the fifth, *quadrifid*; in the ſixth, *quinquefid*; and in the ſeventh, *multifid*.

Several ſpecies of the firſt ſection yield indifferently that acrid milky juice, which when inſpiſſated is ſent us under the title of *Euphorbium*. The flowers are of little beauty, and theſe plants have been noticed rather for the ſingularity of their form, and the ſtriking difference of their ſtructure, from the plants of Europe, than for any charms that they poſſeſs. The ſpecies ſuppoſed to be that from whence the ancients had the drug [b], is known by a triangular, jointed ſtalk: the ſpecies from which it is ſaid we now have it [c], has a quadrangular ſtem, and double ſpines: and the ſpecies which Linnæus ſuppoſes ought to be uſed [d], is multangular with double ſpines.

Meduſa's-head [e] is of the ſecond ſection. The ſtalks are cloſely covered with tubercles, lying over each other, and from the ſides of theſe ſpring many branches, which are frequently ſo entwined as to give the idea of a parcel of ſerpents. The ends of the branches have narrow ſucculent leaves readily dropping off, and a ſet of white flowers.

The plants of the other ſections are com-

[b] Euphorbia antiquorum *Lin.* Comm. hort. 1. t. 12.
[c] Euphorbia canarienſis *Lin.* Comm. hort. 2. t. 104.
[d] Euphorbia officinarum *Lin.* Comm. hor. 1. t. 11.
[e] Euphorbia Caput Meduſæ *Lin.* Comm. hort. 1. t. 17.

monly

monly known by the name of *Spurge*, and are moſt of them wild in the different parts of Europe. Two ſpecies are common weeds in kitchen gardens: one of them [f] belongs to the fourth ſection, or thoſe which have trifid umbels: the ſubdiviſions of theſe are dichotomous: the *involucellæ* or *bractes* are ovate; and the leaves are quite entire, or without any notches about the edge; they are ovate in form, and attached to the ſtalk by ſhort petioles; each petal alſo has two little horns; the other [g] is of the ſixth ſection, having quinquefid umbels; each principal diviſion ſubdivides into three; the *involucellæ* are ſhaped as in the former; the leaves are wedge-ſhaped, and ſerrate about the edges; and the petals are round and entire. A third ſpecies [h], common in woods, is of the laſt ſection, with multifid umbels: it is a larger plant, and perennial; whereas the others are annual: the *involucellæ* are round and perfoliate; the leaves are very blunt at the end.

Spurges having little beauty, they are ſeldom cultivated in gardens. We muſt however except the *Euphorbia punicea*, a moſt ſplendid Jamaica plant, which flowers in the collection of the Marchioneſs of Rock-

[f] Euphorbia Peplus. Petty Spurge. Curtis, Lond. I. 35. Ger. 503. 19.

[g] Euphorbia helioſcopia. *Lin.* Sun Spurge. Curtis, Lond. I. 36. Ger. 498. 2.

[h] Euph. amygdaloides *Lin.* Wood Spurge. Mor. hiſt. ſ. 10. t. 1. f. 1. Ger. 500. 9.

ingham,

ingham, and is admirably figured in Dr. Smith's *Icones pictæ*. This belongs to the fifth ſection. One of the moſt common is a biennial ſpecies, of the ſame ſection, with the leaves oppoſite and quite entire, called *Broad-leaved Spurge* or *Cataputia* [i]. Its native place is Italy, and the ſouth of France: it grows three or four feet high; the flowers are of a greeniſh yellow, and the capſules being very elaſtic, the ſeeds are thrown to a conſiderable diſtance. A ſecond is perennial, and of the laſt ſection [k]; the *involucellæ* are heart-ſhaped; the petals are formed like a creſcent; and the capſules are ſmooth; ſome of the branches are barren, and others bear flowers and ſeed; on the firſt the leaves are narrow and ſetaceous; on the ſecond they are lance-ſhaped.

Sempervivum. There is a genus [l] of this claſs in which the number twelve prevails in all the parts. Having twelve ſtyles, it is of the order *Dodecagynia*. The calyx is divided into twelve parts; the corolla conſiſts of twelve petals; and the flower is ſucceeded by twelve capſules, containing many ſmall ſeeds. *Common Houſeleek* [m] is one of theſe, which, though ſo ſucculent a plant, flouriſhes on walls and

[i] Euphorbia Lathyris *Lin.* Mill. illuſtr.

[k] Euphorbia Cypariſſias *Lin.* Blackw. 163. f. 3.

[l] Sempervivum, nearly allied to the Sedums in the tenth claſs.

[m] Sempervivum tectorum *Lin.* Curtis, Lond. III. 29. Fl. dan. 601. Mill. illuſtr. Ger. 510. 1. Plate 17. of this work.

roofs.

roofs. The edges of the leaves are ſet with ſhort fine hairs; and they do not grow in a globular form, as ſome other ſpecies do, but ſpread open. From the centre of the heads of leaves ariſes a round, red, ſucculent flower-ſtalk, about a foot high, which at bottom has a few narrow leaves, and at top divides into two or three parts, each ſupporting a reflex range of flowers, with red corollas. Though the natural number in this genus be twelve, yet you will find it to vary exceedingly: nature being leſs conſtant in larger than in ſmaller numbers. With this ſhort ſketch, adieu, dear couſin, for the preſent.

LETTER

LETTER XXI.

THE CLASSES ICOSANDRIA AND POLYANDRIA.

June the 21ſt, 1775.

YOU have already, dear couſin, taken an imperfect view of the twelfth claſs, as far as it relates to fruit-trees [n]: you are not however to ſuppoſe, either that all theſe trees range in the claſs *Icoſandria*, or that no other but them are to be found there. No leſs than twenty-nine genera, and two hundred and ninety-four ſpecies, are included in this claſs, a conſiderable portion of which is trees or ſhrubs; many herbs however are found among them.

To diſtinguiſh this claſs and the next from the reſt, and from each other, remember always that it is not the number, but the ſituation of the ſtamens which furniſhes the claſſical character. In the next they ariſe, as generally in the other claſſes, from the receptacle; but in this they ſpring either directly, or with the parts of the corolla, from the calyx [o], which is of one leaf, and not flat but hollow: the corolla is moſt frequently of five petals.

[n] In Letter VII. [o] Plate 18. f. 1. c.

Of

Of the firſt order, *Cactus* is a very conſiderable genus, compriſing the *Melon-thiſtles*, *Torch-thiſtles*, or *Cereuſes*, and the *Opuntias* or *Indian Figs*. Theſe all agree in a calyx, whole at the bottom, but yet conſiſting of ſeveral rows of leaves, and placed on the top of the germ: in a corolla which is double, or formed of ſeveral rows of petals: and in having a berry containing ſeveral ſeeds in one cell. Cactus.

The *Melon-thiſtles* are roundiſh bodies, without either leaf or ſtalk. The *Torch-thiſtles* have a long ſtem without leaves, which in many ſpecies is ſtrong enough to ſupport itſelf; but in ſome trails along the ground, or is ſupported by trees: theſe laſt are called *Creeping Cereuſes*. *Opuntias* are compoſed of flat joints connected together.

Theſe are all remarkable for a ſtructure different from that of other plants; but ſome of the *Cereuſes* are much eſteemed for the beauty of the flowers, which are perhaps the more noticed, becauſe they are the leſs expected from plants whoſe appearance is ſo unpromiſing. Thoſe of the *Great-Flowering Creeping Cereus*[p] are near a foot in diameter, the inſide of the calyx of a ſplendid yellow, and the numerous petals of a pure white: hardly any flower makes ſo magnificent an appearance during the ſhort

[p] Cactus grandiflorus *Lin.* Mill. fig. pl. 90.

time

time of its duration, which is one nigh only; for it does not begin to open till ſeve or eight o'clock in the evening, and cloſe before ſun-riſe in the morning, unleſs it i gathered and kept in the ſhade, by whic means I have prevented it from cloſing til about ten. This noble flower opens bu once; but when, to the grandeur of it appearance, we add the fine perfume whic it diffuſes, there is no plant that more de ſerves your admiration. When it is not i blow, you will know it by the creepin ſtem, marked longitudinally with abou five prominences.

Another ſpecies of *Creeping Cereus* [q] i more common, but ſcarcely leſs admirable for the beauty of its pink-coloured flowers, which the plant produces in greater quantity; they are alſo of longer duration, for they not only boldly ſhow their face to the ſun, but will even keep open three or four days. When it is not in flower, this ſpecies is diſtinguiſhed by its very ſlender branches, covered with ſpines, and marked with ten prominences. But you are well acquainted with this fine plant, which requiring little heat, forms one of the principal ornaments of your dreſſing-room, in the month of May.

There are many ſpecies of *Opuntia*, *Indian Fig*, or *Prickly Pear*, all natives of

[q] Cactus flagelliformis *Lin.* Ehret. pict. t. 2. Trew. Ehr. t. 30. Curtis Mag. 17.

America,

America, and kept rather for their ſingularity than their beauty, having no leaves, but a flat jointed ſtalk, ſet with knots of prickles, briſtles, or both. The *Cochineal Fig*[r], on which the inſect of that name feeds, is the only one that is unarmed: this has oblong joints; the common ſort[s] has roundiſh joints, with bruſhes of briſtles, but no prickles.

In this ſame order you will find the *Syringa*[t]. The natural number in the calyx, corolla, and capſule, is four; but ſometimes it is five. The taſte of the leaves like cucumbers, and the odour of its white flowers, like thoſe of the orange, ſufficiently diſtinguiſh this well known ſhrub from all others. The ſlight indentations about the edges of the leaf ſeparate it from another ſpecies, which has none. Philadelphus.

Here too will you find your favourite *Myrtle*, which has a calyx ſitting on the top of the germ, and generally cut into five ſegments; a corolla of five petals; and a berry for a fruit. Some ſpecies however have a quadrifid calyx, and then the corolla has four petals: others have an entire undivided calyx. The *Common Myrtle*[u], of which there are many varieties, has the Myrtus.

[r] Cactus cochinillifer *Lin.* Dill. elth. t. 297. f. 383.
[s] Cactus opuntia *Lin.* Mill. fig. t. 191.
[t] Philadelphus coronarius *Lin.* Duham arb. 83.
[u] Myrtus communis *Lin.* Mill. fig. 184.—Pl. 18. f. 1.

flowers coming out ſingly, and an *involucre* of two leaves upon the peduncle.

Cratægus. In the ſecond order there is only the *Cratægus*, a genus comprehending ſeveral ſpecies of *Thorn*, and alſo two trees, the *Aria*, or *White Beam Tree* [v], and the *Maple-leaved Service* [w]. The generic characters are, a calyx cut into five ſegments, and ſitting on the top of the germ; a corolla of five petals; and a berry containing two ſeeds. The firſt of the trees is readily known by the ovate ſhape of the leaves, with very prominent tranſverſe veins, and unequal ſerratures about the edges; but particularly by the hoarineſs of their under ſurfaces: the ſecond, by its leaves cut into many acute angles like thoſe of the Maple; the diviſions are five or ſeven; and the loweſt lobes ſtand wider than the others. *Cockſpur Hawthorn* [x] has the leaves ovate, and ſo deeply ſerrate, as to be almoſt lobate. *Virginian Azarole* [y] has oval leaves, wedge-ſhaped at the baſe, ſhining and deeply ſerrate. *Common Hawthorn*, or *White-thorn* [z], whoſe flower has obtained the name of

[v] Cratægus Aria *Lin.* Fl. dan. 302. Mill. illuſtr. Ger. 1327. 2. Hunt. Evel. ſilva. p. 173.

[w] Cratægus torminalis *Lin.* Ger. 1471. 2. Fl. dan. 798. Hunt. Evel. ſilva. p. 146.

[x] Cratægus coccinea *Lin.* Mill. fig. 179. Angl. hort. t. 13. f. 1.

[y] Crat. Cruſ-galli *Lin.* Mill. fig. 178. 2.

[z] Cr. Oxyacantha Jacqu. auſtr. 292. 1. Blackw. 149. 1. Ger. 1327. 1.

May,

May, from the month in which it appears, has obtuſe leaves, cut into three principal parts, and thoſe ſerrate. *True Azarole* [a] has leaves like the foregoing, but larger, paler, and with broad lobes: the flowers and fruit are alſo much larger. All theſe you will find in your plantations: as you will alſo two trees that are in the third order, under the genus *Sorbus*; viz. the *Mountain Aſh* [b] and the *Service* [c]; both which have pinnate or winged leaves, like the Aſh; ſmooth on both ſides in the firſt, but villous on the under ſurface in the ſecond; theſe alſo have the lobes broader, and not ſo much ſerrated. Their common characters are a quinquefid calyx, a pentapetalous corolla, and an inferior berry with three ſeeds. Sorbus.

The fourth Order (*Pentagynia*), beſides the *Apple*, *Pear*, and *Quince*, comprehended under one genus, *Pyrus*, has the *Medlar* with many other ſpecies of trees or ſhrubs in a ſecond [d]; and all the ſhrubs called *Spiræa*, in a third. Theſe genera agree in a quinquefid calyx, and a pentapetalous corolla; the germ is incloſed within the flower in the laſt; but is beneath it in the reſt:

[a] Cr. Azarolus *Lin.*

[b] Sorbus aucuparia *Lin.* Mill. illuſtr. Ger. 1473. Hunt. Evel. ſilva. p. 211.

[c] Sorbus domeſtica *Lin.* Edw. av. t. 211. Ger. 1471. 1.

[d] Meſpilus *Lin.*—germanica. Medlar. Ger. 1453. 1. Blackw. 154.

the fruit is the principal diſtinction; in *Pyrus* it is a *Pomum*—in *Meſpilus* a *Berry*—in *Spiræa* a ſet of *Capſules*.

Meſembryanthemum. This order boaſts a large and ſplendid genus of herbaceous ſucculent plants, called *Ficoides* or *Fig Marigolds*[e]. Fifty ſpecies all conſent in a quinquefid calyx on the top of the germ; a multifid corolla of narrow linear petals: and a fleſhy capſule divided into cells correſponding with the number of ſtyles, and containing many ſeeds. Though moſt of the ſpecies have five ſtyles, yet ſome have only four, and others have ten. This large genus is ſubdivided into three ſections, from the colour of the flowers, which being ſtriking and permanent, may here very well furniſh ſuch a diſtinction, though it is in moſt caſes a circumſtance not to be depended on. The corollas then, which are ſpecious, very large, and double, are in the firſt ſection *white*, in the ſecond *red*, and in the third *yellow*. The different forms of the ſucculent leaves afford, almoſt of themſelves, ſufficient ſpecific diſtinctions.

The moſt known ſpecies is that which is called *Diamond Ficoides*, or more commonly *Ice Plant*[f]. This has ovate, alternate, waving leaves, with white corollas; but it is chiefly regarded for the ſingularity of be-

[e] Meſembryanthemum *Lin.*

[f] Meſembryanthemum cryſtallinum *Lin.* Dill. elth. t. 180. f. 221. Bradl. ſucc. 5. t. 15. f. 48.

ing

ing covered with pellucid pimples, in the ſun appearing like cryſtalline bubbles. *Egyptian Kali* [g], eſteemed for making the beſt pot-aſh, is alſo of this genus; has alternate, roundiſh, obtuſe leaves, ciliate at the baſe, and white corollas.

Of the laſt order of this claſs the *Roſe* is a genus univerſally known; and, were it leſs ſo, would hold the firſt rank in the admiration of mankind. The diſtinctive characters are, a quinquefid calyx; a pentapetalous corolla; and a kind of pitcher-ſhaped, fleſhy berry, formed out of the calyx, terminated by the diviſions of it, and containing ſeveral oblong, rough ſeeds, growing to the calyx on every ſide. The ſpecies are diſtinguiſhed by the globoſe or ovate form of the fruit, by the ſituation of the ſpines on the different parts of the ſhrub, the inflorescence, &c. The *Sweet-Briar* [h] has globoſe fruits beſet with crooked ſpines, and the leaves rubiginous or ruſty underneath. The *Dog-roſe* or *Wild-Briar* [i] has ovate fruit, but ſmooth, as are alſo the peduncles; the ſtalk however and the petioles are ſpinous, the petals are bluſh-coloured and bilobate, Roſa.

[g] Meſem. nodiflorum *Lin.* Mor. hiſt. f. 5. t. 33. f. 7. Several ſpecies of this beautiful genus are figured in Mr. Curtis's Magazine:—as M. dolabriforme in t. 32.—bicolorum 59.—pinnatifidum 67.—barbatum 70.—and many more in Dillenius's Hortus Elthamenſis.

[h] Roſa rubiginoſa *Lin.* Fl. dan. 870. Ger. 1269.

[i] Roſa canina *Lin.* Curt. Lond. 5. 34. Fl. dan. 555. Blackw. 8.

and there are two ciliate bractes, oppoſite each other, to every flower.

Fragaria. *Strawberry*, with all its various fruits, conſtituting only one ſpecies [k], is of this order. Here, though the corolla has only five petals, the calyx is cut into ten ſegments, alternately larger and ſmaller, and the ſeeds are diſperſed over the ſurface of a roundiſh, pulpy receptacle, vulgarly called a berry. Theſe are the generic characters. All the eatable Strawberries increaſe by runners; and by this circumſtance they are ſufficiently diſtinguiſhed from the barren ſort [l], which not only has a dry juiceleſs receptacle, but never throws out any of theſe runners.

THE CLASS POLYANDRIA.

The thirteenth claſs, *Polyandria*, has many ſtamens to the flowers [m] as well as the foregoing, but ſpringing from the receptacle along with the piſtil. Theſe two claſſes united would have formed too large a claſs for commodious examination; a difficulty to be avoided certainly in all caſes where we can; beſides, the plants contained in the one, are in general ſo different, both in their form and qualities, from thoſe of the other, that it would have been a pity to intermix beings ſo diſcord-

[k] Fragaria veſca. *Lin.* Mor. hiſt. ſ. 2. t. 19. f. 1. Ger. 997. Blackw. 77. 1.

[l] Fragaria ſterilis *Lin.* Curtis, Lond. III. 30. Ger. 998.

[m] From 20 to 1000.

ant,

ant, or to unite in the ſame claſs fruits which are ſo pleaſant to the palate, and wholeſome to the conſtitution, with herbs deſtructive to the human frame from their poiſonous qualities; as many of thoſe in the claſs *Polyandria* are known to be.

In the firſt order (*Monogynia*) you will find the *Poppy*, which is ſufficiently diſtinguiſhed by a calyx of two leaves [n]; a corolla of four petals; and a one-celled capſule, crowned with the ſtigma, under which it opens with many holes, to give exit to the numerous little ſeeds. Of this genus, four ſpecies have rough, and five have ſmooth capſules. The common *Corn Poppy* [o]; the ſpecies uſed in medicine, and which yields the Opium [p]; the Welch Poppy; and the Oriental ſort, now introduced as an ornament to the flower garden [q], are all of the latter diviſion. The firſt has the capſules almoſt globoſe; the ſtalk covered with hairs, and ſuſtaining ſeveral flowers of a fine high ſcarlet; and the leaves pinnatifid and cut. The ſecond has the calyx ſmooth, as well as the capſule, the leaves cut and embracing the ſtalk: that which is cultivated in the fields has white corollas, and oblate ſpheroidal Papaver.

[n] This falls off ſpontaneouſly when the flower expands.

[o] Papaver Rhæas *Lin.* Curtis, Lond. III. 32. Ger. 371. 1. Pl. 19. f. 2.

[p] Papaver ſomniferum *Lin.* Blackw. t. 483. Ger. 370.

[q] Papaver orientale *Lin.* Curt. Magaz. 57.

heads as big as an orange, with white ſeeds: the garden ſort has purpliſh corollas, very dark at the baſe, with ſmaller oblong heads and black ſeeds: this varies much in colour, and has ſometimes very large and very double flowers, then reſembling an immenſe Carnation. Some perſons are of opinion that the field and garden Poppy are different ſpecies; Linnæus makes them but one: I have given you the differences, but do not take upon me to decide. The capſules of the *Welch Poppy* [r] are oblong; the ſtalk ſmooth; the leaves winged and cut: the corollas large and yellow. The *Oriental Poppy* has rough leafy ſtalks, ſupporting one large, ſingle, red flower; the leaves are winged, and ſerrate about the edge. All the ſpecies of Poppy have a ſtrong diſagreeable ſmell.

The *Caper* [s] is of this firſt order; ſo is the *Tea-tree*, and the *Lime* [t]; the *Water-Lilies*, both *yellow* [u] and *white* [v], ſpreading their broad leaves on the ſurface of ſlow moving ſtreams and ſtagnant pools, and raiſing their ample many-petalled corollas above it. Here alſo is the numerous and beautiful genus *Ciſtus*, known by a calyx of five leaves; two of which are leſs tha

Ciſtus.

[r] Papaver cambricum *Lin.* Dill. elth. t. 223. f. 290.
[s] Capparis ſpinoſa *Lin.* Blackw. 417.
[t] Tilia Europæa *Lin.* Fl. dan. 553. Ger. 1483. Hunt. Ev. ſilva. p. 194.
[u] Nymphæa lutea *Lin.* Fl. dan. 603. Ger. 819. 2.
[v] Nymphæa alba *Lin.* Fl. dan. 602. Ger. 819. 1.

the

the other three; a corolla of five petals; and a capſule for a ſeed-veſſel. Of theſe there are forty-nine ſpecies, moſt of them ſhrubs, but ſome herbaceous; the corollas purple, white or yellow in the different ſorts.

Peony is of the ſecond order, which is a ſmall one: the characters of the genus are a calyx of five leaves, a corolla of five petals, and two or three germs, crowned immediately with ſtigmas, without the interpoſition of any ſtyles. Pœonia.

This, and ſome plants of the following orders, are ſtrictly united by one natural bond, under the name of *Multiſiliquæ* or *Many-podded*; having a fruit compoſed of ſeveral pericarps joined together. They agree likewiſe in having either no calyx, or at leaſt one very apt to fall off; a polypetalous corolla, and ſtamens exceeding the petals in number. Of theſe you are acquainted with the *Larkſpur* and *Aconite*, belonging to the third order; the *Columbines* to the fifth, and *Hellebore* to the laſt. None of them have any calyx; and they have all a corolla of five petals: the nectaries form the principal diſtinction of the genera[w]. This in *Larkſpur* is bifid, ſeſſile, and continued backwards into a horn or ſpur. *Aconite* has two recurved, peduncu-late nectaries. *Columbine* has five of theſe

[w] See Pl. 34. f. 1, 2, 8.

horn-

horn-ſhaped nectaries, between the peta
Hellebore has many ſhort, tubulous nectari
placed in a ring round the outſide of t
ſtamens, each divided into two lips at t
Delphinium. *Larkſpur* has alſo either one capſule
three, and the garden ſpecies [x] is diſt
guiſhed by its ſimple unbranched ſtem fr
the wild one [y], which has it ſubdivide
theſe both have the nectary of one leaf;
Bee Larkſpur [z] and the reſt it is of tw
Aconitum. *Aconite* has the upper petal arched; a
three or five capſules. You have one ſp
cies common in your flower-borders a
plantations, with long ſpikes of large bl
flowers, called *Monk's-hood* [a]; this is o
of the ſpecies that have three capſules t
flower; and the leaves are multifid, wi
linear diviſions, broadeſt at top, and mark
with a line running along them. *Wholeſo*
Wolfsbane [b], as it is called, has five capſule
five ſtyles, and the flowers are ſulphur-c
Aquilegia. loured. *Columbine* has five diſtinct capſule
the common ſort [c] has bent nectari[illegible]
wild ſtate the flowers are blue, the peta
ſhort, and the nectaries very prominent;

[x] Delphinium Ajacis *Lin.* Ger. 1082.
[y] Delphinium Conſolida *Lin.* Fl. dan. 683. G
1083. 5.
[z] Delphinium elatum *Lin.* Mill. fig. 250. f. 2.
[a] Aconitum Napellus *Lin.* Mill. illuſtr. Jacq. au
4. 381.
[b] Aconitum Anthora *Lin.* Mill. fig. pl. 12. Ja
auſtr. 4. 382.
[c] Aquilegia vulgaris *Lin.* Fl. dan. 695. Mill. illuſ
Ger. 1093, 1094.

the garden you obſerve not only a variety of colours, but that the petals are excluded, and the nectaries much multiplied. *Helle-bore* has ſometimes more than five petals to the corolla: and always ſeveral capſules ſucceeding to each flower; theſe contain many round ſeeds, fixed to the future of the capſule. The winter-flowering ſpecies, commonly called *winter Aconite* [d], is the only one that drops its petals; it bears one yellow flower ſitting on the leaf. *True Black Hellebore* or *Chriſtmas Roſe* [e] has one or two large white flowers upon a naked ſtalk, and fleſhy pedate leaves. *Stinking Black Helle-bore* or *Bear's-foot* [f] ſuſtains many greeniſh flowers on one ſtalk, and pedate leaves on the ſtem, but none towards the root. This is not uncommonly wild, and you will find it flowering during winter under the trees in your plantations. Caution your poor neighbours againſt being too free in giving their children this plant againſt worms; for in too large a doſe it is certainly dangerous. Indeed all the herbs juſt now deſcribed are more or leſs poiſonous: *Aconite* is known to be highly ſo. Helleborus.

The laſt order of this claſs, *Polyandria*, contains alſo the *Tulip-tree*, which has a tri- Liriodendron.

[d] Helleborus hyemalis *Lin.* Curtis, bot. mag. 3.
[e] Helleborus niger *Lin.* Curtis, bot. mag. 8.
[f] Helleborus fœtidus *Lin.* Blackw. t. 57. Ger. 976. 4.

phyllous

phyllous calyx, ſix petals to the corolla, a
many lance-ſhaped ſeeds lying one o
another, and forming a ſort of *ſtrobile*. T
tree is remarkable for the ſhape of
leaves, having the middle lobe of the th
truncate, or cut tranſverſely at the e
The flowers are large and bell-ſhaped; t
petals marked with green, yellow, and
Magnolia. ſpots [g]. Here alſo are the *Magnolias*, whi
have a calyx of three leaves like the la
but a corolla of nine petals; the fruit i
ſtrobile or ſcaly cone of bivalvular capſul
covering a club-ſhaped receptacle, each ca
ſule containing a roundiſh ſeed, like a ber
hanging out by a thread. It is to be
mented that theſe fine trees, ſo beautif
both in leaf and flower, will not bear
the rigour of our climate.

Anemone. This order boaſts two numerous gene
much eſteemed among the floriſts—t
Anemone and *Ranunculus*. The firſt has
calyx; a corolla of two or three rows, wi
three petals in each row: and many nak
ſeeds, retaining each their ſtyle. You a
now too far advanced in the ſcience,
need a caution againſt taking the fine flowe
of your beds, upon which the gardener
much values himſelf, in order to exa
the corolla of the *Anemone*; they are
children of art; not thoſe of nature, ſu

[g] Liriodendron Tulipifera *Lin.* Trew, Ehr. t.
Cateſb. car. 1. t. 48.

as we are ſtudying. The early *Hepatica* [h] is of this genus; and is known by its three-lobed entire leaves. It is the only ſpecies which has any thing like a calyx; for it has a *perianth* of three leaves, which being remote from the flower, is rather an *involucre* than a calyx. The *Paſque-flower* [i], ſo called from its flowering about Eaſter, is alſo of this genus: it adorns ſome of our dry chalky hills with its beautiful bell-ſhaped, purple flowers; and though it has no calyx properly ſo called, yet the flower-ſtalk has a leafy multifid *involucre*; and the leaves are doubly winged, or *bipinnate*. Each plant bears but one nodding flower; and after that is paſt, the top of the plant is hoary with the tails, which adhere to the ſeeds. Another wild ſort is the *Wood Anemone* [k], bearing only one white or purpliſh flower on a plant; the leaves are compound, with cut lobes; and the ſeeds are pointed, but without tails. The garden Anemones, which are ſo ornamental to the flower-garden in the ſpring, are only of two ſpecies, notwithſtanding the great variety of their colours; red, white, purple, blue, with all the intermediate ſhades, and

[h] Anemone Hepatica *Lin.* Curtis, bot. mag. 10. Fl. dan. t. 610.

[i] Anemone Pulſatilla *Lin.* Relh. Fl. cantab. p. 208. Fl. dan. 153. Ger. 385. 1.

[k] Anemone nemoroſa *Lin.* Curtis, Lond. II. 38. Fl. dan. 549. Ger. 383. 2.

innumerable

innumerable variegations of them. Art, increaſe their beauty, has rendered th very large and double; but we can ſ diſtinguiſh the ſpecies by their leaves, whi in one [l] are decompounded, dividing threes; in the other [m] digitate: the ſtalk leafy; and the ſeeds are tailed, in both ſp

Ranuncu-lus. cies. The rival genus of the Anemone the *Ranunculus*, which differs from it having a calyx of five leaves, and a coro of five petals: but the diſtinguiſhing ma of this genus is a honied gland juſt abo the baſe of each petal, on the inſide [n]. forty-four ſpecies many are wild; and ſo extremely common in moſt parts of Europ under the name of *Butter-flowers*, *Butte cups*, and *King-cups*. Three ſorts partic larly, which at one ſeaſon caſt a yello veil over our meadows, are generally co founded and looked upon as one. Ho ever the *bulbous* [o] has the calyx bent bac to the flower-ſtalk, whereas in the *cree ing* [p] and *acrid* [q] it is open or ſpreading: the firſt and ſecond the peduncle is fu rowed; in the third it is round, witho

[l] Anemone coronaria *Lin.* Mill. fig. pl. 31.

[m] Anemone hortenſis *Lin.* Curtis Magaz. [illegible]3.

[n] See Pl. 34. 4.

[o] Ranunculus bulboſus *Lin.* Curtis, Lond. I. 3 Ger. 953. 6.

[p] Ranunculus repens *Lin.* Curtis, Lond. IV. 3 Ger. 951. 1.

[q] Ranunculus acris *Lin.* Curtis, Lond. I. 39. Ge 951. 2.

an

any channelling: beſides this, the leaves are very different upon inſpection; and the firſt has a bulbous root, the ſecond throws out abundance of runners which ſtrike root like thoſe of the ſtrawberry, and the third is a taller, genteeler, later-flowering plant. But not the meadows only are filled with *Ranunculi*; the woods [r], the corn-fields [s], the waters [t], have alſo their ſhare of them. One ſpecies, which flowers in moiſt meadows very early in the ſpring, is ſo diſtinct from its fellows, that ſome botaniſts have not ſcrupled to remove it from this genus, to form one by itſelf: for it has a calyx of three leaves only; but, to make amends, a corolla of more petals than five: it has heart-ſhaped, angular, petiolate leaves, one flower on a ſtalk, and tuberous or knobby roots [u]. But the *Perſian Ranunculus* [v] is the great rival of the Anemone, in the flower-garden, for the beauty and variety of the large, double corollas; which are ſo changed by art, that you muſt have recourſe, for

[r] Ranunculus auricomus *Lin.* Curtis, Lond. II. 41. Ger. 954. 7.

[s] Ranunculus arvenſis *Lin.* Fl. dan. 219. Ger. 951. 3.

[t] Ranunculus ſceleratus, hederaceus, aquatilis, &c. *Lin.*—ſceleratus Curtis, Lond. II. 42. Ger. 962. 4.—hederaceus, IV. 39. Fl. dan. 321,—aquatilis. Ger. 829. Fl. dan. 276.

[u] Ranunculus Ficaria *Lin.* Leſſer Celandine. Curtis, Lond. II. 39. Ger. 816.

[v] Ranunculus aſiaticus *Lin.* Mill. fig. 216.

the

the ſpecific diſtinction, to the leave
theſe are ternate, and biternate, the lob
trifid and cut. The ſtalk is erect, roun
hairy, and branching at bottom: the r
dical leaves are ſimple. With all th
employment as a botaniſt, and amuſeme
as a floriſt, I leave you, dear couſin, f
the preſent.

LETTER XXII.

THE CLASS DIDYNAMIA.

July the 1ſt, 1775.

HAVING now finiſhed more than half our courſe, we are arrived at a ſet of natural claſſes, with which you are ſo well acquainted, as to find no difficulty in aſſigning the proper place to any plant belonging to them.

The ſtructure of the flowers in the fourteenth claſs was explained at length in the fourth letter: but the proper and eſſential character of it is, the having four ſtamens, all in one row, and in pairs; the outer pair longer than the other, whence the name *Didynamia*; and one ſtyle: all included within an irregular monopetalous or ringent corolla.

This claſs has only two orders; which are not founded upon the form of the flower, as you might be led to ſuppoſe from what was ſaid in a former letter; nor upon the number of the ſtyles, as in the foregoing claſſes, becauſe none of the flowers have more than one; but upon the circumſtance of having four naked ſeeds, boſomed in the calyx; or elſe many fixed to a receptacle in the middle of a pericarp: the firſt

of theſe is called *Gymnoſpermia*, the ſecond *Angioſpermia*.

This claſs contains one hundred and two genera, and ſix hundred and forty-three ſpecies; and each order forms a natural one—the firſt including the *Verticillate* plants, ſo called from the manner in which the flowers grow, in *verticilli* or *whorls*: they alſo agree in producing the leaves by pairs, and in having the ſtalks ſquare. The ſecond compriſing the *Perſonate* flowers; or ſuch as have moſtly a perſonate corolla, but always a pericarp, or veſſel incloſing the ſeeds.

THE ORDER GYMNOSPERMIA.

Glechoma. The eſſential generic character of *Ground Ivy* [w] is at the ſame time beautiful and extremely diſtinctive, each pair of anthers forming an elegant little croſs, one above the other. The leaves are kidney-ſhaped, and notched about the edges. In this genus, in Hyſſop, Mint, Lavender, Bugle, Betony, Dead-Nettle, Cat-Mint, Savory, Horehound, &c. the calyxes are pretty regularly quinquefid. In Thyme, Baſil, Self-heal, Marjoram, Baum, &c. they are bilabiate. In *Mint* the corollas are hardly ringent; the filaments are ſtraight and diſtant. *Lavender* has the corollas, as it were,

[w] Glechoma hederacea *Lin.* Curtis, Lond. II. 44. Ger. 856. 1. Pl. 20. f. 1. of this work.

turned

turned *topſyturvy*; that which is the upper part in moſt others being the lower in this, and *vice verſa*; the calyxes alſo are ſupported by a *bracte*; and the ſtamens lie within the tube. *Teucrium* has no proper upper lip, but the corolla is ſlit quite through for the ſtamens to paſs. *Bugle* has the upper lip of the corolla remarkably ſhort, much ſhorter than the filaments; our common wild ſpecies [x] is known by its ſmoothneſs, and increaſing by runners. *Betony* has the upper lip of the corolla flattiſh and riſing, with a cylindric tube; the ſegments of the calyx are prolonged into narrow thin points like awns; and the filaments extend not beyond the neck or opening of the tube. *Wood Betony* [y] is diſtinguiſhed by an interrupted ſpike, and by the middle ſegment of the lip being emarginate, or having one notch. *Cat-mint* has the middle diviſion of the lower lip crenate, or ſlightly notched; the edge of the chaps reflex; and the ſtamens cloſe. The flowers of the wild ſpecies [z] are in a ſpike, conſiſting of a ſet of whorls on ſhort peduncles; the leaves are heart-ſhaped, bluntly ſerrate and petiolate. If you have any doubt concerning this

Ajuga.

Betonica.

Nepeta.

[x] Ajuga reptans *Lin.* Curtis, Lond. II. 43. Ger. 631. 1.

[y] Betonica officinalis *Lin.* Curtis, Lond. III. 32. Ger. 714.

[z] Nepeta Cataria *Lin.* Fl. dan. 580. Mor. hiſt. ſ. 11. t. 6. f. 1. Ger. 682. 1.

plant preſent it to puſs, and ſhe will inform you by the careſſes which ſhe beſtows upon it, in common with Marum and Valerian; the firſt of which not growing wild, and the ſecond being ſo very different a plant, ſhe cannot lead you into an error. *Black Horehound* and *White Horehound* both have a calyx marked with ten ſtreaks; but the upper lip of the corolla, in the former, is arched and crenate: in the latter ſtraight, linear, and bifid. *Common Black Horehound*[a] is known by its whole, heart-ſhaped, ſerrate leaves, and ſharp-pointed calyxes: the corollas are red. *Common White Horehound*[b] has the diviſions of the calyx ending in ſetaceous hooked points: the corollas are white, and the whole plant has a white appearance from the nap that covers the ſtalks and leaves.

Ballota.

Marrubium.

Thymus. Of the ſecond diviſion with bilabiate calyxes, *Thyme* has the opening of the tube cloſed with hairs. *Wild Thyme*[c] that ſmells ſo gratefully, and adorns dry ſheep-paſtures with its red flowers, is known by theſe flowers growing in a head; by the diviſions of the calyx being ciliate; the leaves ovate, flat, blunt at the end, dotted with little

[a] Ballota nigra *Lin.* Blackw. 136. Mor. hiſt. ſ. 11. t. 9. f. 14. Ger. 701. 1.

[b] Marrubium album *Lin.* Blackw. 479. Moris, t. 9. f. 1. Ger. 693. 1.

[c] Thymus Serpyllum *Lin.* Curtis, Lond. II. 47. Mor. hiſt. t. 17. f. 1.

glands,

glands, and ciliate at the baſe; and by its creeping ſtalks. *Garden Thyme* [d] is an erect plant, with its ovate leaves revolute, and the flowers in a ſet of whorls, all together making a ſpike. Of this there are ſeveral varieties, as there are alſo of the other. *Baſil* has an *involucre* of many narrow leaves immediately under the whorl of flowers. *Marjoram* is diſtinguiſhed by an *involucre* compoſed of ovate, coloured, imbricate *bractes*, forming all together a ſquare kind of ſpike or *ſtrobile*. *Wild Marjoram* [e] has the ſpikes rounded at the corners, conglomerate, and all together forming a panicle; the bractes longer than the calyxes. You will find this wild under hedges, and among buſhes. That which is in the kitchen garden, under the name of *Pot Marjoram* [f], differs not greatly from the next: the ſpikes are oblong, aggregate, and hairy; the leaves heart-ſhaped, and nappy; the ſtem woody, and the flowers white. *Sweet Marjoram* [g] has ovate leaves, blunt at the end, and roundiſh compact pubeſcent ſpikes. *Winter Sweet Marjoram* [h] has long, aggregate, pedunculate ſpikes, and the bractes the length of the calyxes. The corollas of this are

Origanum.

[d] Thymus vulgaris *Lin.* Blackw. t. 211.
[e] Origanum vulgare *Lin.* Curt. Lond. 5. 39. Fl. dan. 638. Mor. hiſt. ſ. 11. t. 3. f. 12. Ger. 666. 4.
[f] O. Onites. Bocc. mus. 2. t. 38. Ger. 664. 2.
[g] Origanum Majorana *Lin.* Blackw. t. 319.
[h] Origanum heracleoticum *Lin.* Lob. ic. 492.

white; of the other red. *Dittany of Crete*[i] has the ſmall purple flowers collected in looſe, nodding heads, with imbricate bractes; the ſtalks are pubeſcent, purpliſh, and ſend out ſmall branches from their ſides by pairs; the leaves are round, thick, and ſo woolly as to be quite white: the whole plant has a piercing aromatic ſcent, and biting taſte. This is the celebrated plant with which Venus cured the wound of Æneas[k]. *Baum* has a dry, chaffy, angular calyx, flattiſh at top; the upper lip riſing: the caſque of the corolla is a little arched, and deeply notched or bifid; the lower lip is trifid, with the middle lobe heart-ſhaped.

Meliſſa. *Common Garden Baum*[l] has the flowers growing in ſmall looſe bunches from the wings of the ſtalk, in whorls, and the pedicles are ſimple or unbranched. There are two plants of this genus growing wild, that

Dracocephalum. have the name of *Calamint*[m]. *Dracocephalum* is diſtinguiſhed principally by the great inflation, or wide opening of the chaps of the corolla, the upper lip alſo is arched, folded, and obtuſe. Of this genus is the very fine-ſmelling plant vulgarly called *Baum of Gilead*[n], which has compound

[i] Origanum Dictamnus *Lin.* Blackw. t. 462.
[k] Virgil Æneid. XII.
[l] Meliſſa officinalis *Lin.* Blackw. t. 27.
[m] Meliſſa Calamintha & Nepeta *Lin.* Blackw. t. 166, & 167.
[n] Dracocephalum canarienſe *Lin.* Mor. hiſt. ſ. 11. t. 11. fig. laſt.

leaves,

leaves, conſiſting of three or five oblong, pointed, ſerrate leaflets; and flowers coming out in thick, ſhort ſpikes: the corollas are pale blue. *Self-heal* is known immediately by its forked filaments, with the anthers inſerted below the top: the ſtigma alſo is emarginate or bifid. *Wild Self-heal*[o], ſo common in paſtures, has all the leaves of an oblong ovate form, ſerrate about the edge, and petiolate. *Scutellaria* is abundantly diſtinct from all the other genera of this order by its fructification; for the calyx is entire at the mouth, and after the flower is paſt, cloſes with a kind of lid; ſo that the whole bears a reſemblance to a helmet, whence the names of *Caſſida*, *Skull-cap*, and *Hooded Willow-herb*: and the ſeeds being hereby incloſed in a kind of capſule, this genus forms the connecting link between this order and the next. The ſpecies common on the banks of rivers, by ditch ſides, and other watery places[p], has lance-ſhaped leaves, hollowed at the baſe, notched about the edge, and wrinkled on the ſurface; the flowers are blue, and proceed from the axils, or angles formed by the leaves or ſubdiviſions of the main ſtem.

Prunella.

Scutellaria.

[o] Prunella vulgaris *Lin.* Curtis, Lond. IV. 42. Ger. 632. 1.

[p] Scutellaria galericulata *Lin.* Curtis, Lond. III. 36. Ger. 477. 10.

THE ORDER ANGIOSPERMIA.

The corollas in all the genera of the firſt order, with very few exceptions, are open-mouthed, *Labiate*, or *Ringent*, properly ſo called. In the ſecond order, which you are now going to ſurvey, many of them are *Perſonate*, or Labiate, with the lips cloſed; ſome however have open bell-ſhaped, wheel-ſhaped, or irregular corollas. To have ſeeds incloſed in a *Pericarp* is common to all, and hence the name of the order *Angioſpermia*. In moſt of the genera the calyxes are quinquefid; in ſome however they are bifid, in one trifid, in many quadrifid, and in two multifid.

Orobanche. Of thoſe with bifid calyxes, you have the *Orobanche* or *Broom rape*; which has an open corolla, divided at top into four ſegments, and nearly regular; there is a gland at the baſe of the germ; and the capſule is unilocular and bivalvular. The common ſpecies[q] has a pubeſcent ſtalk, abſolutely undivided; the ſingular *feuillemort* hue of this plant is alone ſufficient to betray it to you at firſt ſight.

Rhinanthus. Among ſuch as have quadrifid calyxes, are *Rhinanthus*, *Yellow Rattle*, or *Cock's-comb*, and *Eyebright*: theſe have *Perſonate* corollas:

[q] Orobanche major *Lin.* Curtis, Lond. IV. 44. Ger. 1311. 2.

corollas: the firſt has the calyx ſwelling; and an obtuſe, compreſſed bilocular capſule. The wild ſort[r], common in moiſt meadows, is known by the ſhortneſs and compreſſed form of the upper lip of the corolla; the colour is yellow: the calyx is very large, being an early flowering plant; this part grows dry before the time of mowing, and makes a craſhing or ratling ſound under the ſcythe. *Euphraſy*, or *Eyebright*, once celebrated as fit "to purge the viſual ray," has the calyx cylindric; the anthers ſpinous at the baſe of one of their lobes: and the capſules of an oblong ovate form, and bilocular. The officinal ſpecies[s] has ovato-linear leaves, ſharply indented about the edges. It is an humble, neat plant, growing in dry paſtures and heaths; and the corolla, on a near view, is very elegant. Euphraſia.

In the largeſt ſection, with quinquefid calyxes, you will find the *Antirrhinum* genus compriſing forty-ſeven ſpecies. The corolla is perſonate, prolonged at the baſe into a bag or ſpur; and the ſeed veſſel is a bilocular capſule. Of two ſpecies formerly mentioned to you, *Toadflax*[t] has linear leaves inclining to lanceolate, growing many toge- Antirrhinum.

[r] Rhinanthus Criſta galli *Lin.* Curtis, Lond. V. 43. Mor. hiſt. ſ. 11. t. 23. f. 1. Ger. 1071. 1.

[s] Euphraſia officinalis *Lin.* Curtis, Lond. V. 42. Mort. hiſt. t. 24. f. 1. Ger. 663.

[t] Antirrhinum Linaria *Lin.* Curtis, Lond. I. 47. Ger. 550. 1.

ther upon an erect ſtalk; the flowers grow cloſe in ſeſſile ſpikes, terminating the ſtem the under lip of the corolla is hairy within the chaps are orange-coloured, but the reſt is of a pale yellow; and it ends in a long ſpur. It is now in flower, or will ſoon be ſo. Accident has produced a ſtrange variation in this plant, by changing the corolla from perſonate with four didynamous ſtamens, to regularly pentapetalous with five, the reſt of the plant remaining the ſame[u]. Varieties partaking of the nature of two ſpecies are not uncommon[v], but as they are generally found among annual plants, and never produce ſeed, they are loſt almoſt as ſoon as they come to perfection. Whereas this being perennial, and creeping much at the roots, has been preſerved as an example of monſters in vegetable nature. *Snapdragon*[w] has the leaves of the calyx rounded at top, the flowers growing in a ſpike, and the corollas ſpurleſs; the colours of theſe are red with white or yellow mouths, or entirely white, or elſe white with yellow mouths: the leaves are lance-ſhaped and petiolate. Several ſpecies of *Antirrhinum* are wild on walls and in corn fields; and ſeveral others are not uncommon in gardens:

[u] This is deſcribed at length under the name of *Peloria* in the firſt volume of *Amœn. Acad.*

[v] Theſe are called *Hybridous* plants, or *Mules.*

[w] Antirrhinum majus *Lin.* Mill. fig. t. 42. Ger. 549. 1, 2, 3.

as

as *Three-leaved Toadflax*[x], an annual plant, having ovate, ſmooth, gray leaves, generally ternate, as the name implies, but ſometimes only in pairs: the flowers grow in ſhort ſpikes at the top of the ſtalks, and are ſhaped like thoſe of common Toad-flax, only the tubes are not ſo long; they are yellow, with ſaffron-coloured chaps. Two or three perennial ſpecies, with handſome ſpikes of blue flowers, and ſome of them ſmelling ſweet[y], are uſually in large borders, among flowering-ſhrubs, and other perennials.

Scrophularia or *Figwort* is another of theſe; the corolla is of the topſyturvy kind, almoſt globular in its form; the two upper diviſions are the largeſt and erect; the two ſide-ones ſpread open, and the fifth below is reflex. In many ſpecies, under the topmoſt diviſion, in the chaps of the corolla there is a little flap reſembling a lip: the flower is ſucceeded by a bilocular capſule. Two ſpecies are ſufficiently common; one in woods and hedge-rows[z], with the angles of the ſtem blunted, and heart-ſhaped leaves, much prolonged at the tip, and marked with three riſing nerves: the other by river Scrophularia.

[x] Antirrhinum triphyllum *Lin.* Bocc. ſic. t. 22.

[y] Antirrhinum purpureum, repens & monſpeſſulanum, &c. *Lin.* 1. Riv. mon. 82.—2 Dill. elth. 198. t. 163. f. 197.—3. Dill. elth. 199.

[z] Scrophularia nodoſa *Lin.* Blackw. t. 87. Mor. hiſt. ſ. 5. t. 8. f. 3. Ger. 716. 1.

ſides,

ſides, and in other watery places[a], with membrane running along the ſtalk at the angles, and heart-ſhaped leaves blunted the end. The ſe plants have a duſky ſha ſpread over their green, and their flowe are of a dull red.

Digitalis. *Foxglove*, one of the moſt ſhowy of o wild plants, has an open corolla, divided in four ſegments at top, and ſwelling out b low, ſhaped like the fingers of a glove; th capſule ovate and two celled. *Wild* or *purp Foxglove*[b] is diſtinguiſhed by having th leaves of the calyx ovate and acute, wit the ſegments of the corolla obtuſe, an the upper lip entire: the inſide of the coroll is beautifully ſprinkled with ſpots reſemblin eyes; and the leaves are large and wrinkled red is the colour of the flower in its wil ſtate; when cultivated in gardens it varies to white and yellow.

Bignonia. *Bignonia* has a *cyathiform* calyx, narrow at bottom, and ſpreading wide at top; a bell-ſhaped corolla, ſwelling out below, and divided into five ſegments at top; and a two-celled *ſilique* for a ſeed-veſſel, containing winged ſeeds lying cloſe over each other. The *Trumpet-flower*[c] of Virginia and Canada, with its trailing branches, putting

[a] Scrophularia aquatica *Lin.* Curt. Lond. V. 44. Fl. dan. 507. Blackw. t. 86. Ger. 715.

[b] Digitalis purpurea *Lin.* Curtis, Lond. I. 48. Fl. dan. t. 74. Ger. 790. 1.

[c] Bignonia radicans *Lin.* Mill. fig. pl. 65. Pl. 20. f. 2.

out

out roots from the joints, to acquire ſupport and nouriſhment from trees, has pinnate leaves, the leaflets of which are cut: the large trumpet-ſhaped flowers are orange coloured. The *Catalpa*[d] is a large tree with leaves remarkably ſimple, and heart-ſhaped: the flowers are produced in great branching panicles; they are of a dirty white, with a few purple ſpots, and faint ſtripes of yellow; but, what is moſt remarkable, they have only two perfect ſtamens, with ſmall rudiments of three others; the calyx alſo is not barely quinquefid, but divided quite to the bottom.

Acanthus, the leaves of which are ſaid to have given the firſt hint of the elegant Corinthian capital, is alſo of this order, but of that ſection which has bifid calyxes: it has an irregular corolla, without any upper lip; the lower one has three lobes; the anthers are villous, and the capſule is two-celled. Acanthus.

I cannot help remarking to you, ſince it has ſtruck me, that the greater part of the genera in the principal ſection of this order, is dedicated to the memory of eminent botaniſts. Here ſtands the great Linnæus himſelf; the celebrated Arabian Avicenna; thoſe fathers of the ſcience Geſner and Columna: in Italy, Creſcentio, Tozzi, Vandelli, Durante, Cirillo; the illuſtrious Frenchmen,

[d] Bignonia Catalpa *Lin.* Duham. arb. 1. t. 41. Cateſb. car. 1. t. 49.

Bignon,

Bignon, Barrelier, Ruellius, Cornutus, D dart; Celſius, Toren, Brovall, Swede Brunfelſius, Buchner, Bontius, Volk mer, Loeſel, Heſler, Hebenſtreit, Linder Gmelin, and other Germans; Oviedo th Spaniard; and of England old venerabl Gerard, Millington, and in more moder times, Lord Petre and two contemporar profeſſors of Oxford and Cambridge. Th illuſtrious, the indefatigable Baron Haller occupies a ſection alone, as he well merits being himſelf an hoſt. This plan, of con ſecrating newly diſcovered plants to perpe tuate the memory of perſons who have bee eminent in the ſcience, appears to me wel imagined. Ladies have had this honour[e], a well as the men; and I have no doubt, dea couſin, but that you will one day merit a nich in this temple.

[e] See Strelitzia Reginæ in Hort. Kew. 1. 285. Curt. magaz. 119, 120. John Miller's plates, t. 5, 6. Portlandia grandiflora in Dr. Smith's Icones pictæ. Monſonia ſpecioſa. Curt. magaz. 73.

LETTER XXIII.

THE CLASS TETRADYNAMIA.

Auguſt the 4th, 1775.

BEFORE any idea of ſyſtem or arrangement had gone abroad, every ſcientific eye perceiving a ſimilitude between the Cabbage and Turnip, the Stock and Radiſh in the fructification, there was an univerſal agreement among authors to place theſe plants, and others like them, in the ſame ſection or diviſion of their books, and to treat of them all together. You have already ſeen[f] the nature of this ſimilitude, and are not at any loſs in claſſing the *Cruciform* tribe: you have only to learn that the fifteenth claſs (Tetradynamia) in the ſyſtem of Linnæus, contains the ſame plants as you have been accuſtomed to call *Cruciform*; and to recollect that it has the long Greek name from four of the ſtamens being more powerful or longer than the remaining two; the circumſtance on which Linnæus founds the character of the claſs; and which diſtinguiſhes it from the ſixth, wherein the ſix ſtamens are of equal length, or at leaſt not of that regular, proportional inequality that we diſcover in the claſs now before you.

[f] In Letter II.

It

It will ſuffice to examine a few of th genera and ſpecies, which are not extremel numerous [g], and therefore my preſent lett will not extend to that frightful length tha ſome of the former have done.

THE ORDER SILICULOSA.

The *Siliculoſe* or ſhort-podded order lead the way, and is ſubdivided into two ſections the firſt containing thoſe which have the ſi licle entire, and the ſecond ſuch as have th ſilicle notched at top. From the firſt ſubdi- viſion I ſhall ſelect *Honeſty* for your obſer- vation, becauſe it is common in gardens, and has larger parts than moſt of theſe flowers. The ſilicle is oval, entire, quite flat, and ſtands on a pedicle; the valves are equal to the partition, parallel and flat: the leaflets of the calyx are bagged. The brilliant whiteneſs of theſe ſilicles has occaſioned this plant to be called *White Sattin*: and from the ſhape of them it is named *Lunaria* and *Moonwort*. Linnæus mentions but two ſpecies; the *annual* [h] differing from the *biennial* [i] in having larger flowers of a lighter purple, and the pods longer and narrower: they have both heart-ſhaped leaves, indented on their edges, are a little hairy, and end in

Lunaria.

[g] The genera are 32, and the ſpecies 287.
[h] Lunaria annua *Lin.* Mill. illuſtr. Beſl. eyſt. 7. f. 1.
[i] Lunaria rediviva *Lin.* Beſl. eyſt. 7. f. 2.

acute

acute points: the lower ones are on long petioles, but the upper ones ſit cloſe to the ſtalk.

Of the ſecond ſubdiviſion is the *Candy-tuft* or *Iberis*, known by an irregular corolla with the two outer petals larger than the two others. *Red Candy-tuft*[k] is an annual herbaceous plant with red flowers growing in a kind of umbel; your gardener ſows it in patches about the borders of your flower garden; it has lance-ſhaped leaves drawn to a point: the lower ſerrate, the upper ones quite entire: the flowers of this are ſometimes white, and then it is confounded with the bitter ſpecies[l], which however has the leaves not ſo ſharp-pointed, and with only few indentations: the flowers alſo grow in a raceme, and the plant is more branched. Iberis.

In this ſubdiviſion alſo ranges *Scurvy-graſs* and *Horſe-radiſh*, agreeing in a heart-ſhaped, turgid, rugged ſilicle, the valves of which are gibbous and obtuſe. *Officinal* or *Garden Scurvy-Graſs*[m] has a branching ſtalk; the lower leaves roundiſh and hollowed next the petiole; the ſtem-leaves oblong and ſubſinuous: the white flowers are produced in cluſters at the ends of the branches. *Engliſh* Cochlearia.

[k] Iberis umbellata *Lin.* Riv. tetr. 225. Curt. mag. 106.

[l] Iberis amara *Lin.* Riv. tetr. 112. Ger. 263. 5.

[m] Cochlearia officinalis *Lin.* Fl. dan. 135. Ger. 401. 1.

Sea Scurvy-Graſs[n] has longer leaves, and all of them ſinuate. *Horſe-radiſh*[o], which few beſides botaniſts obſerve in flower, has the radical leaves lance-ſhaped, and notched about the edges, the ſtem-leaves gaſhed.

THE ORDER SILIQUOSA.

The ſecond order, containing the *Cruciform* flowers, ſucceeded by a *ſilique* or long pod, is alſo ſubdivided into two ſections; in the firſt of which the leaflets converge at top, in the ſecond they gape. *Radiſh*, *Eryſimum*, *Stock*, *Wall-flower*, *Rocket*, *Arabis*, *Cabbage*, *Turnep*, &c. range in the firſt ſection: *Woad*, *Sea-Colewort*, *Cardamine*, *Muſtard*, *Char-*
Raphanus. *lock*, *Water-Creſs*, &c. in the ſecond. *Radiſh* has a cylindric, jointed, toroſe or ſwelling ſilique; and one pair of glands between the ſhorter ſtamens and the piſtil, with a ſecond pair between the longer ſtamens and
Eryſimum. the calyx. *Eryſimum* has a columnar ſilique with four equal ſides. Of this there are ſeveral wild ſpecies: as firſt, the *common*[p], growing by road ſides, well diſtinguiſhed by its runcinate leaves, and ſiliques preſſed cloſe

[n] Cochlearia anglica *Lin.* Fl. dan. 329. Ger. 401. 2.
[o] Cochlearia Armoracia *Lin.* Mor. hiſt. ſ. 3. t. 7. f. 2. Ger. 241. 1.
[p] Eryſimum officinale *Lin.* Curtis, Lond. V. 50. Fl. dan. 560. Ger. 254. 1.

to

to the ſtalk: ſecondly, *Winter Creſs*[q] with lyrate leaves, the outmoſt lobe roundiſh; and ſpikes of yellow flowers, growing by ditch-ſides: and thirdly, the *garlick-ſmelling*, called thence *Sauce-alone*, and from the uſual place of its growth, *Jack-by-the-hedge*[r], has heart-ſhaped leaves: the flowers are white, but the ſmell betrays it at once.

Stock and *Wall-flower* have two leaflets of the calyx gibbous at the baſe; the germ has a glandular toothlet on each ſide; and the ſeeds are flat. The two ſpecies are thus diſtinguiſhed. *Wall-flower*[s] has acute, ſmooth leaves, with angular branches. *Stock*[t] has obtuſe hoary leaves, with flatted ſiliques truncate at top: both have ſhrubby ſtems, and lance-ſhaped entire leaves. The *Annual* or *Ten-week Stock*[u] differs in having an herbaceous ſtalk, the leaves ſomewhat toothed, the petals notched, and the ſiliques cylindric and acute at the end. *Rocket*[v] has the petals obliquely bent; a gland on each ſide within the ſhorter ſtamens; the ſtigma forked, with the parts converging at top; and the ſilique ſtiff and upright. Cheiranthus.

[q] Eryſimum Barbarea *Lin.* Mor. hiſt. t. 5. f. 11, 12. Ger. 243.

[r] Eryſimum Alliaria *Lin.* Curtis, Lond. II. 48. Ger. 794.

[s] Cheiranthus Cheiri *Lin.* Mor. ſ. 3. t. 8. f. 15. Ger. 456.

[t] Cheiranthus incanus *Lin.* Mill. illuſtr. Ger. 458.

[u] Cheiranthus annuus *Lin.*

[v] Heſperis *Lin.*

Arabis. *Arabis* has four glands, within the leaflets of the calyx, like reflex ſcales. Some of the ſpecies are wild[w], and the *Alpine* ſort[x] is now common in many gardens: the leaves of this embrace the ſtalk, and are toothed about the edges; it bears white
Braſſica. flowers in looſe *corymbs*. *Cabbage*[y], *Turnep*[z], *Coleſeed*[a], &c. All agree in having the glands diſpoſed as in the radiſh; the leaflets of the calyx are erect: the claws of the corollas hardly ſo long as the calyx; the ſilique is roundiſh, a little flatted on each ſide, with the valves ſhorter than the partition; and filled with ſeveral globoſe ſeeds.

Iſatis. Of the ſecond ſection, *Woad* has a lance-ſhaped, bivalve, one-celled ſilique, containing one ſeed only, and deciduous; the valves are boat-ſhaped. The ſpecies cultivated for dying[b], has the radical leaves notched and petiolate; the ſtem-leaves ſagittate or ſhaped like the head of an arrow, and embracing the ſtalk; and oblong ſilicles. It is a large plant, with corymbs of ſmall
Crambe. yellow flowers. *Sea-Colewort* has a globoſe ſilique, or rather dry berry, which is deciduous, and contains one ſeed; but its moſt

[w] Arabis thaliana, Curtis, Lond. II. 49. ſtricta, Turrita *Lin.* Jacq. auſtr. t. 11. but the laſt has glands as in *Braſſica*.

[x] Arabis alpina *Lin.* Fl. dan. 62.

[y] Braſſica oleracea *Lin.*

[z] Braſſica Rapa *Lin.*

[a] Br. Napus *Lin.*

[b] Iſatis tinctoria *Lin.* Blackw. 246. Mor. hiſt. ſ. 3. t. 15. f. 10, 11. Ger. 491.

remarkable character is, that the four long filaments are forked at the end, and the anthers are borne on the outer forks. Our ſpecies[c] has the ſtalk and leaves ſmooth.

Cardamine, Cuckow-flower or *Lady's Smock*, (forgive the vulgar name) has the calyx gaping a little: two glands, one on each ſide, between the ſhorter ſtamens and the calyx; and an elaſtic ſilique, the valves rolling back with force when the ſeeds are mature, and thus throwing them off to ſome diſtance. There are many ſpecies wild, but that which is common in moiſt meadows, and on the banks of brooks[d], has pinnate leaves, the folioles on the radical leaves roundiſh, on the ſtem-leaves lance-ſhaped. The alluſions to the whiteneſs of the corollas will not always hold, ſince in ſome countries they are purple. Cardamine.

Muſtard has the claws of the corollas ſtraight, and the glands as in the Cabbage genus, to which it is very nearly allied; differing from it only in the circumſtance firſt mentioned, and in having the leaflets of the calyx ſpreading: the ſilique indeed is different; being toroſe and rough, with the partition uſually very long; but this is reſerved for the ſpecific diſtinction. The wild ſpecies, a weed ſo common among corn, Sinapis.

[c] Crambe maritima *Lin.* Fl. dan. 316. Ger. 315. 15.

[d] Cardamine pratenſis *Lin.* Curtis, Lond. III. 40. Ger. 259. 1, 2.

and generally called *Charlock*[e], has many angled, toroſe, ſmooth ſiliques, longer than the two-edged beak. *Black* or *common Muſtard*[f] has ſmooth ſiliques preſſed to the raceme, or common bunch of the fructification. *White Muſtard*[g] has the ſiliques hiſpid, terminated by a very long, oblique, ſword-ſhaped beak. If you ſuffer ſome of the plants which your gardener ſows for ſmall ſallad to grow up and flower, you will find it to be the laſt named ſpecies. Common Muſtard is a much larger plant, growing four or five feet high; the lower leaves large and rough, like thoſe of the Turnep. Charlock does not grow more than two feet in height; the leaves, which are alſo rough, are ſometimes jagged, and ſometimes entire.

Siſymbrium. *Water-Creſs* is of a numerous genus, there being twenty-nine ſpecies of *Siſymbrium*. The corolla is ſpreading as well as the calyx in this genus; and the ſilique gapes with ſtraightiſh valves. The ſpecific characters of *Water Creſs*[h] are, ſhort, declining ſiliques, and pinnate leaves, with the lobes a little heart-ſhaped. The flowers are

[e] Sinapis arvenſis *Lin.* Curtis, Lond. V. 47. Fl. dan. 753. Mor. hiſt. ſ. 3. t. 3. f. 7. Ger. 233. 2.

[f] Sinapis nigra *Lin.* Blackw. t. 446.

[g] Sinapis alba *Lin.* Curtis, Lond. V. 46. Blackw. 29. Ger. 244. 4.

[h] Siſymbrium Naſturtium *Lin.* Curtis, Lond. II. 61. Fl. dan. 690. Ger. 257. 1. and pl. 21.

white,

white, and grow in a corymb[i]. There is another ſpecies, called *Flixweed*[k], not uncommon on dunghills, where rubbiſh is thrown out, by way-ſides, and in uncultivated places: this has decompound pinnate leaves, and very ſmall corollas, the petals being leſs than the calyx: the ſilique is very long and ſlender, filled with ſmall, roundiſh ſeeds: the leaves are as finely cut as Roman Wormwood; and the ſmall yellow flowers are produced on looſe corymbs, at the top of the ſtalks.

The ſeaſon, dear couſin, is now in its wane, and a journey I muſt make on affairs of buſineſs, obliges me to leave the completion of my plan to another ſummer. If leiſure and health are then granted me, I ſhall with pleaſure reſume the employment which you honour with your attention. In the mean time you and your fair daughter have enough to amuſe you for the autumn, and even till winter confines you to the arrangement of your ſummer's labours within.

[i] See more in Letter XVII.

[k] Siſymbrium Sophia *Lin.* Fl. dan. 528. Ger. 1068.

LETTER XXIV.

THE CLASS MONADELPHIA.

June the 1ſt, 1776.

SOME neceſſary occupations, dear couſin, have prevented me from reſuming my pleaſing taſk ſo ſoon as I had wiſhed. But the ſpring has not been unprofitably employed by you, in the examination of ſuch plants as were paſt flowering, before you received my former letters. You have done well by marking in your pocket-book the names of all thoſe which have either wholly eſcaped your ſearch, or have preſented themſelves to you in a ſtate unfit for complete examination. You are not ſo unreaſonable as to expect that all Nature ſhould be open to your view at once. On the contrary, I am charmed with your patience and aſſiduity in awaiting the proper ſeaſons of flowering and fruiting; marking the times which authors have ſet down; and repeating your examinations in order to view plants in their different ſtates, when they ſometimes put on appearances ſo different, that to a leſs informed eye they might ſeem to be diſtinct ſpecies.

We are now arrived at a claſs, of which you have had no previous information in the introductory letters, deſigned to give

you

you a general knowledge of the moſt natural. The claſs *Monadelphia* however is a natural, as well as a moſt beautiful one. The union of the filaments at bottom into one body, or brotherhood as it were, is the leading character, and the occaſion of the name. You will recollect that hitherto the ſtamens have been ever free and diſtinct from each other, how many ſoever you may have found in a ſingle flower; you will alſo recollect having been informed, that in the ſixteenth and ſucceeding claſſes, they are united, either at top or bottom, into one body or more. In this, as I obſerved before, the filaments all join below, next the receptacle, ſome higher than others; all of them, together with the anthers, being ſtill entirely ſeparate at top.

If then you have met with a plant which has five, ten, or eſpecially many ſtamens, and you have not been able to aſſign it a place in the fifth, tenth, or thirteenth claſſes, examine it a little more attentively, and conſider whether it has not a peculiar port or ſtructure, announcing it to be a natural tribe. It may perhaps have a permanent calyx; but if it is alſo double you may be almoſt certain that it ranges here. The corolla of your flower may perhaps have five heart-ſhaped petals, the ſide of one embracing or at leaſt touching that which is next to it, in a direction contrary to the ſun's apparent motion. The filaments perhaps,

haps, connected at bottom only, whet
ſlightly, or for a conſiderable portion of th
lengths, are gradually ſhorter as they rec
from the middle; and the anthers are
cumbent, or lie along over the top of the
You find the receptacle of the fructificati
prominent in the centre of the flower; t
top of this receptacle ſurrounded by er
germs forming a jointed ring: all the ſty
united below into one body with the rece
tacle; but diſtinguiſhed at top into as ma
filaments as there are germs: theſe ger
becoming a capſule conſiſting of as ma
cells as there are piſtils in the flower: a
frequently conſiſting of as many connect
Arils. In each of theſe cells lurks a ki
ney-ſhaped ſeed.

If you have not already divined this ri
dle, take the flower of a wild Mallow,
Althæa, Lavatera, or other plant reſe
bling theſe; examine it by the characte
juſt laid down, and you will have a perfe
idea of the claſs *Monadelphia*. From t
circumſtance of the receptacle ſtanding
in the middle of the flower, like a colum
theſe have alſo the name of *columnifero*
plants.

The orders are five, taken from the num
ber of the ſtamens, which you remembe
determined the claſs in the firſt thirtee
claſſes; but being now no longer uſed fo
that purpoſe, may ſerve very well for th
other.

Th

The fruit was formerly taken for diſcriminating the genera. This being found inſufficient, ſucceeding nomenclators had recourſe to the leaves; but Linnæus has, for this purpoſe, wiſely adopted the calyx, which is always preſent, and is remarkable for its ſtructure in this claſs. The illuſtrious Swede has ever ſhown great ſagacity in ſeizing that part of the plant which is moſt conſtant, and furniſhes the greateſt choice of permanent variations, whereon to found the eſſential characters of his genera and ſpecies [1].

THE ORDERS PENTANDRIA AND DECANDRIA.

Not having taken the piſtil for the diſtinction of the orders, that part remains to aſſiſt us in characteriſing the genera. Accordingly in the firſt order of this claſs, in which the flowers have five ſtamens, two genera have one, and two have five ſtyles; the number of cells in the capſules ſerves to complete the generic character. Thus *Hermannia* has five ſtyles, and a five-celled capſule; to which we may add that the five petals of the corolla are rolled ſpirally in a direction contrary to the ſun's apparent motion; and that their claws have Hermannia.

[1] Genera 35, and ſpecies 256, in this claſs.

a little