

THE
LINNÆAN
ARTIFICIAL SYSTEM.

PART IV.

CONSTITUTING A SIMPLE AND BEAUTIFUL DIVISION OF
PLANTS, ACCORDING TO THEIR PARTS OF FRUCTIFI-
CATION, INTO TWENTY-FOUR CLASSES, WITH THEIR
COMPONENT ORDERS.

THE
LINNEAN
ARTIFICIAL SYSTEM.

PART IV.

CONSTITUTING A SIMPLE AND BEAUTIFUL DIVISION OF
PLANTS, ACCORDING TO THEIR PARTS OF FERTILITY
AND INTO TWENTY-FOUR CLASSES, WITH THEIR
CORRESPONDENT ORGANS.

THE
LINNÆAN
ARTIFICIAL SYSTEM.

SECTION I.

General view of the system :—the division, origin and derivation of the classes. The origin and derivation of the orders.

SECTION II.

An explanation of every class and order constituting the system, illustrated with references to plants of each division.

SECTION III.

General rules for ascertaining the class, order and genus to which any plant may belong, or a convenient and simple guide to a practical knowledge of the Linnæan Arrangement.

SECTION I.

GENERAL VIEW OF THE SYSTEM.

1. In the History of Botany, we alluded to the necessity of a simple and comprehensive arrangement of plants, in which every vegetable production might be classed, with tolerable accuracy and precision.

Many systems were published by some of the most learned botanists, but none have been so well received or so truly valued, as the excellent arrangement we are now about to consider.

2. The artificial system of Linnæus, is founded entirely on the *stamens* and *pistils* of the flower, and according to his arrangement, all known plants are distributed into different classes, orders, genera, species, and varieties.

The stamen is generally considered as the male part of the flower, and the pistil as the female ; the former, because the flowers having stamens only, bear no seed ; and the latter, because they bear seed when the pollen of the stamen has been discharged upon them. With this idea of the sexes of plants, the Linnæan system, is very commonly called the *sexual system*.

3. The *classes* are the first general division of all vegetables into twenty-four kinds. There are numerous plants which have a character common to them all, and the aggregation of these plants as bearing this evident *primary* distinction, constitutes a class.

Thus, if two hundred new plants were to be discovered, and all of them were found to have flowers with one stamen, they would be arranged in the first class of the Linnæan system; if they had two, in the second, and so on, provided they were deficient in any other peculiarities which give rise to a distinct class. If on the contrary, these two hundred plants were found to possess characters unknown to botanists before, they would naturally constitute a separate class of vegetables.

4. Each of the twenty-four classes, admit of being subdivided into *orders* or tribes. These orders are derived from a *secondary* characteristic.

For example, the first class of plants are those which produce perfect flowers with one stamen only. If the plants which belong to this class are examined, some will be found to have but *one* pistil, the others *two*; it is consequently very plausible, since the pistil is a sufficient *secondary* characteristic, to say the class is composed of two sets of plants. These two sets are therefore the two *orders*.

5. The orders into which the classes are divided, are again subdivided into *genera* or families. The genera, in their turn, are derived from peculiar characters, which many plants of the same order possess in common to themselves.

In most of the orders, you will find some plants which have one or more peculiarities, that agree with each other; thus the different geraniums have their particular character, the tulips theirs, the poppies theirs, and other plants in the same way, their marks of distinction. It is then, on these points of distinction, that the genera of plants are constructed.

6. The genera, like the preceding divisions, are also subject to a further arrangement into *species*, and these species into *varieties*.

For instance, you often see in green houses, a great many different sorts of geranium; the geraniums form a *genus* or family of plants, and each different sort is a *species* of that genus; so that when you hear a person say, round-leaved geranium, a Pensylvanian geranium, or a dark-flowered geranium, you know that they all belong to the genus geranium: and that the round-leaved, Pensylvanian, and dark-flowered geraniums are different species.

7. The *varieties* are nothing more than plants of the same species, with some trivial distinction in which they differ from others of the same species.

With some plants, owing to soil, situation, or other causes, both the leaves and flowers are subject to variation. When this is the case, they are denominated varieties.

8. Such are the primary and ultimate divisions according to the artificial system of Linnæus. We shall next speak of the division, origin and derivation of the classes, and afterwards of the origin and derivation of the orders.

In performing these tasks, we shall endeavour to impress upon the memory, the usual circumstances on which the respective divisions are established.

DIVISION, FOUNDATION, AND DERIVATION OF THE CLASSES.

9. The character of the classes are established from *six* circumstances connected with the stamen.

10. *First Division* :—These are established on the *number* of the stamens *alone*, as is the case with the first ten classes. Their names are derived from two Greek

words, the first expressing number, and the second a stamen.

1. Monandria; from *monos* one, and *andros* of *aner*, a stamen.
2. Diandria; from *dis* two, and *andros* of *aner*, a stamen.
3. Triandria; from *treis* three, and *andros* of *aner*, a stamen.
4. Tetrandria; from *tettares* four, and *andros* of *aner*, a stamen.
5. Pentandria; from *pente* five, and *andros* of *aner*, a stamen.
6. Hexandria; from *hex* six, and *andros* of *aner*, a stamen.
7. Heptandria; from *hepta* seven, and *andros* of *aner*, a stamen.
8. Octandria; from *okto* eight, and *andros* of *aner*, a stamen.
9. Enneandria; from *ennea* nine, and *andros* of *aner*, a stamen.
10. Decandria; from *deka* ten, and *andros* of *aner*, a stamen.

11. *Second Division*:—The classes of this part, are founded upon the *number* and *insertion* of the stamens, as with the eleventh, twelfth, and thirteenth classes. Their names are also derived from two Greek words, one expressing number, and the other a stamen.

11. Dodecandria; from *dodeka* twelve, and *andros* of *aner*, a stamen.
12. Icosandria; from *ikosi* twenty, and *andros* of *aner*, a stamen.
13. Polyandria; from *polus* many, and *andros* of *aner*, a stamen.

12. *Third Division*:—Consists of two classes in which the *number* and *proportion* of the stamens differ. These are the fourteenth and fifteenth classes, the names of which are derived from two words, one expressing number, and the other power.

14. Didynamia; from *dis* two, and *dunamis*, power.
15. Tetradynamia; from *tettaris* four, and *dunamis*, power.

13. *Fourth Division*:—Here we find five classes in which the stamens are *united*. They are the sixteenth, seventeenth, eighteenth, nineteenth and twentieth classes.

The three first are derived from two words, one denoting number, and the other a brother, because stamens are, figuratively speaking, brothers to each other; the two last, from words expressing their distinguishing characters.

16. Monadelphia; from *monos* one, and *adelphos*, a brother.

17. Diadelphia; from *dis* two, and *adelphos*, a brother.

18. Polyadelphia; from *polus* many, and *adelphos*, a brother.

19. Syngenesia; from *sun* together, and *genos*, generation, because the stamens are found united by their anthers.

20. Gynandria; from *gune* a pistil, and *andros* of *aner*, a stamen, because the pistils are most conspicuous, and have the stamens placed upon them.

14. *Fifth Division*:—The classes of this part, are established on the principle of the stamens being *separate*, that is, not in the same flower, or on the same plant as the pistils, or otherwise. They are the twenty-first, twenty-second, and twenty-third classes.

21. Monœcia; from *monos* one, and *oikos* a house, because the stamens and pistils are distinct, in separate flowers on *the same* plant.

22. Diœcia; from *dis* two, and *oikos* a house, because the stamens and pistils are distinct upon *different* plants of the same species.

23. Polygamia; from *polus* many, and *gamos* unions, because the stamens and pistils are separate in some flowers, and united in others, either on the same plant, or on two or three distinct plants.

15. *Sixth Division*:—Is constituted by the class cryptogamia, in which the stamens and pistils are *concealed*, or not perceptible to the naked eye.

This class is derived from the words *kruptos* concealed, and *gamos* unions, from the circumstance just related.

16. We shall here close our general observations on the divisions of the Linnæan artificial classes, and next

make a few remarks on the foundation and derivation of the *orders*.

ORIGIN AND DERIVATION OF THE ORDERS.

17. The orders are the secondary divisions of the Linnæan system, and are established upon different principles.

18. In the first thirteen classes, they are founded on the *number of the pistils* in each flower, and derived from two Greek words, one expressing number, and the other, a pistil.

1. Monogynia ;	from <i>monos</i>	one,	and <i>gune</i> , a pistil.
2. Digynia ;	from <i>dis</i>	two,	and <i>gune</i> , a pistil.
3. Trigynia ;	from <i>treis</i>	three,	and <i>gune</i> , a pistil.
4. Tetragynia ;	from <i>tettares</i>	four,	and <i>gune</i> , a pistil.
5. Pentagynia ;	from <i>pente</i>	five,	and <i>gune</i> , a pistil.
6. Hexagynia ;	from <i>hex</i>	six,	and <i>gune</i> , a pistil.
7. Heptagynia ;	from <i>hepta</i>	seven,	and <i>gune</i> , a pistil.
8. Octagynia ;	from <i>okto</i>	eight,	and <i>gune</i> , a pistil.
9. Enneagynia ;	from <i>ennea</i>	nine,	and <i>gune</i> , a pistil.
10. Decagynia ;	from <i>deka</i>	ten,	and <i>gune</i> , a pistil.
11. Dodecagynia ;	from <i>dodeka</i>	twelve,	and <i>gune</i> , a pistil.
12. Polygynia ;	from <i>polus</i>	many,	and <i>gune</i> , a pistil.

19. The orders of the fourteenth class didynamia, are taken from the *situation of the seeds*.

1. Gymnospermia ; from *gumnos* naked, and *sperma* seed.
2. Angiospermia ; from *aggos* a vessel, and *sperma* seed.

20. The orders of the fifteenth class, tetradynamia, are formed from a *difference in the shape of the seed vessels*.

1. Siliculosa ; from the Latin *silicula*, a little pod.
2. Siliquosa ; from the Latin *silicula*, a long pod.

21. In the classes monadelphia, diadelphia, polyadelphia, and gynandria, the orders are taken from *the number of the stamens*.

Monandria, diandria, triandria and so on, according to the number of stamens.

22. In the nineteenth class, syngenesia, the orders are taken from *the structure of the flower*.

1. Polygamia æqualis ; the first from *polus* many, and *gamos* unions ; the second *æqualis* equal ; meaning that each flower is equally possessed of stamens and pistils.

2. Polygamia superflua ; the first from *polus* many, and *gamos*, unions ; the second *superflua*, superfluous ; meaning that the florets in the disk being perfect, produce seed, and those in the ray or circumference (which are furnished with pistils only), are superfluous, as the former were sufficient to continue the species.

3. Polygamia frustranea ; the first from *polus* many, and *gamos* unions ; the second *frustranea* needless ; because the florets in the ray being neuter, their existence seems useless.

4. Polygamia necessaria ; the first from *polus* many, and *gamos* unions ; the second *necessaria* necessary ; because the florets in the disk have stamens only, and in the ray pistils only, so that, if those in the disk were absent, there would be no seed, hence the necessity of the pistils in the ray.

5. Polygamia segregata ; the first from *polus* many, and *gamos* unions ; the second *segregata* separate ; because the florets are all equal, that is perfect, as with the order polygamia æqualis, but *separate* by having *a calyx to each flower*, which separates the florets individually.

23. The classes monœcia and diœcia, take their orders from *the number and other peculiarities of the stamen*, and are named after the classes.

Monandria, diandria, triandria, tetrandria, pentandria, hexandria, polyandria, monadelphia, and polyadelphia, are the list of orders, as belonging to the two classes above mentioned.

24. In the twenty-third class, polygamia, the orders are established on *the separation of the stamens and pistils*.

These orders are monœcia and diœcia, in accordance with the classes so called; and triœcia from *treis* three, and *oikos* a house, because the stamens and pistils may be said to have three dwellings.

25. The orders of the last class, or cryptogamia, are founded on circumstances which we shall mention, when speaking of that peculiar class of vegetables.

With this we close the first section of the Linnæan system; in the next we shall display the separate characters of each class, and give a full account of the whole arrangement in respective order.

SECTION II.

EXPLANATION OF THE CLASSES AND ORDERS.

1. The Artificial System of Linnæus, or “Linnæan System,” as it is usually called, we have already said, is a simple arrangement of all vegetable productions into *twenty-four classes*, according to some peculiar character as regards *the stamen*.

Linnæus did not offer this arrangement as a *natural system*, nevertheless, its classes very frequently bring together many genera of plants, very similar in their natural resemblance, many of which we shall mention in the notes to the primary character of each class.

2. The *classes*, it must be attentively remembered, are founded on six circumstances; viz. the number, the insertion, the proportion, the union, the separation, and the concealment of the stamens.

We shall avail ourselves of the advantage of treating of the classes according to these separate divisions.

CLASSES DERIVED FROM THE NUMBER OF STAMENS.

3. The first ten classes are established on this principle. The plants which belong to them must produce simple perfect flowers, the stamens of which are generally separate.

CLASS I.—MONANDRIA.

4. *Character*:—The class monandria consists of such plants, as bear flowers furnished with but *one stamen*. (F. 174.)

The class monandria has no high claim to the character of a natural class. Indeed it brings together vegetables of very unlike habits, or appearance, and of very opposite qualities. The hare's-tail and glass-wort on the one hand, are very far removed from the Indian-shot and amomum on the other. Nevertheless, the first class contains several plants nearly allied to each other, as the amomum, turmeric, thalia, arrow-root, galangale, Indian-shot, alpinia, ginger, and others.

5. *Division* :—There are only two orders in this class ; viz. *monogynia* and *digynia* ; both derived from the number of pistils in each flower.

6. *Monogynia* :—This order comprehends those flowers of the first class, which have but *one* pistil.

The ginger, turmeric, glass-wort, grains-of-Paradise, galangale, opera-girls, arrow-root, and common mare's-tail, are plants of the class monandria, order monogynia.

7. *Digynia* :—Embracing those flowers of the class, which have *two* pistils.

The common water star-wort, a native annual of Britain, and a few other genera of plants, compose the order in question.

CLASS II.—DIANDRIA.

8. *Character* :—In this class are comprehended, such plants as bear flowers with *two* stamens. (F. 175.)

The class diandria, though not a natural class, embraces some assemblages of vegetables which are considerably allied to one another. Such are the olive, the snow-tree, the privet, the lilac, on the one hand ; and on the other hand, a number of plants with ringent flowers and naked seeds, such as the monarda, rosemary, sage, &c.

9. *Division* :—There are three orders in this class ;

viz. *monogynia*, *digynia* and *trigynia*; all derived from the number of pistils in each flower.

10. *Monogynia*:—Comprehending such plants of the class, as have flowers with but *one* pistil.

Among the plants in this order, are the jasmine, privet, olive, lilac, enchanter's night-shade, speedwell, hedge-hyssop, butter-wort, water-horehound, sage, and many others.

11. *Digynia*:—Including such plants of the class, as have flowers with *two* pistils.

This order consists only of the two genera, vernal grass and crypsis. The sweet-scented vernal grass is the only indigenous plant.

12. *Trigynia*:—Embracing such plants of the second class, as have flowers with *three* pistils.

The genus piper or pepper, is the only family of plants at present known of this class and order. In this genus, there is neither calyx or corolla.

CLASS III.—TRIANDRIA.

13. *Character*:—The third class includes those plants which bear flowers with *three* stamens. (F. 176.)

This is, in various respects, a natural class. Iris, crocus, moræa, antholyza, corn-flag or sword-lily, ixia, and some others, have considerable affinities to each other: they, together with commelina, spider-wort, pontederia, &c. constitute Linnæus's sixth natural order called *ensatæ*.

14. *Division*:—There are three orders of plants in this class: viz. *monogynia*, *digynia*, and *trigynia*; all established from the number of pistils in each flower.

15 *Monogynia*:—Consisting of those plants of the class, which produce flowers with but *one* pistil.

This order contains many plants, among which are the beautiful crocus, the iris, the corn-flag, the valerian, &c. Here also, we find the sword-leaved plants and numerous grass-like plants, as the cyprus-grass, the cotton-grass, the bull-rush, the bog-rush, &c.

16. *Digynia*:—Including such plants of the class, as produce flowers with *two* pistils.

The verdant carpet which covers the earth, is principally composed of plants belonging to this order, and though the least striking, are by far the most valuable of all vegetable productions. Here are the sugar-canes, and with a few exceptions, the true grasses, so many of which, as wheat, barley, rye, oats, &c. are of infinite service to man. (F. 176.)

17. *Trigynia*:—Comprehending such plants of the class, as produce flowers with *three* pistils.

This order is chiefly composed of little pink-like plants, most of which are arranged in the natural order *caryophyllæ*. The four-leaved polycarpon, blinks, jointed pipe-wort, and umbelled holosteum, are the only indigenous productions belonging to this order.

CLASS IV.—TETRANDRIA.

18. *Character*:—In this class, the flowers are furnished with *four* stamens, *all* of an equal length; in which respect, they differ from plants of the class *didynamia*. (F. 177.)

The class tetrandria has some claims to the character of a natural class. Several of the genera, such as protea, banksia, globularia, button-wood, teasel, scabious, &c. form a part of the Linnæan natural order *aggregatæ*. The ixora, hedyotis, houstonia, madder, ladies-bed-straw, woodroof, &c. form a part of the Linnæan natural order *stellatæ*. All these genera, together with many others which

Linnæus has introduced, as well into the fourth as into the other classes of his artificial system, constitute an extensive order of vegetables to which Jussieu has given the name of *rubiacææ*.

19. *Division*:—The class tetrandria, is divided into three orders; these are called *monogynia*, *digynia*, and *tetragynia*, from the number of pistils in each flower.

20. *Monogynia*:—Constituted by such plants of the class, as bear flowers with but *one* pistil.

In this order, there are above a hundred genera, many of which as the protea, banksia, &c. are very magnificent vegetables. The teasel, scabious, plantain, madder, ladies-bed-straw, woodroof, and other genera possessing indigenous species, also belong to this order.

21. *Digynia*:—Comprehending such plants of the class, as bear flowers with *two* pistils.

This is but a very small order, containing only two native plants of Britain, which are, the common and lesser dodder. The Virginian witch-hazel, buffonia, and hyecoum, are also of this arrangement.

22. *Tetragynia*:—Embracing such plants of the class, as bear flowers with *four* pistils.

The families of the holly, pond-weed, tassel pond-weed, &c. are of this order. Of the first genus, there is only one species, the common holly, a native of this country, but all the species of pond-weed and pearl-wort are indigenous.

CLASS V.—PENTANDRIA.

23. *Character*:—The plants arranged in this class, have *five* stamens in each flower, the anthers of which, are either united or separate. (F. 178.)

This class is the most extensive in the system, and brings together numerous genera of plants possessing natural affinities. The turn-soles or heliotropes, grom-well, bugloss, hound's-tongue, lung-wort, comfrey, onosma, borage, wild bugloss, scorpion-grass, and some other genera of this class, are arranged in the Linnæan natural order *asperifoliæ*. The stramonium, henbane, tobacco, mullein, cestrum, strychnos, capsicum, night-shade, winter-cherry, atropa, ellisia, box-thorn, and some others are also met with, in the natural order *luridæ*. The great natural order *umbellatæ*, is entirely made up of pentandrous vegetables. Again, the buckthorn, ceanothus, staff-tree, spindle-tree, buttneria, viburnum, elder, sumach, cassine, and other genera of this class, belong to the natural order *dumosæ*.

24. *Division*:—There are six orders which compose this extensive arrangement of plants, viz. *monogynia*, *digynia*, *trigynia*, *tetragynia*, *pentagynia*, and *polygynia*; all founded on the number of pistils in each flower.

25. *Monogynia*:—Including such plants of the class, as produce flowers with only *one* pistil.

This is the most extensive order of the whole Linnæan arrangement, containing numerous well-known garden flowers and useful productions. The different families of bugloss, lung-wort, comfrey, borage, primrose, pimpernel, convolvulus, campanula, honey-suckle, thorn-apple, henbane, tobacco, night-shade, buckthorn, vine, currant, violet, balsam, and a great number of other genera, will be found to correspond in character to this order.

26. *Digynia*:—Claiming such plants of the class, as produce flowers with *two* pistils.

This order is illustrated by the natural order of umbelliferous plants as the bur-parsley, carrot, earth-nut, hemlock, spignel, laserwort, cow-parsley, angelica, fool's-parsley, coriander, parsnip, parsley, dill, caraway, and others. The families of gentian, goose-foot, beet, &c. are also of the class pentandria, order digynia.

27. *Trigynia*:—Embracing such plants of the class, as produce flowers with *three* pistils.

In this order, stands the poisonous genus sumach or poison-oak. The beautiful laurestinus, which renders itself so valuable by blooming through most of the winter, is likewise of this order, as also the common elder, gelder-rose, French tamarisk and common chick-weed.

28. *Tetragynia*:—Formed by such plants of the class, as produce flowers with *four* pistils.

This order contains only two families of plants; the elegant and curious genus called parnassia or grass of Parnassus, and the genus *evolvulus*, nearly allied to *convolvulus*.

29. *Pentagynia*:—Including such plants of the fifth class, as produce flowers with *five* pistils.

Of the plants of this order, the common thrift, sea-lavender, common flax, and the genus *drosera* or sun-dew, will afford very excellent illustrations.

30. *Polygynia*:—Consisting of such plants of the class, as produce flowers with *many* pistils.

The lesser mouse-tail or *myosurus minimus* of this country, and the parsley-leaved yellow-root of North America, are the only specimens to be collected of this order.

CLASS VI.—HEXANDRIA.

31. *Character*:—The plants of this class, have flowers with *six* stamens, all of one uniform length, or at least, nearly so, in which respect they differ from plants of the class tetradynamia. None of the flowers of the class hexandria have four petals, as is the case with all those of the fifteenth class. (F. 179.)

The class hexandria, may be considered as one of the most beautiful in the Linnæan artificial arrangement. It also has a very fair claim to the character of a natural class; for it embraces some pretty extensive natural assemblages, such as those which Linnæus has thrown into his ninth and tenth orders *spathaceæ* and *coronariæ*. There are likewise several genera of plants in this class, which belong to the natural order *sarmentaceæ*; such are alstroemeria, Solomon's-seal, dracœna, asparagus, gloriosa, erythronium, uvularia, and others.

32. *Division*:—The class hexandria is subdivided into five orders: viz. *monogynia*, *digynia*, *trigynia*, *hexagynia*, *polygynia*, all founded on the number of pistils in each flower.

33. *Monogynia*:—Comprehending those plants of the class, which have flowers with *one* pistil only.

In this order, is the extensive and beautiful genus narcissus. The lily and the tulip tribe are likewise of this order; as also many other familiar genera of plants, such as the pine-apple, snow-drop, allium, fritillary, star-of-Bethlehem, squill, asphodel, asparagus, Solomon's seal, hyacinth, berberry, &c.

34. *Digynia*:—Embracing those plants of the class which bear flowers with *two* pistils.

This is a very small order, consisting only of a few genera, among which, the rice-plant forms a genus. There are not any natives of this country.

35. *Trygynia*:—Comprehending those plants of the class, which bear flowers with *three* pistils.

Among the genera of plants peculiar to this order, are dock, mountain-sorrel, arrow-grass, and meadow-saffron, all possessed of indigenous species; but the most familiar specimens are the common sorrel, a species of dock, and the common meadow-saffron; to these

might be added, garden-patience, monk's-rhubarb, sheep's-sorrel, and all the species of dock.

36. *Hexagynia*:—Including such plants of the class, as bear flowers with *six* pistils.

There is only the heart-leaved damasonium or damasonium indicum, a native perennial of the East Indies, to constitute this order.

37. *Polygynia*:—Comprehending those plants of the class, which bear flowers with *many* pistils.

This order, like the last, consists of only one genus; this is the alisma or water-plantain, five species of which, are peculiar to Great Britain, one of New Holland, and another of North America.

CLASS VII.—HEPTANDRIA.

38. *Character*:—This class embraces such plants as have flowers with *seven* stamens. (F. 180.)

It is a very inconsiderable branch of the twenty-four classes, and possesses no sort of claim to a natural arrangement: no two of the genera which it contains, are placed by Linnæus in any of his natural orders.

39. *Division*:—Although the class heptandria, is one of the smallest in the system, it is still subdivided into four orders; viz. *monogynia*, *digynia*, *tetragynia*, and *heptagynia*, all established from the number of pistils in each flower.

40. *Monogynia*:—Consisting of such plants of the class, as produce flowers with *one* pistil only.

The genus *æsculus*, of which the common horse-chesnut of this country is a species, together with a few other genera of foreign plants, compose the order in question.

41. *Digynia*:—Constituted by such plants of the class, as produce flowers with *two* pistils.

The limeum africanum or African limeum, a native perennial of the Cape of Good Hope, appears to be the only known plant of this order.

42. *Tetragynia*:—Consisting of such plants of the class, as bear flowers with *four* pistils.

Two species of saurus, the drooping and shining lizard's-tail, both native perennials of North America, are the only plants of this order.

43. *Heptagynia*:—Embracing those plants of the class, which bear flowers with *seven* pistils.

There is only one genus of plants to constitute this order, which is the septas, a Cape genus, very nearly allied to crassula, consisting of three species. The septas capensis or Cape septas, is a very singular specimen of this order as respects number; for in addition to its *seven* stamens and *seven* pistils, it is said to have the calyx in *seven* deep segments, *seven* petals, *seven* germens, and consequently *seven* capsules.

CLASS VIII.—OCTANDRIA.

44. *Character*:—Plants which produce flowers with *eight* stamens, belong to this class or arrangement. (F. 181.)

The class octandria embraces several natural assemblages of vegetables. The genera willow-herb, guaria, œnothera or tree-primrose, osbeckia, and rhexia, form a part of Linnæus's natural order *calycanthemæ*. These plants, among other characters, have the corolla and the stamens inserted into the calyx. The vaccinium or whortle-berry, and the immense family of erica or heath, are placed in the natural order *bicornes*. Again, gnidia, leather-wood, daphne, sparrow-wort, and some others, form the natural order *vepreculæ*.

45. *Division*:—This is rather an extensive arrange-

ment of plants, and subdivided into four orders; viz. *monogynia*, *digynia*, *trigynia*, and *tetragynia*; all derived from the number of pistils in each flower.

46. *Monogynia*:—Including every plant of the octandrous character, with *one* pistil in each flower.

Many plants present themselves as of this order, among which the well known *tropæolum* or *nasturtium* of our gardens, the different willow-herbs, blackberry, bilberry, mezereon, are familiar specimens. The heaths of this country, together with upwards of three hundred native species of the Cape of Good Hope, and a few more of other countries, form the major part of the order, as the largest genus of plants at present known.

47. *Digynia*:—Including every plant of the eighth class, with *two* pistils in each flower.

This is a small order of few plants but little known; among which is the African *galenia*, a native of the Cape of Good Hope, and the mossy *mœhringia*, a perennial plant of the south of Europe.

48. *Trigynia*:—Comprising all plants of the octandrous character, with *three* pistils in each flower.

The principal genus of this order is the *polygonum* or *persicaria*, of which the well known *bistort* or *snake-weed*, and the *water-pepper*, are species. The *soap-berry*, *heart-seed*, *sea-side-grape*, *seriana*, and *paullinia*, are other genera of the same order.

49. *Tetragynia*:—Embracing every plant of the octandrous character, with *four* pistils in each flower.

In this subdivision we find the *true-love* or *herb-parish*, and the *tuberous moschatel*, both native perennials of this country.

CLASS IX.—ENNEANDRIA.

50. *Character* :—All plants of this class, bear flowers with *nine* stamens. (F. 182.)

With respect to the genera which belong to the class enneandria, they constitute different assemblages of vegetables, more or less natural. The laurel, cashew-nut, and rhubarb, are of the Linnæan natural order *holeraceæ*. The other two genera, butomus and eriogonum, bear no particular affinity to each other, or to the genera we have just mentioned.

51. *Division* :—There are three sets of plants belonging to this class, and consequently three orders; viz. *monogynia*, *trigynia*, and *hexagynia*, all established on the number of pistils in each flower.

52. *Monogynia* :—Comprising those plants of the class, which produce flowers with *one* pistil only.

This order is chiefly constituted by a single family of valuable plants, generically called laurus or laurel. The cinnamon tree, bastard-cinnamon, camphor-tree, and cogwood, sweet-bay, royal-bay, alligator-pear, benjamin-tree and sassafras-tree, are all species of the genus laurus. The genera of anacardium or cashew-nut, and eriogonum are very small.

53. *Trigynia* :—Including such plants of the class, which produce flowers with *three* pistils.

The family of rhubarb or rheum is the only genus of this order, the true medical species of which, is the rheum palmatum or officinal rhubarb.

54. *Hexagynia* :—Consisting of a particular plant of the class, which produces flowers with *six* pistils.

This single plant, is the *butomus umbellatus* or common flowering-rush, a great ornament to our rivers and pools.

CLASS X.—DECANDRIA.

55. *Character*:—Here we have arranged, all plants which bear flowers with *ten* stamens. (F. 183.)

The class decandria is very extensive, and possesses many genera similar in their natural characters. For example, sophora, and bean-trefoil with some other genera, belong to the natural order *papilionaceæ*. Judas-tree, mountain-ebony, locust-tree, flower-fence, adenanthera, guilandina, cæsalpinia, cassia, logwood and some others belong to the natural order *lomentaceæ*. Beard-tree, mahogany-tree Barbadoes-cherry, and banisteria, are of the natural order *trihi-latæ*. Guaiacum, tribulus, fagonia, bean-caper, quassia, dionæa, oxalis, averrhoa, and others, of the order *gruinales*. Clethra, pyrola, ledum, andromeda, rose-bay, kalmia, epigæa, gaultheria, arbutus, and storax, of the natural order *bicornes*. Hydrangea, chrysosplenium, saxifrage, tiarella, mitella, cotyledon, sedum, penthorum, and bergia, are arranged in the natural order *succulentæ*. Lastly, gysophila, saponaria, dianthus, arenaria, stellaria, cucubalus, silene, spergula, cerastium, agrostemma, lychnis, and others, will be found in the order *caryophylleæ*.

56. *Division*:—The class decandria is subdivided into five orders; viz. *monogynia*, *digynia*, *trigynia*, *pentagynia*, and *decagynia*, all founded on the number of pistils in each flower.

57. *Monogynia*:—In this order are arranged such plants of the class, as produce flowers with *one* pistil only.

Among the plants of this order, we have families of the bean-trefoil, Judas-tree, mountain-ebony, cassia, fraxinella, rue, logwood, mahogany-tree, quassia, rose-bay, winter-green, and others. The singular plant called *dionæa muscipula* or Venus's fly-trap, is also of this class and order.

58. *Digynia*:—Embracing such plants of the class as produce flowers with *two* pistils.

In this division of plants, we have the families of hydrangea, saxifrage, golden-saxifrage, soap-wort, and pinks.

59. *Trigynia*:—In this order, are included such plants of the class, as produce flowers with *three* pistils.

Here will be found the different families of catch-fly or silene, stich-wort, sand-wort, Barbadoes-cherry, banisteria, garidella, &c.

60. *Pentagynia*:—A selection of those plants of the class, which produce flowers with *five* pistils.

Among the plants of this order, the most familiar are the hog-plum, navel-wort, stone-crop, corn-cockle, wood-sorrel, wall-pennywort, common orpine, wall-pepper, ragged-robin, and spurrey.

61. *Decagynia*:—Including such plants of the class, as produce flowers with *ten* pistils.

This order consists only of two genera, neurada and phytolacca; the latter, an irregular genus as to stamens and styles.

CLASSES ESTABLISHED ON THE NUMBER AND INSERTION OF THE STAMENS.

62. In this division, we shall enter the eleventh, the twelfth, and the thirteenth classes, each of which, will be found very simple and very distinct.

CLASS XI.—DODECANDRIA.

63. *Character*:—The exact number of stamens, does

not give rise to this class, for here are included all plants which produce flowers with *twelve to nineteen* stamens.

It cannot be asserted, that the class dodecandria is a natural class. The different genera which it contains, have very little natural affinity to each other. *Asarum* is referred to the order *sarmentaceæ*; *garcinia* and *halesia* to the order *bicornes*; *portulaca* and *house-leek* to *succulentæ*; the vast genus *euphorbia*, with a number of other genera, belong to the order *tricocceæ*.

64. It seems to be the essential character of this class, that the stamens, or in place of them, the anthers, are *inserted* into the *receptacle*. (F. 184.)

By the place of insertion, we very readily distinguish the plants of the class dodecandria from those of icosandria, for in this last, the stamens are either inserted into the calyx or into the petals, and from those of the class polyandria, by the number not exceeding nineteen.

65. *Division*:—The orders of this class are six in number, viz. *monogynia*, *digynia*, *trigynia*, *tetragynia*, *pentagynia*, and *dodecagynia*, all founded on the number of the pistils.

66. *Monogynia*:—Including, such plants of the class, as bear flowers with *one* pistil only.

The European asarabacca, tree-celandine, snow-drop tree, purslane, common lythrum, and other plants may be consulted as illustrations of this order.

67. *Digynia*:—Embracing such plants of the class, as bear flowers with *two* pistils.

To this order belongs the *heliocarpus*, a very rare American tree,

with a singularly fringed or radiated fruit, and the family of agrimony, among which the agrimonia eupatoria or common agrimony is a native perennial of this country.

68. *Tryginia*:—Embracing those plants of the class, which produce flowers with *three* pistils.

This order is principally constituted by two genera of plants; viz. the family reseda, among which the dyer's weed, base rocket, and mignonette are very familiar species; and the genus euphorbia or spurge, an extensive family of above one hundred species.

69. *Tetragynia*:—Constituted by such plants of the class, as produce flowers with *four* pistils.

The two genera calligonum and aponogeton, are the only kind of vegetables of this department.

70. *Pentagynia*:—Claiming such plants of the dodecandrous class as bear flowers with *five* pistils.

The hairy glius, an annual plant of the south of Europe, appears to be the only certain plant of this order. The genus blackwellia is considered a doubtful one.

71. *Dodecagynia*:—Embracing such plants of the class, as bear flowers with *about twelve* pistils.

The genus sempervivum or house-leek, is the only family of plants arranged in this order. The common species is a perennial native of this country, but all the others, are of foreign extraction.

CLASS XII.—ICOSANDRIA.

72. *Character*:—This class embraces those plants, which have flowers with *twenty* or *more* stamens *inserted* into the *calyx* or *corolla*. (F. 185.)

Although the class Icosandria cannot be said to be a natural class in the strict sense of the term, it nevertheless includes several great assemblages of vegetables, which are related to each other by striking family affinities. The great genus cactus, does not seem to have much relation with the other genera. The genera pomegranate, almond, cherry-tree, cocoa, plum-tree, pyrus and spiræa are referred to the natural order *pomaceæ*. The principal genera of the order polygynia are of the natural order *senticosæ*. The class altogether is a very useful and innoxious selection of plants, scarcely comprising one of a poisonous nature.

73. The distinguishing feature we have said of the flowers of this class is, that the stamens are attached to the calyx or corolla, and *never* to the receptacle.

This is a more certain guide than the number of stamens, which is by no means constant, many flowers belonging to it possessing a much greater number, and others, as tormentilla, not so many as twenty.

74. *Division* :—This useful and valuable class of plants is divided into five orders ; viz. *monogynia*, *digynia*, *trigynia*, *pentagynia* and *polygynia* ; all established on the number of pistils in each flower.

75. *Monogynia* :—In this order are arranged those plants of the icosandrous character, which produce flowers with *one* pistil only.

The most familiar examples of this order are the peach, plum, cherry, common allspice, cactus, myrtle, pomegranate, almond, and cocoa-plum-tree.

76. *Digynia* :—In this order we find such plants of the class, as bear flowers with *two* pistils.

The foreign genus waldsteinia, is said to be the only family of plants, correctly of this order.

77. *Trigynia*:—This order contains those plants of the icosandrous character, which have flowers with *three* pistils.

The genus *sesuvium*, a small foreign family of vegetables, is the only constituent of this part of the class.

78. *Pentagynia*:—This order lays claim to such plants of the class icosandria, as produce flowers with *five* pistils.

Among the productions of this subdivision we have the medlar-tree, quince, common pear, common apple, crab-apple, mountain ash, Virginian gelder-rose, meadow-sweet, and a large genus of upwards of two hundred species of *mesembryanthemum* or fig-marygold.

79. *Polygynia*:—The last order includes all plants of the necessary primary character, which set forth flowers with *many* pistils.

Here we are at liberty to search for examples among the beautiful family of roses. Illustrative specimens also present themselves in the raspberry, dewberry, bramble, strawberry, cinquefoils, tormentil, avens or herb-bennet, and many others.

CLASS XIII.—POLYANDRIA.

80. *Character*:—The flowers of this class have, as its name implies, *many* stamens, (that is from *twenty* to one hundred or more) all *inserted* into the *receptacle*. (F. 186.)

The principal natural relations which take place between the different genera of this class, are by no means inconsiderable. The genera caper tree, and *maregravia*, belong to the Linnæan natural order *putamineæ*. *Bixa*, *tilia* or lime-tree, and *thea*, form a part of the order *columniferæ*. *Papaver* or poppy, *chelidonium* or celandine,

glaucium, argemone, sanguinaria, and podophyllum, to the order *rhæadeæ*. Herb-christopher, pæony, larkspur, wolf's-bane, bug-wort, fennel-flower, columbine, meadow-rue, virgin's-bower, atragene, hellebore, marsh-marygold, adonis or pheasant's-eye, ranunculus and others, are of the order *multisiliquæ*. Magnolia, tulip-tree, michelia, uvaria, and annona or custard apple, are the principal genera in the natural order *coadunatæ*. The class polyandria, is particularly noted for its poisonous productions, a character very different to the last class.

81. This class of plants may be distinguished from those of the eleventh dodecandria, by *the superior number of stamens*; and from those of the twelfth, icosandria, by the difference *in their insertion*.

If there are from twelve to nineteen stamens, and these inserted into the receptacle, the plant must belong to the class dodecandria. But if there are more than nineteen, and still attached to the receptacle, it is then to be found in the present class polyandria. If, instead of the stamens being inserted into the receptacle, they should be attached to the calyx or corolla, you must be certain the plant is of the class icosandria.

82. *Division* :—The orders of the polyandrous class are seven; viz. *monogynia*, *digynia*, *trigynia*, *tetragynia*, *pentagynia*, *hexagynia*, and *polygynia*, all established from the number of pistils in each flower.

83. *Monogynia* :—Including such plants of this arrangement, as produce flowers with *one* pistil only.

Among the plants of this order, the most known are the poppy, the celandine, horned poppy, common lime-tree, cistus or rock-rose, tea, and the tribe of nymphæa or water-lily.

84. *Digynia* :—Including such plants of the class, as produce flowers with *two* pistils.

The genus *pæonia* or *pæony*, is the chief selection of plants in the order *digynia*. The genera *fothergilla*, *curatella*, and *bauera* are likewise of this same order.

85. *Trigynia*:—Embracing such plants of the polyandrous character, as possess flowers with *three* pistils.

Here we shall find upwards of twenty species of *delphinium* or *larkspur*, and near that number of *aconite* or *wolf's-bane*.

86. *Tetragynia*:—Consisting of such flowers of the class, as have *four* pistils.

The small family of *cimicifuga* or *bug-wort*, and the *caryocar* are the only plants we can mention as of this order.

87. *Pentagynia*:—Embracing such plants of the class, as have flowers with *five* pistils.

The genus *aquilegia* or *columbine*, of which the common and two-coloured are native perennials of this country, are of this order; as also the genus *fennel flower*, one species of which, commonly called *devil in the bush*, or *love in a mist*, is very frequent in our gardens.

88. *Hexagynia*:—Including a few plants of the class which produce flowers with *six* pistils.

The genus *stratiotes* or *water-soldier* is the only illustration to be collected from English botany.

89. *Polygynia*:—This order brings together such plants of the class, as bear flowers with *many* pistils.

The *tulip-tree*, *aniseed-tree*, *magnolia*, *custard-apple*, *bitterwood*, *anemones*, *virgin's-bower*, *meadow-rue*, *pheasant's-eye*, *fair-maid-of-February*, *golden-locks*, *garden-crow-foot*, *globe-flower*, *hellebore*, *marsh-marygold*, and several others, are here collected.

CLASSES FOUNDED ON THE NUMBER AND PROPORTION OF
THE STAMENS.

90. There are only two classes of this division, consequently very little confusion will arise in their explanation; these are the fourteenth and the fifteenth.

CLASS XIV.—DIDYNAMIA.

91. *Character*:—The fourth class tetrandria, and the present class didynamia have both *four* stamens; but in plants of the former class they are all *equal*, or of no fixed deviation in length, but in the class didynamia, there are *always* two long and two short. (F. 187.)

This class of plants is peculiarly characterized by Linnæus, in having flowers with four stamens, two of which are long and two short, the anthers converging, or inclining towards each other, in there being but one style, and in the corolla being of an irregular figure. It is not to be called a natural arrangement, though it is, indeed, much more natural than some of the other classes of the artificial system. Linnæus himself, appears to have been fully sensible of the few family affinities that subsist, between the plants of the class didynamia. Accordingly, in his work on the *natural orders*, he has disposed of the greater number of the didynamous plants under two great natural families, which he calls *verticillatæ* and *personatæ*.

92. *Division*:—There are two orders or subdivisions of this class; the first order called *gymnospermia*, and the second *angiospermia*. These divisions are not founded, like those of the preceding classes, on the pistils, but on the *presence or absence of the seed-vessel*.

93. *Gymnospermia*:—This order contains those didynamous plants, which are destitute of a proper seed-

vessel. In all the British species, there are four naked seeds at the bottom of the calyx.

The common bugle, ground-pine, tribes of germander, savory, cat mint, lavender, iron-wort, mint, and ground-ivy, archangel, dead-nettle, betony, hedge-nettle, horehound, mother-wort, marjoram, thyme, balm, dragon's-head, basil, skull-cap, and other families of plants may be selected as examples.

94. *Angiospermia* :—The order angiospermia, contains those plants, answering the character of the class, which have their seeds covered, that is, lodged in a proper seed-vessel.

Here we shall meet with the eye-bright, the cock's-comb, and the different genera of cow-wheat, lathræa, louse-wort, toad-flax, snap-dragon, fig-wort, fox-glove, trumpet-flower, vervain, broom-rape, monkey-flower, chaste-tree, acanthus, honey-flower, and others.

CLASS XV.—TETRADYNAMIA.

95. *Character* :—The plants of this class, have perfect flowers with *six* stamens, *four* of which are longer than the other *two*; and it thus differs from the plants of the sixth class, in which the stamens of the flowers are all of equal length. The flowers of this class are also cross-shaped, which is not the case with flowers of the class hexandria. (F. 188.)

This is unquestionably, the most natural class of the twenty-four, not only in general appearance, but also in habits and properties. Linnæus has arranged all the genera, (cleome excepted) into one great natural division, by the name of *siliculosæ*.

96. *Division* :—The *form of the seed vessel* divides the plants of this class into two orders: the first called *siliculosa* and the second *siliquosa*.

97. *Siliculosa* :—The plants of this order are furnished with that particular species of seed-vessel, which is called a *silicle* or little pod. (F. 61.)

The gold-of-pleasure, cole-wort, woad, awlwort, whitlow grass, pepper-wort, shepherd's-purse, penny-cress, scurvy-grass, swine's-cress, candy-tuft, madwort, and honesty, are all of this order.

98. *Siliquosa* :—The plants of the second order, instead of having a little pod, have a *siliqua* or very long pod. (F. 65)

Here we shall meet with the common wall-flower and common stocks of our gardens. We shall likewise find numerous other illustrations, as the cuckoo-flower, water-cress, water-radish, dames-violet, cole seed or rape, turnip, charlock, and the different tribes of dentaria, lady's-smock, winter-cress, lady's-mustard, sea-rocket, rocket, wall-cress, tower-mustard, cabbage, mustard, radish, and a few others.

CLASSES ESTABLISHED ON A CONSIDERATION OF THE UNION OF THE STAMENS.

99. In this division we shall explain those classes of plants, which have flowers with the stamens *united* to each other, either by their filaments, as in monadelphia, diadelphia, and polyadelphia, or by their anthers, as in syngenesia ; or on the other hand, by the *union* of the stamens and the pistils, as in the class gynandria.

CLASS XVI. — MONADELPHIA.

100. *Character* :—This vast and interesting class, embraces those plants, the flowers of which have *all* their stamens *united below*, that is by their filaments,

into *one body* or cylinder, through which the pistil passes. (F. 189.)

The class monadelphia upon the whole, is a natural class, the greater number of the genera of which, are arranged by Linnæus in his natural order *columniferæ*.

101. *Division*:—The orders of this class, are neither founded on the pistil nor on the seed-vessel, but upon *the number of the stamens*. They are eight in number, and are called after the classes, *triandria*, *pentandria*, *heptandria*, *octandria*, *decandria*, *endecandria*, *dodecandria* and *polyandria*, according to the number of stamens in each flower.

In all the preceding classes we have observed, that the stamens, whether few or many, have been evidently distinct from each other; but in the present case, you will always find them united at the bottom, though perfectly separate at the top, by which their number is very readily ascertained!

102. *Triandria*:—Including such plants of the class, as produce flowers with *three* stamens.

Here is arranged the genus tamarind, consisting of only one species. The ferraria whose fugitive flowers scarcely last one forenoon, and galaxia, whose beauty is almost as transient, are likewise found here. In this order also, is the pretty genus sisyrinchium, and the singular Cape plant aphyteia, consisting of a large flower and succulent fruit springing immediately from the root, without stem or leaves.

103. *Pentandria*:—In this order of the class, we have such plants as produce flowers with *five* stamens.

The genus erodium or heron's-bill, which of late has been separated from that of geranium, hermannia a pretty Cape genus, and a few others constitute this division. Sir J. E. Smith refers the family

of passiflora or passion-flower, as unquestionable, to the class pentandria, order trigynia.

104. *Heptandria* :—This division brings together those plants of the character of the class, which have flowers with *seven* stamens.

This order is formed by one extensive genus, called pelargonium or stork's-bill, upwards of one hundred and fifty species of which are natives of the Cape of Good Hope. They are characterized by their irregular flower, and tubular nectary.

105. *Octandria* :—Embracing those monadelphous plants, the flowers of which have *eight* stamens.

This is a very small order, having only the two genera aitonina and pistia.

106. *Decandria* :—This order is intended to comprehend such plants of the class, as have *ten* stamens.

The well known genus geranium or crane's-bill, is reckoned by some, as the only family of plants of this order, while others attribute a few more.

107. *Endecandria* :—This order has been established for the arrangement of the splendid American genus brownea, the number of whose stamens is very different in different species.

The species of brownea called *Rosa del Monte*, has a stem about sixty feet high, and its heads of purple flowers, consist of five or six hundred each.

108. *Dodecandria* :—Here are to be found those plants of the class, whose flowers have from *twelve* to *twenty* stamens.

The different tribes of helicteres or screw-tree, pentapetes, pterospermum, and a few more, are the constituents of this order.

109. *Polyandria* :—In this order are included such plants of the general character, as have flowers with more than twenty stamens.

This order contains a much greater number of genera than any of the others in the class. Among these will be found, the sour-gourd or monkey-bread-tree, the tribes of silk-cotton-tree, mallow, marsh-mallow, lavatera, hibiscus, camellia, and others. The most known plants may be, the common marsh-mallow, the common mallow, the tree-mallow a species of lavatera, the China rose, a species of hibiscus, and the camellia japonica or common camellia.

CLASS XVII.—DIADELPHIA.

110. *Character* :—With plants belonging to this class, the flowers are either *papilionaceous* or butterfly-shaped, or else the stamens are inserted into *two sets* by their filaments. (F. 190.)

The structure and general aspect of plants arranged in this class, are very similar in their natural resemblance. They are inserted by Linnæus in his natural order *papilionaceæ*, and by Jussieu in his vast order *leguminosæ*.

111. *Division* :—There are four orders of plants in this class; viz. *pentandria*, *hexandria*, *octandria*, and *decandria*, all established on the *number* of the stamens.

112. *Pentandria* :—This order is constituted by a rare little South American plant, the monniera, having two filaments, the upper with two anthers, and the lower with three.

The natural order of this plant is uncertain. It has a ringent corolla, ternate leaves, a simple bristly pubescence, and is besprinkled with resinous dots.

113. *Hexandria*:—In this order, are placed those diadelphous plants which bear flowers with *six* stamens.

There are only two genera of this order; viz. *saraca*, and *fumaria* or *fumitory*, of which last, some British species are very common.

114. *Octandria*:—Comprehending such plants of the class, as have flowers with *eight* stamens.

The extensive genus *polygala* or milk-wort, and a few others, compose the order in question. The *polygala vulgaris* or common milk-wort, is a frequent, but very beautiful little plant.

115. *Decandria*:—This order brings together numerous genera of plants characterized with the features of the class, and here arranged because their flowers have *ten* stamens.

This, as we have observed is a copious order, and the species belonging to a number of its genera, are very numerous. The most common genera of plants we can mention, are the broom, furze, rest-harrow, kidney-vetch, lupine, kidney-bean, pea, bitter-vetch, vetch, lathyrus, tare, chick-pea, milk-vetch, dhalia, trefoil, bird's-foot-trefoil, and many others. Among these and other genera, we find numerous well-known species, such as the petty-whin, scarlet runner, sweet-pea, tangier-pea, everlasting-pea, santfoin, lentil, laburnum, wild-liquorice, melilot, Dutch clover, and common clover.

CLASS XVIII.—POLYADELPHIA.

116. *Character*:—In this class, the flowers have their

stamens united into *more than two* parcels by their filaments. (F. 191.)

This collection of plants, has but little claim to the character of a natural class. The genera which it contains belong to very different natural orders. Thus, the genera theobroma, abroma, and symplocos, belong to the Linnæan natural order *columniferæ*. Monsonia is referred to the order *gruinales*; citrus to *bicornes*. Hypericum and ascyrum belong to the order *rotacæ*. Though one of the smallest classes, it nevertheless furnishes many luxuries.

117. *Division*:—The orders of this class have long been imperfectly defined, but Sir James Edward Smith, has proposed the class should be divided into three orders; viz. *dodecandria*, *icosandria*, and *polyandria*. These are, of course, established on the *number* or *insertion* of the stamens.

118. *Dodecandria*:—In this order the plants produce flowers with stamens, or rather anthers, from *twelve* to *twenty* or *twenty-five* in number, their filaments *unconnected* with the calyx.

The orange, the lemon, and the theobroma or chocolate tree are, according to Sir J. E. Smith, decidedly of this order.

119. *Icosandria*:—The plants of this order, have flowers with *numerous* stamens, *inserted*, by means of their filaments, in several parcels, into the calyx.

Professor Willdenow has removed the genus melaleuca from the next order to this; and Sir J. E. Smith has referred the orange, lemon, &c. which have been previously arranged in this order, to the order dodecandria as above.

120. *Polyandria*:—In this order of the polyadel-

phous plants, the flowers have *upwards of twenty-five* stamens, all *unconnected* with the calyx.

Among a few others in this order, is the hypericum or St. John's-wort, several species of which are natives of this country. The stamens of these plants are united into three or five sets, corresponding with the number of the styles.

CLASS XIX.—SYNGENESIA.

121. *Character* :—This is a very extensive class, comprehending for the most part, those plants which produce *compound flowers*. With these *the anthers* are united into a cylinder or tube, whilst the filaments, by which they are supported, are separate and distinct. (F. 5.)

The class syngenesia, is a very natural assemblage of plants. It embraces the great family of compound flowers, which is, unquestionably, a natural tribe, essentially distinct from plants with simple flowers. The essence of these compound flowers is said, by Linnæus, to consist in the two circumstances of the union of the anther, into a cylinder, and a single seed placed below the receptacle, and attached to each floret. Most of the plants of this class, are referred by Linnæus to his natural order *compositæ*.

122. *Division* :—The class syngesia is divided into five orders ; viz. *polygamia æqualis*, *polygamia superflua*, *polygamia frustranea*, *polygamia necessaria*, and *polygamia segregata*. They are all founded on the *structure* of the flower.

123. *Polygamia æqualis* :—In the plants of this order, the florets or partial flowers are all *perfect* or *united*, that is, furnished with their own perfect stamens and

pistil, and thereby capable of bringing their seed to maturity, without the assistance of any other florets.

Here we shall meet with the old-man's-beard, goats-beard, lamb's-beard, viper's-grass, sow-thistle, lettuce, dandelion, ox-tongue, hawk-weed, hawk's beard, cat's-ear, nipple-wort, succory, burdock, sow-wort, thistle, cotton-thistle, artichoke, golden-locks, and many other well-known families of plants.

124. *Polygamia superflua*:—With the vegetables of this subdivision, the florets in the centre or disk are *perfect* or *united*; while those of the circumference or margin, are furnished with pistils only. Notwithstanding the outer florets have only pistils, they are still impregnated with the pollen from the stamens of the disk, and consequently produce seed.

The most common tribes of plants belonging to this order, are the genera tansy, wormwood, everlasting or cud-weed, flea-bane, colt's-foot, groundsel, star-wort, golden-rod, inula, leopard's-bane, daisy, chrysanthemum, feverfew, chamomile, milfoil, ox-eye, and several others.

125. *Polygamia frustranea*:—In the flowers of this order, the florets of the disk or centre, are *perfect* or supplied with both the stamens and pistil, while the flat florets (sometimes called *semi-florets*) of the margin or circumference are *neuter*, that is, are destitute both of stamens and pistils. There are a few genera, however, with the rudiments of pistils in their outer florets.

The common sunflower, Jerusalem artichoke, family of coreopsis or tick-seed-sunflower, sweet and yellow sultan, black knapweed, blue-bottle, blessed-thistle, star-thistle, and St. Barnaby's thistle, are the most familiar illustrations we can name.

126. *Polygamia necessaria* :—In this order, the florets of the centre are furnished with *stamens only*, while those of the margin or circumference, are merely supplied with *pistils*. The presence of both kind of florets, are therefore necessary for the production of seed.

The family calendula or marygold, of which the common variety in our gardens is a native of the south of Europe, belongs to this order. The three Cape genera, othonna or rag-wort, osteospermum, and arctotis, are likewise of this division.

127. *Polygamia segregata* :—This order of the class syngenesia, embraces such plants as bear several flowers, either simple or compound, but with united tubular anthers, and with a partial calyx, all included in one general calyx.

We have examples of this order of plants, in the genera echinops or globe-thistle, elephantopus or elephant's-foot, and a few others.

CLASS XX.—GYNANDRIA.

128. *Character* :—The plants of this class are furnished with perfect flowers, the stamens of which are *inserted* either upon the style or germen of the pistil. (F. 192.)

This is rather a miscellaneous class of plants. Linnæus, however, deemed the first order, which he called diandria, as a natural assemblage. They constitute his seventeenth order named *orchideæ*. Many plants which were previously arranged in this class, are now removed to other divisions of the system.

129. *Division* :—Botanists are very uncertain about the correct number of orders, which should form this

class ; some assert there are only four, others more or less, but the most general division is into seven ; viz. *monandria*, *diandria*, *triandria*, *tetrandria*, *pentandria*, *hexandria* and *octandria*. These are all established on the number of the stamens.

Linnæus himself attributed three more to the number we have mentioned ; viz. *decandria*, *dodecandria*, and *polyandria*, but these are now entirely abolished and their genera of plants referred to other places.

130. *Monandria* :—In the first order of the class, we find those plants which have flowers with *one* stamen or sessile anther.

The very beautiful and curious tribe of the orchis, are the principal productions of this order.

131. *Diandria* :—This subdivision consists of those gynandrous plants, the flowers of which have *two* stamens.

The genus *cypripedium* or ladies-slipper, of which the common species is a well known native of this country, is the principal family in this part.

132. *Triandria* :—This is a very trivial order, consisting of those plants answering to the character of the class, which have *three* stamens.

The *rhodium* of Schreber, appears to be the only certain genus of the order we are considering.

133. *Tetrandria* :—This is also a very small order, the plants of which have flowers with *four* stamens.

The genus *nepenthes* formerly attributed to this order, is now removed to *diccia monadelphia*. The order, however, is retained for the reception of a New Holland genus named *stylidium*.

134. *Pentandria*:—In this department we shall find those plants of the class, producing *five* stamens in each flower.

The three genera *ayenia*, *gluta*, and *passiflora* or passion-flower, were formerly placed here, but the learned Schreber has very correctly removed them to the fifth class. It has been proposed to reinforce this order from the class *pentandria digynia*, some of the genera of which are related, as decidedly of the proper qualities for such a removal.

135. *Hexandria*:—The plants of this order, have flowers with *six* stamens.

The *aristolochia* or birth-wort, a curious genus, of which there are many exotic species, and but one indigenous, is the only genus of the hexandrous order.

136. *Octandria*:—Here we are to expect such plants of the class, as produce flowers with *eight* stamens.

The *cytinus*, a singular parasitical plant growing on the roots of *cistus* in the south of Europe, has been brought hither from the order *dodecandria*, of which it originally formed the only example.

CLASSES FOUNDED ON A CONSIDERATION OF THE SEPARATION OF THE STAMENS WITH REGARD TO THE PISTILS.

137. The classes which we have hitherto explained, are constituted by plants, the flowers of which are perfect, or in other words, furnished with both stamens and pistils, but in the classes of this division, we shall ascer-

tain, that some plants may have flowers with these organs distinct in separate flowers, as well as both in the same flower. According to the nature of these differences, there are three classes; viz. monœcia, dioœcia, and polygamia.

CLASS XXI.—MONŒCIA.

138. *Character*: The plants of this class, are particularly distinguished by their producing some flowers with stamens only, and some flowers with pistils only, both growing *on the same plant*. (F. 193.)

The vegetables of the class monœcia, are arranged by Linnæus under very different natural orders. *Zannichellia* belongs to the order *inundatæ*. *Anguria*, *trichosanthes*, *momordica*, *cucurbita*, *cucumis*, *sicyos*, and *bryonia*, are referred to the order *cucurbitaceæ*. *Betula*, *fagus*, *quercus*, *juglans*, *corylus*, *carpinus*, and *platanus*, are of the order *amentaceæ*. *Pinus*, *cupressus*, *thuja*, &c. to the *coniferæ*. *Zea*, *tripsacum*, *coix*, *olyra*, *zizania* and *pharus*, are grasses, and belong to the order *gramina*. *Carex*, *sparganium* and *typha* are referred to the natural order *calamariæ*.

139. *Division*:—There are nine orders in this class; viz. *monandria*, *diandria*, *triandria*, *tetrandria*, *pentandria*, *hexandria*, *polyandria*, *monadelphia* and *polyadelphia*; all established on the number, or some other circumstance, connected with the stamens.

140. *Monandria*:—This order claims those plants of the monœcious character, which produce barren flowers with but *one* stamen.

The *zannichellia* or horned-pondweed, and the celebrated bread-fruit tree or *artocarpus*, may be considered as the most correct illustrations.

141. *Diandria*:—Comprehending those plants of the monœcious character, which produce barren flowers with *two* stamens.

The genus *lemna* or duck's-meat, a British family of plants, may be selected in exemplification of this order.

142. *Triandria*:—Including such plants of the proper character, which produce barren flowers with *three* stamens.

Here we shall find the typha or cat's-tail, bur-reed, Indian-corn or maize, Job's-tears, jack-in-a-box, and the extensive genus *carex* or sedge, of which about sixty species are peculiar to Great Britain.

143. *Tetrandria*:—In this order are arranged such plants of the monœcious character, which produce barren flowers with *four* stamens,

Though not an extensive order, there are still some very frequent and familiar specimens to be collected; such as the common and other species of nettle, the common box tree, common elder, common mulberry, gold-plant, and a few others.

144. *Pentandria*:—Embracing those plants of the class, which produce barren flowers with *five* stamens.

The different genera *securinega*, *nephelium*, *schisandra*, *xanthium*, *ambrosia*, and the considerable family *amaranthus* or *amaranth*, are the chief arrangements in this order. The small burdock, a native of this country is a species, of *xanthium*, and the well known plant of our garden, called love-lies-bleeding, is a species of *amaranth*.

145. *Hexandria*:—Comprehending those plants of the monœcious character, which produce barren flowers with *six* stamens.

The zizania or Canada-rice, and pharus, both grasses, compose this order, to which Schreber has added epibaterium and pometia of Forster, as well as the splendid guettarda. The sagus or sago-palm, and cocos or cocoa-nut tree are likewise said to belong to it.

146. *Polyandria* :—Including those plants of the general character, which produce barren flowers with *more than seven* stamens.

This is a very considerable order, containing numerous plants for familiar references. Here will be found the different genera of horn-wort, water-milfoil, arrow-head, begonia, burnet, oak, walnut, beech-tree, chesnut-tree, birch tree, hornbeam-tree, hazel-nut-tree, arum, and several others.

147. *Monadelphica* :—Embracing those vegetables, the barren flowers of which have their filaments united into *one* set.

The genus pinus or fir-trees, arbor-vitæ or tree-of-life, cypress, palma-christi or castor-oil-tree, and a few other tribes of plants, are to be found in this order.

148. *Polyadelphia* :—Including those plants of the monoecious character, the barren flowers of which, have their filaments united into *more than two* sets.

Sir James Edward Smith proposes this order should be established for the reception of the gourd plants, and accordingly the different genera of cucurbita or gourd, cucumis or cucumber, bryonia or bryony and others, are removed from their former supposed order, syngenesia, to their present arrangement here.

CLASS XXII.—DIECIA.

149. *Character* :—The twenty-second class contains those plants, which have no perfect flowers, but produce

flowers with stamens on one plant, and flowers with pistils on another of the same species. (F. 194.)

The genera of the class diœcia are referred, by Linnæus, to very different natural orders. *Salix*, *populus*, *myrica*, belong to the order *amentaceæ*. *Juniperus*, *taxus*, *ephedra*, to the *coniferæ*. *Vallisneria* and *hydrocharis* to the order *palmæ*. *Smilax*, *tamus*, *yam*, *rajanian*, *moon-seed*, *cissampelos*, and *butcher's-broom* to the *sarmentaceæ*. While *carica* or *papaw-tree*, and *cliffortia*, are arranged in the natural order *tricoccæ*.

150. *Division*:—The class diœcia, like the preceding one, is very variously divided by different writers. Some consider there are fourteen orders, but the number usually admitted, is *nine*. These are all named and established after the classes.

151. *Monandria*:—Containing those species of diœcious plants, the barren variety of which, produce flowers with only *one* stamen.

The *pandanus* or *screw-pine*, and the *brosimum* or *bread-nut-tree*, both foreign genera, are to be found in this order.

152. *Diandria*:—When, instead of producing flowers with only one stamen, they are furnished with *two* stamens.

The extensive genus *salix* or *willow*, will afford plenty of native examples of the order in question.

153. *Triandria*:—When the flowers of the barren plant, are furnished with *three* stamens.

The genera *empetrum* or *crow-berry*, *osyris* or *poet's-cassia*, *restio* or *rope-grass*, *phœnix* or *date-palm-tree*, and a few others, are the constituents of this division.

154. *Tetrandria*:—Where the flowers of the barren plant, are furnished with *four* stamens.

Examples of this order, are presented in the different genera, viscum or misseltoe, amber-tree, ramoon-tree, sea-buckthorn and myrica or candle-berry-myrtle. The last genus affords a very familiar native species called the myrica gale or sweet-gale.

155. *Petandria*:—When the flowers of the barren plant, have *five* stamens.

The common hop, bastard-hemp, common hemp, the spinage of our gardens, the tooth-ache-tree, and a Cape genus called leucadendron, are the principal productions of this order.

156. *Hexandria*:—When the flowers of the barren plant are furnished with *six* stamens.

Here we meet with the common black bryony of our own country, the yam or dioscorea of the Indies, and the oily-palm-tree of Guinea.

157. *Octandria*:—When the flowers of the barren plant, are furnished with *eight* stamens.

The common rose-root or rhodiola, and the white, hoary, black and trembling poplar-trees of this country, have received their arrangement in this part of the system.

158. *Polyandria*:—In which the flowers of the barren plant, have more than *eight* stamens.

This order will afford us, as examples, the annual and perennial mercury, frog-bit, papaw-tree, Canadian bonduc, the hyæna-poison a Cape plant, the family menispermum or moonseed, the cycas or sago-palm, and the genera zamia, cliffortia, &c.

159. *Monadelphica*:—Embracing those plants of the

class, the barren flowers of which, have the filaments of their stamens united into *one* set.

The common juniper, prickly butcher's-broom, and common yew of this country, should be collected as specimens. Among the foreign illustrations, are the Bourbon-palm, the nutmeg tree, Sir Joseph Banks' pine, and the singular pitcher-plant of Ceylon.

CLASS XXIII.—POLYGAMIA.

160. *Character*:—This class includes such plants, as produce three different kinds of flowers; viz. some with *pistils* only, some with *stamens* only, and others with *both*; and these flowers situated on *the same* individual plant, or on *two* or *three* different plants of the same species.

This class possesses a considerable number of genera, some of which, have very natural affinities to each other. *Holcus* or Indian millet, *ischæmum*, *manisuris*, *ægilops* or hard-grass, *andropogon* or man's-beard, belong to the order *gramina*; *mimosa*, *gleditschia*, and *ceratonia* or carob-tree, to the *lomentaceæ*; *musa* to the *scitamineæ*; the ash to *sepiariæ*; the nettle-tree or *celtis*, *pellitory* and *fig*, to the order *scabridæ*.

161. *Division*:—The orders of this class are three; viz. *monæcia*, *diæcia*, and *triæcia*, all established on a consideration of the separation of the stamens and pistils.

162. *Monæcia*:—Embracing those plants of the class, which have *perfect* flowers accompanied with *barren* or *fertile* flowers, or *both*, on *the same* plant.

Among the plants of this character, are the banana-tree and plantain-tree, two Indian species of *musa*; the white helebore, a species

of veratrum; the sycamore and common maple, the sensitive plant, and humble-plant, two species of mimosa; the Egyptian-thorn, the balsam-tree, the elephant-apple, looking-glass plant, and the different families of atriplex or orach, parietaria or pellitory, valantia or looking-glass plant, ægilops or hard-grass, acacia, and several others.

163. *Diæcia*:—Embracing those plants of the class, which have the different flowers on *two* of the same species.

The common and one-leaved ash-tree, are the only two illustrations to be collected from British botany. The foreign species of ash, together with the genera gleditschia or honey-locust-tree, brosimum or bread-nut, diospyros or date-plum, and a few others, appear to compose this subdivision of the class.

164. *Triæcia*:—Embracing those plants of the class, which have the different flowers on *three* different plants; or in other words, one plant producing *perfect* flowers, another *barren* flowers, and a third plant of the same species, *fertile* flowers.

This order only claims two genera of plants; the ceratonia or carob-tree, and the large family of ficus or fig.

CLASS DERIVED FROM A CONCEALMENT OF THE STAMENS.

165. This division brings us to the last class of the Linnæan Artificial System. The plants which it embraces, will be found to differ very materially from those we have already considered, and to constitute Nature's gradual steps to another division of her kingdom.

CLASS XXIV.—CRYPTOGAMIA

166. *Character*:—The class cryptogamia, contains a

vast assemblage of vegetables in which the parts of fructification are, either from their minuteness, or from their particular situation, entirely concealed, or imperfectly visible. (F. 33, 35, 57, 195, 196.)

The vegetables of this class, are referred by Linnæus to several distinct natural families. Thus the ferns constitute the fifty-fifth order of his natural system, the mosses his fifty-sixth, the algæ his fifty-seventh, and the fungi his fifty-eighth order.

167. *Division*:—This class has always been divided into five natural orders; viz. *filices*, *musci*, *hepaticæ*, *algæ*, and *fungi*, each established on the distinguishing characters of the productions they embrace.

168. *Filices or Ferns*:—This order contains a selection of plants, the fructifications of which, are essentially different from all others, at least in point of situation, being generally diffused in spots or lines on the under surface of the leaf. (F. 33.)

Specimens of this order are furnished by several plants; such are the horse-tail, adder's-tail, adder's-tongue, moon-wort, osmund-royal, various species of polypody, shield-ferns, spleen-wort, hart's-tongue, and the common brake or fern, a well known plant, found upon almost all the heaths and open hilly places in the kingdom.

169. *Musci or Mosses*:—These plants, which form the second order of the class cryptogamia, have roots and leaves something like those of other plants, but the fruit is very different. Small threads, like the filaments of stamens, generally grow out of the bosom of the leaves, and support little roundish bodies that resemble

anthers, but which are really the capsules that contain the seed. These capsules are hollow, of various figures, and in general furnished with a peculiar appendage (F. 58, a) called a veil or calyptra, and when this is removed, the mouth of the capsule itself, is found to be surrounded with one or two rows of fringe, of great delicacy, and of surprising regularity in the number of teeth that compose it. (F. 58.)

The different kinds of bog-moss, are distinguished by having their capsule without any fringe. Earth-moss is known by its ovate capsule without any separate lid and its very small veil, which soon falls off. The gland-moss, has a cylindrical capsule placed on a fleshy receptacle, and a single fringe of sixteen teeth standing in pairs. Fork-moss is distinguished by an oblong capsule, and a fringe of sixteen flat and cloven teeth somewhat bent inwards. The other kinds of mosses have their peculiar characters, and some of them are extremely beautiful.

170. *Hepaticæ or Liverworts*:—The productions of this order, are a tribe of small plants resembling mosses, in which the herbage, generally speaking, is leafy, and the fructification originates from what is at the same time, both leaf and stem. The capsules have no lid or operculum, as in the mosses.

The principal genera are *jungermannia* and *marchantia*. Of the former, the distinguishing characteristic is, that the barren flowers are sessile or setting; the capsule has four valves, and is situated on a stalk which rises from a sheath, and the seeds are attached to elastic filaments. In the latter, the barren flowers have a salver-shaped calyx, with numerous anthers embedded in its disk; the calyx of the fertile flower is shield-shaped, and open beneath, the capsules burst at their summit, and the seeds are attached to elastic fibres.

171. *Algæ or Flags*:—The fourth order, is consti-

tuted by plants in which the herbage is sometimes leafy, sometimes a mere crust, and sometimes of a leathery or gelatinous texture. The seeds are either embedded in the frond itself, or in some peculiar receptacle, and the barren flowers are very imperfectly known.

The most common distribution of the tribe of algæ, is that by which they are divided into the six following genera.

a. The Lichenes or Lichens—a numerous tribe growing in all climates and in most situations; the fructifications of which, for the most part, consist of a smooth round disk, flat, convex, or concave, with or without an adventitious border, in the substance of which disk, the seeds are lodged. In some others, they are placed in powdery warts or in fibrous receptacles. (F. 196.)

b. Tremellæ—Those species of algæ which appear on rotten wood, grass, and in moist weather, in the form of heaps of jelly. Their organization is not yet known.

c. Fuci—Comprehending the different vegetable productions commonly called *sea-weeds*; the seeds of which are collected together in tubercles or swellings, of various forms and sizes.

d. Ulvæ—The plants of this division are also aquatic, and their character well defined by the seeds being dispersed under the cuticle, throughout the membranous or gelatinous substance of the frond.

e. Confervæ—Likewise a division of aquatic algæ, characterized by their capillary and articulated structure, and by the seeds of some species being lodged in external capsules or tubercles, and of others, in the joints of the frond. (F. 195.)

f. Byssi—comprehending such species of algæ, as exist in the form of a most delicate downy substance. They are usually found on old wood, in moist situations.

172. *Fungi or mushrooms* :—This order is composed by a tribe of plants of a fleshy substance, generally of quick growth and short duration, differing in firmness, from a watery pulp to a leathery or even woody texture.

Belonging to this order we have the following illustrations. Mushrooms or agarics, are a very extensive genus, grow horizontally, and are furnished with laminae or gills on the under surface. The

spunk or boletus, is another genus which grows horizontally, but differs from the last, in having pores instead of gills on the under surface. The phallus or morell is known by a smooth surface underneath, and a kind of net-work on the upper part. The lycoperdon or puffball is of a roundish form, and filled with a mealy powder, supposed to be the seeds. The tuber or truffle used for food, has no root, but grows beneath the surface of the ground; it is round and solid, and of a rough exterior.

SECTION III.

GENERAL RULES FOR ASCERTAINING THE CLASS AND
ORDER OF PLANTS.

1. If the *class* of the plant about to be investigated is desired, you must bear in mind that the classes are taken either from the number, the number and insertion, number and proportion, and so on, as before arranged.

The divisions into which the system has been related, should be perfectly understood, because an intimate knowledge on this point, will render more clear and familiar the following steps of enquiry.

FIRST DIVISION.

2. If the flower under examination is perfect, and not furnished with more than *ten* stamens, it is a very easy task to discover the class, because the ten first classes of the system are founded on the number of the stamens alone, each flower having no relation to any of the other classes.

Therefore, if the plant produces perfect flowers with *one* stamen, (F. 174.) as in the common mare's-tail, it belongs to the first class *monandria*; if with *two* stamens, (F. 175.) as in the lilac, to the second class *diandria*; if with *three* stamens, (F. 176.) as in the crocus, to the third class *triandria*; and so on in progression to the tenth class. The orders of all these classes being founded on the number of pistils are very clear.

SECOND DIVISION.

3. The class of the plant in hand, not being any of the preceding, we will pursue our attempts to decide

if it does not belong to one of the three classes established on the number and insertion of the stamens.

4. Does the plant produce flowers with *twelve to nineteen* stamens fixed to the *receptacle*? (F. 184.) If it does, you must consult the *eleventh* class or *dodecandria*. If there are *more than twenty* stamens attached to the *calyx* (F. 185.) or *corolla*, to the class *icosandria*. But if there are *more than nineteen* stamens, inserted into the *receptacle*, (F. 186.) then the plant must belong to the thirteenth class, or *polyandria*.

These classes are simple in their characteristics, and the orders into which they are divided being founded on the number of pistils in each flower, they are soon made familiar.

The class monadelphia has an order *polyandria*; the class polyadelphia, an order *dodecandria*, *icosandria*, and *polyandria*: and the classes monœcia and diœcia have both an order *polyandria*. But as the essential qualities of either of these classes are not present in plants of the second division, very little confusion can result to an accurate observer.

THIRD DIVISION.

5. We have already given rules for investigating plants which belong to those classes founded on the number and insertion of the stamens; we will now speak of those which are founded on their number and proportion.

We shall hereafter hear, that the filaments of the stamens may be united, but we have now to know that the filaments of the first fifteen classes of the system, are separate and distinct.

6. If the flowers of your plant should have *four stamens*, *two long* and *two short*, the fourteenth class or *didynamia* would be indicated. (F. 187).

The plants of this class might be confounded with those of the fourth class *tetrandria*, which are also furnished with *four* stamens, but in the last case they do not have any determinate inequality in length, but are generally equal. (F. 177.)

7. Should the plant you are wishing to analyze produce flowers furnished with *six* stamens, you must be particular in assuring yourself that there are *four long* and *two short*; and if there are, the fifteenth class or *tetradynamia* is correct. (F. 188.) Flowers always of four petals and cross-shaped.

This class is only likely to be mistaken for the class *hexandria*; in the plants of which, there are also *six* stamens, but these are all nearly equal in their height. (F. 179.) The orders of the fifteenth class are established on the kind of seed-vessel, and being only two, are easily comprehended.

FOURTH DIVISION.

8. If the plant about to be examined, does not arrange in one of the first fifteen classes, you must ascertain whether it does not belong to either of the classes founded on a consideration of the union of the stamens either with themselves or with the pistil.

9. If the *filaments* are united with each other into *one set* only, (F. 189.) the plant must belong to the sixteenth class, or *monadelphia*; if the *filaments* are united into *two sets*, (F. 190.) to the class *diadelphia*; or if they are united into *more than two*, (F. 191.) then the class *polyadelphia* would be the proper one.

These three classes are very fairly distinguished from each other. Nevertheless, it will be as well to observe, that both the classes *monœcia* and *diœcia* have an order *monadelphia*, and that the former

class has also an *order polyadelphia* ; but as the plants arranged in these orders possess the true *monœcious* and *diœcious* character, a careful observer will find no difficulty in knowing to what class his plant may belong. The orders of the three classes monadelphia, diadelphia and polyadelphia, are very simple and readily ascertained.

10. If the *anthers are united with each other*, so as to form a tube through which the pistil passes, or that the flowers are *compound*, your plant belongs to the nineteenth class *syngenesia*. (F. 5.)

The plants which constitute this class are generally compound, and the exact order to which any plant may belong, is readily discovered by referring to the construction or foundation of the orders.

11. If the *stamens arise from any part of the pistil*, or from a pedicle or column elevating the pistil, the plant is then of the twentieth class, or *gynandria*. (F. 192.)

The particular origin of the filament will very effectually prove the certainty of the plant being of this class, and the respective orders may also be attained with very little trouble.

FIFTH DIVISION.

12. Plants not corresponding to any of the divisions we have mentioned, carefully examine whether they are not of the fifth division, that is, whether they produce flowers with stamens only, and flowers with pistils only, and with both.

The plants of this division are said to have *united or perfect flowers*, when they have both stamens and pistils inclosed within the same corolla : *separated flowers* when their stamens are in one flower called the *barren flower*, and their pistils in another, called the *fertile flower*. But if a plant bears united flowers, as well as barren or fertile flowers, the plant is said to have *mixed flowers*.

13. If the stamens and pistils are *distinct* in *separate* flowers (F. 193.) *on the same plant*, the plant must be referred to the class *monœcia*.

This class is only likely to be confounded with the *order monœcia*, of the twenty-third class, but by a strict analysis of the flowers produced by plants of the *class monœcia*, you will not detect any which produce *both* stamens and pistils in the same flower. The orders of this class are easily understood.

14. If on the other hand, the *barren* or stamen-bearing flowers, are on *one* plant, and the *fertile* or pistil-bearing flowers on *another* of the same species, (F. 194.) then the plant must be arranged in the class *diœcia*.

There is a probability of this class being mistaken for plants belonging to the two *orders diœcia* and *triœcia* of the class *polygamia*; you are therefore required to ascertain precisely, that there are *no united flowers* on any species of the plant you are examining, and if there are not, you have obtained a true diœcious plant. The orders of this class are very simple, and easily understood.

15. Having made the necessary examination, if the flowers are *mixed*, you are certain the plant belongs to the twenty-third class, or *polygamia*.

To convince yourself that the *polygamia* class is the correct one, you must not be content to examine different flowers on the same plant, but you must collect them from several plants of the same species, otherwise you will be led to imagine the plant is of the class *monœcia* or *diœcia*, or if you should only chance to have plucked the *united flowers*, of some of the classes established on a different principle from the present one. Thus, the sycamore has *united flowers* with barren or fertile flowers on *the same* plant, consequently belongs to the first order of the class *polygamia*. The common ash-tree has the different flowers on *two* plants of the same species, and belongs to the second order; whilst the fig-tree, has the different flowers on *three* plants of the same kind, and is of the third order.

If the stamens and pistils are invariably *separate*, you must pursue your purpose by an attempt to convince yourself, whether the plant belongs to the class *diœcia* or *monœcia*.

SIXTH DIVISION.

16. If the parts of fructification are *not visible* by the naked eye, the plant belongs to the last division or class *cryptogamia*.

To ascertain the *orders*, you have only to examine the natural resemblance which the production in hand bears to the character peculiar to each order. Thus, no one would, for a moment suspect the puff-ball to be a sea-weed, or on the other hand, ferns to be mushrooms. The distinctions are therefore too evident to require any observations.

RULES FOR ASCERTAINING THE GENERA AND SPECIES OF PLANTS.

17. The *class* and *order* being fixed upon, to which a plant is suspected to belong, a general plan may be laid down for a knowledge of the precise *genus* and *species*.

Having so far prosecuted your investigation, as to be certain of the *class* and *order* to which your plant belongs, refer to the said class and order, in a good systematic arrangement or *genera plantarum*, and taking notice of the different genera by which the order is constituted, carefully examine the principal characters of the flower under examination, and mark which genus it most resembles. The *genus* being fixed upon to which you think the plant belongs, read over the *species*, and by comparing the flower in your hand with what you read, there will be no difficulty in finding *its name*, though you might never have seen or heard of the plant before.

18. We will here likewise observe, that most plants

have two *Latin* words for their name ; the first word is said to be its *generic* term, and the second its *specific* name.

Thus the term *primula* or primrose is the name of a genus or family of plants agreeing in certain characters, and the individual plants which compose this family, bear the *generic* term *primula* first, and a *specific* term afterwards, expressive of their individuality, so that the common species of our hedges is systematically called the *primula vulgaris* ; the cowslip another species, *primula veris* ; and the auricula of our gardens, a foreign species of the same genus, is denominated *primula auricula*. By this simple principle in naming of plants, we know that the cowslip, auricula and primrose, are all of the same genus. In the same way every plant is to be known by their technical appellations.

THE
LINNÆAN
NATURAL SYSTEM.

PART V.

BEING A SIMPLE ARRANGEMENT OF PLANTS, ACCORDING
TO SOME STRIKING PECULIARITIES IN COMMON TO
SEVERAL, WHEREBY THEY ARE REGULARLY DIVIDED
INTO FIFTY-EIGHT ORDERS OR ASSEMBLAGES.

NATURAL SYSTEM
LINNÆAN
NATURAL SYSTEM

1. In the first part of the work, the author has endeavored to present a simple arrangement of plants, according to the most striking characters in common to the natural families, and has endeavored to show the relation of the parts of the plant to the whole, and the relation of the whole to the parts. The second part of the work, which is the most important, is a description of the natural families, and a list of the plants which belong to each. The third part of the work, which is the least important, is a list of the plants which are cultivated in the gardens of the country.

2. The second part of the work, which is the most important, is a description of the natural families, and a list of the plants which belong to each. The third part of the work, which is the least important, is a list of the plants which are cultivated in the gardens of the country.

THE
LINNÆAN
NATURAL SYSTEM.

1. In addition to the artificial arrangement just explained, the immortal Linnæus, gave much of his time and labour to establish a system on the natural character of plants, and as the result of his investigations, he has presented to the world, the following fragments of a natural arrangement.

Linnæus never gave any distinct marks to his natural orders, we can therefore only take a cursory view of them as they follow each other, with such indications of their characters, as have been traced by modern botanists.

ORDER I.—PALMÆ.

2. The tribe of palms is an entirely natural and very distinct order, constituted by families of lofty plants with very peculiar frondose tops. Phoenix, cocos, &c.

With the genera of this order some have a three-leaved calyx, others none at all; some have a corolla of three, others one of six

petals; most have six stamens, some three, others nine. The germens are three in some, solitary in others, and the style and stigma are subject to like diversity in different genera. The fruit is in some, as in the *phœnix dactylifera* or date, a single drupe, in others composed of three; in some like the cocoa, a nut with a carinaceous coat. The seeds are mostly solitary, but in several instances, two or three in each fruit.

ORDER II.—PIPERITÆ.

3. The plants of this division have an acrid flavour, whence they are commonly named *pepper-plants*. Piper or pepper, arum, acorus and others.

They afford no common character to discriminate the order, except possibly the elongated receptacle and sessile anthers, but some *amentaceæ* have the same.

ORDER III.—CALAMARIÆ.

4. This order consists of such plants as are usually called *reeds*, and most of which are very closely related to the true grasses or fourth order, and have almost the same kind of leaves. Scirpus or club-rush, &c.

Their seed is solitary and naked; stamens three; style one, not unfrequently three-cleft at the summit; glume generally one-valved; stem a culm, mostly triangular, rarely round, often leafless or nearly so.

ORDER IV.—GRAMINA.

5. This order is constituted by the *true grasses*, a very peculiar and extensive tribe of plants.

Their stem is a hollow culm; inflorescence either a spike or panicle; calyx two-valved; stamens from one to six; the germen is superior, with two styles, sometimes raised on a common stalk or elongated base; seed generally solitary and without a capsule.

ORDER V.—TRIPETALOIDES.

6. The plants of this order have flowers with *three petals* only, and are nearly allied to the grasses, but possess no very striking characters. *Juncus*, *calamus*, *alisma*, *butomus*, and so on.

ORDER VI.—ENSATÆ.

7. The plants in this order usually having sword-shaped leaves, are naturally called *sword-leaved plants*, and their order established on that circumstance. *Iris* or *flower-de-luce*, *ericaulon* or *pipewort*, *sisyrinchium*, and others.

The calyx is a kind of spurious spathe; corolla usually of six petals; seed vessel a capsule of three cells and three valves, with many seeds, generally inferior.

ORDER VII.—ORCHIDEÆ.

8. The plants of this order are of the *orchis-tribe*, forming a peculiar selection of vegetables.

Their roots are generally tuberous and fleshy; stem solitary and herbaceous; leaves simple, alternate, undivided, sheathing the stem. Inflorescence, terminal, either spiked or racemose; fructification irregular and very singular; corolla of five petals with a sixth or nectary; stamens consist of two anthers, nearly without filaments, very singular, and peculiar to this order, concealed in a double pouch or hood; germen inferior; style short; the fruit a capsule of one cell and three valves; seeds numerous.

ORDER VIII.—SCITAMINEÆ.

9. The name of this order is an ancient word synoni-

mous with *aromatic*, consequently answers to nearly all the plants it contains. These plants nearly approach the *orchideæ* in aspect. Ginger, cardamoms, zedoary, &c.

Their roots are fleshy, mostly acrid and aromatic; stem simple; leaves lanceolate, quite entire, even, stalked, convoluted contrary to the direction of the sun; their stalks sheathing the stem. Inflorescence either a spike or cluster; flower superior; calyx a perianth of three valves; corolla always irregular. Pericarp in most instances a capsule of three cells and three valves, with many seeds in each cell; stamen one; anther consists of two parallel distinct lobes, united lengthwise with the filament; germen roundish, with a thread-shaped style, lodged between the lobes of the anther, and a dilated cup-like, often fringed stigma.

ORDER IX.—SPATHACEÆ.

10. In this order are arranged those plants which produce flowers with a *spathe* or *sheath*. They are further distinguished by their bulbous root consisting of a radical bulb formed from the basis of the last year's leaves, which envelopes the rudiments of the future foilage. Meadow-saffron, narcissus, and many more.

In this order the leaves are sheathing at the root, and with a few exceptions, linear or linear-lanceolate. Stem, a round, two-edged or triangular scape. The flowers are stalked within the sheath, and in most instances they are superior; corolla usually monopetalous; stamens six, except in *githyllis*; pistil one, except in *colchicum*; capsule three celled with many seeds.

ORDER X.—CORONARIÆ.

11. This order has received its name from the flowers of many of its plants being formerly used to decorate a

coronary or garland, in consequence of their beauty. Hyacinths, lilies, crown-imperial, asphodel, &c.

With this order the root is tuberous ; the stem is simple, often a mere scape, occasionally leafy, in consequence of a partial elevation of the radical leaves ; flower destitute of a spathe or any sort of calyx, consists of six petals ; stamens six ; germen superior ; capsule three celled and three valved, the sides placed one above another.

ORDER XI —SARMENTACEÆ.

12. Sarmenta among the ancients meant unarmed, prostrate, weak branches, unable to support themselves ; hence this name is applied to the order before us, many plants belonging to which, answer to that character, being of a long, weak, trailing or twining habit. Paris, aristolochia, asparagus, smilax, and many more.

All the sarmentaceæ are monocotyledonous, and entirely without pubescence, but they differ so much in their natural appearances, that no common character derived from the fructification, can be made applicable to the whole order. The roots are oblong and fleshy ; the stem at first coming forth is smooth and leafless, mostly branched ; in some prostrate—leaves in every instance simple and undivided, sometimes linear, sometimes lanceolate and acute, or heart-shaped, uniform, mostly alternate. Flowers mostly on simple stalks ; stamens six, except in *menospermum* ; styles three, or three cleft ; calyx or corolla generally deficient ; fruit generally three celled.

ORDER XII.—HOLERACEÆ.*

13. This denomination, literally meaning *pot-herbs*, is given to plants that are tender or brittle in the mouth, and usually used for culinary purposes. Beet, rhubarb, amaranth, &c.

* Incorrectly printed in many works *holeraceæ*.—Sir J. E. Smith.

The plants of this order have been divided into several sections, but there is not yet discovered a mark of distinction common to them all.

ORDER XIII.—SUCCULENTÆ.

14. This division is intended to embrace those plants which are of a fleshy and juicy nature. Cactus, tamarind, saxifrage, hydrangea, &c.

The succulentæ grow, and become very turgid, in the driest soil, nor are any found in watery places. If moistened too much they perish and their roots decay. They afford, on putrifying, a fine vegetable mould, whereas dry plants, like heath and fir, scarcely yield any.

ORDER XIV.—GRUINALES.

15. This order brings together those plants which have flowers somewhat resembling a crane's-bill. Geranium, flax, sun-dew, wood-sorrel, and others.

Their roots and habits are various. Calyx, usually of five leaves, and corolla of five petals; stamens various in number and connexion; pistils mostly five or ten; fruit, various. Many of the plants have acid leaves.

ORDER XV.—INUNDATÆ.

16. So called, because they grow in water, many of them under the surface, except their blossoms. Hippuris, potamogeton or pond-weed, elatine, &c.

The qualities of the inundatæ are very obscure. They are mostly inodorous, except a fishy scent in some, nor have they any particular taste.

ORDER XVI.—CALYCIFLORÆ.

17. The plants of this order have the stamens in-

serted into the calyx, and are of the shrub or tree kind, such is the elæagnus or wild olive, osyris or poet's-cassia, trophis, &c.

No observations relative to this order have been made, except that the genera of which it formerly consisted, are removed elsewhere.

ORDER XVII.—CALYCANTHEMÆ.

18. These plants have the corolla and stamens inserted into the calyx. *Epilobium*, *œnothera*, *amman-nia*, &c.

With the plants of this order there is a great diversity of character. They are mostly inodorous and insipid; chiefly herbaceous, with opposite or alternate leaves; stamens from four to twelve; pistil always solitary; the stigmas either four or one; germen inferior in some, superior in others; seed-vessel for the most part, a capsule usually of four or five cells.

ORDER XVIII.—BICORNES.

19. So called because many of the tribe of plants belonging to this division, have the anthers terminating, in two beaks or horns. *Vaccinium* or whortleberry, *erica* or heath, *citrus* or orange, *royena*, and so on.

The plants are rigid, hard and evergreen, almost all more or less shrubby. The leaves are alternate, simple, undivided, scarcely crenate, permanent. Calyx of one leaf, more or less deeply, four or five cleft; corolla usually monopetalous; nectaries none, except in *kalmia*; stamens from four to ten, answering to the divisions of the corolla or twice their number; pistil one, except in *royena*; germen, in some superior, in others, inferior; fruit, sometimes a capsule, sometimes a berry; in each four or five cells; seeds one or more in each cell, mostly small, chaffy.

ORDER XIX.—HESPERIDEÆ.

20. This natural order has not been fairly related. It is said, to consist of aromatic and elegant shrubs and trees; such as the eugenia or clove-tree, myrtus or myrtle, psidium or guava, &c.

ORDER XX.—ROTACEÆ.

21. This order has likewise been indifferently defined, but the wheel-shaped corolla of many of its plants has evidently suggested its name. Anagallis or pimpernel, gentiana or gentian, and so on.

ORDER XXI.—PRCIEÆ.

22. The plants of this order, have been so named from *precins*, early; because they flower early in the spring. The genus primula or primrose, together with its elegant relatives, form the foundation of this arrangement.

These plants are all destitute of stems; leaves simple; flower regular; calyx as well as corolla, five-cleft; stamens five; style one fruit a simple superior capsule.

ORDER XXII.—CARYOPHYLLÆ.

23. Here we have the tribes of pink and campion, with numerous other plants having natural affinities to the same. Dianthus or pink, saponaria or soap-wort, silene or catch-fly, arenaria or sand-wort, stellaria or stitch-wort, and others.

The whole order is harmless, without any peculiar taste or smell, except in the flowers. The roots are fibrous; stem herbaceous, scarcely shrubby, jointed; its branches commonly alternate; leaves simple, more or less of a lanceolate figure, undivided, hardly crenate in any degree, sessile, with no other appearance of a foot-stalk than their elongated narrow base, opposite, obvolute. Flower rarely sessile; stamens never numerous, but either the same in number as the petals, or twice as many; pistils from one to five, not more; fruit a capsule, either of one cell, or of as many as there are styles, the cells usually with many seeds.

ORDER XXIII.—TRIHILATÆ.

24. So called to comprehend plants with three-celled and three-grained fruit, all the cells being distinct, and each seed marked with the hilum or scar. The genus *melia*, however, has five cells. *Trichilia*, *guarea*, *malpighia* or Barbadoes cherry, &c.

The whole order scarcely contains any thing acrid, except *tropæolum*, nor any thing either fragrant or noxious. The leaves of the plants are inclined to be compound, and are both opposite and alternate. The calyx is either of four or five leaves, or of one leaf in five deep segments; petals four or five; stamens eight or ten. One part of the fructification is often diminished as to number; for instance the petals, and when they become but four, the stamens are only eight. A nectary is always present, hence the corolla is frequently irregular.

ORDER XXIV.—CORYDALES.

25. This order embraces a selection of plants which have irregular flowers somewhat resembling a helmet. *Impatiens* or balsam, *melianthus* or honey-flower, *fumaria* or fumitory, and so on.

There is a certain fragility and delicacy of texture characteristic of the corydales, with a glaucous hue, which points out their affinity:

They have also a bitter flavour, and scarcely any of the order are odoriferous, except melianthus, which is extremely fœtid. The plants are smooth and unarmed; a few of them climbing by means of tendrils. The leaves are alternate in all, except in calceolaria, and many bear stipules. Their mode of flowering is spiked, racemose, or solitary, their stalk naked or leafy, different in different species. The calyx is of two leaves, except in pinguicula, where it is only cloven; and melianthus, where it consists of four leaves.

ORDER XXV.—PUTAMINEÆ.

26. This order consists of a few genera of plants allied in habit, whose fruit is covered with a strong rind or hard woody shell. Cleome, cratæva or garlic-pear, capparis or caper-tree, &c.

ORDER XXVI.—MULTISILIQUEÆ.

27. Containing an arrangement of plants with more seed-vessels than one, such are those of the genera pæonia or peony, aquilegia or columbine, aconitum or aconite, delphinium or larkspur, helleborus or hellebore, anemone, ranunculus, and several more.

Most of the order, with a few exceptions, are of European growth, acrid taste, and generally of a disagreeable odour; none esculent, and most poisonous; rarely arboraceous or shrubby, except such species of climatis as climb trees. The roots are fibrous, sometimes tuberous; leaves often many-cleft or compound, but in a few instances simple; all alternate, except in the climatis integrifolia. There are no stipules, spines, or prickles. Flowers never monopetalous; stamens for the most part more than eight. Fruit in some capsular, in others single-seeded.

ORDER XXVII.—RHŒADEÆ.

28. The order under consideration consists of the

poppy genus and a few genera which resemble it in habit and structure. Papaver or poppy, argemone, chelidonium or celandine, podophyllum or duck's-foot, &c.

There are no marks of distinction mentioned for the rhœadæ. Upon being cut, they emit a juice which is white in poppy, and yellow in others. They are all more or less narcotic.

ORDER XXVIII.—LURIDÆ.

29. The Luridæ are an order of plants whose pale and gloomy appearance indicate their baneful and noxious qualities. Digitalis or fox-glove, datura or thorn-apple, solanum or night-shade, &c.

None of these plants are arboraceous, though some are shrubby. Colour of the herbage mostly dull and lurid; the taste disagreeable, smell nauseous, hurtful to the nerves, hence their poisonous qualities. Leaves alternate in all; calyx five cleft; corolla monopetalous, folded in a plaited manner; stamens four or five; pistil one; germen superior; seed-vessel of two cells, in some a berry, others a capsule.

ORDER XXIX.—CAMPANACEÆ.

30. An order consisting of plants with campanulate or bell-shaped flowers, such as the genera convolvulus and campanula, with their respective allies.

Leaves in every instance alternate. Calyx and corolla five-cleft; stamens five; pistils usually one; fruit a capsule. They are milky plants, at least while young, and more or less bordering on a poisonous nature.

ORDER XXX.—CONTORTÆ.

31. This order derives its name from the corolla being

twisted in the bud contrary to the course of the sun, its limb being wheel-shaped when expanded, in such a way that each of its segments unequally proportioned in their margin, is curved inward under the next segment, the shorter side of the former being beneath the longer one of the latter. *Vinca* or periwinkle, *nerium* or rose-bay, *asclepias* or swallow-wort, &c.

The plants have perennial roots; leaves simple and undivided, and with a very few exceptions, opposite; sometimes ternate or quaternate; rarely alternate. The inflorescence is often peculiar, in having its flower-stalks not axillary, but proceeding from the side of the stem between the insertion of the leaves. Calyx of one leaf, five-cleft; corolla of one petal, regular, its segments contorted, as above described, and often notched in the margin; nectaries in many instances singularly formed; stamens five; pistils two, or one with a double stigma; germen superior in most; fruit in many, two distinct follicles not observable in other plants.

ORDER XXXI.—VEPRECULÆ.

32. Derived from *veprecula* or little briar, and consisting of plants resembling the daphne. *Daphne*, *lachenæa*, *passerina* or sparrow-wort, *guidia*, and so on.

The plants of this order are known by their tough branches, silky inner bark, simple entire leaves, acrid and even burning flavour and sweet scented flowers, whose calyx and corolla are united into one integument, most coloured within.

ORDER XXXII.—PAPILIONACEÆ.

33. This is an extensive and very natural assemblage of plants, having papilionaceous or butterfly-shaped flowers, embracing the leguminous vegetables, such as

the different families of *vicia* or vetch, *lathyrus*, *lupinus* or lupin, *pisum* or pea, and numerous others.

Perianth of one leaf, irregular, inferior, generally withering
Corolla nearly the same in all; its standard either emarginate or entire, either reflexed or not at the sides, for the most part very large compared with the other petals; wings, if present, always two, opposite, frequently large; keel simple, either pointed, obtuse, or abrupt; stamens ten, united by their filaments into sets; pistil generally uniform; the style downy or woolly, either above or below; stigma either acute or capitate; seed-vessel a legume of two-valves.

ORDER XXXIII.—LOMENTACEÆ.

34. This order is named from *lomentum*, a colour used by painters, because some of its plants are much employed in the art of dyeing. *Polygala* or milk-wort, *bauhinia* or mountain-ebony, *cassia*, *cæsalpinia* or *brasilletto*, &c.

The plants of this order are all shrubby or arboraceous. Leaves alternate, compound, pinnate or bipinnate, without a terminal leaflet, *moringa* excepted. Stipules always large. Calyx five-cleft; corolla in some degree irregular, polypetalous, except *ceratonia* and several *mimosæ*; stamens differing in number, mostly ten; pistil universally single; fruit a legume, for the most part having transverse partitions.

ORDER XXXIV.—CUCURBITACEÆ.

35. This order has received its name from *cucurbita*, a gourd, on account of its being constituted by plants similar in their habits and character to the gourd family. *Cucurbita* or gourd, *cucumis* or cucumber, *momordica*, *bryonia* or bryony, and so on.

In this order there are, properly, no trees. Some of the plants,

indeed, have a climbing, woody, perennial stem ; root perennial or annual ; leaves in all alternate, simple, always accompanied at their origin by stipules, and mostly with glands, either on the foot-stalk, at the base of the leaf, or on its disk—all have tendrils. The calyx is either of five leaves, or five deep segments ; corolla of one petal, in five deep divisions ; stamens inserted not into the receptacle, but into the interior surface of the calyx, to which also the corolla is attached ; the filaments are often five, but frequently so combined as to appear only three ; the style is of considerable thickness, with three, frequently eleven stigmas ; fruit internally of three cells, fleshy, and somewhat juicy.

ORDER XXXV.—SENTICOSÆ.

36. So named from *sentis* a briar, on account of its embracing the briar and bramble tribe ; such as the genera *rubus* or bramble, *rosa* or rose, *tormentilla* or tormentil, *fragaria* or strawberry, and others.

ORDER XXXVI.—POMACEÆ.

37. Pomaceæ from *pomum*, an apple, embracing the apple and plum tribe. *Pyrus* or pear, *mespilus* or medlar, *cratægus* or hawthorn, *punica* or pomegranate, *prunus* or cherry, and so on.

This and the preceding order have been described by Linnæus together. The plants are said to be mostly perennial, very few annuals ; rarely smooth. The leaves are alternate, mostly compound. Stipules always two, large. Receptacle of the stamens equally that of the germen, but raised at the sides of the calyx, above the germen. There is nothing acrid in any, nor much fragrance ; there is much of a styptic, little of a mucilaginous quality, nothing poisonous.

ORDER XXXVII.—COLUMNIFERÆ.

38. So called from *columna*, a pillar, and *fero* to bear ;

consisting of plants whose stamens are united in the form of a column or pillar. *Malva* or mallow, *althæa* or marsh-mallow, *lavatera*, *gossypium* or cotton, &c.

This order contains no disagreeable or hurtful plants, nor are any esculent: none are fœtid, but some agreeably fragrant. The roots of all are fibrous; stem often herbaceous. All have stipules in pairs. The leaves are alternate, never opposite; in numerous instances stalked; plaited in the bud, and what is remarkable, many of them have glandular pores under the rib. Inflorescence is various; calyx in some simple and five cleft; in others, double; petals generally five, often adhere to the united filaments, giving the flower a monopetalous appearance; the corolla somewhat abrupt and twisted, contrary to the sun's motion; pistils usually corresponding in number to the parts of the fruit; as do the stigmas, where the style is simple.

ORDER XXXVIII.—TRICOCCÆ.

39. Derived from two Greek words, the first signifying three, and the second a grain; it will therefore be found to comprehend plants (usually) with a single three-cornered capsule, having three cells each, all containing a single seed. *Euphorbia* or spurge, *trewia* and others.

The plants of this order bear alternate, mostly simple leaves, often furnished with glands. Many afford a most acrid milk; they are generally offensive, nauseous, purgative or poisonous. The style is in several highly remarkable, being more or less deeply three-cleft, and each of its branches divided. The calyx as well as corolla, have always something unusual in their formation, or in their nectary; and many of the genera are monœcious or diœcious.

ORDER XXXIX.—SILIUOSÆ.

40. The plants of this order are of the class tetrad-

namia, and consequently are furnished either with a silicle or short pod, or with a silique or long pod. Alyssum or mad-wort, cardamine or ladies'-smock, brassica or cabbage, and so on.

The plants of the order *siliculosæ*, are distinguished into *siliculosæ* and *siliquosæ*, from the circumstance just mentioned; but it being difficult to define the precise limits of each, Linnæus refers to the *siliculosæ*, such as have a stigma without a style, and to the *siliquosæ* such as have a style to elevate the stigma.

ORDER XL.—PERSONATÆ.

41. *Personatæ* originates from *persona*, a mask, from the flowers of its plants being furnished with an irregular, gaping or grinning petal, in figure somewhat resembling the snout of an animal. Anterrhinum or snap-dragon, justicia, &c.

ORDER XLI.—ASPERIFOLIÆ.

42. The plants of this order are very generally called rough-leaved plants, because of their usual rough or harsh habit. Borago or borage, echium or viper's-bugloss, pulmonaria or lung-wort, and others.

The plants have a fibrous root. Cotyledons two; stem branched; the branches alternate and round; leaves alternate, simple; neither divided nor compound, for the most part nearly entire, rough with rigid scattered hairs; convolute before they expand. A common flower-stalk having the flowers ranged along one side; calyx in five divisions; corolla inferior, of one petal, regular except in echium, five-cleft; its mouth either furnished with vaulted valves, or crowned with teeth, or naked stamens, five; fruit superior.

ORDER XLII.—VERTICILLATÆ.

43. The order verticillatæ consists of herbaceous vegetables, having four naked seeds, and the flowers placed in whorls round the stalk. Hyssopus or hyssop, lavendula or lavender, galeopsis or dead nettle, and others.

There is much difficulty in defining the limits of this order, but Linnæus has divided it into two sections according to a character of the calyx. The first section comprehends such as have a five-cleft calyx, that is, where all the teeth of this part are nearly of equal size and shape. The second consists of those with a two-lipped calyx, which is indeed five-cleft, but its two upper segments are, in a manner, united into one, which might almost be termed emarginate only; while between these two united segments, and the remaining three, there is so deep a fissure at each side, that the calyx is nearly divided into two parts or lobes.

ORDER XLIII.—DUMOSÆ.

44. The Dumosæ from *dumus*, a bush, are all of the shrub and tree kind, thick and bushy, rising from six to thirty, and even forty feet high. Rhamnus or buckthorn, sambucus or elder, viburnum, cassine, &c.

ORDER XLIV.—SEPIARIÆ.

45. Sepiariæ from *sepes* a hedge, the plants of which, from their use and habits are particularly calculated for hedges. Ligustrum or privet, olea or olive-tree, syringa or lilac, &c.

Leaves opposite, with scarcely any evident stipules. Flowers disposed in a more or less dense panicle; calyx four cleft; corolla

four cleft, regular; stamens two; pistil one, with a cloven stigma; fruit a drupe, with one, two, or many seeds; or a capsule.

ORDER XLV.—UMBELLATÆ.

46. This is a very true and natural order of plants furnished with umbels; though all plants which bear umbels do not belong to it, but only those with five stamens, two styles, and two seeds.

With the umbellatæ the root is mostly simple; stem mostly hollow; leaves generally alternate, and repeatedly compound. Of the fructification the germen is inferior, simple, solitary, separating when arrived at maturity into two equal naked seeds, each of which is furnished with a thread inserted into its summit; stamens, &c. as above mentioned.

ORDER XLVI.—HEDERACEÆ.

47. Hederaceæ from *hedera*, ivy, consisting of both herbaceous and shrubby plants, most of which, particularly ivy and vine, have creeping branches, which attach themselves by roots or tendrils to other bodies. *Vitis* or vine, *hedera* or ivy, *panax*, &c.

ORDER XLVII.—STELLATÆ.

48. This order has received its name from the leaves of most of the plants which compose it, being placed, four, six, or eight together, in the form of a star or *stella*, round the stem. *Spigelia* or worm-grass, *cornus* or dog-wood, &c.

The plants of this division are chiefly small herbs, growing in

barren earth or coarse sand. The roots generally perennial ; leaves opposite, horizontal, mostly rough. Stipules of the form and aspect of leaves ; stem jointed, with mostly tumid knots. Corolla of one petal, either flat, wheel-shaped, or funnel-shaped ; in one genus, bell-shaped ; mostly four-cleft, sometimes almost down to the base ; rarely five-cleft, stamens usually four ; pistil solitary, divided ; fruit for the most part, inferior.

ORDER XLVIII.—AGGREGATÆ.

49. Embracing those plants which are furnished with aggregate flowers, or in other words, with flowers consisting of a number of partial flowers, each of which have a proper and common calyx. *Dipsacus* or teasel, *scabiosa* or scabious, &c.

With this order there is a shrubby stem ; leaves often opposite ; a common receptacle, either naked, villous, hairy or scaly ; corolla generally of one petal, regular or irregular, in four or five divisions, rarely polypetalous ; stamens four with separate anthers ; germen inferior ; fruit single-seeded.

ORDER XLIX.—COMPOSITÆ.

50. In this order are purposed to be arranged, numerous plants with compound flowers, or in other terms, with many florets enclosed in one common calyx. *Carduus* or thistle, and numerous others.

There is a great diversity of structure and appearance in the plants of this order ; so much so, that no essential character can be mentioned.

ORDER L.—AMENTACÆ.

51. Plants bearing an amentum or catkin ; which is, a species of calyx very like a spike, consisting of a com-

mon receptacle, drawn out like a thread, on which the flowers stand in alternate order. *Salix* or willow, *populus* or poplar, *quercus* or oak, &c.

They are all either trees or shrubs, with alternate leaves and monœcious or diœcious flowers. Many of them produce but one seed from each flower. The styles are usually two or three. The flowers come before the leaves.

ORDER LI.—CONIFERÆ.

52. The plants of this order, are denominated *coniferæ*, because they bear a strobile or cone, a species of seed-vessel formed by a catkin with hardened scales, each scale containing a seed at its base. *Pinus* or fir-tree, *cupressus* or cypress, *juniperus* or juniper, &c.

All the *coniferæ* properly bear cones, though in some instances, (as in *juniper*, &c.) their fruit seems of a very different nature.

ORDER LII.—COADUNATÆ.

53. The *coadunatæ* from *coadunare*, to join, are so termed from the general appearance of the seed-vessels, which are numerous, and being slightly joined below, form altogether a single fruit in the shape of a sphere or cone; the parts of which however are easily separated. Such are *magnolia*, *tulip-tree*, &c.

ORDER LIII.—SCABRIDEÆ.

54. *Scabrideæ*, derived from *scaber* rough, consists of plants with rough leaves, which seem to be a kin to the *asperifoliæ*; only their degree of roughness is much greater. *Hemp*, *fig*, &c.

ORDER LIV.—MISCELLANÆ.

55. This order consists of miscellaneous plants, or such genera as are not connected together by very numerous relations. *Reseda, datisca, coriaria, &c.*

ORDER LV.—LVI.—LVII. AND LVIII.

56. The four last orders, viz. filices or ferns, musci or mosses, algæ or flags, and fungi or mushrooms, are natural divisions of the class *cryptogamia* in the artificial system, therefore do not require, another explanation.

PLANTÆ DUBII ORDINIS.

57. Linnæus found numerous genera which he could not reduce to any of the foregoing orders; he has in consequence thrown them into an appendix, as plants of uncertain or doubtful order.



Castle, Thomas. 1829. "The Linnaean artificial system : constituting a simple and beautiful division of plants, according to their parts of fructification, into twenty-four classes, with their component orders and The Linnaean natural system : Being a simple arrangement of plants, according to some striking peculiarities in common to several, whereby they are regularly divided into fifty-eight orders or assemblages." *An introduction to systematical and physiological botany* 111–195.

View This Item Online: <https://www.biodiversitylibrary.org/item/59484>

Permalink: <https://www.biodiversitylibrary.org/partpdf/215041>

Holding Institution

University of California Libraries (archive.org)

Sponsored by

MSN

Copyright & Reuse

Copyright Status: NOT_IN_COPYRIGHT

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.