ſtalks: the calyx, with the corolla, ſpreads out quite flat: the colour of the corolla is a fine blue, which ſometimes fades to white, or changes to red.

Lycopſis. *Bugloſs*[u] is common among corn, and by

[r] Cerinthe major *Lin.* Mill. ſſg. 91.

[s] Cerinthe minor *Lin.* Jacq. auſtr. 2. t. 124.

[t] Borago officinalis *Lin.* Mor. hiſt. ſ. 11. t. 26. f. 1. Ger. 797. 1, 2.

[u] Lycopſis arvenſis *Lin.* Curt. Lond. 5. 17. Mor. t. 26. f. 8. Ger. 799. 3.

way

way ſides. A very rough plant, with blue corollas veined with white.

Viper's Bugloſs [v] is a much larger plant than this, with a large handſome ſpike of blue flowers. The ſtalk is very erect and ſpotted: the leaves lance-ſhaped, the lower ones petiolate, the upper ſeſſile. It is common among the corn in ſome countries; alſo in ſome paſtures, by way ſides, and on walls. Echium.

You will find ſome plants of this fifth claſs and firſt order which have a bell-ſhaped corolla of one petal. If they have a permanent calyx divided into five parts, and a capſule for a ſeed-veſſel, they belong to a natural order entitled *Campanaceæ* [w]. Three very large genera [x], beſides ſome others, belong to this order.

The genus *Convolvulus* [y] is diſtinguiſhed from all others by its large, ſpreading, plaited corolla, with the edge either marked with ten notches, or ſlightly quinquefid; two ſtigmas; and a capſule wrapped up in the calyx, generally bilocular, with two roundiſh ſeeds. Convolvulus.

From this genus I will ſelect two wild

[v] Echium vulgare *Lin.* Fl. dan. 445. Ger. 802. 2.

[w] Bell-flowers.

[x] Convolvulus, Ipomæa, and Campanula: the firſt has ſixty-four; the ſecond twenty-two; and the third ſixty-ſix ſpecies.

[y] So called from twining round any thing it comes near; this property however is not common to all the ſpecies.

and two cultivated ſpecies, for your examination.

Small Bindweed[z], which is ſo common a weed among corn, has ſagittate leaves[a] acute both ways, and one flower upon a round long peduncle. The weak ſtalks trail on the ground, unleſs they meet with ſome other plant to ſupport them; the corolla is either white, or red, or variegated; and if the plant came from India it would be cultivated for the beauty of the flower: I do not however recommend you to grow fond of it, for it creeps intolerably at the root.

Great Bindweed[b] has ſagittate leaves as well as the laſt, but truncate or cut off behind; the flowers come out ſingle alſo, but on ſquare peduncles. This is a much larger, ſtronger plant than the other, riſing in hedges or among buſhes and ſhrubs, ten or twelve feet high: the corolla is very large, and always pure white; immediately under the calyx is a large heart-ſhaped involucre of two leaves. The former ſpecies has theſe two leaves, but they are very narrow, and in the middle of the peduncle.

Purple Bindweed[c], an annual ſpecies cultivated in flower gardens under the name of *Convolvulus major*, has heart-ſhaped undi-

[z] Convolvulus arvenſis *Lin.* Curtis, Lond. II. 13.

[a] Shaped like the head of an arrow.

[b] Convolvulus ſepium *Lin.* Curtis, Lond. I. 13. Pl. 12. f. 3.

[c] Convolvulus purpureus *Lin.* Ehret. pict. t. 7. f. 2. Curtis's Magaz. 113.

vided

vi[illegible]d leaves, the ſeed veſſels hanging down aft[illegible]r the flower is gone, and the peduncles ſw[illegible]elling. This, if ſupported, will climb to the height of ten or twelve feet. Though the moſt uſual colour of the corolla is purple, yet there are varieties white, red, and whitiſh blue.

Tricolor Bindweed[d], or, as it is vulgarly called, *Convolvulus minor*, has lance-ſhaped, ſmooth leaves, a weak falling ſtalk, that never climbs, and the flower coming out ſingly. The corolla is a beautiful blue with a white eye; but ſometimes all white or variegated. This is alſo annual. Its native country is Portugal. The former is wild both in Aſia and America.

This genus contains ſeveral remarkable plants; *as Scammony*[e], *Turpethum* or *Turbith*, and *Jalap*.

Ipomæa has rather a funnel-ſhaped than a campanulate corolla; a globoſe ſtigma, and a trilocular capſule[f]; but the plants that range under this genus being natives of the Weſt Indies, and conſequently requiring much heat to raiſe and preſerve them, may probably not come within your view; and therefore I ſhall not enlarge upon them.

In *Campanula* you will of courſe expect to find a campanulate or bell-ſhaped corolla; but it is worth your obſervation that Campanula.

[d] Convolvulus tricolor *Lin.* Curtis's Mag. 27.
[e] Conv. Scammonia. *Lin.* Mill. fig. 102.
[f] See Mill. fig. 214.

the

the bottom of it is cloſed with five valv
concealing the receptacle, and that the ſ
mens take their riſe from theſe valves. T
ſtigma is trifid, and the ſeed veſſel is a c
ſule, below the flower, having three or f
cells, and at the top of each a hole, throu
which the ſeeds are ſcattered when ri
You ſee by this time how curious and h
various the ſtructure of the parts of fruc
fication is. By thus examining them fing
and comparing them one with another y
will in time grow an eminent botani
and acquire a facility in determining t
genus, ſpecies, analogy, and connexis
vegetables.

There is a little *Bell-flower* that gro
frequent in dry paſtures, and on a m
every heath and common, with is noddi
blue corolla anſwering well to its nam
The botaniſts have conſpired to call it *roun
leaved* Bell-flower[g]; for what reaſon pe
haps you will wonder, ſince you will di
cover no leaves upon the ſtem but what a
linear, or very long, narrow lance-ſhape
if however you take a young plant, or
leaſt one in full vigour, and ſearch amon
the graſs cloſe to the ground, you will f
theſe leaves, which are not ſo proper
round as heart[h] or kidney-ſhaped[i]. This ſo
flowers towards the latter end of the ſum
mer, and all the autumn, till froſt puts a

[g] Campanula rotundifolia *Linnæi.* Curtis, Lond. IV
21. [h] Haller. [i] Linnæus.

en

end to it; and frequently has a white corolla. *Rampion* [k], which was formerly cultivated for its roots to eat in ſallads, is now ſo much neglected, that your kitchen garden perhaps may not furniſh it; and in its wild ſtate it is by no means common. This has upright ſtalks, two feet high; the leaves undulating, thoſe next the root ſhort, lance-ſhaped, inclined to oval: towards the upper part of the ſtem, and cloſe to it, ſmall flowers are produced, with a blue or white corolla.

The *Peach-leaved Bell-flower* [l] is abundant in your flower borders, both blue and white; but ſince your gardener has obtained the double ſorts, he has probably deſpiſed the ſingle ones ſo much as to have deſtroyed them, and at the ſame time to have deprived you of the power of determining the genus: you will however know this to be a Campanula by its air; and you will determine the ſpecies by the leaves, which are ovate near the root, and on the ſtalk are very narrow lance-ſhaped approaching to linear, ſlightly ſerrated about the edge, ſit cloſe to the ſtem, and are remote from each other.

I remember your hall chimney uſed to be adorned in ſummer with the *pyramidal* or *ſteeple* Bell-flower [m], ſtrutting out like a fan,

[k] Campanula Rapunculus *Linnæi.*
[l] Campanula Perſicifolia *Linnæi.*
[m] Campanula pyramidalis *Linnæi.*

by

by means of a frame of little ſticks. Th has ſmooth, heart-ſhaped leaves, ſerrat about the edge; thoſe on the ſtem lanc ſhaped: the ſtems are ſimple and ruſh-like the flowers come out in ſeſſile umbels fro the ſide of the ſtem. Such are Linnæus ſpecific characters.

There is the *Giant Throatwort* [n], wild but not common, in buſhy places an hedges: known by its ſtrong, round, ſi gle ſtalks; its long ovate leaves, incline to lance-ſhaped, ſlightly ſerrated or toothe like a ſaw on their edges: towards the u per part of the ſtalk the flowers come u ſingly upon ſhort peduncles. Pray remark that after theſe are faded, the ſeed-veſſels turn downwards till the ſeeds are ripe, and then riſe up again.

Great Bell-flower [o], vulgarly called *Canterbury Bells*, is much more common in the like places. This has ſtiff, hairy, angular ſtalks, putting out a few ſhort ſide-branches. The leaves are like thoſe of nettles, hairy, and deeply ſerrated on their edges: towards the upper part of the ſtalks the flowers come out on ſhort trifid peduncles, and have hairy calyxes.

Small Canterbury Bells [p] is common in

[n] Campanula latifolia *Lin.* Fl. dan. 85. Ger. 448. 3.
[o] Campanula Trachelium *Lin.* Mor. hiſt. ſ. 5. t. 3. f. 28. Ger. 448. 1.
[p] Campanula glomerata *Linnæi.* Mor. t. 4. f. 40 & 43. Ger. 449. 4.

paſtures,

paſtures, eſpecially in a chalky ſoil. In dry places it is very ſmall, and in a moiſt ſoil will grow to the height of two feet. The ſtalk is hairy, angulate, and unbranched; the lower leaves are broad, and pedunculate; thoſe on the ſtalk long, narrow, ſitting cloſe to the ſtalk, and even embracing it: towards the top of the ſtalk, from the axils of the leaves, two or three flowers come out together, and a larger bunch terminates it: the flowers are ſeſſile.

Venus's Looking-glaſs[q] is a Campanula, with a weak, low, and very branching ſtalk; the leaves oblong, and a little notched; the flowers ſolitary, and the ſeed-veſſels of a prismatic form. *Corn-bell-flower*[r] very much reſembles this; but the ſtalk is ſtiff, and branches little; the leaves are more deeply notched, and waving; the flowers come out in parcels, and the calyx is longer than the corolla. This is a common weed among corn. Theſe two have ſcarcely bell-ſhaped corollas, any more than another plant of this Campanulate order, entitled *Greek Valerian* or *Jacob's Ladder*[s], which has the corolla rather rotate, with the tube ſhorter than the calyx, but cloſed with five valves, into which the ſtamens are inſerted, as in Polemonium.

[q] Campanula ſpeculum *Lin.* Curtis Magaz. 102.

[r] Campanula hybrida *Lin.* Mor. t. 2. f. 22. Ger. 439. 2.

[s] Polemonium cæruleum *Lin.* Fl. dan. 255. Ger. 1076. 5.

Campanula:

Campanula: the ſtigma alſo is trifid, as that, and the ſeed-veſſel a trilocular or thre celled capſule, but incloſed within the flow The circumſtances that diſtinguiſh this fro the other two ſpecies are, that the leaves a pinnate, the flowers erect, and the cal full as long as the tube of the corolla; which you ſee it recedes a little from o character of the genus. It is blue, and o into five roundiſh ſegments. I ſcarc need caution you not to be miſled by nam which being uſually given by ignora perſons, are very fanciful or erroneo Thus here, you may as well ſuppoſe *Pol monium* to have an affinity with a ladder a with valerian: indeed the ſame circumſtanc of the pinnate leaves probably gave occaſio to both names.

I am almoſt afraid to preſent you with ſet of plants, which from their lurid, duſky diſmal, gloomy, appearance, are kept to gether under the title of *Luridæ*. The have alſo moſt of them a diſagreeable ſmell which, with their forbidding look, will de ter our young couſin from examining them ſhe not being yet ſufficiently tinctured with enthuſiaſm to go on in ſpite of ſuch circum ſtances. Indeed I would not wiſh her to be too buſy with ſome of theſe *inſane roots that take the reaſon priſoner*, and which I can never collect and examine myſelf, with out their affecting my head. You will conſider that nature has kindly given us notice

notice in general of approaching danger, by means of our ſenſes; and accordingly ſome of theſe *Lurid* plants are highly poiſonous; moſt of them are ſo in ſome degree, though ſoil and climate may mitigate the poiſon, and even render them wholeſome. I will ſelect ſome of the leaſt diſagreeable in ſmell and appearance; or, if they be otherwiſe, will announce it to you. Beſides the circumſtances of five ſtamens and one piſtil, theſe plants agree in a permanent calyx divided more or leſs deeply into five ſegments; a monopetalous corolla, divided alſo into five ſegments, tubulous, irregular; the ſeed-veſſel bilocular, and either a capſule or a berry, incloſed within the flower.

Of *Verbaſcum*, or *Mullein*, there are ſeveral ſpecies wild, one very common, and another not uncommon. Their general characters are, that the corolla is rotate, and ſlightly irregular; the ſtamens unequal in length, bending down, and generally clothed at bottom with a coloured fringe; the ſtigma obtuſe, and the capſule bivalve, and opening at top. Verbaſcum.

The common ſpecies is the *Great* or *Hoary Mullein*[t], which grows moſtly under banks or hedges. It is a biennial plant; the firſt year forming its root, and a ſet of large, broad leaves, extremely woolly on both ſides, and ſpreading on the ground,

[t] Verbaſcum Thapſus *Linnæi.* Fl. dan. 631. Mor. hiſt. ſ. 5. t. 9. f. 1. Ger. 733. 1.

with

with ſcarcely any petioles: the ſecond y
it ſends up a ſingle ſtem, ſometimes f
feet in height, with decurrent leaves on
woolly as the radical ones; and on the to
cloſe ſpike of yellow flowers, which ha
an odour not diſagreeable.

The other which I hinted at is the *Bla Mullein*[u], growing in ſimilar places, abu dantly in ſome, but by no means ſo exte ſively. It has not ſo high a ſtem; the ſha of the lower leaves is that of a heart muc lengthened out, and they are petiolate; th leaves on the ſtem ovate, ſharp-pointed, a ſeſſile; all of them are pale green o th upper, and hoary on the under ſurface; an are indented about the edges. The ſtalk i terminated by a long ſpike of yellow flowers formed by ſhort cluſters or ſpicules on th ſides of the principal ſtalk. The corolla i yellow, with the filaments fringed or bearde with purple. It has the name of black, preſume, merely becauſe it is not white like the other.

Datura. *Datura*, *Stramonium*, or *Thorn Apple*, has the calyx tubulous, ſwelling in the middle, five-cornered, and deciduous; the corolla funnel-ſhaped, ſpreading out gradually very wide from a long cylindric tube, into a pent-angular border with five plaits: the capſule is quadrivalvular, or opens into four parts. The flowers of theſe are large, and rather

[u] Verbaſcum nigrum *Lin.* Mor. hiſt. ſ. 5. t. 9. f. 5.

ſpecious,

ſpecious, and the capſules are remarkable for their ſize.

The *common* Thorn Apple[v] has ſmooth leaves, irregularly angular, and ſmelling diſagreeably; the flowers come out from the firſt diviſions, and near the extremities of the branches; the corolla is white, and each angle of it ends in a long point; the capſule is ovate, covered with ſtrong thorns, and grows erect.

Another ſort[w], cultivated ſometimes in flower gardens, has purple flowers; it has alſo purple ſtalks, which are ſtouter and taller than thoſe of the laſt; the leaves are alſo larger, and more angular and notched; the capſule is larger, but much like that of the common ſort. One of them, having the capſule armed with very ſtrong ſpines, has the epithet of *fierce*[x].

Henbane[y] is a very common plant, and has often done miſchief to ſuch as will not ſuffer their appetites to be corrected by their ſenſes. You will agree with me that the ſmell is ſufficient to deter any perſon from eating it. I cannot however diſpenſe with your examining the flower, which is really beautiful on a near view. The corolla is funnel-ſhaped, and obtuſe; of a pale yel- Hyoſcyamus.

[v] Datura Stramonium *Lin.* Curtis, Lond. n. 61. Fl. dan. 436. Ger. 348. 2.
[w] Datura Tatula *Lin.*
[x] Datura ferox. *Lin.* Mor. t. 2. f. 4.
[y] Hyoſcyamus niger *Lin.* Ger. 353. 1.

lowiſh colour, beautifully veined with purple. The ſtamens are of different lengths and bent; and the capſule is involved in the calyx, of an oval form, and covered with a hemiſpherical lid, which, by falling off, announces that the ſeeds are ripe.

The common wild ſpecies is diſtinguiſhed from the others by its ſinuate leaves, embracing the ſtalk, and by the flowers ſitting cloſe to it. The whole plant is covered with long hairs, from which exudes a clammy, fetid juice: the leaves are very large, and remarkably ſoft; and the flowers come out in a very long ſpike, rather on one ſide. It grows on banks, dunghills, and way-ſides about villages, and is a biennial plant. There are other ſorts, but neither wild nor much cultivated.

Nicotiana. You who have ſuch an averſion from tobacco in all the ways of uſing it, will not be diſpleaſed at finding it in this lurid order. Notwithſtanding it is ſo generally taken, the oil of it is the ſtrongeſt of the vegetable poiſons. It is a plant however neither unornamental for your garden, nor dangerous, nor even diſagreeable to examine. The eſſential generic characters are, that the corolla is funnel-ſhaped, the border plaited; the ſtamens a little inclined; the ſtigma notched; the capſule ovate, marked with a furrow on each ſide, bivalvular, and opening from the top.

Common

Common or *broad-leaved* Tobacco [z] is diſtinguiſhed by its broad lanceolate leaves, which are about ten inches long, and three and an half broad, ſmooth, ending in acute points, and ſitting cloſe to the ſtalks; the corollas are of a pink purple, and end in five acute points. There is a ſort like this, or perhaps a variety of it, called *Oroonoko* Tobacco, which is a larger plant, the leaves more than a foot and half long, and a foot broad; very rough and glutinous; the baſe embracing the ſtem: the corollas are of a pale purple.

Another ſpecies, called *Engliſh* Tobacco [a], might eaſily be miſtaken for a Henbane, if you did not remark the regular form of the corolla, and the want of a lid to the capſule. It is a lower plant than the others; the leaves are ovate, entire, and on ſhort petioles. The flowers come out in looſe bunches on the top of the ſtalks; the corolla has a ſhort tube, ſpreading out into five obtuſe ſegments, of a greeniſh yellow colour. Though this has the epithet of Engliſh, you are not to ſuppoſe it to be an European plant, for it is a native of America, as well as all the other ſpecies, which are at leaſt ſeven in number.

How the ſame plant ſhould come to have the gentle appellation of *Bella-donna*, and Atropa.

[z] Nicotiana Tabacum *Linnæi*. Mill. fig. 185. 1. Pl. 12. f. 1.

[a] Nicotiana ruſtica *Linnæi*. Blackw. t. 437.

the tremendous name of *Atropa*[b], ſeems ſtrange, till we know that it was uſed as a waſh among the Italian ladies, to take off pimples and other excreſcences from the ſkin; and are told of its dreadful effects as a poiſon. Linnæus has joined them, making *Atropa* the generic, and *Bella-donna* the ſpecific or trivial title. The principal characters which he gives of the genus are theſe—the corolla is bell-ſhaped; the filaments grow from the baſe of it, are cloſe at bottom, but at top diverge from each other, and are arched; the ſeed-veſſel is a globoſe berry, ſitting on the calyx, which is large.

Our ſort, for there are ſix ſpecies of the genus, is a great branching plant, with ovate, entire leaves, and large flowers coming out among the leaves ſingly, on long peduncles; the corolla is of a duſky brown colour on the outſide, and of a dull purple within; the ſtalks have a tinge of the ſame colour, as have alſo the leaves towards autumn. The berry is round, of a ſhining black when ripe, and not unlike a black cherry in ſize and colour; it contains a purple juice of a mawkiſh ſweetneſs, and has frequently enticed children to taſte it at their peril. I have known however the ſame poiſonous effects follow from eating the young ſhoots

[b] From *Atropos*, the name of one of the furies. Figured by Miller, pl. 62. Fl. dan. 758. Ger. 340. Blackw. 564. Curtis, Lond. 5. 16.

of

of the ſpring boiled, as from the crude berries of autumn. *Deadly Nightſhade* is rarely cultivated, and not common wild; it ſkulks in gloomy lanes, and uncultivated places, but is too frequent near villages in ſome countries.

You have heard of the *Mandrake's Groan*, and "of ſhrieks, like Mandrakes torn out "of the earth:" ſuperſtition having endued this plant with a ſort of animal life, fatal to whoever preſumed to deſtroy it by digging up the root. It was famous, as Opium now, for procuring ſleep; whence Cleopatra ſays,

——"Give me to drink *Mandragora*,
"That I might ſleep out this great gap of time
"My Anthony is away."

And the vile Iago boaſts that

——"Not Poppy, nor *Mandragora*,
"Nor all the drowſy ſyrups of the world,
"Shall ever med'cine thee to that ſweet ſleep
"Which thou hadſt yeſterday."

Since Mandrake groans and ſhrieks when injured, it muſt needs have a human form; and accordingly ſuch have been carried about for ſale, notwithſtanding the danger that attends the procuring it; but this is cunningly avoided by tying a dog to the root, and thus making the blind fury of the poor Mandrake fall upon the innocent dog inſtead of the aggreſſor. Theſe pretended

Mandrakes are ſaid to be roots of Angelica or Bryony, either cut into form, or compelled to go through earthen moulds put into the ground for this purpoſe: they were uſed in magical incantations; and though theſe are now pretty much out of faſhion, yet I have had them very gravely offered me for ſale. Linnæus formerly made this a diſtinct genus from the laſt, but on ſecond thoughts he has made it a ſpecies of Atropa [c], diſtinguiſhing it from the others, by its having no ſtems except the ſcapes which ſupport a ſingle flower. The root is like that of a parſnep, ſometimes forked; next the ground there is a circle of large, broad leaves; the *ſcapes* or naked ſtalks that ſupport the flowers are but about three inches long; the corollas are five cornered, and of a greeniſh white or purpliſh colour; the berry is as large as a nutmeg, and of a yellowiſh green. The root and leaves are ſtinking, and the whole plant is poiſonous, though, in ſmall doſes, it is uſed medicinally.

Phyſalis. Another genus of this ſame natural order is *Phyſalis*; the characters of it are theſe—the corolla is wheel-ſhaped; the filaments and anthers are convergent or bend towards each other; and the ſeed-veſſel is a berry incloſed within the calyx, which grows to a large inflated, coloured bladder. *Winter-*

[c] Atropa Mandragora. Mill. fig. pl. 173. Blackw. 364.

Cherry,

Cherry [d], of which you have ſuch abundance under your ſhrubs, is a ſpecies of this genus. The diſtinguiſhing marks are, that the leaves are double or conjugate, that is, come out in pairs, are entire about the edges, or but very ſlightly indented, and ſharp pointed; the ſtalk is herbaceous, and a little branching at bottom. The roots creep ſo far as to be troubleſome; the ſtalks are only about a foot high; the leaves are of various ſhapes, and have long petioles: the flowers are produced ſingly from the axils of the ſtalks on ſlender peduncles; and have a white corolla, which, with the calyx, leaves, and ſtalks, is hairy. This plant, which is ſo humble and inconſiderable all the ſummer, attracts your notice in autumn, by its great inflated calyx turning red, and diſcloſing the round red berry within it, about the ſize of a ſmall cherry.

But the principal genus of this natural order is the *Nightſhade*, or *Solanum*, whence ſome authors have entitled theſe plants *Solanaceæ*. There are no leſs than forty-ſix ſpecies of Solanum; out of which I ſhall ſelect, as uſual, both ſome wild and cultivated ſorts, ſuch eſpecially as are either moſt important, or moſt likely to be within your reach. Solanum.

You will eaſily know the genus by its wheel-ſhaped corolla; by its large anthers cloſed in the middle of the corolla, and

[d] Phyſalis Alkekengi. Blackw. 161.

ſeeming to form but one body; and by its bilocular berry.

Some of the ſpecies have prickly ſtalks and leaves; others are unarmed: hence a commodious partition of the genus into two ſubdiviſions.

A ſhrubby, tall ſort, from the Madeiras, without any ſpines or prickles, has long been an inhabitant of the greenhouſe, which it adorns with its ſplendid red berries all the winter: the gardeners know it by the name of *Amomum Plinii*; and it is often called *Winter Cherry* [c]; ſuch is the dearth of diſtinctive names, and ſuch the confuſion ariſing from the want of a regular language, like that which Linnæus firſt introduced into Botany. The leaves are lance-ſhaped, and have a waving edge [f]: the flowers grow in ſmall umbels, cloſe to the branches; the corolla is white; and the berries are as large as a ſmall cherry; generally red, but ſometimes yellow.

Another ſhrubby ſort, without ſpines, is the *Woody Nightſhade*, or *Bitter-ſweet* [g], which grows commonly wild in moiſt hedges. This has a climbing, flexuous ſtalk: the lower leaves lance-ſhaped, the upper ones ſometimes trifid: the flowers are in bunches, or branched cymes, coming out from the axils of the leaves; the corolla

[c] Solanum Pſeudocapſicum *Lin.*
[f] Linnæus calls them repand.
[g] Solanum Dulcamara *Lin.* Curtis, Lond. I. 14.

revolute,

revolute, purple, marked with two ſhining green ſpots at the bottom of each ſegment; and the berries red.

Garden Nightſhade[h] is alſo unarmed, but not ſhrubby. It is an herb, an annual. The leaves are on long petioles, and being of a ſoft texture, are inclined to hang down. They are either of an ovate or rhomboid form, with long points, angulate and notched about the edges: the flowers grow on a kind of nodding umbel; the corolla is white, and the berry is black. It is a common weed on dunghills, in gardens, and other richly cultivated places. It varies with yellow and red berries; and in the form of the leaves.

Potatoe[i] is of this genus, as you will be convinced, if you compare the ſtructure of the flower with that of the other ſpecies. Linnæus characteriſes it by theſe diſtinctions—that the ſtalk is herbaceous and unarmed, the leaves pinnate and quite entire, the peduncles ſubdivided: the corollas are either purple or white, and the berry is large.

Tomatos or *Love-apple*[k] is another ſpecies of Nightſhade, which is alſo admitted to the table, and eaten with impunity, in ſpite of the ill neighbourhood in which it is

[h] Solanum nigrum *Lin.* Curtis, Lond. II. 14.

[i] Solanum tuberoſum *Lin.* The Engliſh name is evidently a corruption of the Indian *Batatas.*

[k] Solanum Lycoperſicum *Lin.* Blackw. 133.

found.

found. This has an unarmed, herbaceous ſtem, which is very hairy; the leaves alſo are pinnate, but cut; and the flowers are borne on ſimple unbranched bunches; the corolla is yellow, and the fruit or berry is large, flatted, and deeply furrowed.

Melongena or *Mad Apple*[1] is alſo of this genus; it is cultivated as a curioſity for the largeneſs and ſhape of its fruit; and when this is white, it has the name of *Egg plant*; and indeed it then perfectly reſembles a hen's egg in ſize, ſhape, and colour. The ſtem of this is herbaceous, and without prickles; the leaves ovate and nappy; the peduncles pendulous, and growing thicker towards the top, and the calyxes unarmed. The corollas are purple, and the fruit varies much in colour. The three laſt ſpecies recede a little from the character of the order; for the Potatoe and Tomatos have many cells to the fruit, and this has but one.

The prickly ſorts of *Solanum* are natives of hot countries, and moſt of them are brought to us from the Spaniſh Weſt Indies: they will not therefore commonly fall under your obſervation.

Capſicum, or *Guinea Pepper*, is alſo of this lurid order; its beauty and uſe lies in the fruit, which Linnæus calls a dry or juiceleſs berry, and others a capſule or pod.

[1] Solanum Melongena *Lin.* Pluk. phyt. t. 226. f. 2.

This

This circumſtance, together with the rotate form of the corolla, and the anthers being connivent or converging, make up the eſſential characters of the genus. Linnæus has only five ſpecies, one annual[m], with an herbaceous ſtem, the reſt perennial with woody ſtems[n]. Others make many more ſpecies from the different form of the fruit; which indeed varies much both in ſhape and colour, and intermixt with the white flowers and green leaves, makes a pleaſing variety: but Linnæus does not allow the form of the fruit in this genus to be permanent enough to conſtitute ſpecific differences. They are all very hot, and hence have the names of *Bell Pepper*, *Hen Pepper*, *Barberry Pepper*, and *Bird Pepper*. The *Bell Pepper*, which has large, ſwelling, wrinkled fruit, with a fleſhy tender ſkin, of a red colour when ripe, is the only ſort fit for pickling. *Cayan Pepper* is made from the laſt, whoſe fruit is ſmall, oval, and of a bright red, and much more pungent than the reſt. Moſt ſorts of Capſicum come from both Eaſt and Weſt Indies. Though they are uſed in hot countries ſo univerſally with their food, yet the ripe fruits thrown on the fire will emit ſtrong noiſome vapours, which occaſion violent ſneezing, coughing, and often vomiting, in thoſe who are near; and mixt in ſnuff will have

[m] Capſicum annuum. Blackw. 129.
[n] Capſicum baccatum, ſinenſe, groſſum & fruteſcens.

the

the ſame effects to a violent and dangerous degree: ſo that theſe plants, though not ſtrictly poiſonous, are however worthy a place in the lurid tribe.

Lonicera. In this firſt order of the fifth claſs are to be found ſeveral well known ſhrubs; among which the *Honey-ſuckle* is eminent. Of theſe the *Italian*[o], and *Wild*[p] ſpecies are the principal. They are diſtinguiſhed by the firſt having the upper pairs of leaves connate, or ſo joined as to form but one, and the ſtalk running through the middle of them: whereas in the wild honey-ſuckle they are all diſtinct. The Dutch or German Honey-ſuckle of the gardens is ſuppoſed to be a variety only of this, though it is much ſtronger, and not ſo apt to climb. The Woodbind has indeed very ſlender trailing branches, twining round the boughs of trees, and climbing to the very tops of them.

Trumpet Honey-ſuckle[q] is a North American; it agrees with the Italian in having the upper leaves connate; with the Woodbind in its ſlender trailing branches: but differs from both in the whorls of flowers being naked or void of leaves, and the corollas being almoſt regular; the leaves alſo

[o] Lonicera Caprifolium *Linnæi.* Hort. angl. t. 5. Pl. 12. f. 4.

[p] Lonicera Periclymenum *Lin.* Woodbind. Curtis, Lond. I. 15.

[q] Lonicera ſempervirens *Lin.* Riv. mon. 116.

are

are evergreen, and the corollas are bright ſcarlet on the outſide, and yellow within.

There are other ſpecies, which you will find among the ſhrubs, differing in appearance, and receding ſomething in character from Honey-ſuckles properly ſo called. Theſe have always two flowers only coming out together; whereas in the former the flowers go in whorls or heads many together. *Fly* Honey-ſuckle[r] has the two berries that ſucceed the two neighbouring flowers diſtinct; the leaves are entire and hoary; and the corollas are white. *Red-berried upright* Honey-ſuckle[s] has the two berries joined together; the leaves lance-ſhaped and ſmooth; the corollas are red on the outſide, but pale within. This is not ſo tall growing a plant as the other.

The five recited ſpecies agree in having a monopetalous irregular corolla, except that in the Trumpet Honey-ſuckle it is almoſt regular; in the genuine Honey-ſuckles the tube is remarkably long. The ſeed-veſſel in all is a berry growing below the flower, and incloſing ſeveral ſeeds; though the laſt has only two.

The numerous genus of *Rhamnus*, containing twenty-ſeven ſpecies, is alſo of the firſt order in the claſs *Pentandria*: theſe are either thorny, prickly, or unarmed. *Buck-* Rhamnus.

[r] Lonicera Xyloſteum *Lin.* Mill. fig. 167. 1.
[s] Lonicera alpigena *Lin.* Mill. fig. 167. 2.

thorn

thorn[t] is one of the firſt; having thorns terminating the branches, the ſtem erect, the leaves ovate, and the calyx cut into four ſegments: the berries have four ſeeds in them, and if you wet them and rub them on white paper, they will ſtain it of a green colour. I mention theſe two circumſtances, becauſe they who gather the berries for ſale are apt to mix others with them: and I know you will be intereſted in them, when I inform you, that the fine green colour[u], which you uſe in your miniature painting, is made from theſe berries. If you ſhould have the curioſity to ſearch the hedges for them, in order to make this paint yourſelf, you muſt not be ſurpriſed if you do not find them on every Buckthorn ſhrub; for all the flowers are incomplete, ſome plants having them with ſtamens, others with a piſtil only; and the former of theſe are never ſucceeded by fruit.

Berry-bearing Alder[v] is one of the unarmed ſpecies. It grows in woods, is a black looking ſhrub, with bunches of inconſiderable herbaceous flowers, with a quinquefid corolla, ſucceeded by black berries containing four ſeeds: the leaves are ovate, ſmooth, and quite entire.

[t] Rhamnus catharticus *Lin.* Fl. dan. 850. Duham. 50. Ger. 1337.

[u] Verd de veſſie.

[v] Rhamnus Frangula *Lin.* Fl. dan. 278. Duham. 100. Ger. 1470.

Another

Another of the unarmed diviſion is the *Alaternus*[w], formerly ſo ſhorn and beclipped in hedges, and covering of walls; but now ſeen chiefly among other evergreens, taking its natural form. The leaves are extremely ſhining, generally notched or ſerrate about the edges; the flowers have a trifid ſtigma, and are incomplete, like thoſe of the Buckthorn: the corolla is quinquefid, and the berry has three ſeeds. There are ſeveral varieties of *Alaternus*, differing in the ſhape of the leaves, and depth of the ſerratures; they are alſo ſometimes blotched or variegated. This ſhrub is frequently confounded with *Philyrea*, from which it may be known at all times by the poſition of the leaves, which is alternate in this, and oppoſite in that: when the two ſhrubs are in flower, you perceive other more eſſential diſtinctions.

Paliurus, or *Chriſt's-Thorn*[x], is one of the prickly diviſion. It has double prickles, the under ones reflex; and is another inſtance of irregularity in this genus, the germ being trilocular, ſurrounded by a membranaceous rim, and crowned by three ſtyles. It has a pliant weak ſtem requiring ſome ſupport; the flowers grow in cluſters, and are of a greeniſh yellow colour: the corollas are quinquefid. Being very common in Paleſtine, it is ſuppoſed to be the thorn with which our Saviour was crowned.

[w] Rhamnus Alaternus *Lin.* [x] Rhamnus Paliurus *Lin.*

The

The common characters of all theſe is that there is only a calyx or corolla, with five ſmall ſcales, one at the baſe of each diviſion, bending towards one another, and defending the ſtamens; the ſeed-veſſel a roundiſh berry, divided within into fewer parts than the corolla or calyx.

Currants and Gooſeberries[y], the Ivy[z] and the Vine[a], are alſo of this order *Monogynia*; but being ſo well known to you and every body, I will not dwell on them, having already run out this letter to ſo great a length.

Coffea. Some other trees and ſhrubs are leſs known becauſe they are the growth of hotter climes. Such is the coffee[b], originally of Arabia, though now common in both the Indies. It is known by its ſalver-ſhaped corolla, with the ſtamens growing upon the tube of it; and by its ſeed-veſſel, which is a berry below the flower, containing two ſeeds, covered with an *aril*, or detached coat. This tree does not grow above ſixteen or eighteen feet high; the leaves are large, of a lucid green, lance-ſhaped, and waving about the edges. The flowers are produced in cluſters, cloſe to the branches; the corollas are quinquefid, of a pure white colour, and a very grateful odour. It is an evergreen, and at all times makes a beautiful appearance.

[y] Ribes *Linnæi*. [z] Hedera Helix *Lin.*

[a] Vitis vinifera *Lin.*

[b] Coffea Arabica *Linnæi*. Blackw. 337. Dougl. et Ellis monogr.

Ceſtrum

Ceſtrum or *Baſtard Jaſmine* is a ſhrub of the Weſt Indies, and therefore requires a ſtove to keep it alive in theſe northern countries. It has a funnel-ſhaped corolla; the filaments have a little proceſs in the middle; and the ſeed-veſſel is an unilocular berry, containing ſeveral ſeeds. One ſpecies[c] has cluſters of herbaceous flowers on ſhort peduncles, ſmelling ſweetly in the night. And another[d], with leaves of a lively green, and great conſiſtence, has cluſters of white flowers, ſitting cloſe to the ſtalk, ſmelling ſweet in the day time. Ceſtrum.

Dioſma is a genus of ſhrubs from the Cape of Good Hope. Theſe are of another phalanx, having five petals to the corolla, which is inferior, or incloſes the ſeed-veſſel. The germ alſo is crowned with five nectaries, and becomes three or five united capſules, containing each one ſeed, with an elaſtic *Aril* involving it. The flowers are ſmall, but elegant; white, and of an agreeable ſpicy odour. Dioſma.

Other foreign trees and ſhrubs of this claſs and order are, the *Iron-wood tree*[e], the *Phylicas*, the *Mango-tree*[f], and ſome others: but ſince it is not probable that you will meet with theſe, I have not troubled you with their characters, or any account of them.

[c] Ceſtrum nocturnum *Lin.* Dill. elth. t. 153. f. 185.
[d] Ceſtrum diurnum *Lin.* Dill. elth. t. 154. f. 186.
[e] Sideroxylon. [f] Mangifera Indica *Lin.*

Phlox. There remain ſome ſpecious plants to be noticed, which are commonly cultivated in flower gardens for their beauty. Such are all the ſpecies of *Lychnidea*[g]: which you will know by their ſalver-ſhaped corolla, with a bent tube; their filaments of unequal length; their trifid ſtigma; their priſmatic calyx; their three-celled capſule, with one ſeed in each cell. They are perennial plants; the corollas of moſt of the ſpecies are large, and of a purple colour; and the leaves are lance-ſhaped. They are the produce of North America.

Upon the firſt diſcovery of the New World, as America was vauntingly called, every thing found there was repreſented as wonderful. Strange ſtories were related of the plants and animals they met with, and thoſe which were ſent to Europe had pom-
Mirabilis. pous names given them. One of theſe is the *Marvel of Peru*, the only wonder of which is the variety of colours in the flower. It appertains to this claſs and order, and has the following generic marks—the corolla is funnel-ſhaped, the ſtigma globoſe; and there is a globoſe nectary incloſing the germ, which afterwards hardens to a kind of nut. There are three ſpecies: firſt, the common Marvel of Peru[h], which has ſo much variety of colour in the flowers of the ſame plant; theſe are produced plentifully

[g] Phlox *Linnæi*. See Mill. fig. 205.
[h] Mirabilis Jalapa *Lin.* Blackw. t. 404.

at the ends of the branches, and in hot weather do not open till towards evening; but when it is cool covered weather, continue open the greateſt part of the day. Secondly, that whoſe root was ſuppoſed, though erroneouſly, to yield the Jalap[i]; the ſtalks of this are ſwollen at the joints, the leaves are ſmaller and the flowers ſit ſingly, cloſe in the axils of the leaves: they are not variable, but all of a purpliſh red, and not much more than half the ſize of the others: the fruit alſo is very rough. In the Weſt Indian iſlands, where it is very common, they call it *four o'clock flower*. Thirdly, the *long-flowered* Marvel of Peru[k], whoſe corollas are white, and have remarkably long tubes; they have a muſky odour, and keep cloſe ſhut all the day, expanding as the ſun declines: they grow in bunches like the firſt ſort, and the ſeeds are rough like the ſecond: this differs from both the others in having weak ſtalks that require ſome ſupport; and theſe, with the leaves, are hairy and viſcous. This ſpecies is from Mexico, and has not been long known.

The *Creſted Amaranth* belongs alſo to this Celoſia. place; it is commonly called *Cock's comb*, from the form in which the head of flowers grows. It ranges in the diviſion of incomplete, inferior flowers: and the generic characters are—that the exterior calyx con-

[i] Mirabilis dichotoma *Lin.* Mart. cent. t. 1.
[k] Mirabilis longiflora *Lin.*

ſiſts of three dry, coloured leaves, within which is a corolla or ſecond calyx, conſiſting of five ſtiff, ſharp-pointed leaves: that there is a ſmall rim ſurrounding the germ, from which the filaments take their riſe; and that the ſeed-veſſel is a round capſule, opening horizontally, and containing three ſeeds.

There are many ſpecies; but that which is ſo much eſteemed for the variety of form and colours in its fine creſt of flowers, is diſtinguiſhed by oblong ovate leaves; round, ſtriated peduncles; and oblong ſpikes[l]. The colours are red, purple, yellow, white, and variegated; and ſome are like a fine plume of ſcarlet feathers. You muſt not however confound theſe plants with the *Amaranth* or *Prince's Feather*, which you will find in a place far diſtant from this.

One natural order more ſhall, if you pleaſe, conclude your labours, and my prate, for the preſent. It has its name[m] from this circumſtance; the diviſions of the corolla are turned or bent in the ſame direction with the apparent motion of the ſun. But beſides this ſingularity, the flowers of this order have a one-leafed calyx divided into five ſegments; a corolla of one petal; the a fruit conſiſting of two veſſels, containing many ſeeds. In moſt of the genera theſe

[l] Celoſia criſtata *Lin.* [m] Contortæ *Lin.*

fruits are *follicles*[n]. The corollas in the greater part are funnel-ſhaped; and are furniſhed with a remarkable *nectary*.

The common Periwincle, which covers the ground and creeps about the bottoms of the hedges, in many parts of your plantations, may ſerve you very well for an example of this order. It has a ſalver-ſhaped corolla, ſucceeded by two erect follicles, which contain ſeeds that are called naked or ſimple, to diſtinguiſh them from thoſe of ſome other genera, which are winged. You will obſerve alſo that the tube of the corolla forms a pentagon, at top; nor will it eſcape you, that there are two large ſtigmas, one over the other. Vinca.

Linnæus will not allow that the little running ſort[o], and the upright one with larger flowers[p], are diſtinct ſpecies. Without entering into any controverſy on a matter not eaſy to ſettle, you know them aſunder not only by their ſize, but by the ſtalks of the firſt lying on the ground, and the leaves being narrower, and ſharp-pointed towards either end, that is lance-ſhaped, and on very ſhort petioles; whereas the ſtalks of the ſecond are upright, and will climb a little, and the leaves are hollow at

[n] This is a dry ſeed-veſſel, of one cell and one valve; the ſeeds lie looſe in a down, and the ſhell opens on one ſide to let them eſcape.

[o] Vinca minor *Lin.* Curtis, Lond. III. 16.

[p] Vinca major *Lin.* Curtis, Lond. IV. 19. Pl. 12. f. 5.

the baſe, and ovate, ſharper pointed at the end, and on longer petioles.

There is a third ſort, called *Upright Periwincle*[q], for which we are obliged to the Iſland of Madagaſcar, and of courſe it requires the protection of a ſtove, in our colder climates. It has a ſtiff, upright, branching ſtalk, woody at bottom; the leaves are of an oblong ovate ſhape, ſmooth and ſucculent, and ſitting pretty cloſe to the branches; from the axils of theſe come out the flowers, on very ſhort peduncles, generally ſingle, but ſometimes two together: the tube of the corolla is long and ſlender, the brim very flat, the upper ſurface of a bright crimſon or peach colour; the under of a pale fleſh colour: and there is a conſtant ſucceſſion of theſe beautiful flowers from February to October: the corolla is ſometimes white.

Nerium. The *Oleander*[r] is one of the moſt beautiful plants of this tribe. The genus has two erect follicles, like the laſt; but the ſeeds incloſed in them are downy; there is a ſhort crown alſo terminating the tube of the corolla cut into narrow ſegments, and the diviſions of the corolla are oblique to the tube. This ſhrub grows to the height of eight or ten feet; the branches come out by threes from the main ſtem; and the leaves alſo come out by threes from the branches, on very ſhort petioles, point up-

[q] Vinca roſea *Lin.* Mill. fig. 186.

[r] Nerium Oleander *Lin.* Figured in Miller's illuſtr.

wards,

wards, are very ſtiff, and end in ſharp points. The flowers come out in bunches at the ends of the branches; the corolla is of a bright purple, varying to crimſon or white. It grows wild in ſeveral countries about the Mediterranean Sea, but with us is generally kept in tubs, not being hardy enough to ſuſtain the ſeverity of all our winters.

But the moſt admired of this tribe is the *Cape Jaſmine*[a], which was firſt diſcovered near the Cape of Good Hope by the ſuperior fragrancy of its flowers. The diviſions of the calyx are uniform and vertical, and the ſeed-veſſel is a two or four-celled berry, below the flower. The branches come out by pairs; and the leaves are oppoſite, cloſe to the branches, of a ſhining green, and thick conſiſtence: the flowers are produced at the ends of the branches; the corolla is of one petal only, but cut into many ſegments, of which it has ſometimes three or four rows, and then it is as large and as double as a roſe: the anthers are inſerted on the tube without filaments. The colour of the corolla is white, changing as it decays to a buff-colour; and the odour is that of Orange flowers or Narciſſus. Gardenia.

There is another plant of this order of twiſted corollas, called alſo a *Jaſmine*, with the addition of *Red*, but of a very different genus from the Jaſmines properly ſo called. *Plumeria* or *Red Jaſmine* has two reflex Plumeria.

[a] Gardenia florida *Lin.* Mill. fig. 180.

follicles, with the ſeeds flat, winged, and imbricate. There are four or five known ſpecies, all natives of the Spaniſh Weſt Indies, except one, which comes from Senegal. The ſort moſt known[t] has oblong ovate leaves, with two glands upon the petioles: it grows to the height of eighteen or twenty feet; the ſtalks abound with a milky juice, and towards the top put out a few thick ſucculent branches; at the ends of which come out the flowers in cluſters, ſhaped like thoſe of the Oleander; of a pale red colour, and having an agreeable odour. Theſe being never ſucceeded by the fruit in our northern climes, you will not be able to diſcern the generic character.

Cinchona. The famous *Jeſuits' Bark* is from a tree of this claſs and order[u], approaching in its characters to the natural tribe of *Contortæ*: to which alſo belong ſome plants of the ſecond order of this fifth claſs, becauſe they have two piſtils: ſuch are the *Periplocas*, the *Cynanchums*, and the numerous genus of

Aſclepias. *Aſclepias*, containing twenty-ſeven ſpecies. Of this laſt, you have the common *Swallow-wort*, or *Tame poiſon*[v], whoſe root is ſuppoſed to be a powerful antidote to poiſons: it has a ſhort upright ſtalk, ovate leaves bearded at the baſe, white flowers growing

[t] Plumeria rubra *Lin.* Cateſb. car. 2. 92. Ehret. t. 10.
[u] Cinchona officinalis *Lin.*
[v] Aſclepias Vincetoxicum *Lin.* Fl. dan. 849.

in

liferous umbels[w], and each of them ſucceeded by two long, jointed follicles, incloſing ſeveral compreſſed ſeeds, crowned with a ſoft white down. This is a native of the ſouthern countries of Europe, and is very hardy. Other ſpecies are much larger, growing to the height of ſix or ſeven feet. Some creep very much at the root, and become troubleſome in a garden. Others coming from the Cape, or the warm parts of America, require care and heat to preſerve them. Some have white, others purple, orange, or red corollas. Some have the leaves oppoſite; others have them alternate; in ſome again they are flat, whilſt others have their edges rolled back. Many of the ſorts are very handſome. They all agree in the following circumſtances, which therefore form the generic character—that the ſegments of the corolla are bent back; that five ovate, hollow nectaries, ending at bottom in a ſharp ſpur, involve the ſtamens and piſtils; and that each flower is ſucceeded by two follicles, incloſing many downy ſeeds.

Stapelia is ſo remarkable a plant of this tribe, that I muſt not omit mentioning it. This has a very large wheel-ſhaped corolla, divided beyond the middle into five ſegments, which are broad, flat, and ſharp-pointed. The nectary is a double ſtar, one of them ſurrounding, the other covering Stapelia.

[w] That is, the large umbels have ſmaller ones iſſuing from them.

the

the ſtamens and piſtils. Two follicles, incloſing many flat, downy ſeeds, follow each flower.

There are three known ſpecies, all growing naturally at the Cape of Good Hope, and all having ſucculent branches, as thick at leaſt as a man's finger. The three ſorts are diſtinguiſhed by the indentures on the ſides of theſe leafleſs branches; which in the firſt [x] ſpread open horizontally, ending in acute points; in the ſecond [y] have their points erect; and in the third [z] obtuſe.

In the firſt ſpecies the flowers come out ſingly on a ſhort peduncle from the ſide of the branches towards the bottom: the corolla is greeniſh on the outſide, but yellow within, having a purple circle round the nectaries, and the whole is finely ſpotted with purple, like a frog's belly. The branches of the ſecond ſort are much larger, and ſtand more erect; they have four longitudinal furrows, and the indentures are on the ridges between them. The flowers are much bigger than thoſe of the laſt, of a thicker ſubſtance, and covered with fine purpliſh hairs: the ground of it is a greeniſh yellow, ſtreaked and chequered with purpliſh lines.

But the great ſingularity of theſe plants is that the flower when fully open has a fetid

[x] Stapelia variegata *Lin.* Bradl. ſucc. 3. t. 22. Curtis Mag. 26.

[y] Stapelia hirſuta *Lin.* Mill. fig. 258.

[z] Stapelia mammillaris *Lin.* Burm. afr. t. 11.

ſmell

ſm[illegible] perfectly reſembling that of carrion, that the common fleſh-fly depoſits her eggs in it, which frequently are hatched into little worms, but never proceed any farther, or become flies. A rare inſtance this of an animal miſtaking its inſtinct.

Having by this time ſufficiently fatigued you, I leave you, dear couſin, to meditate on this irregularity in the operations of nature, and once more heartily bid you adieu.

LETTER

LETTER XVII.

ON THE OTHER ORDERS OF THE FIFTH CLASS, PENTANDRIA DIGYNIA, &c.

May the 1ſt, 1774.

I AM not ſurpriſed, dear couſin, at your being ſolicitous to know what the nectary is, which I mentioned ſeveral times in my laſt. But I am not diſpoſed at preſent to ſatisfy your curioſity any farther, than to inform you, that it is an appendage to the corolla, and that there is a juice in it, probably of uſe to the plant, certainly ſerving for the food of bees, and numberleſs other inſects. It is a perfect Proteus, and puts on a far greater variety of forms than the ſon of Neptune. Another time I may perhaps enter more deeply into this matter; but at preſent we will go ſtraight on our way.

You will have great pleaſure when I inform you, that the ſecond order of the fifth claſs [a] is almoſt wholly made up of the *Umbellate* tribe of plants [b], which you are already ſo well acquainted with: there are however ſome, which the circumſtances of having five ſtamens and two piſtils bring into the ſame diviſion of the arbitrary ſyſ-

[a] Pentandria Digynia *Lin.* [b] See Letter V.

tem,

[illegible]ough they are not naturally related to them. A few of theſe we will examine, before we enter into a detail of the *Umbellate* tribe.

Many of them have incomplete flowers, or are deficient in the corolla; and may be found among the *Oleraceous* plants in the natural orders of Linnæus, by other authors called *Apetalous*.

Such are all the *Gooſefoots*, of which there are no leſs than twenty ſpecies, moſt of them growing common on dunghills, and in waſte places, and having no beauty to attract your notice. They are known by their five-leaved, five-cornered calyx, incloſing one round, flattiſh ſeed, ſhaped like a lens. One of the moſt reſpectable ſpecies is the *Engliſh Mercury* or *Allgood*[c], growing frequently in waſte places, and by walls and way-ſides; and cultivated in ſome places as a ſubſtitute to Spinach. The leaves of this are triangular, quite entire, waving, and having the under ſurface covered with a kind of meal; the flowers grow in compound ſpikes, which are deſtitute of leaves, and ſpring from the axils. Chenopodium.

Beet is very nearly allied to theſe in its characters; but it is diſtinguiſhed by having a kidney-ſhaped ſeed, wrapped up in the ſubſtance of the calyx. In its wild ſtate, on the ſea-coaſt, and in ſalt marſhes[d], Beta.

[c] Chenopodium Bonus Henricus *Lin.* Curtis, Lond. III. 17. Ger. 32.

[d] Beta maritima *Lin.*

it

it has two flowers coming out together, the ſtalks are weak, and lie moſtly on the ground, the leaves are triangular and oblique or vertical; the diviſions of the calyx are equal and not toothed at bottom, and it flowers the firſt year of its riſing from ſeed. The garden ſort[e] has many flowers coming out together, the ſtalks erect, the leaves oblong lance-ſhaped, thick and ſucculent; the diviſions of the calyx are toothed at the baſe, and it does not flower till the ſecond year.

It ſometimes has pale green leaves, and ſmall roots; ſometimes dark red or purple leaves, with large purple roots ſhaped like a carrot; but theſe are not generally ſuppoſed to be diſtinct ſpecies.

Salſola. The *Glaſſworts* are alſo of this *Oleraceous* tribe. They are diſtinguiſhed by having a large ſeed, ſpiral like a ſcrew, covered with a kind of capſule which is wrapped up in the calyx. There is one ſort that grows wild in the ſalt marſhes[f], which has a herbaceous ſtalk that lies on the ground; awl-ſhaped, rough-leaves terminating in ſpines; the calyxes edged, and ſitting cloſe in the axils, and a trifid ſtyle.

Another ſort which grows wild in warmer countries[g], has alſo herbaceous

[e] Beta vulgaris *Lin.*

[f] Salſola Kali *Lin.* Fl. dan. 818. Mor. hiſt. 3. 5. t. 33. f. 11.

[g] Salſola Soda *Lin.* Jacqu. hort. t. 68.

ſpreading

ſtems; but it is a much larger ſt than the other, and the leaves have no ſpines. Theſe or any of the ſorts yield the cauſtic alkaline ſalt, which is ſo neceſſary in that moſt elegant and uſeful manufacture of glaſs; but this is the ſort generally uſed.

The *Globe Amaranth* [h] is of this claſs and order. Its fine round head is compoſed of many flowers, which have a large, boat-ſhaped, flat, coloured calyx, of two leaves; a corolla divided into five rude, villous ſegments; a cylindric nectary, divided into five parts at top; a ſtyle cut half way into two; and a capſule opening horizontally, and containing one ſeed. India is its native country: the ſtalk is erect and annual; the leaves are lance-ſhaped, as are the branches and peduncles, which are long and naked, except that a pair of ſhort leaves grows cloſe under each head of flowers, which always comes out ſingle. The calyx and corolla being dry and chaffy, will retain their colour ſeveral years, and hence their name of *Amaranth* or *incorruptible*. Bright purple is the uſual colour, but ſometimes the heads are brilliant white, or ſilver-coloured. The name muſt not lead you to ſuppoſe this, any more than the *creſted Amaranth*, to be of the ſame kind with the true *Amaranth* [i]. When you are told that

Gomphrena.

Ulmus.

[h] Gomphrena globoſa *Lin.* Mill. fig. pl. 21.
[i] See Letter XXVIII.

the

the *Elm* is of the ſame claſs and order, an alſo one of the incomplete tribe, as havin no corolla, you will probably reflect th an artificial ſyſtem is very different from natural arrangement: and in this you a not miſtaken; but then you muſt conſide that an artificial ſyſtem is the only on that can enable you to find out the gener and ſpecies of plants, which is the art propoſe to inſtruct you in. Few perſon know that the Elm has any flower, be cauſe it is inconſiderable in ſize and appear ance, and comes out in an early inclemen ſeaſon: however this tree in reality abound in flowers, before the leaves make their ap pearance. They have no corolla, but a quinquefid calyx: the flower quickly paſſes and is ſucceeded by one ſeed covered anc ſurrounded by a flat membrane. The dif- ferent ſorts, known by the names of *Rough Witch Elm*, *Smooth-leaved Witch Elm*, *Witch Hazel*, *Engliſh Elm*, *Dutch Elm*, *Upright Elm*, &c. are ſuppoſed to be varieties of one ſpecies[k]; and all have doubly-ſerrated leaves, unequal at the baſe.

Gentiana. The *Gentians* are alſo of this claſs and order, and of that ſubdiviſion which has monopetalous inferior corollas. They are diſtinguiſhed from the other genera of this ſubdiviſion by the capſule, which is oblong, round, and ſharp-pointed; has one

[k] Ulmus campeſtris *Lin.* Duham. t. 108. Hunter's Sylv. ſilva, p. 114.

cell.

cell, opens by two valves; and has two receptacles on the inſide, each adhering lengthwiſe to one of the valves. The form of the fruit is conſtant; whereas the figure and number of parts in the flower vary in the different ſpecies, which are numerous [l]. Great part of the ſkill and ſagacity of the botaniſt conſiſts in ſeizing thoſe parts which are conſtant in all the ſpecies, for the generic characters, and in this conſiſts the great merit of Linnæus; writers before him having either taken all parts indiſcriminately, or elſe the ſame part invariably for this purpoſe.

The ſpecies have either four or five petals, and the latter have either funnel-ſhaped corollas, or elſe approaching to bell-ſhaped; hence a threefold diviſion of the genus.

The principal of the genus is the *Great Yellow Gentian* [m], which has a ſingle ſtalk, three feet high, covered with leaves that are large, ovate, marked underneath with nerves meeting at the tip; the lower ones petiolate, the upper ſeſſile. There is but one flower to a peduncle, but they grow round the ſtalk in whorls: the calyx reſembles a double ſpathe: the corolla is rotate, cut into five ſegments [n]; the colour yellow irregularly dotted. The root is very

[l] Thirty-nine.
[m] Gentiana lutea *Lin.* Mill. fig. 139. 2.
[n] Varying ſometimes as far as eight.

large, and remarkably bitter; it communicates the bitterneſs ſo much to the whole plant, that it remains always untouched by the cattle in the mountainous paſtures of Germany and Switzerland, where it grows naturally.

The *Leſſer Centaury* [o] is of this genus, and is diſtinguiſhed by its dichotomous ſtalk, and its funnel-ſhaped corollas divided into five ſegments; they are of a bright purple colour, but often fade to white. This plant is annual, and varies much in height according to the ſoil, from three or four inches to a foot. This is extremely bitter as well as the other.

There are ſeveral beautiful little Gentians, with flowers of the fineſt blue that can be imagined, growing wild in the Alps. One of them is frequently cultivated in gardens, under the name of *Gentianella* [p], and is ſingular for having its fine bell-ſhaped azure flowers larger than the whole plant beſides.

Chlora. *Yellow Centaury* [q] is alſo naturally of this genus; but has been removed to the eighth claſs; firſt with the title of *Blackſtonia*, and now under that of *Chlora*.

But methinks you are languiſhing to be

[o] Gentiana Centaurium *Lin.* Chironia Centaurium Curtis, Lond. IV. 22.

[p] Gentiana Acaulis *Lin.* Jacquin auſtr. 2. t. 135. Curt. Magaz. 52.

[q] Chlora perfoliata *Lin.* See Letter XIX.

on

on ground you are better acquainted with. And indeed you are already ſo well verſed in the nature of the umbellate tribe, that I am perſuaded you will find little difficulty in determining the genera and ſpecies. Many of them are very generally known, either for their uſe in medicine or the kitchen, or elſe for their poiſonous qualities. Moſt of thoſe which grow on dry ſoils have roots that have an aromatic pungent ſmell and taſte; whilſt thoſe which grow in moiſt places or in the water, as many of them do, are in a greater or leſs degree poiſonous.

Scandix. You have long ſince been able to diſtinguiſh true Parſley and Chervil from Fool's-Parſley [r]. There is another wild plant that grows upon banks and by way-ſides, called *Hemlock-Chervil* [s], which has been miſtaken for *Garden-Chervil* [t], and has produced bad effects, when put into ſoups: it is not however ſo dangerous, becauſe it does not grow wild in gardens, and we muſt go out of our way to poiſon ourſelves: on another account however it is more dangerous, becauſe it is not only of the ſame diviſion, as having partial involucres only, but alſo of the ſame genus; and therefore liable to be miſtaken for the true Chervil, even when in flower, which Fool's-Parſley

[r] See Letter V.
[s] Scandix Anthriſcus *Lin.* Curtis, Lond. I. 19.
[t] Scandix Cerefolium *Lin.* Jacquin auſtr. 4. t. 390. Compare Pl. 13. f. 2. & Pl. 5. f. 3.

cannot be. They have both a radiate corolla, petals notched at the end, the flowers in the middle often incomplete and producing no ſeed, and the fruits of an oblong ſhape. However, notwithſtanding all this ſimilitude of character, they are eaſily to be diſtinguiſhed both in and out of flower. *Hemlock-Chervil* is a much lower plant; the ſtalks are ſmooth indeed, and the leaves finely cut, but they are hairy, the diviſions much ſmaller and cloſely placed, and the green much deeper than in *Garden Chervil*; the corollas alſo are uniform, the ſeeds ovate, and very rough. *Garden Chervil* is a tall, genteel, ſmooth plant; the umbels come out on the ſides of the branches, and ſit cloſe to them; and the ſeeds are long, narrow and ſhining. After all, I am perſuaded that when you have an opportunity of comparing theſe two plants together, as you eaſily may, the gardener furniſhing you with one, and the other being ſo common in a wild ſtate, you will wonder that any perſon ſhould ever have confounded them. Here you ſee we have an inſtance of an umbellate plant, growing on dry land, that is poiſonous; you are not therefore to conclude that all theſe are wholeſome, any more than that every water ſpecies is poiſonous.

Sium. We have another inſtance of fatal confuſion, not in two plants of this tribe, but in one of this, with another of a different claſs;

namely, of the *Creeping Water Parſnep* [u], with *Water Creſs* [v], which belongs to the cruciform flowers. You are ſo well miſtreſs of both tribes, that it is impoſſible you ſhould miſtake them when in flower; but this is not the time when Water-Creſſes are eaten, and this plant is ſo different in its flowering ſtate, that I am perſuaded an eater of it would think himſelf impoſed upon, if he were then ſhown it for Water-Creſſes. When they are both young they are really not unlike; and ſince they frequently grow together, the one may ſometimes be gathered for the other; though I muſt confeſs that I have not met with the miſtake more than twice, and that only in a ſingle piece among a conſiderable quantity: however, the leaves of Water Parſnep are of a light green; the ſmall leaves compoſing the whole winged or pinnate leaf are longer and narrower, ſerrated on the edges, and pointed at the end; whereas thoſe of Water-Creſſes have a tincture of brown upon them, the leaflets are roundiſh, and particularly the odd one at the end is very large and blunt, and they are none of them regularly ſerrated, but have only a few indentures on their edges.

[u] Sium nodiflorum *Lin.* Fl. dan. t. 247. Mor. hiſt. ſ. 9. t. 5. f. 3.

[v] Siſymbrium Naſturtium *Lin.* Fl. dan. t. 690. Mor. hiſt. ſ. 3. t. 4. f. 8. Ger. 257. 5. Compare Pl. 13. f. 1. with Pl. 21.

The characters by which you will know the Water-Parſnep when in flower are theſe—it has both an univerſal and partial involucre, the flowers are all fertile, the petals are heart-ſhaped, and the ſeeds are ovate and ſtreaked. This ſpecies is diſtinguiſhed from the others by its pinnate leaves, and the umbels of flowers ſitting cloſe to the ſtem, in the axils.

Conium. Another poiſonous herb of great fame is the *Hemlock* [w]. A tall plant, three feet high and more, eaſily known by its purple-ſpotted ſtalk. It has both involucres, the univerſal of three, four, five, or ſeven broadiſh reflexed leaves; the partial of three or four broad leaves only, on one ſide of the umbel; both very ſhort. The flowers are all fertile; irregular without, regular within: the petals heart-ſhaped. The fruit is almoſt ſpherical, marked with five notched ridges. The common ſpecies is diſtinguiſhed by its ſmooth ſtreaked ſeeds. The leaves are large, abundant, of a dark green but ſhining, triply pinnate, with the laſt diviſions obtuſely indented; it has many umbels of white flowers, with numerous ſpreading rays. It grows wild on ditch banks, in ſhady lanes, about dunghills and church-yards: and is a biennial plant.

The waters afford other poiſonous herbs,

[w] Conium maculatum *Lin.* Curtis, Lond. 1. 17. Ger. 1061.

as

as *Water-Hemlock* [x], *Long-leaved Water-Hemlock* [y], *Hemlock Water Dropwort* [z], and *Common Water Dropwort* [a]: but let us quit theſe ill-omened plants, and proceed to others more innocent, and more within your reach.

Two umbellate plants you will be ſure to find under every hedge, called *Wild Chervil* [b] and *Rough Chervil* [c]: they are both of the ſame genus, but of a different genus from Garden Chervil. They have partial, but no univerſal involucres; theſe are of five leaves, concave and bent back; ſome flowers in the middle drop without leaving ſeeds; the petals are bent in and heart-ſhaped; and the fruit is oblong and ſmooth. The firſt, vulgarly called *Cow-weed* or *Cow-parſley*, has a ſmooth ſtreaked ſtalk, and the joints ſwelling but a little. The ſecond has a rough ſtalk, and the joints more tumid. The firſt is remarkably leafy, and the leaves very large, and generally ſmooth, except the nerves. The ſecond has hairy

Chærophyllum.

[x] Phellandrium aquaticum *Lin.* Mor. hiſt. ſ. 9. t. 7. f. 7. Ger. 1063. 2.

[y] Cicuta viroſa *Lin.* Fl. dan. 208. Mor. hiſt. ſ. 9. t. 5. f. 4. Ger. 256. 4.

[z] Oenanthe crocata *Lin.* Philoſ. Tranſact. for 1747. Ger. 1059. 4.

[a] Oenanthe fiſtuloſa *Lin.* Fl. dan. 846. Mor. hiſt. ſ. 9. t. 7. f. 8. Ger. 1060.

[b] Chærophyllum ſylveſtre *Lin.* Curtis, Lond. IV. 25. Mor. hiſt. t. 11. f. 5.

[c] Chærophyllum temulum *Lin.* Curt. Lond. n. 61. Mor. hiſt. t. 10. f. 7. Ger. 1038. 2.