

A grammar of botany : containing an explanation of the system of Linnaeus, and the terms of botany, with botanical exercises, for the use of schools and students : illustrated by forty-five engravings : multum in parvo / by Robert John Thornton, M.D.

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A
GRAMMAR
OF
BOTANY;
CONTAINING
AN EXPLANATION
OF
THE SYSTEM OF LINNÆUS,
AND
THE TERMS OF BOTANY,
WITH
BOTANICAL EXERCISES,
For the Use of Schools and Students.

Illustrated by Forty-five Engravings.

MULTUM IN PARVO.

ROBERT JOHN THORNTON, M.D.

OF THE UNIVERSITY OF CAMBRIDGE; AND OF THE
LONDON COLLEGE OF PHYSICIANS; LECTURER ON
AND AUTHOR OF THE NEW FAMILY HERBAL, &c.

NEW-YORK:

BY JAMES EASTBURN AND CO.

LITERARY ROOMS, BROADWAY.

W. H. & Kingsland, Printers.

...

1818.



TO
THE REV. DR. GOODALL,
PROVOST OF ETON,

&c. &c.

47 Broad-Street, City.

DEAR SIR,

YOU may, perhaps, be surprised to find a work on Botany dedicated to you in the same manner as I had the honour of affixing your illustrious name to my School-Virgil; but when it be considered, that, together with being one of the best classical scholars of the age, you unite in your own person all kinds of knowledge, and in the science of Botany you are equally an adept as in other branches of polite literature, and have honoured me by the approval of my labours, and most ardently wishing to facilitate the acquisition of useful knowledge to the younger

branches of the community, to no one more properly could this dedication be addressed ; and I have the honour of thus publicly, as well as privately, testifying how much I feel myself,

Dear Sir,

Your obliged

devoted friend,

ROBERT JOHN THORNTON, M.D.

GRAMMAR OF BOTANY.

INTRODUCTION.

UTILITY OF THE SCIENCE.

I. BOTANY is a name given to that part of Natural History, which treats of vegetables or plants as a science.

II. Plants, according to the science of botany, are divided in classes ; orders ; genera ; species ; and varieties.

III. The classes of the sexual systems of Linnæus, are 24, the orders 121, the genera 2000, the species about 30,000, and the varieties almost innumerable.

Observation. Such arrangements of botanists are so many steps by which we arrive at a knowledge of plants. By means of *classes*, a certain number of plants, of certain common properties, are brought under review : by *orders*, a still less number : and by *genera*, the number is still further diminished.

IV. The true botanist will first discover the *class*, next the *order*, then the *genus*, and lastly

the *species* of every plant, which last is the object and the end of botanical science.

Observation. There is nothing useless in nature. Some plants administer to the immediate wants of man in diet, for timber to build with, for clothing, for making of paper, rearing of silk-worms. Others furnish medicine for curing of diseases, some are ornamental,* all have their respective inhabitants, and give out in the sun vital air, which imbibed into the blood by the lungs, as well as the spiracula of insects, is the *sine qua non* of life. In short, without vegetables, there could be no animals, or the animated world would only catch a glimpse of life, and then miserably perish through hunger, so much do all living beings owe to plants!

V. The system of botany which chiefly prevails among all civilized nations, is that of Linnæus, a Swede, who was born in 1707, and died in 1778; and it is this system which will be taught in the present work.

Observation. Botany is commonly considered as a science of names or terms, because, on the first entrance into the study of this science, we are obliged to learn the harsh-sounding and difficult language of botanists. But it should be remembered that words are but *sounds* indicative of *things*, and the number and variety of plants alone create the necessity for using a great number of terms. The nomenclature of botany is compared by Linnæus to the invention of letters. On the composition of letters depend words, and on words depend sentences, and on sentences

* The reader who wishes to understand the uses of plants, will find these fully detailed by Dr. Thornton, with figures in wood, by Bewick, of each plant serviceable to man, in Dr. Thornton's *New Family Herbal, being an Account of Plants used in Medicine, Diet, and the Arts*.

our power of reasoning ; just so, the comprehending of the terms of botany leads to the knowledge of plants, and these terms form the vestibule which we are obliged to traverse before we can arrive at the Temple which Flora inhabits. Without this knowledge, the labours of travellers would be useless. How many plants indeed have been observed by them, and attempted to be described in language *not botanical*, and which plants no reader has been since able, from such a description, to divine ! From this cause also, nearly all the knowledge of the ancients is lost to us ; therefore, to reject a botanical nomenclature, would be to sink into the ancient state of barbarism.

CHAP. I.

OF VEGETABLES OR PLANTS.

(*Vegetabilia seu Plantæ* ; Plantes ou végétaux.*)

Consistence and height of different Plants.

1. A Tree, (*arbor*, arbre,) a ligneous plant in stem and branches, generally rising to a great height, and of long life, producing buds in cold climates. Examples. Oak, Willow.

2. A Shrub, (*frutex*, arbrisseau,) a tree of small size, whose young branches produce buds, Ex. *Althæa frutex*, seu *Hibiscus syriacus*.

* The first word, in italics, is Latin, and the other French. These are placed in parentheses, and need not be learnt, except the pupil is acquainted with the respective languages. They serve, however, to show how nearly resembling the several terms are in each. The learner may also omit getting the observations by heart.

3. Under-shrub, (*suffrutex* sous-arbrisseau,) a ligneous plant, which is smaller than a shrub, and whose young branches have no buds. Ex. Laurustinus.

4. Herb, (*herba*, herbe,) of a soft tender substance, whose fibres are relaxed, and which dies down in the winter, whether its roots be annual or perennial. Ex. A Tulip.

Observation. The difference betwixt a tree and a shrub is very difficult to define, although obvious by sight in many instances: the trunk of a tree is usually single, of a shrub numerous even from the base, and the under shrub with us is marked by producing no buds. Herbs, seeing that they differ much from trees in their structure, are supposed to have no ligneous fibres, but if you strip off the outer bark, which is tender, you will find several largish longitudinal threads, of a substance less coloured, harder, differently organized from the rest, and composed of fibres, which are woody, and which enable them to resist the winds. Some herbs rise ten feet in height, and, on the contrary, there are perfect trees which do not reach a span in height.

Countries which these inhabit.

5. Exotics, (*exoticæ*, exotiques,) plants strangers to the countries in which they are cultivated. (See Smith's Exotic Botany.)

6. Indigenous, (*indigenæ*, indigènes,) plants the natural produce of that country to which we belong. (See Smith's English Botany, and Dr. Milne's Indigenous Botany.)

Observation. In the cultivation of plants, much depends upon knowing not only the peculiar natures of different plants, but the climates in which these are produced. Those

from hot climates mostly require the stove, and it is curious to observe, that plants from colder climates than ours, bear our cold badly, as the snow serves as a clothing to the herbage of cold climates, which comes on early before the piercing frost.

Places where they naturally grow.

7. On Plains, (*campestre*, des champs incultes,) large flat surfaces of uncultivated ground. Ex. *Gentiana campestris*.

8. On Lands for Tillage, (*arvensis*, des terres en jachère,) where the land has been prepared, but is not yet sown. Ex. *Veronica arvensis*.

9. On sown Land, (*agrestis*, des champs cultivés,) where the seed has been committed to the ground. Ex. *Veronica agrestis*.

10. In Gardens, (*cultæ*, des jardins,) places prepared for the cultivation of plants.

11. In trodden Places, (*ruderales*, parmi les décombres.) Ex. *Hordeum murinum*.

12. In Hedges, (*dumosæ*, or *sepiariæ*, des haies.) Ex. *Sambucus nigra*.

13. On Sands, (*arenosæ*, des lieux sablonneux.) Ex. *Lilium Capense*.

14. In Meadows, (*pratenses*, des prairies.) Ex. *Poa pratensis*.

15. On Mountains, (*montanæ*, des montagnes.) Ex. *Veronica montana*.

16. In Forests, (*sylvaticæ*, des forêts,) land completely clothed with trees. Ex. *Melampyrum sylvaticum*.

17. In Woods, (*nemorosæ*,) more open. Ex. *Melampyrum nemorosum*.

18. Marshes, (*paludosæ*, des marais.) Ex. *Scirpi*.

19. Lakes, or Stagnant Waters, (*lacustres*, des lacs et eaux dormantes.) Ex. *Isoëtes lacustris*.

20. On the Borders of Rivers, (*littorales*, des bords des fleuves.) Ex. Rushes.

21. On the Seashore, (*maritimæ* qui naissent sur des bords de la mer, ou dans la mer.) Ex. *Plantago maritima*.

Observation. The only true foundation of gardening, and the right cultivation of plants, depends upon the knowledge of the native places of their production, whence the rules and principles of the art ought to be derived. When describing of plants by travellers, the country should be named, as respects the kingdom, province, district, and, when plants are very rare and scarce, the particular spot should be noted. Other particulars should be also mentioned, for although plants often bear great diversity of soil and situation, still we find particular plants adapted for particular places. Thus, plants are adapted for hills, and the altitudes of mountains may be ascertained by their produce. Thus, the mountainous, commonly called alpine plants, are the same all over the world : in lower situations climates vary, but in these they are the same. Thus, the alpine plants of England, Scotland, Wales, Lapland, Greenland, Siberia, Switzerland, the Pyrenean mountains, Olympus, Ararat, and the Brazils, are the same, although growing in places so remote from each other. The advantage of such distinctions will be seen when we come practically to study botany : thus in the first class of British plants, we shall find that Glasswort, or Samphire, (*SALICORNIA*,) is only to be met with in salt-marshes, or on the seashore, and that all the other plants of this class are to be met with

in stagnant, or pure waters, and, in searching after particular plants, we are often conducted to them by knowing their habitations. (Vide our Practical Botany, where the secondary characters of the genera, and the several Habitations of plants are given.)

COTYLEDONS,

Their Number or Absence.

22. Acotyledonous, (*acotyledones*, *acotylédones*,) plants whose embryos have no lobes, or seminal leaves. Ex. Ferns.

23. Monocotyledonous, (*monocotyledones*, *monocotylédones*,) plants whose embryos possess one cotyledon, or lobe. Ex. Grasses.

24. Dicotyledonous, (*dicotyledones*, *dicotylédones*,) plants which sprout up with two cotyledons, or seminal leaves. Ex. Bean, Spinach.

25. Polycotyledonous, (*polycotyledones*, *polycotylédones*,) having several cotyledons. Ex. Firs.

Observation. The cotyledons in seeds, or as they are called, seed-lobes, are immediately attached to the embryo, or plantule, and when this shoots in the earth, they expand into lobes, or leaves, distinct from the other kind of leaves. Hence, the cotyledons are likewise called seminal-leaves. In general, plants produce two of these lobes, or leaves, as in the bean, or lupine, where they are lobes: in the spinach, radish, cucumber, they are leaves, and in the genus pine (*pinus*) the cotyledons are four, or more. Those which produce a single cotyledon, are the grass or corn tribe, palms, the orchis tribe, and the lilies in general, with several others. Here the cotyledon does not, as in the other instances, rise on the surface of the earth, but

is buried in the ground, and hence, these plants have been supposed by the vulgar to have *no cotyledons*. Perhaps there are no plants truly without cotyledons, or parts destined to furnish the embryo with the first nourishment analogous to the *breasts*, the *Mammæ*, of animals, (Vide our Philosophy of Botany, Vol. I. p. 30,) and the seed-lobes of mosses, according to the observation of Hedwig, are both numerous and perfectly distinct from the other leaves, so that these plants are very improperly placed by authors amongst the *acotyledonous*; a circumstance arising more from imagination, than the actual observance of nature. The structure also of plants vary, as they have one or more cotyledons, those with one being by far the most simple. (See Desfontaine's admirable Memoir on the Organization of Monocotyledonous and Dicotyledonous Plants.)

CHAP. II.

Roots, (*Radices*, les racines.)

26. The Root is the organ situated at the extremity of a plant, plunging itself commonly into the earth, covered or terminated with *radicles*, or *small fibres*, (*radiculæ*,) which have the faculty of sucking up nutritive juices for the benefit of the plant. The body of the root itself is called *caudex*.

Observation. The whole plant is usually supposed to be nourished by the root, but if a Grape-Vine be partly introduced into a hot-house, and partly into a green-house, whilst a part is abroad, we shall find, at the same season, all the different appearances which climate produces, originating from the powers of different branches, independent of the root, and yet sever the roots, and the whole plant dies; such is its wonderful separation and connexion! The inoculating, or budding of plants, shows the

same circumstance, one plant producing seven or eight different sorts of fruits, and the juices of the parent stock not affecting the fruit. Some plants have their roots attached to rocks, and others to the bodies of plants, hence called parasytical, as the Missletoe (*Viscum*) and others again thrive in water. Nevertheless the growth of plants greatly depends upon the soil in which they are placed, and therefore on the roots which pump up the nutritive juices. The organization of the root and stem differs. The pores are more open in the root, as may be seen in the oak; and soft herbaceous plants have sometimes even ligneous roots, as the Cabbage. If the main body of the root be cut below, lateral radicles shoot out: hence the propriety of gardeners cutting this part; and they are torpid in the winter, or autumn, hence the necessity of transplanting at this season. For the radicles, like leaves, have their seasons of growth and decay, or fall, and renewal, and in spring are renewed; and in this infant state, if exposed to cold and change, by transplanting, the loss of the plant is almost inevitable. Plants having no locomotion, yearly spread, and thus change their quarters by the extension of their roots, and Duhamel found that the roots of an Oak, in a good soil, was near four feet in length, whilst the stem had only six inches of height.

I. *Their Duration.*

27. Annual, (*annua*, *annuelle*,) perishing within the year.

Observation. Both root and plant perishing together, and the species is only continued by means of the seeds produced. Ex. Annual Stock.

28. Biennial, (*biennis*, *bisannuelle*,) such plants as are produced from seed, either in the spring, summer, or autumn, outlive the winter, but do not blow that season, and the following year pro-

duce flowers and seeds, and then die. Ex. *Oenothera biennis*.

Observation. The term biennial is applied to any plant that is produced one year, and flowers another, provided it flowers but once, whether that event takes place the second year, as usual, or whether from unfavourable circumstances, it may happen to be deferred to any future time. (Vide Smith's Introduction to Botany, p. 103.)

29. Fruticose, (*fruticosa*, frutiqueuse,) lasting three years.

30. Perennial, (*perennis*, vivace,) lasting many years. Ex. Trees.

Observation 1. Many plants of hot climates, naturally perennial, and even shrubby, become annual in our gardens, as the Mignonette, (*Reseda*), which rises in warm climates, to appear as a bush, and the garden Nasturtium, (*Tropæolum*.)

2. These observances are of the greatest use to gardeners, who are in the habit of marking their distinctions by the following signs: ☉ Annual, ♂ Biennial, ♀ Shrubby, 24 Perennial.

II. Substance.

31. Bulbous, (*bulbosa*, bulbeuse,) having the form of a bulb. Ex. Tulip.

Observation. The bulbous root, called also a bulb, in French oignon, is a substance, tender, succulent, of a round or oval form, composed of several tunicks, or coats, which cover one another, and is terminated beneath by a fleshy portion, from which issue small radicles, which constitute the true root. Linnæus calls the bulb an hybernacle, or winter receptacle of a plant, composed of the bases of past leaves, and placed immediately upon the

root. Martyn says, the bulb is vulgarly considered as a root, and was called so by botanists till Linnæus corrected the error, and showed that it was a single bud, enveloping the whole plant.

32. Tuberous, (*tuberosa*, *tubéreuse*,) composed of tubers.

Observation. The tuberous root is a round, fleshy, solid body, from which small fibrous roots often shoot out both laterally and from beneath, as in the potatoe (*solanum tuberosum*.)

33. Fibrous, (*fibrosa*, *fibreuse*,) consisting of fibres. Ex. Grasses.

Observation. These fibres are often slender, like hairs.

III. *Structure.*

34. Simple, (*simplex*, *simple*,) if it does not branch or divide. Ex. Turnip.

35. Branched, (*ramosa*, *rameuse*,) having lateral divisions. Ex. Trees.

IV. *Direction.*

36. Perpendicular, (*perpendicularis*, *pivotante*,) descending perpendicularly. Ex. Radish.

Observation. The fibrous root, when it descends in a straight direction in the earth, is called a perpendicular root: with many plants this direction is very principal, and then this part of the root is called the tap-root. If this be cut, the side roots are increased. Hence the advantage of cutting such roots designed for pots — (Vide *Observation*, p. 12.)

37. Horizontal, (*horizontalis*, *horizontale*,) when, instead of taking the descending course, it spreads horizontally. Ex. Iris.

Observation. It is a curious fact that roots, as if they had a *presentiment*, make their course to good soils.

38. Repent, (*repens*, *rampante*,) running horizontally, and at distinct parts throwing out roots.

Observation. This is well seen in the Strawberry, and this part is called in English a runner, and likewise in Couch Grass, hence the last is a weed most difficult to exterminate.

V. Form.

39. Globular, (*globosa*, *globuleuse*,) of a round figure.

Observation. As in some of the tuberous roots. Ex. The Turnip.

40. Solid (*solida*, *solide*,) of one uniform substance. Ex. Crocus.

41. Scaly, (*squamosa*, *écailleuse*,) covered with scales.

Observation. These are supposed to be the rudiments of old leaves, as in the Lily.

42. Tunicated, (*tunicata*, *tunique*,) having several coats. Ex. Onion.

43. Knotty, (*nodosa*, *noueuse*,) forming knots united by a thread, as in the Filipendula.

44. Articulated, (*articulatus*, *articulée*,) cut from space to space by contractions, or articulations, which resemble knots. Ex. *Adoxa moschatellina*.

45. Fascicular, (*fascicularis*, *fasciculée*,) when a large portion of tubers proceed from the same centre, shooting forth in an elongated form, as in the Piony.

46. Grumous, (*Grumosa*, *grumeleuse*,) smaller portions of tubers united in a common centre with their substance, and ending beaked, as the *Ranunculus*.

47. Granulated, (*granulata*, *granulée*,) composed of small granules. Ex. *Saxifraga granulata*.

48. Twin, (*testiculata*, *didyme*,) when two tubers almost round, are contiguous, or adhere, as in the Orchis.

49. Palmated, (*palmata*, *palmée*,) divided into blunt lobes, like fingers, as in some species of the Orchis.

50. Fibrous, (*fibrosa*, *fibreuse*,) composed of many simple fibres, as Grasses.

51. Premorse, (*præmorsa*, *succisa*, *tronquée*, *ou rongée*,) appearing as if the end was bitten off, as in the Devil's bit, (*Scabiosa*.)

Observation. This is beautifully seen in the early Primrose and Cowslip, when you may observe persons unacquainted with botany, accusing the innocent old women, who sell these wild plants for gardens, of cutting off the bottom of the roots to prevent them from growing.

CHAP. III.

STEM *Caulis*, Tige.)

52. The Stem takes an opposite direction to the root, multiplies the plant, and is usually covered with both leaves and flowers.

Observation. According to Linnæus, when a seed germinates, the *descending stem*, (*Caudex Descendens*,) are the roots, and the *ascending stem*, (*Caudex Ascendens*,) are the branches and leaves. That is, all these parts are the same, as propagating plants by layers or cuttings, shows; the difference of circumstances alone constituting the different evolution.

I. *Their Kinds.*

53. Culm, (*culmus*, chaume,) an herbaceous stem, hollow, simple, having many knots. Ex. Grasses.

54. Scape, (*scapus*, hampe,) stem herbaceous, without stalk, branches, or leaves, terminated by the flower, as, in the Cowslip, &c.

55. Stem (*caulis*, tige,) the stem properly so called, bearing stock, branches, and leaves. Ex. The Stock.

56. Stipe, (*stipes*, piéd,) a stem running into a leaf, as with the Fern, it is also a name given to the pillar, or pedicle, of the mushroom.

II. *Nature and Duration.*

57. Herbaceous, (*herbaceus*, herbacée) annual and not woody.

58. Suffruticose, (*suffruticosus*, suffrutiqueuse, ou suffrutescente,) stem woody, annual.

59. Fruticose, (*fruticosus*, frutiqueuse, ou frutescente,) stems many, woody, and abiding.

60. Arboreous, (*arboreus*, arborescente ou tronc,) stem single, woody, and abiding.

Observation. Vide Chap. I. page 3.

III. *Consistence.*

61. Solid, (*solidus*, solide,) of a uniform solid substance.

Observation. This respects trees in particular, whose stems and branches are composed of an epiderm, or skin; the liber, bark, or cortical circle; the sap, (*aubier*,) or imperfectly formed wood, produced by the bark; the wood in concentric circles, and the medulla, or pith, in the centre. Each of these have their peculiar vessels. These are all of them dicotyledonous.

62. Succulent, (*succulentus*, succulente,) replete with juices.

Observation. Very conspicuous in the liliaceous tribe, especially in the scape.

63. Corked, (*suberosus*, suberéuse,) having over the epiderm a substance like, or the same as the Cork-tree.

Observation. This is a peculiar incrustation, of a light elastic nature, which seems as it were fortuitous: that is,

not essential to the plants so clothed, however beneficial to us ; for in a species of Oak, (*Quercus Suber*,) called hence the Cork-tree, (*Suber*,) although in fact an Oak, as may be seen by comparing the construction of its form, as seen in transverse sections of both in the microscope, this cork is, at different times, stripped off without the least injury to the tree.

64. Medullary, (*inanis*, *medullosus*, spongieuse,) containing only a spongy substance in the centre. Ex. *Cyperus*.

Observation. The word *inanis* means truly empty, void, but in botany it is defined to contain medulla.

65. Empty, (*fistulosus*, *fistuleuse*,) quite hollow in the centre. Ex. *Asphodelus fistulosus*.

Observation. The term *empty* must not therefore be ever translated by *inanis*.

66. Rigid, (*rigidus*, *roide*,) stiff, inflexible, nor easily bent. Ex. *Dipsacus sylvestris*.

67. Lax, (*debilis*, *foible*,) not stiff, and pliant. Ex. *Bryonia alba*.

Observation. These two last terms are opposed to each other.

IV. *Direction.*

68. Erect, (*erectus*, *droite*,) approaching to a perpendicular. Ex. *Dipsacus sylvestris*.

69. Straight, (*strictus*, *parfaitement perpendiculaire*,) neither bending to the right nor left in the least. Ex. *Digitalis purpurea*.

70. Oblique, (*obliquus*, oblique,) visibly turned from the perpendicular line.

Observation. Opposed to the two preceding terms.

71. Ascending, (*ascendens*, montante) a stem much bowed at its base, and which afterwards takes an opposite upright direction. Ex. *Artemisia rupestris*.

Observation. Or from an horizontal direction is gradually curved or bowed upwards.

72. Geniculate, (*geniculatus*, géniculée,) a stem which having a knot, or knob, at each joint, is bent so as to form angles at these joints, as *Alopecuris Geniculatus*.

Observation. Stem bent in an angle at the joints.

73. Flexuose, (*flexuosus*, flexueuse,) taking a zig-zag direction.

Observation. Suddenly and evidently changing from side to side, as in *Solidago flexicaulis*, *Statice flexuosa*, and *Aira flexuosa*.

74. Declined, (*declinatus*, déclinée,) descending archwise, and then gradually curving upwards. Ex. *Asparagus declinatus*.

Observation. The least degree of curvature towards the earth, and the rising again at an obtuse angle, opposed to ascending.—(Vide No. 71.)

75. Nodding, (*nutans*, penchée,) when the top,

instead of pursuing the vertical line, bends outwards. Ex. *Melica nutans*.

76. Procumbent, (*procumbens*, *tombante*,) falling on the ground through weakness. Ex. *Convolvulus soldanella*.

77. Prostrate, (*prostratus*, *couchée*,) trailing, running horizontally along the ground. Ex. *Gypsophila prostrata*.

Observation. Probably these two terms differ, by the first having an ascending position, and the last from taking a direction along the earth from the first. They are, however, indiscriminately used, and they differ essentially from repent, as this last always puts forth roots.—Vide next term, No. 78.

78. Repent, (*repens*, *rampante*,) may either creep along the ground, or take any other position, affixing itself in its progress by roots, as the Ivy, (*Hedera*) Ground-ivy, (*Glechoma*) and Creepers.

79. Stoloniferous, (*reptans*, *tracante*,) sending forth from the root leafy suckers, or scions, (*stolones*.)

Observation. Consult observations to the next term.

80. Sarmentose, (*sarmentosus*, *sarmenteuse*,) sending forth shoots.

Observations. “A sarmentose stem is filiform, and almost naked, or having only leaves in bunches, at the joints or knots, where it strikes root. It seems to be in shrubs what the runner is in herbaceous plants.”—*Martyn's Language of Botany*.

" A sarmentous stem is a creeping or trailing stem, barren of flowers, thrown out from the root, for the purpose of increase, and is called a sarmentum, or a flagellum, a runner, as in the strawberry, (*fragaria vesca*.) When leafy, it is generally denominated Stolo, a sucker, or scion, as in *bugle*, (*Ajuga Reptans*,) and *sweet violet*, (*Viola Odorata*.)"—Vide *Smith's Introduction*, page 120.

81. Climbing, (*scandens*, *grimpante*,) is that which mounts up other bodies, and attaches itself by means of tendrils, as the several passion flowers.

82. Twining, (*volubilis*, *voluble*,) twining in a spiral manner round plants, sometimes from left to right, (with the sun,) as the Hop, and in other plants from right to left, (against the sun,) as the *Convolvulus*.

V. Form.

83. Round, (*teres*, *cylindrique*,) round, without any angles. Ex. *Hypericum montanum*.

Observation. This may be translated cylindrical.

84. Half-cylindric, (*semiteres*, *demi-cylindrique*,) round on one side, and flat on the other, a half-cylinder. Ex. *Butomus*.

85. Compressed, (*compressus*, *comprimée*,) more or less flattened on its sides, as the *Potamogeton compressum*.

86. Ancipital, (*anceps*, *gladiée*,) that which cuts on both sides: that is, whose sides or borders end acute. Ex. *Gladiolus anceps*.

87. Angular, (*angulatus*, *anguleuse*,) having angles. Ex. *Vaccinium*.

88. Triquetrous, (*triqueter*, triquétre,) having three flat sides. Ex. *Carex acuta*.

89. Four-Cornered, (*tetragonus*, tétragone,) having four angles and four equal sides, as in the *lipped flowers*, (*labiati*.)

90. Membranous, (*membranaceus*, membra-neuse) of the substance of parchment, as *lactus phyllanthus*.

Observation. Of a delicate substance, without any internal substance, or composed of many membranes, applied one upon the other.

91. Articulated, (*articulatus*, articulée,) intercepted by knots from space to space. Ex. *Cacalia articulata*.

VI. Clothing.

92. Naked, (*nudus*, nue,) without leaves.

Observation. Applied also to a want of any of the appendages to plants, as the scape of the Tulip.

93. Leafless, (*aphyllus*, aphyllé,) without leaves. Ex. *Veronica aphylla*.

94. Leafy, (*foliatus*, feuillée,) having leaves, as most plants.

95. Scaly, (*squamosus*, écailleuse,) having scales. Ex. *Orobanche*.

96. Sheathed, (*vaginatus*, engainée,) invested by a sheath, or cylindrical tube belonging to the leaf. Ex. Grasses.

97. Imbricated, (*imbricatus*, imbriquée,) co-

vered with scales, so as the stem does not appear.
Ex. *Sempervivum*.

98. Winged, (*alatus*, *ailée*,) furnished longitudinally, with a membrane, which is commonly the prolongation of the base of the leaves. Ex. *Carduus nutans*.

VII. *Surface*.

99. Polished, (*lævis*, *lisse*,) the surface being every where equal and smooth. Ex. *Phaseolus nanus*.

100. Striated, (*striatus*, *striée*,) having small hollow longitudinal lines. Ex. *Hieracium amplexicaule*.

101. Furrowed, (*sulcatus*, *sillonnée*,) these excavations being deeper and somewhat wider than the last. Ex. *Eryngium*.

102. Channelled, (*canaliculatus*, *canaliculée*,) the excavations being exceedingly wide. Ex. *Beta vulgaris*.

Observation. Hollowed above, with a deep, longitudinal groove, convex underneath.—*Martyn*.

103. Smooth, (*glaber*, *glabre*,) devoid of hairs, glands, or any particular excrescences. Ex. *Hypochæris glabra*.

Observation. Having a surface void of roughness, opposed to scabrous, not to pilosus, hairy.—*Martyn*.

104. Pubescent, (*pubescens*, *pubescent*,) the

surface being covered with soft, feeble hairs, which imitate a soft down. Ex. *Fragaria*.

Observation. Young plants are mostly pubescent.

105. Hairy, (*pilosus*, velue,) the surface being covered with soft hairs, long, but near together. Ex. *Juncus pilosus*.

106. Hirsute, (*hirtus seu hispidus*, hérissée,) the surface being defended with rough hairs, or bristles, more or less separate from each other, Ex. *Galium aperinum*.

Observation. Beset with stiff bristles.—*Martyn*.

107. Tomentose, (*tomentosus*, tomenteuse ou drapée,) covered with hairs, so interlaced one with the other, that each hair cannot be separately distinguished, and the quantity gives to the surface a cottony appearance. Ex. *Cerastium tomentosum*.

Observation. Covered with hairs, so interwoven as scarcely to be discernible.

108. Scabrous, (*scaber*, scabre,) surface spread over with tubercles, rough to the touch. Ex. *Echium*.

Observation. Something like shagreen.—*Martyn*.

109. Muricated, (*muricatus*, tuberculée,) stem defended with sharp conical points. Ex. *Cænothera muricata*.

Observation. Having subulate points scattered over it,

or armed with prickles, like the murex, a shell-fish.—*Martyn*.

110. Stinging, (*urens*, *seu pruriens*, cuisante, covered with pointed stings, which excite inflammation. Ex. *Jatropha urens*.

111. Prickly, (*aculeatus*, aiguillonnée,) armed with prickles. Ex. Rose.

Observation. Prickles are sharp prominences, which arise from the bark only.

112. Thorny, (*spinosus*, épineuse,) armed with thorns. Ex. *Prunus spinosa*.

Observation. Thorns proceed from the wood.

113. Chinky, (*rimosus*, crevassée,) full of chinks or cracks.

Observation. As the generality of old trees.

VIII. Composition.

114. Simple, (*simplex*, simple,) without branches. Ex. *Corona imperialis*.

Observation. Extended in one continued series from the bottom to the top.—*Martyn*.

115. Without knots, (*enodis*, continue ou sans nœuds,) having no knots or joints. Ex. *Schœnus*.

116. Knotty, (*nodosus*, noueuse,) intercepted in different parts with knots.

Observation. As the grasses.

117. Jointed, (*articulatus*, articulée,) having joints. Ex. *Cacalia articulata*.

Observation. Lamark has ably distinguished knotty from jointed, as the former strengthens the stem, and makes part of it, whereas the latter is only the place of union of two joints, where it more easily breaks.

118. Branched, (*ramosus*, branchue,) giving out branches, as most plants.

Observation. Opposed to simplex, simple.

119. Dichotomous, (*dichotomus*, dichotome,) forked, and dividing always into two parts, as the Misseltoe.

120. Stoloniferous, (*stoloniferus*, stolonifere,) putting forth suckers.

121. Twiggy, (*virgatus*, vergetée,) pushing out weak and unequal rods or twigs, as many species of *Passerina*.

122. Proliferous, (*prolifer*, prolifère,) is when the branches always grow from the extremity, as the *Pinus*.

Observation. Putting forth branches only from the centre of the top.—*Martyn*.

A term seldom used.—*Smith*.

123. Paniculate, (*paniculatus*, paniculée,) where the branches are many times subdivided, and the flowers are numerous. Ex. *Erigeron canadense*.

Observation. Having branches variously subdivided.—*Martyn*.

124. Fastigate, (*fastigiatus*, *fastigiée*,) the stem being terminated by equal branches, so as to make a level top. Ex. *Gypsophila fastigiata*.

CHAP. IV.

DIVISIONS AND SUBDIVISIONS OF STEMS.

125. Branches, (*rami*, *branches*,) divisions of the stem.

126. Branchlets, (*ramuli*, *rameaux*,) divisions of branches themselves.

Observation. Stems terminate in roots, as branches do in stem, and branchlets into branches, and these last penetrate their respective bases in the form of an inverted cone, so that the medulla of the receptacles remain distinct, although the ligneous parts adhere: but the cortical parts of it are homogeneous. Hence, some have supposed the cortical part to serve the office of roots, and this part possesses a great absorbent power, as is seen by putting of stems into water, when much of it will be absorbed.

127. Very much Branched, (*ramosissimus*, *très-rameuse*,) having numerous branches, as most trees.

I. *Their Situation.*

128. Alternate, (*alterni*, *alternes*,) when branches are placed around the stem, first on this side and then on the other, rising one above another, like steps. Ex. *Malus*.

Observation. Coming out one after, or above another, in

a regular succession or gradation, contrasted with opposite.—*Martyn*.

129. Opposite, (*oppositi*, *opposés*,) growing in pairs. Ex. *Fraxinus*.

Observation. Each pair being placed exactly vis-a-vis the other.

130. Decussated, (*decussati*, *croisés* ou *opposés en croix*,) growing in pairs, and alternately crossing each other at right angles.

Observation. In this case, if the stem be viewed vertically, or the eye be directed right down it, the leaves or branches will appear to be in four.

131. Verticillate, (*verticillati*, *verticillés*,) disposed in the form of a circle round the stem. Ex. *Protea argentea*.

132. Two-ranked, (*distichus*, *distiques*,) a distich, or two-ranked stem, is one that puts forth branches, not decussated, but in an horizontal position, as the Fir.

133. Scattered, (*sparsi*, *épars*,) placed here and there without order.

134. Crowded, (*conferti*, *entassés*,) branches so close as scarcely to leave any space between them, as the Yew.

II. *Direction*.

135. Erect, (*erecti*, *droits*,) rising in an upright direction. Ex. *Populus*.

Observation. Approaching to a perpendicular, for when

entirely upright, the term straight, *strictus*, is used.—Vide page 20, No. 69.

136. Spreading, (*patentes*, ouverts,) making an obtuse angle with the stem, as the Cherry.

Observation. When they form nearly right angles, the term is much spreading.

137. Horizontal, (*horizontales*, horizontaux,) forming a perfect right angle with the stem.

138. Incurved, (*incurvati*, courbés, endedans,) curved inwards.

139. Recurved, (*recurvati*, recourbés, ou courbés endehors,) having at the inferior part a perpendicular direction, but above bending outwards in the form of a bow.

140. Reflexed, (*reflexi*, réfléchis ou pendans perpendiculairement,) hanging down perpendicularly. Ex. *Salix babylonica*.

141. Declined, (*declinati*, déclinés,) descending archwise.

Observation. The least degree of curvature towards the earth, opposed to archwise.

142. Divaricate, (*divaricati*, écartés,) making an obtuse angle with the stem, of the Oak. Ex. *Aster divaricatus*.

143. Diffuse, (*diffusi*, diffus,) extending horizontally, as *Trachelium diffusum*.

144. Fastigate, (*fatigiati*, fastigiés,) level at top, as *Chrysanthemum corymbosum*.

CHAP. V.

145. Leaves (*folia*, *feuilles*,) are the organs of motion of plants, inhaling moisture, and exhaling air.

Observation. Leaves furnish the decoration of plants, and are usually flat, and principally of a green colour: but even the green varies in shades, especially on the under side, which is sometimes of a decided white.

In the silver Protea, the two surfaces are covered with a silvery silk, which gives this plant a metallic lustre, and the Clarys, with some others, are seen partly tinged with blue and red, vying even with flowers.

The Vine, in autumn, also displays veins filled with a scarlet juice, when the Creepers look a blood-red, and a purple Beech has leaves constantly of a dull red, or purple.

Leaves furnish a refreshing shade, and pour out oxygen, or vital air, which maintains animal life.

The leaf is composed of a large nerve, which goes off in branches, and this again divides into smaller fibres, and so on to an excessive minuteness, which, when preserved by maceration in water, forms those beautiful skeletons, which we admire. These are the ligneous vessels, besides which we observe glands, and a tissue of vessels which belong to these, and a cellular substance, with a true cortical epiderm. From the under surface of leaves, moisture is inhaled.

I. *Foliation of Leaves.*

Observation. Linnæus paid much attention to this subject. He made a great number of observations in eighteen different provinces of his native country, situate between the sixtieth and seventieth degree of north latitude, in the years 1750, 1751, and 1752. It was his chief object to discover what species of trees begin to open their buds, *i. e.*

unfold their leaves, at the time most proper to sow barley, and he found that the Birch-tree (*BETULA ALNUS*) best indicated the precise period. Opposed to this term *frondescencia*, FOLIATION, is the term *defoliatio*, DEFOLIATION, or fall of the leaf.

146. Buds, (*gemmae*, boutons,) little conoid bodies, which form themselves in summer, and are covered with scales.

Observation. These parts are formed in summer on the branches of trees and shrubs, and under regular scales the leaves are contained in miniature. If you examine these leaves in winter, or rather at the beginning of spring, you will find them regularly packed up the same in each genus and species, and every nerve in miniature, the same as when fully expanded.

The disposition of leaves within the bud, as well as the opening, is also called FOLIATION, of which botanists have remarked the following kinds.

147. Involute, (*involuta*, involutées,) when the lateral margins are rolled inwards upon each other, as in *Pyrus*.

148. Revolute, (*revoluta*, révolutées,) when the lateral margins are rolled outwardly in a spiral manner, as in *Nerium*.

149. Obvolute, (*obvoluta*, obvolutées,) rolled so that its margins are contained alternately within the margins of another leaf, as in *Salvia*.

150. Convolute, (*convoluta*, convolutées,) when the margin of one side envelopes the other side of the same leaf, as *Prunus*.

151. Imbricated, (*imbricata*, imbriquées,) when the leaves cover each other, like the tiles of a house. Ex. *Ligustrum*.

152. Equeitant, (*equitantia*, *chevauchantes*,) when two opposite leaves converge so to each other with their edges, as that one encloses the other. Ex. *Laurus*.

153. Conduplicate, (*conduplicata*, *condupliquées*,) when the two sides of the leaf are doubled over each other at the midrib, as the Rose.

154. Plicate, (*plicata*, *plissées*,) folded like a fan. Ex. *Acer*.

155. Circinal, (*circinalia*, *cochléiformes*,) when the leaf is rolled in spirally downwards, the apex forming the centre, as Fern.

II. Insertion of Leaves.

156. Radical, (*radicalia*, *radicales*,) inserted immediately into the root, as Cowslip.

157. Cauline, (*caulina*, *caulinaire*,) placed upon the stem, as Mignonette.

158. Rameal, (*ramea*, *raméalis*,) placed upon the branches, as in Lilac.

159. Floral, (*floralia*, *florales*,) immediately attending the flowers.

Observation. Differs from the bracteal leaves, although often confounded by writers with them.

III. Situation.

160. Alternate, (*alterna*, *alternes*,) first on this side and then on the other, rising one after the other like so many steps. Ex. *Tilia*.

161. Opposite, (*opposita*, *opposées*,) placed vis-à-vis each other; that is, arising from two opposite points on the same stem. Ex. *Syringa*.

162. Decussated, (*decussata*, *croissées*,) leaves alternately opposite. Ex. *Melissa*.

Observation. Growing in pairs, which alternately cross each other at right angles.

163. Twin, (*gemina*, *geminées*,) when two leaves part from the same point, without being opposite. Ex. *Solanum diphyllum*.

164. Verticillate, or stellate, (*verticillata seu stellata*, *verticillées*,) in the form of a ring, as in most of the lipped flowers, and the Martagon Lily.

165. Distichous, (*disticha*, *distiques*,) chiefly clothing two sides of the branch only, though inserted at all parts of it, as the Fir.

166. Scattered, (*sparsa*, *éparse*,) spread here and there without any particular order. Ex. *Passerina capitata*.

167. Clustered, (*conferta*, *ramassées*,) crowded so as scarcely to leave any spaces betwixt them. Ex. *Antirrhinum monspessulanum*.

168. Imbricated, (*imbricata*, *imbriquées*,) when they lie over each other, and one covers the half of the leaf nearest it. Ex. *Diosma imbricata*.

169. Fascicled, (*fasciculata*, *fasciculées*,) parting several of them from the same point, so as to form little bundles, as in the *Larix*.

IV. *Attachment.*

170. Adnate, (*adnata*, adnées,) adhering to the stem or branch by the surface or disk itself. Ex. *Xeranthemum vestitum*.

171. Sessile, (*sessilia*, sessile,) being immediately fixed to the stem or branch, in its substance. Ex. *Saponaria*.

Observation. Without any petiolus intervening.

172. Petiolate, (*petiolata*, pétiolées,) possessing a petiolus or petiole, as the Rose.

Observation. Petiolus is the foot-stalk of a leaf.

173. Peltate, (*peltata*, peltees ou ombiliquées,) when the petiolus is inserted into the middle of the surface of the leaf, as in Indian cress.

174. Confluent, (*confluentia*, confluentes,) united together at the base, as the upper leaves of *Potentilla bifurca*.

Observation. Growing in tufts, so as to leave the intermediate parts of the stem bare.—*Martyn*.

175. Perfoliate, (*perfoliata*, perfoliées,) a leaf traversed by the stem. Ex. *Bupleurum rotundifolium*.

Observation. A perfoliate leaf (*Folium perfoliatum*) is not a proper term, but is accepted by botanists. It should rather be a perfoliated stem, (*caulis perfoliatus*).—*Martyn*.

176. Amplexicaul, (*amplexicaulia*, amplexi-

caules,) stem-clasping, surrounding the stem by its base. Ex. *Lamium amplexicaule*.

Observation. The *perfoliate* leaf is defined by Linnæus, surrounding the stem, without any opening: the latter part is added to distinguish it from the *amplexicaul* leaf, which surrounds the sides of the stem, leaving an opening, whereas the *perfoliate* encircles it quite round, so that it seems as if the stem had been driven through the middle of the leaf.
—*Martyn*.

177. Semi-amplexicaul, (*semi-amplexicaulia*, *demi-amplexicaules*,) when the base does not altogether surround the stem. *Aster Novæ-Angliæ*.

Observation. Embracing the stalk half-way.—*Martyn*.

178. Connate, (*connata*, *coalitus*, *connées*,) when two opposite leaves are so united at their bases, as to have the appearance of one leaf. Ex. *Silphium connatum*.

179. Vaginant, (*vaginantia*, *engainante*,) when the base forms a cylindrical tube, which invests the stem. Ex. Grasses.

180. Decurrent, (*decurrentia*, *décurrentes*,) a sessile leaf, whose basis is extended along the stem. Ex. *Carduus*.

V. Direction.

181. Appressed, (*adpressa*, *appliquées*,) when the leaf takes a parallel direction to the stem, and touches it in its whole extent, as in *Protea corymbosa*.

Observation. This term is employed when the disk approaches so near the stem, as to seem as if it had been pressed to it by violence.—*Martyn.*

182. Erect, (*erecta*, droite,) forming a very acute angle with the stem. Ex. *Tragopogon pratense*.

Observation. A leaf is said to be *erect* when it makes so very acute an angle with the stem, as to be close to it.—*Martyn.*

183 Spreading, (*ouvertes*, patentia,) forming with the stem or branches an obtuse angle.

Observation. Between erect and horizontal. Vide No. 136. I do not know that there is any difference in sense, between *patens* and *patulus*.—*Martyn.*

184. Much spreading, (*patentissima*, très-ouvertes,) making an almost right angle with the stem. Ex. *Protea cynarea*.

185. Horizontal, (*horizontalia*, horizontales,) forming a right angle with the stem. Ex. *Lactuca sylvestris*.

186. Inflexed, (*inflexa*, courbées en dedans,) making somewhat of a bow inwards. Ex. *Mesembryanthemum stipulaceum*.

187. Recurved, (*recurvata*, recourbées, ou courbées en dehors,) when the leaf is bent down so that the bow or convexity appears above. Ex. *Roella squarrosa*.

188. Reclined, (*reclinata*, reclinées,) forming a right angle by its insertion to the stem, and having the point of the leaf lower than the base. Ex. *Senecio reclinatus*.

189. Reflexed, (*reflexa*, réfléchies,) bent back without any curve. Ex. *Plantago indica*.

190. Resupinate, (*resupinata*, renversées,) when the under surface looks towards the heavens.

191. Involute, (*involuta*, roulées en dedans,) when the summit is turned spirally inwards.

192. Revolute, (*revoluta*, roulées en dehors,) having the edges rolled back. Ex. *Teucrium fruticans*.

193. Oblique, (*obliqua*, obliques,) when the base is turned to the sky, and the apex points to the horizon. Ex. *Fritillaria persica*.

Observation. Or when the surface is placed obliquely to the petiolus. Ex. *Begonia obliqua*.—*Martyn*.

194. Sunk, (*submersa*, submergées,) plunged in water, and never rising to the surface. Ex. *Hottonia palustris*.

195. Floating, (*natantia*, flottantes,) swimming on the surface of the waters. Ex. *Nymphæa*.

196. Emerged, (*emerse*, émergée,) rising above the water. Ex. *Sagittaria*.

VI. *Circumscription.*

197. Round, (*orbiculata*, orbiculaire,) having the longitudinal and transverse diameters equal. Ex. *Anagallis tenella*.

198. Roundish, (*subrotunda*, arrondies,) nearly round. Ex. *Malva rotundifolia*.

199. Ovate, (*ovata*, ovées,) having a greater

length than width, being rounded at the base, and narrowed at the summit.

Observation. The shape of this leaf, is no other than that of a longitudinal section of an egg.

200. Obovate, (*obovata, seu obverse ovata, ovées à rebours,*) like an egg, but having the narrow end downwards. Ex. *Baccharis halimifolia*.

201. Oval, or elliptic, (*ovalia seu elliptica, ovales,*) having the longitudinal diameter longer than the transverse one, and the curvature the same at both ends. Ex. *Asclepias Syriaca*.

Observation. The oval resembles the ovate, but this last has one end smaller, and it also differs from the elliptic, which is much longer in proportion to its breadth. The one might be called simply oval, the other a long oval. The terms oval and elliptic are made synonymous in the *Philosophia Botanica*, but in the *Delineatio* they are distinguished.

202. Oblong, (*oblonga, oblongues,*) having its longitudinal diameter several times exceeding the transverse one. Ex. *Salvia viridis*.

203. Lanceolar, (*lanceolaria, lancéolaires,*) longer than wide, and narrowing at its two extremities, until it insensibly terminates in a point. Ex. *Olivia communis*.

204. Lanceolate, (*lanceolata, lancéolaires,*) gradually diminishing from the base to the summit, and representing the head of a lance. Ex. *Kiggellaria Africana*.

205. Parabolic, (*parabolica, paraboliques,*) having the longitudinal diameter exceeding the

transverse one, and narrowing from the base upwards, into an half ovate. Ex. *Tetragonia expansa*.

Observation. Rounded gradually towards the top, into a narrower form.

206. Spatula-shaped, or spatulate, (*spatulata*, *spatulées*,) the upper part being round, and the lower narrow and linear. Ex. *Bellis perennis*.

Observation. Like our battledore.

207. Wedge-shaped, (*cuneiformia*, *cuneiformes*,) being longer than broad, and tapering gradually downwards. Ex. *Sedum anacampseros*.

208. Linear, (*linearia*, *linéaire*,) the two edges straight and equidistant throughout, except at the two extremities. Ex. *Euphorbia exigua*.

209. Subulate, (*subulata*, *subulées*,) linear at bottom, but gradually lessening towards the top, and ending acute. Ex. *Arenaria tenuifolia*.

210. Acerose, (*acerosa*, *acéreuses*,) linear, acuminate, as the Pine.

Observation. In form of a needle.

211. Setaceous, (*setacea*, *sétacées*,) small like a bristle. Ex. *Festuca ovina*.

212. Ovate-oblong, (*ovato oblonga*, *ovales-oblongues*,) ovate lengthened out.

Observation. When the word is compounded of two terms, the preceding term is predominant. Ovate-oblong implies that it is more ovate than a true oblong.

213. Linear-lanceolate, (*lineari-lanceolata*, linéaires-lancéolees,) betwixt both terms, but more linear than lanceolate.

VII. *Angles.*

214. Intire, (*integra*, entières,) undivided, having no angles, or sinus. Ex. *Salvia officinalis*.

215. Angular, (*angulosa*, anguleuses,) when the number of angles is not specified. Ex. *Tussilago farfara*.

216. Triangular, (*triangularia*, triangulaire,) having three prominent angles.

217. Deltoid, (*deltoidea*, deltoides,) resembling in form the Greek Δ , that is to say, an equilateral triangle. Ex. *Chenopodium atriplex*.

Observation. The leaves of this form are broad at the base, and nearly triangular. Linnæus says, shaped like a rhomb, having four angles, of which the two lateral ones are nearer the angle at the base than at the apex.

218. Rhomboid, (*rhombea*, rhomboides,) having four sides, of which the opposite ones are equal, and four angles, of which two are acute, and two obtuse. Ex. *Chenopodium viride*.

219. Trapeziform, (*trapeziformia*, trapeziformes,) having the shape of a trapezium, a figure with four unequal sides. Ex. *Adiantum trapeziforme*.

VIII. *Sinuses and Lobes.*

220. Heart-shaped, (*cordata*, *cordiformes*,) like an ovate leaf, but the base rounder at its borders, and hollowed deeply in the middle. Ex. *Geranium cordifolium*.

221. Kidney-shaped, or reniform, (*reniformia*, *reniformes*,) round, having a sinus, or hollow, at the base. Ex. *Asarum Europæum*.

222. Crescent-shaped, or lunate, (*lunata*, *lunulées*,) approaching the orbicular figure, but hollowed at the base, and armed with two points. Ex. *Aristolochia bilobata*.

Observation. Resembling the Moon in her first quarter.

223. Arrow-shaped, or sagittate, (*sagittata*, *sagittées*,) triangular, the base ending with acute angles, divided with a sinus. Ex. *Sagittaria sagittifolia*.

224. Spear-shaped, or hastate, (*hastata*, *hastées*,) triangular, hollowed at the sides and base, with the angles spreading. Ex. *Scutellaria hastifolia*.

Observation. The angles point a little outwards.

225. Lyre-shaped, or lyrate, (*lyrata*, *lyrées*,) cut laterally into lobes, of which the lowermost are smallest, and more scattered, whilst the upper, and more especially the terminal lobe, are largest. Ex. *Salvia lyrata*.

Observation. Divided transversely into several jags, the

lower ones smaller and more remote from each other than the upper ones.—*Martyn*.

226. Runcinate, (*runcinata*, *runcinées*,) lyrate leaves, which possess at their summits pointed lobes, and turned back at the base of the leaf. Ex. Dandelion.

Observation. A sort of pinnatifid leaf, with the lobes convex before, and straight behind, like the teeth of the double saw, used in dividing timber.—*Martyn*.

227. Fiddle-shaped, or panduriform, (*panduræformia*, *panduriformes*,) an oblong leaf, broader at the base, and narrowed at the sides. Ex. *Convolvulus panduratus*.

228. Pinnatifid, (*pinnatifida*, *pinnatifides*,) a species of simple leaf, divided transversely by deep oblong horizontal segments, but not extending to the midrib.

229. Sinuate, (*sinuata*, *sinuées*,) the margins remarkable for their sinuses, or cleft, very open and rounded. Ex. *Statice sinuata*.

Observation. Having large curved breaks, resembling a bay, (*sinus*.)—*Martyn*.

230. Laciniated, or jagged, (*laciniata*, *laci-niées*,) cut into irregular segments. Ex. *Bryonia*.

231. Lobed, (*lobata*, *lobées*,) divided to the middle into segments, distant from each other, with convex margins. Ex. *Passiflora*.

232. Palmated, (*palmata*, *palmées*,) divided beyond the middle, into several lobes that are

nearly equal in size. Ex. *Ricinus communis*, or *Palma Christi*.

Observation. They imitate the fingers with the hand open.

IX. *Borders.*

233. *Intire*, (*integer*,) having neither angles nor sinuses.

Observation. A leaf may be *intire* whose edge is indented, toothed.

234. *Quite intire*, (*integerrima*, *très entiers*,) edge quite uniform, fine, not even toothed.

235. *Crenate*, (*crenata*, *crenelées*,) having round teeth, without any particular direction.

Observation. *Scolloped*.

236. *Serrated*, (*serrata*, *serrées*,) cut into sharp teeth, pointing towards the apex, as the *Peach*.

Observation. The direction of the teeth is essential to the serrated leaf.

237. *Dentate*, toothed, (*dentata*, *dentées*,) having horizontal teeth, of the same consistency with the leaf, with a space between each.

238. *Ciliate*, (*ciliata*, *ciliées*,) bordered all round with silky and parallel hairs.

239. *Spiny*, (*spinosa*, *épineuses*,) armed with thorns.

240. Cartilaginous, (*cartilaginea*, cartilagineuses,) armed with a cartilaginous substance. Ex. *Saxifraga cotyledones*.

241. Revolute, (*revoluta*, à bords roulés en dehors,) having the edges rolled back, or towards the lower surface. Ex. *Teucrium fruticans*.

242. Repand, (*repanda*, gaudronnés ou festonnées,) with flexuose or waving rim.

243. Erode, (*erosum*, rongées,) having the appearance of being gnawed or eaten by insects.

244. Lacerated, (*lacera*, déchirées,) having the margin cut into irregular segments, as if it were rent or torn.

X. *Summits.*

245. Acute, (*acuta*, aigues,) ending in a point.

246. Acuminate, (*acuminata*, acuminées,) terminated by a point lengthened out. Ex. *Lamium album*.

Observation. Ending in a subulate, or awl-shaped point.

247. Cuspidate, (*cuspidata*, cuspidées,) terminating in a bristly point. Ex. *Quercus cuspidatus*.

248. Mucronate, (*mucronata*, mucronées,) terminated in a sharp point, like a dagger. Ex. *Statice mucronata*.

249. Tendrilled, (*cirrhusa*, vrillées,) terminating in a tendril. Ex. *Gloriosa superba*.

250. Obtuse, (*obtusa*, obtuses,) ending blunt. Ex. *Rumex obtusifolius*.

251. Emarginate, (*emarginata*, échancrées,) a notch made at the end. Ex. *Geranium emarginatum*.

252. Retuse, (*retusa*, émoussées,) with a very obtuse sinus. Ex. *Sida retusa*.

Observation. Almost emarginate.

253. Truncated, (*truncata*, tronquées,) seeming as if the end of the leaf had been lopped, or sheared. Ex. *Adiantum truncatus*.

254. Præmorse, (*præmorsa*, mordue,) ending very obtusely, with unequal notches. Ex. *Hibiscus præmorsus*.

XI. Appendages.

255. Stipuled, (*stipulacea*, stipulés,) accompanied with stipules, as in the Peatribe.

256. Without stipules, (*exstipulacea*, seu nuda, dépourvues des stipules,) as in most leaves.

XII. Surfaces.

257. Smooth, (*glaber*, glabre,) without hairs, glands, or any peculiar excrescences. Ex. *Hypochæris glabra*.

Observation. Opposed to tomentosum.

258. Pubescent, (*pubescentia*, pubescentes,) having soft hairs like down on it.

259. Velvety, or villose, (*villosa*, velue,) covered with soft hairs, near together, and growing long. Ex. *Primula villosa*.

260. Tomentose, (*tomentosa*, tomenteuses,) having a cottony appearance. Ex. *Cerastium tomentosum*.

261. Silky, (*sericea*, soyeuses,) having the appearance of silk or satin. Ex. *Protea argentea*.

Observation. Covered with very soft hairs, pressed close to the surface.

262. Hirsute, (*hispida*, seu *hirta*, herissées,) as if defended with bristles. Ex. *Turritis hirsuta*.

263. Scabrous, (*scabra*, scabres,) rough to the touch, as in several of the Campanular.

264. Aculeate, (*aculeata*, aiguillonnées,) armed with prickles. Ex. *Urtica baccifera*.

265. Strigose, (*strigosa*, herissonnées,) having the surface covered with stiff lanceolate bristles. Ex. *Echinops strigosus*.

266. Level, (*lævia*, lisses,) having an even level surface. Ex. *Statice limonium*.

Observation. Having no particular inequalities.

267. Polished, (*lucida*, luisantes,) having a shining surface, like the polish of steel. Ex. *Angelica lucida*.

268. Viscous, (*viscosa*, visqueuses,) covered with an adhesive liquor. Ex. *Geranium viscosum*.

269. Coloured, (*colorata*, colorées,) having a

colour different from the usual one. Ex. *Amaranthus tricolor*.

270. Nerveless, (*enervia*, *enerves*,) without nerves. Ex. *Laurus benzoin*.

271. Nerved, (*nervosa*, *nervées*,) having starting nerves, which extend from the base to the summit, without ramifying. Ex. *Plantago lanceolata*.

272. Three-nerved, (*trinervia*, *trinerves*,) having three nerves, which re-unite at the base of the leaf, upon the petiolus. Ex. *Helianthus annuus*.

273. Triplenerved, (*triplinervia*, *triplinervées*,) having three nerves which unite above the base of the leaf. Ex. *Laurus cassia*.

274. Lineate, (*lineata*, *crayonnées*,) the surface slightly marked with longitudinal lines, a little starting out, or having small nerves. Ex. *Trifolium procumbens*.

275. Striate, (*striata*, *striées*,) having small longitudinal, or lateral excavations. Ex. *Galega officinalis*.

276. Sulcate, (*sulcata*, *sillonnées*,) having similar parallel excavations, but broader and deeper. Ex. *Hypoxis spicata*.

277. Veiny, (*venosa*, *veinées*,) over whose surface run nerves, which ramify much, and communicate together.

278. Wrinkled, (*rugosa*, *rugueuses* ou *ridées*,) furnished with very prominent parts, cutting the surface into small portions. Ex. *Salvia*.

279. Bullate, (*bullata*, *bullées* ou *boursou-*

flées,) having the surface rising above the veins, so as to appear like blisters. Ex. *Ocimum bulbatum*.

Observation. These elevations are convex above, and concave beneath, and only a greater degree of the wrinkled leaf—Vide No. 278.

280. Pitted, (*lacunosa*, *lacuneuses*,) when the disk is buried between the ramifications of the nerves. Ex. *Lichen pustulatus*.

Observation. Contrary to wrinkled, in which it rises.

281. Dotted, (*punctata*, *ponctuées*,) full of small points, hollow and transparent, or having vesicles, containing in them an essential oil. Ex. *Hypericum*.

Observation. Linnæus has used several terms to express this meaning, and if there be any difference in the terms perforatum, pertusum, punctatum, the first may be rendered perforated, the second punched, and the third dotted.—*Martyn*.

282. Glandular, (*glandulosa*, *glanduleuses*,) having glandular bodies either on the surface, or on the serratures.

283. Papillose, (*papillosa*, *mamelonées*,) having the surface covered with fleshy dots or points. Ex. *Lichen pullus*.

Observation. Synonymous with *verrucosum*, warted.—*Martyn*.

284. Pimply, (*papulosa*, *pustulées*,) covered

with vesicular transparent points. Ex. Several species of *Mesembryanthemum*.

XIII. *Expansion.*

285. Flat, (*plana*, planes,) having both upper and under surfaces alike, flat and parallel in all their extent. Ex. *Anagallis tenella*.

286. Channelled, (*canaliculata*, canaliculées,) having a furrow in the form of a channel, the whole length of the leaf. Ex. *Juncus bulbosus*.

Observation. Hollowed above with a deep longitudinal groove, convex underneath.—*Martyn*.

287. Concave, (*concava*, concaves,) when the disk of a leaf sinks, whilst the sides rise. Ex. *Sidum hybridum*.

288. Convex, (*convexa*, convexes,) having the disk raised.

Observation. Opposed to concave.

289. Cucullate, (*cucullata*, capuchonnées,) opening at top, and drawn to a point at bottom. Ex. *Geranium cucullatum*.

Observation. In the shape of a paper rolled up conically by grocers, for small parcels of spices.—*Martyn*.

290. Plicate, (*plicata*, plissées,) the nerves sinking and rising alternately, forming the disk into acute angles. Ex. *Alchimilla*.

Observation. Folded like a fan, distinguished from waved by the folds being angular.—*Martyn*.

291. Waved, (*undulata*, ondées,) the disk sinking and rising alternately, so as to form with the edges folds. Ex. *Tragopogon undulatum*.

Observation. The surface rising and falling in waves, or obtusely.

292. Curled, (*crispa*, crépues,) when the margin appears very large for the disk, or is formed into very many irregular plaits. Ex. *Malva crispa*.

Observation. All curled leaves are monsters, or productions of art.—*Martyn*.

XIV. Substance.

293. Membranaceous, (*membranacea*, membraneuses,) of a dry nature, having no distinguishable pulp between the two surfaces. Ex. Grasses.

294. Scariose, (*scariosa*, scarieuses,) of a nature like dry skin, and sonorous betwixt the fingers.

295. Thick, (*crassa*, épaisses,) of a firm and solid substance. Ex. The Aloe.

296. Fleshy, (*carnosa*, pulposa, charnues,) full of pulp within. Examples. In the Sedums, and other succulent plants.

XV. Form.

297. Round, (*teretia*, cylindriques,) a fleshy

leaf, round its whole length, and terminating in a point. Ex. *Allium vineale*.

298. Gibbous, (*gibba*, *gibbeuses*,) fleshy, and having two surfaces convex. Ex. *Sedum acre*.

299. Depressed, (*depressa*, *déprimées*,) pulpy, and more flattened at the disk than the sides. Ex. *Sedum rubens*.

300. Compressed, (*compressa*, *comprimées*,) pulpy, and more flattened at the sides than the disk.

Observation. Opposed to depressed.

301. Triquetrous, (*triquetra*, *triquètres*,) having three flat sides its whole length, but terminating in a point. Ex. *Allium triquetrum*.

302. Sword-shaped, or ensiform, (*ensiformia*, *gladiées*,) thick in its central part, and possessing cutting edges, and tapering gradually to a point. Ex. *Iris*.

Observation. Ancipital, or two-edged, tapering from the base towards the apex.—*Martyn*.

303. Strap-shaped, or tongue-shaped, (*lingulata*, *seu linguiformia*, *linguiformes*,) linear, fleshy, and convex underneath. Ex. *Mesembryanthemum linguiforme*.

Observation. Linear and fleshy, blunt at the end, convex underneath, and having usually a cartilaginous border.—*Martyn*.

304. Faulchion-shaped, or acinaciform, (*acinaciformia*, *acinaciformes*,) more or less fleshy,

with one border thick, obtuse, whilst the other is cutting. Ex. *Mesembryanthemum acinaciforme*.

305. Hatchet-shaped, or dolabriform, (*dolabriformia*, *dolabriformes*,) cylindric in their inferior part, having the upper part enlarged, thick on one side, and cutting on the other. Ex. *Mesembryanthemum dolabriforme*.

Observation. Compressed, roundish, obtuse, gibbous on the outside, with a sharp edge, roundish below.—*Martyn*.

XVI. *Duration.*

306. Caducous, (*caduca*, *caduques*,) falling before the end of summer.

307. Deciduous, (*decidua*, *tombant*,) falling in autumn.

308. Persisting, (*persistentia*, *persistentes*,) remaining longer than the autumn, and falling off the ensuing spring.

Observation. Remaining on the plant till the fruit is ripe, or after the summer is over, as the Oak.—*Martyn*.

309. Ever-green, (*sempervirentia*, *toujours verts*,) remaining through several seasons, and appearing green in the winter months.

Observation. The decay of the leaf, and its fall, has been the object of much botanical investigation. Some plants are ever-greens, and it may be observed that resinous plants more especially retain their foliage. Many have supposed it is from old age that leaves fall, and if a plant be removed, the rapidity with which leaves are parted with, gives the

sign, whether transplantation has succeeded or not. In this case, it is a kind of sluffing, and the living gets rid of the dead or mortified parts.

XVII. *Composition.*

310. Compound, (*composita*, *composées*,) composed of several little leaves, or leaflets, placed upon a common petiolus.

Observation. This is known by the leaves not falling off alone, as from a branch, but being also accompanied by the petiolus.

311. Jointed, (*articulata*, *articulées*,) when one leaflet grows out of the other. Ex. *Cactus opuntia*.

312. Conjugate, (*conjugata*, *conjuguées*,) when the petiolus bears on its sides, and almost at its summit, one pair of leaflets. Ex. *Zygophyllum fabago*.

313. Binate, (*binata*, *binees*,) when the petiolus bears two leaflets precisely at its summit, inserted at the same point. Ex. *Cynometra*.

314. Digitate, (*digitata*, *digitées*,) composed of five leaflets, or even more, which arises from the same point. Ex. *Sterculia foetida*.

Observation. The digitate leaf, to correspond with the name, should have five leaflets spreading out like the open fingers: but Linnæus makes binate, ternate, and quinate leaves, to be species of the digitate; and the leaves of Horse-chestnut, though they have more leaflets than five, are, nevertheless, called digitate.—*Martyn*.

315. Pedate, (*pedata*, *pédiares*,) when a bifid

petiolus bears leaflets attached to only the inner part of the divisions. Ex. *Passiflora pedata*.

316. Ternate, (*ternata*, ternées,) when the petiolus bears three leaflets, as in Trefoil.

317. Pinnate, (*pinnata*, pinnées, ou ailées, when the petiolus bears many leaflets on each side. Ex. *Astragalus*.

318. Two-yoked, or bijugous, (*bijuga*, bijuguées,) a pinnate leaf, having two pair of leaflets. Ex. *Orobus*.

319. Three-yoked, or trijugous, (*trijuga*, trijuquées,) having three pair of leaflets.

320. Unequally-pinnate, (*impari-pinnata*, ailées avec impaire,) terminated by an odd or single leaflet, as in the Nut.

321. Abruptly-pinnate, (*abrupte pinnata*, ailées sans impaire,) a term used in pinnate leaves, when they have neither leaflet, (foliolum) nor tendril, or clasper, (cirrus) at the end. Ex. *Cassia*.

XVIII. Recomposition.

322. Decompound-leaf, (*decomposita*, recombosées,) having a second composition, that is, the petiolus, instead of bearing the leaflet, bears other petioli, to which the leaflets are attached.

Observation. Decompound, is when the primary petiole is so divided that each part forms a compound leaf.—*Martyn*.

323. Bigeminate, (*bigemina*, bigéminées,) is

when a dichotomous petiolus re-unites four leaflets at its summit. Ex. *Mimosa unguis Cati*.

Observation. A decompound leaf, having a dichotomous or forked petiole, with several folioles or leaflets at the end of each division.—*Martyn*.

324. Biternate, (*biternata*, *biternées*,) when the common petiolus divides into three petioli, each of which bears three leaflets. Ex. *Epimedium*.

325. Bipinnate, (*bipinnata*, *bipinnées*,) having a common petiolus, which produces partial petioli, upon which are inserted the leaflets, and disposed in the manner of wings. Ex. *Mimosa arborea*.

XIX. *Supercomposition.*

326. Super-decompound, (*supra-decomposita*, *sur-composées*,) is when the second petioli, instead of bearing leaflets, divides into other petioli, to which the leaflets are attached. Ex. *Pimpinella glauca*.

Observation. When a petiolus, divided several times, connects many leaflets, each part forming a decompound leaf.—*Martyn*.

327. Tergeminate, (*tergemina*, *tergeménées*,) when the petiolus is divided into two parts, which supports each two leaflets at their summit, and which, besides, bears each a leaflet, situated with-

out, near to the bifurcation of the common petiolus. Ex. *Mimosa tergemina*.

Observation. When a forked petiolus is subdivided, having two leaflets at the extremity of each subdivision, and also two other leaflets at the division of the common petiole.—*Martyn*.

328. Triternate, (*triternata*, triternées,) when the petiolus divides into three parts, and which subdivides again into three other parts, each furnished with three leaflets. Ex. *Paullinia triternata*.

Observation. A species of superdecompound leaf, when a petiole has three biternate leaves.—*Martyn*.

329. Tripinnate, (*tripinnata*, tripinnées,) is when the second petiolus, instead of bearing leaflets, divides into other petioles, to which the leaflets are equally attached to the sides. Ex. *Aralia spinosa*.

Observation. A species of superdecompound leaf, when a petiolus has bipinnate leaves ranged on each side of it.—*Martyn*.

XX. Sleep.

330. Sleep of leaves, (*foliorum somnus*, sommeil des feuilles,) is the different appearances they put on, chiefly at night, from that which they possessed in the day.

Observation. Nothing can be more extraordinary than the sleep of plants, or the folding of their leaves, as well as

petals, at stated hours, chiefly in the night. The contractions of the leaves at night, in some instances, so changes the physiognomy of plants, that they can no longer be recognised. This appearance is more evident in young than in old plants. This arises equally with plants in the stoves, as out of doors, which shows that it cannot depend on heat, and with some plants in the midday, which proves that it does not wholly depend upon the absence of light. It arises from the irritability of plants, and is peculiarly seen in the sensitive plant, which tribe peculiarly obeys this law of nature, upon which a number of experiments have been made.—Vide our Philosophy of Botany.

XXI. *Position of the Leaves in Sleep.*

331. Conniving, (*conniventes*, *conniventes*,) when the two opposite leaves meet together so exactly by their superior surfaces, that they appear to form but one leaf. Ex. *Alsine media*.

332. Including, (*includentia*, *renfermantes*,) when the leaves, which are alternate, approach near to the stalk. Ex. *Sida abutilon*.

333. Environing, (*circum-sepientia*, *environnantes*,) when the leaves naturally horizontal rise up, and make a kind of funnel, the mouth being narrowed. Ex. *Malva Peruviana*.

334. Defending, (*munientia*, *préservantes*,) when the leaves take an opposite direction from that above, and falling down make a kind of cap, protecting whatever lies underneath. Ex. *Mille-ria quinqueflora*.

335. Conduplicate, (*conduplicantia*, *conduplicantes*,) when leaves, during the night, fold together, like the leaves of a book. Ex. *Vicia faba*.

336. Involving, (*involutia*, *recouvrantes*,) when the leaflets of compound flowers, during the night, approach by their summits only, making an arch or hollow underneath. Ex. *Trifolium resupinatum*.

337. Diverging, (*divergentia*, *divergentes*,) when the leaflets, on the contrary, approach at their base, and are open at their summits. Ex. *Melilotus officinalis*.

338. Depending, (*dependentia*, *pendantes*,) when the leaves, which are erect in the day, decline during the evening. Ex. *Lupinus albus*.

339. Inverting, (*invertentia*, *roulées dans une situation renversees*,) when during the night the more tender surface of the leaf is protected by being inverted. Ex. *Cassia*.

340. Imbricate, (*imbricantia*, *retournées dans une situation horizontale*,) when the petioles of the leaflets lie longitudinally along the common petioles, and the inferior surface of the leaflets become the exterior. Ex. *Tamarindus Indica*.

CHAP. VI.

THE DIFFERENT PETIOLES.

341. Linear, (*linearis*, *linéaire*,) of the same breadth throughout.

342. Winged, (*alatus*, *ailé*,) having a thin membrane, or border, on each side. Ex. *Citrus aurantium*.

343. Clubbed, (*clavatus*, *dilaté à son sommet*,

ou en massue,) growing gradually thicker towards the top. Ex. *Cacalia suaveolens*.

344. Compressed, (*compressus*, comprimé,) flattened on the sides. Ex. *Populus tremula*.

345. Round, (*teres*, cylindrique,) without any angles. Ex. *Betula*.

346. Triquetrous, (*triqueter*, triquètre,) having three plane sides.

347. Channelled, (*canaliculatus*, canaliculé,) hollowed above, with a longitudinal groove. Ex. *Rheum palmatum*.

348. Spinescent, (*spinescens*, spinescent,) soft at first, but afterwards becoming hard and thorny. Ex. *Rhamnus catharticus*.

I. *Their Direction.*

349. Erect, (*erectus*, droit,) rising nearly perpendicular to the horizon.

350. Patent, (*patens*, ouvert,) forming an acute angle with the stem.

351. Recurved, (*recurvatus*, recourbé,) curved downwards, so that the bow, or convexity, is upwards.

II. *Surface.*

352. Smooth, (*glaber*, glabre,) free from any pubescence.

353. Prickly, (*aculeatus*, aiguillonnée,) armed with prickles.

354. Naked, (*nudus*, nu,) destitute of thorns or prickles.

355. Articulate, (*articulatus*, articulé,) jointed, furnished with a single joint. Ex. *Oxalis*.

III. Size.

356. Very short, (*brevissimus*, beaucoup plus court que la feuille,) much shorter than the leaf.

357. Short, (*brevis*, un peu plus court que la feuille,) a very little shorter than the leaf.

358. Equal, (*mediocris*, de la longueur de la feuille,) of an equal length with the leaf.

359. Long, (*longus*, un peu plus long que la feuille,) a little longer than the leaf.

360. Very Long, (*longissimus*, beaucoup plus long que la feuille,) much longer than the leaf.

IV. Division.

361. Simple, (*simplex*, simple,) made up of one piece.

362. Compound, (*compositus*, composé,) of several pieces. Ex. *Robinia pseudoacacia*.

CHAP. VII.

ACCESSARY PARTS TO LEAVES.

363. Stipules, (*stipulæ*, stipules,) membranous leafy productions, placed at that part of the stem where the leaves take their origin.

I. *Their Number.*

364. Solitary, (*solitariae*, *solitaire*,) one only.
Ex. *Melianthus*.

365. Twin, (*geminæ*, *géminée*,) in pairs.

II. *Situation.*

366. Lateral, (*laterales*, *latérales*,) placed on each side of the petiole. Ex. *Lotus tetraphyllus*.

367. Extra-foliaceous, (*extra-foliaceæ*, *extra-foliacées*,) growing on the outside of the leaves, or below them. Ex. *Betula*.

368. Intra-foliaceous, (*intra-foliaceæ*, *intra-foliacées*,) growing above, or within the leaves.
Ex. *Morus nigra*.

369. Opposite-leaved, (*opposita-foliæ*, *opposées aux feuilles*,) opposite the leaves.

III. *Attachment.*

370. Sessile, (*sessiles*, *sessiles*,) connected directly with the stem.

371. Adnate, (*adnatæ*, *adnées*,) fixed to the petiole. Ex. *Rosa*.

372. Decurrent, (*decurrentes*, *décurrentes*,) extending downwards along the stem.

373. Vaginant, (*vaginantæ*, *engainantes*,) investing the branch by its basis, in form of a tube.
Ex. *Polygonum*.

IV. *Structure.*

374. Subulate, (*subulatæ*, *subulées*,) linear at bottom, but gradually tapering towards the point.

375. Spinescent, (*spinescentes*, *spinescentes*,) becoming hard and thorny.

376. Lanceolate, (*lanceolatæ*, *lancéolées*,) oblong and gradually tapering towards each extremity, like the head of a lance.

377. Sagittate, (*sagittatæ*, *sagittées*,) triangular, hollow at the base, with acute angles. Ex. *Pisum*.

378. Lunate, (*lunatæ*, *lunulées*,) shaped like a small crescent.

V. *Direction.*

379. Erect, (*erectæ*, *droites*,) rising in a direction perpendicular to the horizon.

380. Patent, (*patentes*, *ouverts*,) between erect and horizontal.

381. Reflexed, (*reflexæ*, *réflechies*,) hanging down perpendicularly.

VI. *Borders.*

382. Intire, (*integerrimæ*, *trés-entières*,) undivided, having no sinus.

383. Ciliate, (*ciliatæ*, *ciliées*,) the edge guarded by parallel bristles, placed longitudinally.

384. Serrate, (*serratæ*, *serrés*,) having sharp

imbricated notches about the edge, pointing towards the extremity.

385. Dentate, (*dentatæ*, *dentées*,) having spreading teeth about the margin, remote from each other.

386. Pinnatifid, (*pinnatifidæ*, *pinnatifides*,) divided transversely by oblong horizontal segments, not extending to the midrib.

VII. *Duration.*

387. Caducous, (*caducæ*, *caduques*,) falling off quickly.

388. Deciduous, (*deciduæ*, *tombantes*,) falling off in the autumn. Ex. *Padus*.

389. Permanent, (*persistentes*, *persistantes*,) continuing after the leaves drop off. Ex. *Pisum*.

VIII. *Size.*

390. Very short, (*brevissimæ*, *plus court que le pétiole*,) shorter than the petiole.

391. Equal, (*mediocres*, *de la longueur du pétiole*,) of the length of the petiole.

392. Long, (*longæ*, *plus longues que le pétiole*,) longer than the petiole.

CHAP. VIII.

THE ARMS OF PLANTS, (*Pubes*, *Arma*.)

393. Hairs, (*pili*, *les poils*,) projections rough to the touch. Ex. *Borago*.

394. Bristles, (*setæ*, les crins,) very stiff hairs. Ex. *Dipsacus*.

395. Silkiness, (*sericum*, la soie,) soft, compact hair, shining like silk. Ex. *Protea argentea*.

396. Down, (*lanugo*, le duvet,) soft, and very short hairs. Ex. *Digitalis*.

397. Cotton, (*gossypium*, le coton,) soft and interlaced hairs, like cotton. Ex. *Populus alba*.

398. Wool, (*tomentum*, la laine,) hair like the last, but less soft, and more like wool. Ex. *Verbascum*.

These are,

399. Simple, (*simplices*, simples,) without division.

400. Branched, (*ramosi*, rameux,) subdivided.

401. Hooked, (*ramosi*, en crochet, on hameçon,) bent at the summit. Ex. *Agrimonia*.

402. Feathery, (*plumosi*, plumeux,) furnished with lateral hairs.

403. Stellate, (*stellati*, étoilés,) shooting out from the same point, and diverging. Ex. *Lactuca*.

404. Toothed, (*glochides*, en double scie,) having two rows of hooks or teeth.

Observation. Many of these terms it is impossible to define with accuracy, as their differences are so very minute, that an adequate idea of the appearances can only be obtained by sight.

405. Spines, or thorns, (*spina*, les epines,) sharp projecting points issuing from the wood, with which it makes a part. Ex. *Prunus spinosus*.

406. Prickles, (*aculei*, les aiguillons,) similar projections issuing from the bark, of which it makes a part, having no connexion with the wood. Ex. *Rosa canina*.

407. Stings, (*stimuli*,) points which sting by means of a poison.

These spines and prickles are,

408. Simple, (*simples*, *simplices*,) without division. Ex. *Prunus spinosa*.

409. Forked, (*fourchues*, *bifurquées*,) shooting out into divisions. Ex. *Poteria*.

410. Branched, (*ramosi*, *ramifies*,) separating. Ex. *Gleditsia*.

411. In pairs, (*binæ*, *geminæ*, *deux à deux*,) two and two. Ex. *Ziziphus*.

412. In threes, (*ternæ*, *trois à trois*,) three together. Ex. *Berberis*.

413. In fours, (*quaternæ*, *quatre à quatre*,) four together.

414. In bundles, (*fasciculati*, *en faisceau*,) growing in bundles. Ex. *Cactus*.

415. Verticillate, (*verticillati*, *verticilles*,) in whirls. Ex. *Azima tetracanthos*.

416. Conic, (*conici*, *coniques*,) like a cone. Ex. *Zanthoxylon*.

Observation. Spines, &c. serve as a defence to plants against animals, and form our hedges, and produce a shelter for birds. We may here remark a wise provision in nature, Horses refuse nettles, thistles, and whins, which are greedily devoured by the jackass. By culture, many vegetables lose their spines.

417. Glands, (*glandulæ*, les glandes,) small protuberances.

These are,

418. Miliary, (*miliares*, miliaires,) very small and numerous. Ex. Pinus.

419. Vesicular, (*vesiculares*, vesiculaires,) like small bladders, transparent, and filled with an inflammable oil. Ex. Myrtus.

420. Utricular, (*utriculares*, utriculaires,) like little bottles, filled with their proper juices, which appear more watery than oily.

421. Globular, (*globulares*, globulaires,) resembling small globules, which appear sometimes like brilliant spots upon the inferior surfaces of the leaves of the labiate flowers.

422. Lenticular, (*lenticulares*, lenticulaires,) like small lentils, which render the surface rough to the touch. Ex. Betula.

423. Cupped, (*cupulares*, en godet,) little fleshy and concave glands, which we observe at the base of the Almond, Plum, and Peach.

Observation. In the year 1745, Guettard, a learned French naturalist, published his Observations on the Hairs and Glands of Plants. He has even formed a system derived from the consideration of the forms, situations, and other circumstances of the hairy and glandular appearances on the surface of plants. He has even shown that these appearances are, in general, constant in plants of the same nature, family, or genus.

424. Bractea, (*bractea*, les bractées,) small leaves, situated close to the peduncle, or flower-stalk, differing somewhat from the other leaves of

the plant, either in colour, or consistency, or form. Ex. *Salvia. sclarea*.

Observation. When these leaves are clustered together, the whole together is called a *coma*, from κομη, Greek, a head of hair.

425. Coloured, (*coloratæ*, *colorées*,) of any colour but green. Ex. *Salvia Horminum*.

426. Caducous, (*caducæ*, *caduques*,) falling.

427. Falling, (*decidua*, *tombantes*,)

428. Persisting, (*persistentes*, *persistantes*,) permanent. Ex. *Tilia Europæa*.

429. Two, three, &c. (*binæ*, *ternæ*, *deux*, *trois*,) Ex. Two, *Campanula Alpina*, three, *Erica*, *calycina*, four, *Corymbium scabrum*, many, *Bartsia coccinea*.

Observation. The same terms are used here as with the Stipule, which this part much resembles. In general, the Bractea is of the same duration as the common, or true leaves of the plant. This circumstance is worthy of attention, as it will, in many instances, enable us to distinguish the Bractea from the Calyx, the leaves of which last almost always wither when the fruit has ripened, if not, indeed, before.

CHAP. IX.

THE PROPS OF PLANTS, (*Fulcra*.)

Observation. In the *Delineatio Plant.* of Linnæus, there are seven fulcras enumerated: 1. The Petiolus; 2. Stipula; 3. Cirrhus; 4. Pubes; 5. Arma, which comprehends prickles, thorns, and stings; 6. Bractea; 7. Pedunculus. Several of the articles cannot be considered as props, for

the more commodious sustentation of plants. But I know not upon what principle we can denominate the spina, the aculeus, the glandula, and the pilus, as species of props, or even bractea and stipula. The petiole and peduncle can also scarcely be considered as a prop. Perhaps the only true one is the tendril.

430. Tendril, (*cirrhi*, les vrilles,) which are slender productions, like threads, attaching themselves to neighbouring bodies, and generally curling round them in a spiral manner.

Observation. The whole stem sometimes takes upon itself the office of the tendril, (*caulis volubilis*.) Vide No. 82.

These are,

431. Foliar, (*foliaries*, attachées au pédoncule,) proceeding from the leaf. Ex. *Gloriosa superba*.

432. Petiolar, (*petiolaris*, attachées au pédoncule,) proceeding from the petiole, as the Pea.

433. Peduncular, (*pedunculares*, attachées au pédoncule,) attached to the peduncle.

434. Axillary, (*axillares*, axillaires,) from the axilla of the leaf. Ex. *Passiflora*.

435. Convolute, (*convoluti*, roulées en tire-bourchon,) twisted inwards. Ex. *Vitis*.

436. Revolute, (*revoluti*, repliées,) twisted outwards.

437. Leafed, (*foliati*, feuillées,) bearing some leaves.

438. Simple, (*simplices*, simples,) without divisions or ramifications. Ex. *Vicia*.

439. Forked, (*bifidi*, fourchues, bifides,) di-

viding at the extremity into two threads. Ex. Vitis.

Observation. Opposed to simple.

440. Trifid, (*trifidi*, trifides,) into three. Ex. Bignonia.

441. Multifid, (*multifidi*, multifides,) cut into many parts.

Observation. Tendrils are very important appendages to vegetables: by means of them, weak debile plants elevate themselves so, as to have the enjoyment of light and air, which plants so exceedingly covet, and without which they sicken and die. The Trumpet-flower, (*bignonia radicans*,) and some species of the Ivy, (*hedera*,) emit tendrils, which serve the place of roots. The Passion flower, (*passiflora*,) by means of their tendrils, out-top the highest trees. In the Vine, (*vitis*,) the branches being very long, fragile, and slender, would be liable to frequent breaking, unless by means of their clasps, they were mutually bound together to support each other, so that the whole care is divided betwixt the gardener and nature. The former, with his ligaments of list, secures the main branches, and nature, with those of her own providing, the less.

442. Equal, (*mediocres*, de la longueur du pétiole,) of the length of the petiole.

443. Long, (*longæ*, plus longues que le pétiole,) longer than the petiole.

CHAP. X.

THE PEDUNCLES OF FLOWERS.

444. Peduncle, (*pedunculus*, pédoncule,) is

the footstalk of the flower, just as the footstalk of the leaf is called petiole, (*petiolus*.)

Observation. Flowers are sometimes *sessile*, that is, immediately placed upon the stem, Ex. *Trillium sessile*, sometimes even arise from a leaf, Ex. *Ruscus*; but in general they have an intermediate wiry substance, into which all the parts seem contracted; and which, by varying in length, gives the most commodious situation of the flowers with respect to light.

I. *Their Structure.*

445. Simple, (*simplex*, simple,) without division, and bearing only one flower. Ex. *Viola tricolor*.

446. Compound, (*compositus*, composé,) having divisions, or ramifying. Ex. *Pisum*.

447. Common, (*communis*, commun,) not dividing, but bearing many sessile flowers assembled.

1. Sometimes in round or oblong heads. Ex. *Sparganium*.

2. Sometimes in catkins. Ex. *Salix*.

3. And sometimes in a common calyx. Ex. *Scabiosa*.

448. Partial, (*partialis*, partiel,) having a pedicel (*pedicellus*) to each of the divisions.

Observation. It is the ultimate subdivision of a common peduncle, immediately connected with the flower itself.

II. *Insertion.*

449. Radical, (*radicalis*, radical,) proceeding immediately from the root. Ex. *Primula*.

450. Cauline, (*caulinus*, *caulinaire*,) arising from the stem. Ex. *Canna Indica*.

451. Ramose, (*rameus*, *raméal*,) proceeding from a branch. Ex. *Populus*.

Observation. These may be called in English a root-peduncle, a stem-peduncle, a branch-peduncle.

III. *Situation.*

452. Terminal, (*terminalis*, *terminal*,) terminating the stem, or proceeding from its top. Ex. *Corona Imperialis*.

453. Axillary, (*axillaris*, *axillaire*,) proceeding from the angle made by the leaf and stem, or the branch and stem. Ex. *Passiflora*.

Observation. Proceeding from the axillas, or from the bosom of the leaves or branches.

454. Extra-axillary, (*extra-axillaris*, *extra-axillaire*,) placed near the axilla.

455. Opposite the leaf, (*oppositifolius*, *opposé aux feuilles*,) placed opposite the leaf.

IV. *Direction.*

456. Appressed, (*adpressus*, *appliqué*,) pressed close to the stem. Ex. *Physalis pruinosa*.

457. Erect, (*erectus*, *droit*,) approaching to a perpendicular.

458. Patent, (*patens*, *overt*,) spreading.

459. Drooping, (*cernuus*, penché,) looking towards the earth.

Observation. This term is distinguished from *nutans*, nodding. Vide No. 75.

460. Flaccid, (*flaccidus*, foible, ou entraîné par le poids de la fleur,) weak.

461. Zig-zag, (*flexuosus*, flexueux,) extending here and there. Ex. *Aira flexuosa*.

V. Form.

462. Round, (*teres*, cylindric,) as with most plants.

463. Triquetrous, (*triqueter*, triquétre,) three-sided.

464. Four-cornered, (*tetragonus*, tétragone.)
Ex. *Convolvulus sepium*.

465. Filiform, or thread-shaped, (*filiformis*, filiform,) of a fine structure, like a thread. Ex. *Calendula pluvialis*.

Observation. Of the same thickness in all its parts.

466. Attenuated, (*attenuatus*, aminci,) diminishing insensibly in thickness from the base to the summit.

Observation. This is the case in the round, or cylindrical, but not in so striking a manner.

467. Incrassated, (*incrassatus*, epassi à son sommet,) thickening at the summit, opposed to attenuated. Ex. *Helianthus annuus*.

468. Geniculate, (*geniculatus*, géniculé,) bent at the joints. Ex. Pelargonium.

469. Articulate, (*articulatus*, articulé,) jointed. Ex. Hibiscus.

Observation. Having a single articulation.

VI. Cloathing.

470. Scaly, (*squamosus*, écailleux,) having scales.

471. Leafy, (*foliatus*, feuillé,) with leaves.

472. Naked, (*nudus*, nu,) without either.

473. Bracteated, (*bracteatus*, muni de bractées,) having bracteas.

VII. Measure.

474. Short, (*brevis*, un peu plus court que la fleur,) shorter than the flower.

475. Middling size, (*mediocris*, de la longueur de la fleur,) of the length of the flower.

476. Long, (*longus*, un peu plus long que la fleur,) somewhat longer than the flower.

477. Very short, (*brevissimus*, beaucoup plus court que la fleur,) shorter than the flower.

478. Very long, (*longissimus*, beaucoup plus long que la fleur.)

Observation. These terms are in reference to the flower, by comparing the different lengths of the peduncles with it, hence we derive the short, (*brevis*,) somewhat shorter than the flower; middling size, of the length of the flower; long, longer than the flower, and so on.

CHAP. XI.

FLOWERS, (*Flores*, *Fleurs*.)

Observation. These are the most attractive parts in plants, and serve to embellish nature, at the same time that they reproduce their kind.

479. Inflorescence, (*inflorescentia*, inflorescence,) is the manner in which flowers are fastened to the plant, by the medium of the peduncle.

Flowers are called from

I. *Their Insertion.*

480. Radical, (*radicales*, radicales,) immediately affixed to the root. Ex. Colchicum.

481. Cauline, (*cauline*, caulinares,) placed on the stem, as the Stock.

482. Ramose, (*ramei*, raméales,) growing on the branches, as the Apple.

II. *Situation.*

483. Terminal, (*terminales*, terminales,) the peduncle, or flower, growing at the extremities. Ex. Rosa.

484. Axillary, (*axillares*, axillaire,) betwixt the stem and leaf. Ex. Hysopus.

485. Supra-axillary, (*supra-axillares*, supra-axillaires,) inserted into the stem above the leaf, the petiole, or axilla.

Observation. Called also supra-foliaceous.—*Martyn*.

486. Extra-axillary, (*extra-axillares*, *extra-axillaires*,) growing on the outside of the axilla.

487. Opposite, (*oppositi*, *opposées*,) placed opposite the leaf. Ex. *Solanum dulcimara*.

488. Alternate, (*alterni*, *alternes*,) placed in regular succession or gradation one above another. Ex. *Passiflora*.

489. Scattered, (*sparsi*, *éparses*,) placed in no apparent regular order. Ex. *Jasminum*.

III. Attachment.

490. Sessile, (*sessiles*, *sessiles*,) placed directly on the stem or branch. Ex. *Labiati*.

Observation. Without the intervention of a peduncle.—*Martyn*.

491. Peduncled, (*pedunculati*, *pédonculées*,) with the intervention of a peduncle. Ex. *Lilium album*.

IV. Direction.

492. Erect, (*erecti*, *droites*,) nearly perpendicular. Ex. *Gratiola*.

493. Horizontal, (*horizontales*, *horizontales*,) making a right angle with the stem.

494. Drooping, (*cernui*, *penchées*,) pointing directly to the ground. Ex. *Hyacinthus non-scriptus*.

495. Nodding, (*nutans*, *penchées*,) curved,

and somewhat bending down. Ex. *Renealmia nutans*.

Observation. But not so much curved as drooping.—*Martyn*.

496. Turned up, (*resupinati*, *renversées*,) when the upper lip of a labiate corolla appears the lower. Ex. *Scrophularia*.

Observation. As if turned topsy-turvy.

497. Distichous, (*distichi*, *distiques*,) the flowers placed in two opposite ranks.

498. Unilateral, (*unilaterales*, *unilaterales*,) placed only on one side. Ex. *Heliotropium*.

499. Uniform, (*secundi*, *détournées d'un seul côté*,) all the flowers turned towards one side. Ex. *Erica herbacea*.

Observation. Pointing one way, directed or inclining the same way.

V. *Number.*

500. Single, (*solitarii*, *solitaire*,) one flower only to each peduncle. Ex. *Dianthus Chinensis*

501. Two together, (*bini*, *deux*,) two flowers only. Ex. *Pisum*.

502. Three together, (*terni*, *trois*,) three flowers. Ex. *Ixia viridis*.

503. Clustered, (*conferti*, *entassées*,) flowers crowded together. Ex. *Leontidon*.

504. Fasciculate, (*fasciculati*, *fasciculées*,) when many flowers spring from a common point, and are upright, parallel, and formed like a bundle. Ex. *Dianthus barbatus*.

VI. *Forms*.

✎ 505. Verticillate, (*verticillati*, *verticillees*,) when the flowers grow in a whirl, or round the stem in rings. Ex. *Lanium album*.

These are either,

506. Sessile, (*sessilis*, *sessile*,) without peduncles. Ex. *Labiati*.

507. Pedunculed, (*pedunculatus*, *pédonculé*,) elevated on peduncles. Ex. *Lilium album*.

508. Naked, (*nudus*, *nu*,) without involucre, or leaves.

509. Involucred, (*involucratus*, *muni d'un involucre*,) having an involucre.

510. Bracteated, (*bracteatus*, *muni des bractées*,) having bractea.

511. Six-flowered, (*sexflorus*, *sexflore*,) having six flowers, &c.

512. Crowded, (*confertus*, *pédoncules rapprochés*,) having the peduncles near each other.

513. Spreading, (*distans*, *pédoncules écartes*,) the peduncles wide asunder.

✎ 514. Capitata, (*capitées*, *ou en tête*,) when the flowers are assembled so as to form a globular head, or almost round. Ex. *Platanus*.

These are,

515. Sessile, (*sessile*, *sessile*,) squat. Ex. *Teucrium pumilum*.

516. Pedunculate, (*pedunculatum*, pédonculée,) peduncled. Ex. *Teucrium capitatum*.

517. Terminal, (*terminale*, terminale,) at the extremity of a branch or stem.

518. Axillary, (*axillare*, axillaire,) fixed at the axilla.

519. Roundish, (*subrotandum*, arrondie,) somewhat round. Ex. *Selago fruticosa*.


520. Globular, (*globosum*, globuleuse,) having a round form. Ex. *Gomphrena globosa*.

521. Conical, (*conicum*, conique,) resembling a cone.

522. Dimidiate, or halved, (*dimidiatum*, dimidiée ou arrondié d'un côté, et plane de l'autre,) round on one side, and flat on the other. Ex. *Lippia hemisphærica*.

523. Leafy, (*foliosum*, feuillée,) having leaves intermixed with the flowers.

524. Naked, (*nudum*, nue,) without leaves, opposed to the last term.

 525. Spicate, (*spicatus*, épiées, ou en épi,) disposed in a spike.

Observation. A spike is defined to be a species of inflorescence, in which sessile flowers are scattered alternately on a common simple peduncle.

These are,

526. Terminal, (*terminalis*, terminal,) at the extremity.

527. Axillary, (*axillaris*, axillaire,) arising from the axilla.

528. Simple, (*simplex*, simple,) having no subdivisions, spicules, or spikelets.

529. Compound, (*composita*, composé,) composed of several spicules, or spikelets.

530. Glomerate, (*glomerata*, gloméré,) having the spikelets, or component spikes, variously heaped together. Ex. *Panicum Italicum*.

531. Ovate, (*ovata*, ovoïde,) shaped like an egg. Ex. *Sanguisorba officinalis*.

532. Ventricose, or bellied, (*ventricosa*, ventru,) gibbous, or protuberant at the sides.

533. Cylindrical, (*cylindrica*, cylindrique,) of a cylindrical form.

534. Spiral, (*spiralis*, en spirale,) twisted like a screw.

535. Interrupted, (*interrupta*, interrompu,) divided by intervals of smaller flowers. Ex. *Mentha spicata*.

536. Ramose, (*ramosa*, rameux,) branched.

537. Articulate, (*articulata*, articulé,) in joints. Ex. *Salicornia herbacea*.

538. Leafy, (*foliosa*, feillé,) having leaves. Ex. *Ballota suaveolens*.

539. Comose, (*comosa*, chevelu,) terminated by a tuft or brush; a species of bractea, called coma. Ex. *Lavandula stæchas*.

540. Amentaceous, (*amentacei*, amentacées,) possessing an ament or catkin.

Observation. An ament is a species of inflorescence, as well as a calyx, and consists of chaffy scales, arranged along a slender stalk, or thread, which is the common receptacle. Ex. *Salix*.

These are,

541. Globular, (*globosum*, *globuleux*,) of a round figure.

542. Ovate, (*ovatum*, *ovoïde*,) like an egg.

543. Cylindrical, (*cylindricum*, *cylindrique*,) of a cylindric shape.

544. Filiform, (*filiforme*, *filiforme*,) fine like a thread. Ex. *Fagus pumila*.

545. Scaly, (*squamosum*, *écailleux*,) having scales.

546. Naked, (*nudum*, *nu*,) without scales.

☞ 547. Racemous, (*racemosi*, *en grappe*,) in raceme.

Observation. The raceme of a peduncle, with short lateral branches.

548. Simple, (*simplex*, *simple*,) when the peduncles are not divided. Ex. *Ornithogalum Pyrenaicum*.

549. Compound, (*compositus*, *composée*,) the peduncles being divided. Ex. *Vitis*.

550. One-sided, or unilateral, (*unilateralis*, *unilatérale*,) when the flowers grow only on one side of the common peduncle. Ex. *Pyrola secunda*.

551. Uniform, (*secundus*, *détournée*,) all the flowers turned towards one side, pointing one way, directed or inclining the same way.

Observation. We have no proper English terms for this word. One-ranked tends to mislead, because a plant may have more ranks or rows of flowers than one, directed to the same point of the horizon, or nearly so.

552. Leafy, (*foliatus*, feuillé,) with leaves interposed. Ex. *Thesium Alpinum*.

553. Naked, (*nudus*, nue,) without any leaves.

554. Erect, (*erectus*, droit,) upright.

555. Pendulous, (*pendulus*, pendante,) hanging down. Ex. *Cytisus laburnum*.

☞ 556. Thyrsoid, (*thyrsoidei*, en thyrses,) in the manner of a thyrses, having a conical figure, as the Lilac.

Observation. A thyrses is a panicle contracted into an ovate form.—*Martyn*. Or, in other words, the inferior peduncles extend horizontally, whilst the upper are shorter, and nearly upright.

These are,

557. Ovate, (*ovatus*, ovoide,) having the figure like an egg.

558. Oblong, (*oblongus*, oblong,) of an oblong shape.

559. Leafy, (*foliatus*, feuillé,) with interposing leaves.

560. Naked, (*nudus*, nu,) without leaves.

☞ 561. Corymbose, (*corymbosi*, en corymbe,) in corymbus.

Observation. A corymbus is where the lesser flower-stalks, being of unequal length, are produced along the common peduncle on both sides, and rise to the same height, so as to form a flat or even surface at top.—*Rose*.

2. In the corymb, the peduncles take their rise from different heights; but the lower ones being longer, they all form nearly an even surface at top.—*Martyn*.

These are,

562. Simple, (*simplex*, simple,) not compound.
Ex. *Thlaspi arvense*.

563. Compound, (*compositus*, composé,) formed of several small corybuses. Ex. *Gnaphalium stæchas*.

☞ 564. Paniculate, (*paniculati*, paniculees,) in panicles.

Observation. A panicle is a species of inflorescence, in which the flowers or fruit are scattered on peduncles, variously subdivided, as in Oats, and some of the grasses.

These are,

565. Pressed together, (*coarctata*, serrée,) close, condensed. Ex. *Agrostis sylvatica*.

Observation. Opposed to the next term.

566. One-sided, (*unilateralis*, unilatérale,) formed on one side.

567. Divaricate, (*divaricata*, écartées,) spread out. Ex. *Briza*.

Observation. When the pedicles form an obtuse angle with the main peduncle.—*Martyn*.

☞ 568. Umbellate, (*umbellati*, ombellées,) in the form of an umbel.

Observation. An umbel is a receptacle stretching out into filiform proportioned peduncles from the same centre.

These are,

569. Sessile, (*sessilis*, sessile,) immediately placed upon the stem. Ex. *Sisum nodiflorum*.

570. Pedunculed, (*pedunculata*, pédonculée,) with peduncles interposing.

571. Simple, (*simplex*, simple,) having only one set of rays. Ex. *Anthriscus pecten*.

572. Compound, (*composita*, composée,) when each peduncle bears, instead of a flower, another umbel, which, as being smaller than the other, is called an umbellet, or umbellule.

573. Partial, (*partialis*, partielle,) a partial umbel, otherwise called umbellule, is when a smaller umbel proceeds from the general, or universal umbel.

Observation. The larger set of rays constitutes the universal, or general umbel, and the second, or subordinate set, the partial umbel.—*Martyn*.

☞ 574. Involucred, (*involucrata*, munie d'un involucre,) having an involucre.

Observation. An involucre consists of small leaves, placed at the origin of the peduncles, or rays of umbels. It is a species of Calyx, which see, No. 624.

575. Naked, (*nuda*, dépourvue d'involucre,) without an involucre.

576. Globose, (*globosa*, globuleuse,) of a round appearance.

577. Convex, (*convexa*, convexe,) rising towards the middle.

578. Flat, (*plana*, plane,) having a flat surface.

579. Unequal, (*inæqualis*, inégale,) when the flowers of the circumference differ from those of the disk.

☞ 580. Cymose, (*cymosi*, en cyme,) disposed in a cyme.

Observation 1. A cyme is when the inferior, or general umbel, is true, but the superior, or partial umbel, false, as not proceeding from a point or centre.

2. Linnæus explains it to be an aggregate flower, composed of several florets, sitting on a receptacle, producing all the primary peduncles from the same point, but having the partial peduncles scattered or irregular, all fastigate, i. e. forming a flat surface at top.—As the Corymbus, Cyme, and Umbel, bear much resemblance, it may be right to put together, and discriminate these three kinds of inflorescence :

1. In the *Corymbus*, the peduncles take their rise from different heights ; but the lower ones being longer, they all form nearly an even surface at top.

2. In the *Cyme*, the peduncles take their rise from the same centre, but the subdivisions are irregular.

3. In the *Umbel*, the peduncles take their rise from the same centre, and the whole is disposed with a striking regularity.—*Martyn*.

581. Sessile, (*sessilis*, sessile, connected immediately with the stem. Ex. *Sedum aizoon*.)

582. Trifid, (*trifid*, trifide,) three-cleft. Ex. *Sedum Acre*.

583. Quadrifid, (*quadrifida*, quadrifide,) four-cleft. Ex. *Crassula rubens*.

584. Tripartite, (*tripartita*, tripartite,) divided into three parts. Ex. *Sambucus ebulus*.

585. Bracteate, (*bracteata*, munie de bractées,) having a bractea.

586. Naked, (*nuda*, nue,) without such investment. Ex. *Cornus sanguinea*.

☞ 587. Spadiceous, (*spadicei*, portées sur un spadix,) having a spadix. Palms, Arums, &c.

Observation. A sort of aggregate flower, having a com-

mon receptacle, bearing many florets, usually surrounded by a spathe.

These are,

588. Simple, (*simplex*, simple.) Ex. *Arum maculatum*.

589. Branched, (*ramosus*, rameaux,) as in Palms.

590. Spathed, (*spatha involutus*, enveloppé dans une spathe,) surrounded by a spathe, a species of calyx.

591. Naked, (*nudus*, dépourvu du spathe,) without such investment.

592. Flat, (*complanatus*, aplati,) as if pressed betwixt the fingers.

VII. Calyx.

☞ 593. Calyx, (*calyx*, calice,) is the outer expanded part of a flower. Vide No. 649.

VIII. Perianth.

☞ 594. Perianth, (*perianthium*, perianth,) is a calyx contiguous to the flower.

Observation. The leaf is *monophyllous*, composed of one leaf, or *polyphyllous*, consisting of several, cut into various forms.

IX. Segments.

595. Lobed, (*lobatus*, lobé,) when the segments are round at their summits, instead of pointed.

596. Partite, (*partitus*, divisé,) when the calyx is cut nearly to its base. Passiflora.

597. Bifid, (*bifidus*, bifide,) cleft into two parts, but not so deep as partite.

598. Multifid, (*multifidus*, multifidè, ou lacinié,) many cleft.

599. Tripartite, (*tripartitus*, tripartite,) deeply cleft into 3 divisions, or parts, &c. &c.

600. Equal, (*æqualis*, égal,) the divisions all of the same size.

601. Unequal, (*inæqualis*, inegal,) some of the divisions larger than the rest.

Observation. Of unequal sizes. Ex. Pinguicula.

602. Irregular, (*irregularis*, irrégulier,) the parts greatly disproportioned.

603. Labiate, lipped, (*labiatus*, labié,) the divisions formed above and beneath, in the form of lips.

X. Surface.

604. Coloured, (*coloratus*, coloré,) varying from a green colour. Punica.

605. Petal-like, (*petaloideus*, pétaloide,) resembling a petal. Passiflora.

606. Smooth, (*glaber*, glabre,) without hairs, or roughness of any kind.

607. Downy, (*pubescens*, pubescent,) having soft hairs.

608. Villose, (*villosus*, velu,) having still finer hairs.

609. Rough, (*hirtus*, herissé,) armed with bristles.

610. Tomentose, (*tomentosus*, tomenteux,) covered with down.

611. Striated, (*striatus*, strié,) streaked.

Observation. Scored with very slender lines.—*Martyn*.

XI. Duration.

612. Caducous, (*caducus*, caduc,) falling off almost immediately. Ex. *Papaver*.

Observation. Falling before the corolla is well unfolded.—*Martyn*.

613. Deciduous, (*deciduus*, tombant,) falling off after the corolla has expanded. Ex. *Berberis*.

614. Permanent, (*persistens*, persistent,) remaining after the fall of the corolla. *Borago*.

Observation. Remaining usually with the fruit, and often serving the office of pericarp.—*Martyn*.

XII. Size.

615. Long, (*longus*, long,) longer than the tube of the corolla.

616. Short, (*abbreviatus*, court,) shorter than the tube of the corolla.

617. Intermediate, (*mediocris*, mediocre,) of the length of the tube of the corolla.

XIII. *Common Calyx.*

618. Simple, (*simplex*, simple,) composed of one row of leaflets. Ex. *Tragopogon*.

Observation. Opposed to calyceled and imbricate.—*Martyn*.

619. Double, or many ranked, (*gemino seu multiplici ordine*, sur deux ou sur plusieurs rangs,) leaves placed on two or more ranks.

620. Polyphyllous, (*polyphyllus*, polyphylle,) having many leaves.

621. Imbricated, (*imbricatus*, imbriqué,) leaves lying upon each other, like tiles of a house. *Centaurea*.

622. Squarrose, (*squarrosus*, raboteux,) consisting of scales, very widely divaricating, or spreading every way. Ex. *Carduus*.

623. Calyculate, or calyceled, (*calyculatus*, seu auctus, calyculé,) having a calycle, or little scales at the base, on the outside. Ex. *Bidens*.

Observation. Applied to the calyx, when not common, as where the scales are placed at the bottom of the pink.

XIV. *Involucre.*

624. Involucre, (*involucrum*, involucre,) is a calyx remote from the flower. Ex. *Geranium*.

Observation. These are small leaves placed at the foot of the umbels, in the (*umbellatæ*) applied also to the whirl, (*verticillatæ*) and also to other kinds of inflorescence.

625. Universal involucre, (*involucrum universale*, involucre universel,) is when these small leaves, leaflets, are placed at the origin of the universal involucre. Ex. Geranium, Meadia, Apium.

626. Partial involucre, (*involucrum partiale*, involucre partiel,) is when the leaflets are placed at the foot of a partial umbel. Ex. *Æthusa cynapium*.

Observation. These distinctions are of vast importance, as the fool's parsley, (*Æthusa cynapium*) a poisonous plant, is hardly to be distinguished from the common parsley, but by means of the leaves of the involucre. The fool's parsley has a partial involucre, consisting of three leaves, stationed at the foot of each umbellet.

627. Dimidiate, (*dimidiatum*, dimidiè,) placed only on one side. Ex. *Æthusa cynapium*.

Observation. Not going all round.

628. Monophyllous, (*monophyllum*, monophylle,) consisting of one leaf.

629. Polyphyllous, (*polyphyllum*, polyphylle,) consisting of several leaves.

630. Simple, (*simplex*, simple,) having only one set of rays. Ex. *Anthriscus pecten*.

Observation. Or having the receptacle divided once only.—*Martyn*.

631. Pinnatifid, (*pinnatifidum*, pinnatifide,) having the leaf divided transversely, by oblong horizontal segments, or jags, not extending to the mid-rib. Ex. *Daucus carota*.

XV. *Spatha*.

☞ 632. *Spathe*, (*spatha*, *spathe*,) is when the calyx opens longitudinally.

Observation. This calyx forms a kind of sheath, or hood, and belongs generally to flowers which produce a spadix, also to such as sometimes have no spadix. Ex. *Arum*, *Narcissus*, *Crocus*, *Iris*.

633. *Plane*, (*plana*,) flat and parallel in all its extent. Ex. *Calla*.

634. *Cucullate*, hooded, or cowled, (*cucullata*, *en cornet*,) wide at top, and drawn to a point below. Ex. *Geranium cucullatum*.

Observation. In shape of the paper rolled up conically by grocers, for small parcels of spices, also from a similitude in the form, this term was applied to the cowl, or large pendant cape of the upper garment, which turned up occasionally to cover the head.—*Mariyn*.

635. *Convolute*, (*convoluta*, *convolutée*,) rolled together like a scroll.

636. *Boat-shaped*, or *navicular*, (*cymbiformis*, *cymbiforme*,) resembling a boat in shape. Ex. *Renealmia*.

637. *One-valved*, (*univalvis*, *univalve*,) opening only on one side. Ex. *Arum maculatum*.

638. *Two-valved*, (*bivalvis*, *bivalve*,) opening on both sides. Ex. *Stratiotes*.

639. *Bipartite*, (*2-partita*, *2-partite*,) deeply cleft into two parts.

640. *Six-parted*, (*6-partita*, *6-partite*,) deeply cut into six parts.

641. One-flowered, (*1-flora*, *1-flore*,) bearing but one flower. *Narcissus poeticus*.

642. Many flowered, (*multiflora*, *multiflore*,) bearing many flowers. Ex. *Narcissus jonquilla*.

XVI. *Glume*.

☞ 643. Glume, (*gluma*, *glume*,) the outer husk of corn and grasses.

644. One-flowered, (*1-flora*, *1-flore*,) enclosing one flower.

645. Two-flowered, (*2-flora*, *2-flore*,) enclosing two flowers, and so on.

XVII. *Calyptra*.

☞ 646. Calyptra, (*calyptra*, *calypstre*,) the calyx of mosses.

Observation. Like a hood, or extinguisher of a candle.

XVIII. *Volva*.

☞ 647. Volva, (*volva*, *volve*,) the calyx mushrooms.

Observation. This appears like a torn fringe surrounding the pedestal of the mushroom or fungus tribe.

XIX. *Corolla*.

☞ 648. Corolla, (*corolla*, *corolle*,) the delicate inner leaves of the flower.

Observation. Linnæus supposed that it was composed of the *liber*, or inner bark of the plant. It may be distinguished from the calyx, usually, by the fineness of its texture, and brilliancy of colour. The calyx is generally of a rough and thick texture, and usually green. But there are many exceptions; the perianth in *bartfia*, is coloured: whereas that of *daphne laureola* is green. Linnæus makes the distinction betwixt the *calyx* and *corolla*, to consist in the former having its segments or petals alternate with the stamina; whereas the latter has its parts or leaflets opposite to them. This appears from the inspection of the class *tetrandria* and *pentandria*, &c.

XX. *Number of Parts.*

649. Monopetalous, (*monopetala*, monopétale,) consisting only of one petal, or coloured leaf. Ex. *Primula*.

650. Dipetalous, (*dipetala*, depétale,) having two petals. Ex. *Circea*.

651. Tripetalous, (*tripetala*, tripétale,) having three petals. Ex. *Tradescantia*.

652. Tetrapetalous, (*tetrapetala*, tétrapétale,) composed of four petals. Ex. *Cheiranthus*.

653. Pentapetalous, (*pentapetala*, pentapétale,) consisting of five petals, as the Dog Rose

654. Hexapetalous, (*hexapetala*, hexapétale,) composed of six petals. Ex. *Lilium*.

655. Polypetalous, (*polypetala*, polypétale,) consisting of many petals. Ex. *Nymphæa*.

Observation 1. Linnæus uses this term in opposition to the *monopetalous* corolla. By other writers it is usually put down for a flower, consisting of more than six petals.—*Martyn*.

2. The office of the petals is to guard the internal and more essential parts of the flower, also to furnish a resting place for insects, in search of honey, and to absorb light, and liberate azotic gas, for the benefit of the flower. Darwin esteems the corolla as the lungs of the stamens and pistils, and with great probability.—*Smith.*

656. Regular, (*regularis*, régulière,) equal in the figure, size, and proportion of parts, of which we enumerate the following kinds :

XXI. *Monopetalous.*

XXII. *Regular Corollas.*

657. Bell-shaped, or campanulate, (*campanulata*, campanulée,) having the form of a bell. Ex. Campanula.

658. Globular, or globose, (*globosa*, globuleuse, en grelot,) in the form of a bell, but having the orifice pursed in, so that it has a roundish appearance. Ex. Andromeda.

659. Funnel-shaped, or infundibuliform, (*infundibuliformis*, infundibuliform, en entonnoir,) having a conical border placed upon a tube. Ex. Nicotiana.

660. Salver-shaped, or hypocrateriform, (*hypocrateriformis*, hypocratériforme,) having the border spread out horizontally, and placed upon a tube. Ex. Phlox.

Observation. This resembles an old-fashioned salver.—*Martyn.*

661. Wheel-shaped, rotate, (*rotata*, en roue,) the limb spreading flat, with scarce any tube. Ex. *Kalmia*.

Observation. Without any tube.—*Martyn*.

XXIII. *Their Tube.*

Observation. *Tubus* is a Latin word, signifying a tube, or hollow pipe, and is put for the lower, narrow, hollow part of a monopetalous, or one-petalled corolla, by which it is fixed into the receptacle.---*Martyn*.

662. Straight, (*rectus*, droit,) without any bend. Ex. *Pervinca*.

663. Bent, or bowed, (*arcuatus*, courbé,) having some bend. Ex. *Duranta*.

664. Cylindrical, or round, (*cylindricus*, cylindrique,) without any angles.

665. Filiform, (*gracilis*, délié, filiforme,) fine like a thread.

666. Bellied, or ventricose, (*ventricosus*, ventru, renflé,) more swelled at the middle, than at either its base or orifice.

667. Appendaged, (*appendiculatus*, appendicule,) furnished with some additions distinct from the tube.

XXIV. *Orifice.*

Observation. *Faux* is a Latin term, signifying throat, being the opening of the tube of the corolla. Where the claws of the polypetalous corolla join, so as to form a tube, this term is likewise applied.---*Martyn*.

668. Closed, (*clausa*, clos, fermé,) as if strangled at its entrance.

669. Dilated, (*dilatata*, dilaté, ouvert,) more open than the other part of the tube. Ex. *Mirabilis*.

670. Five-sided, pentagonal, (*pentagona*, pentagone,) having five distinct regular sides.

671. Prominent, (*prominens*, saillant,) the tube forming a kind of starting out underneath the limb.

672. Naked, (*nuda*, nud,) without any hairs, or appendages.

673. Crowned, (*coronata*, couronné,) bordered by certain projections, somewhat resembling a crown.

674. Cloathed, (*villosa*, pilosa, velu,) furnished with hairs, &c.

675. Tuberculated, or sealed, (*glandulosa*, squamosa, tuberculé, écailleux,) furnished with glands, or with a kind of scales, which obstructs more or less the entrance into the tube.

XXV. Limb.

Observation. The limb is the border or upper dilated part of a monopetalous corolla. Since we have only the word *border* in English, to express the upper spreading part, both in this and the polypetalous corolla, it would be perhaps better to preserve the Latin term *LIMBUS* (*limb*) to this. For *limb*, as applied to express the border, we have the authority of astronomers.

676. Plicate, (*plicatus*, plissé,) presenting regular foldings, like a fan.

677. Spreading, (*putens*, étalé, ouvert,) forming a right angle with the tube.

678. Straight, (*rectus*, droit,) parallel to the axis of the tube.

679. Reflexed, (*reflexus*, renversé,) bent back towards the tube.

XXVI. *Monopetalous.*

XXVII. *Irregular corollas.*

680. Ringent, (*labiata*, labiée,) having the border of the corolla like two lips, and these open, placed upon a tube. Ex. *Lamium album*.

Observation. A ringent flower is an irregular one-petalled corolla, the border of which is usually divided into two parts, called the *upper* and *lower lips*. The first has sometimes the name of *GALEA*, or *HELMET*: the second of *BARBA*, or *BEARD*. The opening between them is named *RIC-TUS*, or the *gape*: the opening of the tube, *FAUX*, the *throat* or *jaws*: the prominent swelling in the *Faux* is *PALATUM*, the *palate*: the upper part of the tube is *COLLUM*, the *neck*. ---*Martyn*.

681. Personate, (*personata*, personné,) having the border of the corolla like the lips, the mouth closed, greatly resembling the snout of an animal, also placed upon a tube. *Antirrhinum*.

Observation. A personate, or masked corolla, is defined by Linnæus to be "a ringent corolla, but with the lips closed at the inside of the palate;" but *ringent*, which expresses *gaping*, is a contradiction in terms. It would be better to define it a species of labiate corolla, with the lips closed. ---*Martyn*.

682. Tubular, (*tubulata*, *tubulée*,) is when the floret of a compound flower ends in a tube, the border being five cleft. Ex. Artichoke.

Observation. A tubulous floret is one which has a bell-shaped border, with five reflex segments, rising from a tube.---*Martyn*.

683. Ligulate, (*ligulata*, *ligulée*, ou en languette,) another species of compound flower, where the florets have their corollets spreading out flat, and placed upon a tubular base.

Observation. Petal of the corolla like the strap of a shoe.

684. Compound, (*composita*, *composée*,) consisting of both kinds of corollas, viz. tubular and ligulate florets.

Observation. The word *compound* is used to express where several florets are enclosed in a common perianth, and on a common receptacle, with the anthers connected in a cylinder round the tube. It is also again employed to express where *tubular* florets are found in the *disk*, or centre, and *ligulate* in the *ray*, or circumference. They are the radiati, rayed flowers of Tournefort.

XXVIII. Regular Polypetalous.

685. Rosaceous, or rose-like, (*rosacea*, *rosacée*,) consisting of four or more regular petals, inserted into the receptacle by a short broad claw, as in the Dog Rose.

Observation. The Piony, Poppy, &c. are examples.

686. Cruciform, or cross-shaped, (*cruciformes*,

seu cruciatæ, cruciforme,) composed of four equal petals, spreading out in the form of a cross.

Observation. The four petals have the form of a St. Andrew's cross, the lower part is called the unguis, or claw, and the upper part tolamen, or border, each petal having the appearance of a battledore. The claw is somewhat longer than the border.

687. Pink-like, (*caryophyllata, fleur en œillet,*) consisting of five regular petals, ending at the bottom in a long narrow claw.

Observation. Resembling a single pink or carnation. The petals are in form like the former.

XXIX. *Irregular Polypetalous.*

688. Papilionaceous, or butterfly-shaped, (*papilionacea, papillonacée,*) consisting of four petals, producing the appearance of a butterfly on the wing.

Observation. These turn against the wind, as may be remarked on a blustering day, presenting the banner to the wind. The lower petal is shaped like a boat, and is called *carina*, or keel: the upper petal, which spreads and rises upwards, is called *vexillum*, the standard or banner: the two side ones stand singly, being separated by the keel, and are called *alæ*, the wings. The keel is sometimes split, and then the corolla is properly five-petalled. Sometimes these are called *Pea-blossomed* flowers, the pea being the most remarkable genus of this natural tribe.

689. Anomalous, (*anomala, anomale,*) formed of different sized petals, the flowers not being papilionaceous. Ex. *Aconitum*.

XXX. *Duration.*

690. Caducous, (*caduca*, *caduque*,) the corolla falling off before the dropping of the stamina.

691. Deciduous, (*decidua*,) falling with the stamina.

692. Marcescent, (*marcescens*, *marcescente*,) withering, but not dropping.

XXXI. *Colour.*

693. White, (*alba*, *blanche*.)

694. Purple, (*purpurea*, *pourpre*.)

695. Scarlet, (*coccinea*, *ecarlate*.)

696. Violet, (*violacea*, *violette*.)

697. Blue, (*cærulea*, *bleue*.)

698. Azure, (*cyanea*, *azurée*.)

699. Green, (*viridis*, *verte*.)

700. Yellow, (*lutea*, *jaune*.)

701. Brown, (*fusca*, *brune*.)

702. Variegated, (*variegata*, *panachée*,) of different colours.

Observation. It may be just remarked, that the same terms apply equally to the corolla, as the calyx, under head IX. p. 87, as *lobed*, *partite*, &c. and a segment is in Latin called *lacinia*, and the segment of a segment, *lacinule*, (*lacinula*.)

XXXII. *Of the Nectary.*

703. Nectary, (*nectarium*, *la nectaire*,) properly speaking, that part which secretes and contains the honey. Ex. Passion-flower.

Observation. The term nectary is a complex idea. Every singular appearance of the flower, whether it secretes honey, or not, if none of the seven parts of fructification, is called by botanists, the nectary. The following are amongst the most prominent examples :

704. A spur, or horn, (*nect. corniculatum*,) as in larkspur, (*delphinium*.)

705. A small open cup, (*cyathus apertus*,) small hollow cups, circularly ranged in the interior of the flower, as in hellebore, (*helleborus*.)

706. A cup closed by a lid, (*cyathus clausus*,) a similar arrangement of nectaries, as in the preceding, but closed with a lid, as in devil in the bush, (*nigella*.)

707. Like the cut finger of a glove, (*nect. campanulatum*,) hollowed like the finger of a glove cut off, but depending, as in renealmia, *limodorum*.

708. Like a funnel, (*nect. infundibuliforme*,) as in narcissus.

709. Like a slipper, (*nect. calceiforme*,) as in lady's slipper, (*cypripedium*.)

710. A simple cavity, (*fovea excavata*,) an excavation at the base of each petal, as in crown imperial, (*fritillaria*.)

711. A naked channel, (*linea longitudinalis excavata*,) a hollow longitudinal groove in a petal, as in white Lily, (*lilium album*.)

712. Villous projections, (*nect. barbatum*,) numerous villi placed upon the petal, as in some species of Iris.

713. Filaments without anthers, imitating sta-

mina, (*filamenta sine antheris, veluti stamina*,) filiform projections like stamina, each terminated with a clasper, as in Arum.

714. Petal-like, (*nec. petalum mentiens*,) as in Snow-Drop, (*Galanthus*,) and Trollius.

715. Resembling a nest of doves, (*columbulos referens*,) five cornuted nectaries, the whole resembling much a nest of doves, as in Columbine, (*Aquilegia*.)

716. Resembling dolphins, (*figuram delphini repræsentans*,) like a dolphin, elevated on a pillar or filament, as in Monkshood, (*Aconitum*.)

717. Like a tongue, (*veluti lingua*,) as in Indian Reed, (*Canna Indica*.)

718. Resembling rays of glory, (*filamenta versicolorata in orbem posita*,) projections in the form of rays of glory, as in the several Passion-flowers.

719. Giving the appearance of various animals, (*nect. formam animalium mentiens*,) as in the several Orchises.

720. A naked scale, (*squama nuda*,) as in Ranunculus and Willow.

721. A fringed scale, (*squama fimbriata*,) as in Parnassia.

722. Glands upon the stamens, (*glandulæ filamentis adpersæ*,) as in Dittany, (*Dictamnus*.)

723. Glands at the insertion of stamens, (*glandulæ filamentis positæ*,) as in the Stock.

XXXIII. *The Seven constituent Parts of Flowers.*

Flowers, although apparently so diversified, consist only of seven Parts :

724. I. Pistil, (*pistillum*, le pistil,) in the centre of the flower.

725. II. The Stamen, (*stamen*, les stamens,) exterior to this.

Observation. Both these are *projecting* bodies, being extensions of the *pith* and *wood*.

The Pistil is discriminated by a *swollen base*, which is the seed-vessel, or *Germen*, which being opened, discloses the seeds.

The Stamen is discriminated by having a *part which forms and contains* coloured *Pollen*, hence called an *Anther* by botanists.

A perfect Pistil is composed of three Parts.

726. The Stigma, (*stigma*, le stigmate,) at top, rarely absent, though sometimes obscure.

727. The Style, (*stylus*, le style,) elevating the stigma, not absolutely essential.

728. The Germen, (*germen*, l'ovaire,) or seed-vessel in the infant state, always present.

A perfect Stamen is composed of two Parts.

729. The Anther, (*anthera*, l'anthère,) at top, containing the fertilizing dust, (*pollen*, Poussière fécondante,) always present.

730. The Filament, (*filamentum*, le filet,) elevating the anther, not so essential, being absent in some flowers.

For the protection and nourishment of the central organs of vegetables, (viz. the Pistilla and

Stamina,) Nature has usually furnished two other Parts.

731. III. The Corolla, (*corolla*,) interior.— Vide No. 648.

732. IV. The Calyx, (*calyx*,) exterior. Vide No. 593.

Observation. Both expanded bodies, being expansions of the bark and rind.

As an appendage to the Corolla, there is found in some plants,

733. V. The Nectary, (*nectarium*,) for the secreting and containing of honey. Vide No. 703.

734. VI. The Pericarp, (*pericarpium*,) which is only the *germen enlarged*, filled with mature seeds. Vide No. 736.

735. VII. The Receptacle, (*receptaculum*,) the basis upon which all the other parts rest.

Observation. This last part is very conspicuous in the Poppy, and the compound flowers.

XXXIV. *The different Pericarps.*

Ten different sorts of Pericarps, or Seed-vessels, are enumerated by botanists.

736. I. Drupe, (*drupa*, le drupe,) is a pulpy seed-vessel, encompassing a stone, or nut.

737. II. Pome, (*pomum*, la pomme,) is a pulpy seed-vessel, not enclosing a stone, or nut, in the middle of which are radiated cells for the reception of seeds.

738. III. Berry, (*bacca*, la baie,) is a pulpy seed-vessel, without radiated cells in the centre, having the seeds irregularly dispersed throughout the pulp.

739. IV. Follicle, (*folliculus*, le follicule,) is a membranous seed-vessel, of one valve, opening longitudinally, i. e. on the side, and having no apparent suture for fastening or attaching the seeds within it.

740. V. Silique, (*siliqua*, la silique,) is a membranous seed-vessel, of two valves, with a dissepiment intervening, seeds attached alternately to the upper and under sutures, seed-vessel longer than broad, flowers cruciform.

741. VI. Silicle, (*silicula*, la silicule,) has the same definition as the last, except that the seed-vessel is broader than long.

742. VII. Legume, (*legumen*, le légume,) is a membranous seed-vessel, of two valves, no dissepiment, seeds attached to the superior suture only, flowers papilionaceous.

743. VIII. Capsule, (*capsula*, la capsule,) is a membranous seed-vessel, varying in the number of valves, without the characters of pericarps 739, 740, 741, 742, as defined above, splits in a determinate manner into valves.

744. IX. Nut, (*nux*, la noix,) a hard stone, or shell, enclosing a kernel, but without a pulpy covering, in which case it would be a *Drupe*.

745. X. Strobile, (*strobilus*, le cone,) is a seed-vessel composed of ligneous scales, which embrace the seeds within their bosom.

XXXV. *Terms applied to Pericarps.*

746. Valves, (*valvulæ*, les valves,) are the external pieces forming the sides of the seed-vessel.

747. Sutures, (*suturæ*, les sutures,) the edges, or margins, by which the valves are connected.

748. Column, (*columella*, la columelle,) a central point of union of the partitions in the seed-vessel.

Observation. Often serving the office of receptacles of the seeds.

749. Partitions, (*dissepimenta*, les cloison,) the division of the seed-vessel into cells.

750. Cells, (*loculi*, les logues,) hollow places for the reception of the seeds.

751. One-seeded, (*monospermus*, monosperme.)

752. Two-seeded, (*dispermus*, disperme,) and so on.

XXXVI. *The different Kinds of Seeds.*

The following are striking examples :

753. A double seed, each resembling a boat, (*semen duplex*, *naviculæ formam repræsentans*,) as in the Umbelliferæ.

754. Kidney-shaped, with heptagon and pentagon cells, (*reniforme*, *cellulis pentagonis et heptagonis*,) as in Poppy-seed, (*Semen Papaveris*.)

755. Ovate, (*ovatum*,) shaped like an egg, as in Eyebright, (*Euphrasia*.)

756. Globular, (*globosum*,) as in the Pea, (*Pisum*,) and Coriander, (*Coriandrum*.)

757. Square, (*tetragonum*,) having four sides, as in Foxglove, (*Digitalis*.)

758. Triangular, (*triangulare*,) having three sides, as in Tansy, (*Tanacetum*.)

759. Cylindric, (*oblongum*,) oblong, as in St. John's wort, (*Hypericum*.)

760. Resembling a particular shell, (*figuram conchæ mentiens*,) as in the Wood-sorrel, (*Oxalis*.)

761. Ditto, as in Purslane, (*Portulacca*.)

762. Ditto, as in Cinquefoil, (*Potentilla*.)

763. Resembling the head of a monkey, (*figuram cynocephali repræsentans*,) as in the Coconut.

764. A single crown, (*corona simplex*,) as in Ragwort, (*Senecio*.)

765. A double crown, (*corona duplex*,) as in Holy Thistle, (*Centaurea benedicta*.)

766. A shuttle-cock, (*corona pennacea*,) as in Dandelion, (*Leontodon*.)

XXXVII. Terms applied to Seeds.

767. Aril, (*arillus*, l'arille,) is the outer coat of the seed.

768. Eye, (*hilum*, umbilic externe,) an oblong scar, marking the place where the seed was affixed by an umbilical cord to the seed-vessel.

769. Heart, (*corculum*, l'embryon,) the rudiment of the young plant within the seed.

770. Plume, (*plumula*, la plumule,) the ascending part of the corcule, or infant stem.

771. Radicle, (*radicula*, la radicule,) the descending part, or infant root.

772. Cotyledons, (*cotyledones*, les cotylèdons,) the side-lobes, furnishing nourishment to the corculum.

773. Seminal leaves, (*folia seminalia*, les lobes séminaux,) the first leaves of the plantule, serving the office of cotyledons, or lobes.

774. Pappus, (*pappus*, l'aigrette,) a feathery crown.

775. Stipe, (*stipes*, le stipe,) a thread connecting the pappus to the seed.

XXXVIII. *The Twenty-four Classes of the Sexual System of Linnæus.*

776. *First class.* Monandria. One Stamen.

777. *Second class.* Diandria. Two Stamens, or Stamina.

778. *Third class.* Triandria. Three Stamens.

779. *Fourth class.* Tetrandria. Four Stamens, of equal length.

780. *Fifth class.* Pentandria. Five Stamens, anthers not united.

781. *Sixth class.* Hexandria. Six Stamens, all of equal length.

782. *Seventh class.* Heptandria. Seven Stamens.

783. *Eighth class.* Octandria. Eight Stamens.
784. *Ninth class.* Enneandria. Nine Stamens.
785. *Tenth class.* Decandria. Ten Stamens,
filaments separate.

786. *Eleventh class.* Dodecandria. Twelve
Stamens, to nineteen, inserted on the recepta-
cle.

787. *Twelfth class.* Icosandria. Twenty, or
more Stamens, inserted upon the calyx or co-
rolla.

788. *Thirteenth class.* Polyandria. Many Sta-
mens, inserted into the receptacle.

789. *Fourteenth class.* Didynamia. Four Sta-
mens, two long, two short ; flowers ringent.

790. *Fifteenth class.* Tetradynamia. Six Sta-
mens, four long, two short ; flowers cruciform.

791. *Sixteenth class.* Monadelphia. Filaments
united at bottom, but separate at top.

792. *Seventeenth class.* Diadelphia. Filaments
united in two sets.

793. *Eighteenth class.* Polyadelphia. Fila-
ments united in three, or more sets.

794. *Nineteenth class.* Syngenesia. Anthers
united. Five Stamens.

795. *Twentieth class.* Gynandria. Stamens in-
serted on the pistil, or on a pillar elevating the
pistil.

796. *Twenty-first class.* Monœcia. Stamens
and pistils in separate corollas, upon the same
plant.

797. *Twenty-second class.* Diœcia. Stamens

and pistils in distinct corollas, upon different plants.

798. *Twenty-third class.* Polygamia. Various situations. Stamens only, or pistils only, along with bisexual flowers.

799. *Twenty-fourth class.* Cryptogamia. Stamens and pistils inconspicuous.

XXXIX. General Observations.

Class III. Triandria, contains chiefly the natural tribe of *grasses*. Class V. Pentandria, has the *lurid plants*, a poisonous tribe, also the *umbelliferæ*. Class VII. Hexandria, the *lilies*. Class XII. Icosandria, contains the *edible fruit*. Class XIII. Polyandria, has many *poisonous plants*. Class XIV. Didynamia, has the natural tribe of *ringent flowers*. Class XV. Tetradynamia, contains the natural tribe of *cruciform flowers*, which are antiscorbutic. Class XVI. Monadelphia, is composed chiefly of the *mallow tribe*. Class XVII. Diadelphia, consists of the *papilionaceous tribe*, which produce mostly edible seeds. Class XVIII. Syngenesia, possess the *compound flowers*. The other classes are not composed of *natural tribes*, except Class XXIV. Cryptogamia, which has the natural tribes of *ferns, mosses, seaweeds, and mushrooms*.

XL. *Classes and Orders of the Sexual System, explained and illustrated by Examples.*

☞ 800. Class I. Monandria, (*one stamen*), contains two Orders.

801. Order 1. *Monogynia*, having one Pistillum. Ex. *Salicornia*, (*jointed glasswort*.) *Canna* F.* (*Indian flowering-reed*.)

802. Order 2. *Digynia*, having two Pistilla. Ex. *Callitriche*, (*star-headed water chickweed*.) *Blitum*, (*strawberry spinach*.)

☞ 803. Class II. *Diandria*, (*two stamina*), contains three Orders.

804. Order 1. *Monogynia*, having one Pistillum. Ex. *Ligustrum*, (*privet*.) *Veronica*, (*speedwell*.)

805. Order 2. *Digynia*, having two Pistilla. Ex. *Anthoxanthum*, (*sweet-scented vernal-grass*.)

806. Order 3. *Trigynia*, having three Pistilla. Ex. *Piper*, F. (*pepper*.)

☞ 807. Class III. *Triandria*, (*three stamina*), contains three Orders.

808. Order 1. *Monogynia*, having one Pistillum. Ex. *Valeriana*, (*valerian*.) *Crocus*, (*saffron*.)—*Iris*.

809. Order 2. *Digynia*, having two Pistilla. Ex. *Gramina* *Pleraque*, (*most of the grasses*.)

810. Order 3. *Trigynia*, having three Pistilla. Ex. *Montia*, (*water chickweed*.)

☞ 811. Class IV. *Tetrandria*, (*four equal stamina*), contains three Orders.

812. Order 1. *Monogynia*, having one Pistillum. Ex. *Dipsacus*, (*teasel*.) *Scabiosa*, (*scabious*.) *Plantago*, (*plaintain*.)

* F. means foreign, those not marked so, are the natural produce of England.

813. Order 2. *Digynia*, having two Pistilla.
Ex. *Aphanes*, (*parsley-piert.*)

814. Order 3. *Tetragynia*, having four Pistilla. Ex. *Potamogeton*, (*pondweed.*)

☞ 815. Class V. *Pentandria*, (*five stamina*), contains six Orders.

816. Order 1. *Monogynia*, having one Pistillum. Ex. *Primula*, (*primrose.*) *Convolvulus*. — *Lonicera*, (*honey-suckle.*)

817. Order 2. *Digynia*, having two Pistilla. Ex. *Gentiana Centaurium*, (*centaury.*) *Conium*, (*hemlock.*) *Ulmus*, (*elm.*)

818. Order 3. *Trigynia*, having three Pistilla. Ex. *Viburnum*, (*wayfaring tree.*) *Sambucus*, (*elder.*)

819. Order 4. *Tetragynia*, having four Pistilla. Ex. *Parnassia*, (*grass of Parnassus.*)

820. Order 5. *Pentagynia*, having five Pistilla. Ex. *Statice*, (*thrift.*) *Linum*, (*flax.*) *Drosera*, (*sundew.*)

821. Order 6. *Polygynia*, having many Pistilla. Ex. *Myosurus*, (*mouse-tail.*)

☞ 822. Class VI. *Hexandria*, (*six equal stamina*), contains five Orders.

823. Order 1. *Monogynia*, having one Pistillum. Ex. *Hyacinthus*, (*hyacinth.*) *Convallaria*, (*lily of the valley.*) *Narcissus*, (*daffodil.*)

824. Order 2. *Digynia*, having two Pistilla. Ex. *Oryza*. F. (*rice.*)

825. Order 3. *Trigynia*, having three Pistilla. Ex. *Rumex*, (*dock.*) *Colchicum*, (*meadow-saffron.*)

826. Order 4. *Tetragynia*, having four Pistilla. Ex. *Petiveria*, F. (*guinea henweed*.)

827. Order 5. *Polygynia*, having many Pistilla. Ex. *Alisma*, (*water plaintain*.)

☞ 828. Class VII. *Heptandria*, (*seven stamina*,) contains four Orders.

829. Order 1. *Monogynia*, having one Pistillum. Ex. *Trientalis*, (*chickweed*, *winter green*.) *Æsculus*, F. (*horse chestnut*.)

830. Order 2. *Digynia*, having two Pistilla. Ex. *Limeum*, F.

831. Order 3. *Trigynia*, having three Pistilla. Ex. *Sarurus*, F. (*lizard's-tail*.)

832. Order 4. *Heptagynia*, having seven Pistilla. Ex. *Septas*, F.

☞ 833. Class VIII. *Octandria*, (*eight stamina*,) contains four Orders.

834. Order 1. *Monogynia*, having one Pistillum. Ex. *Epilobium*, (*willow herb*.) *Erica*, (*heath*.) *Daphne*, (*mezerion*.)

835. Order 2. *Digynia*, having two Pistilla. Ex. *Galenia*, F.—*Weinmannia*, F. (*mountain chickweed*.)

836. Order 3. *Trigynia*, having three Pistilla. Ex. *Polygonum*, (*bistort*.) *Persicaria*, (*knot grass*.)

837. Order 4. *Tetragynia*, having four Pistilla. Ex. *Paris*, (*herb Paris*.) *Adoxa Moschatelina*, (*tuberous moschatel*.)

☞ 838. Class IX. *Enneandria*, (*nine stamina*,) contains three Orders.

839. Order 1. *Monogynia*, having one Pistillum. Ex. *Laurus*, F. (*laurel*.)

840. Order 2. *Trigynia*, having three Pistilla. Ex. *Rheum*, F. (*rhubarb*.)

841. Order 3. *Hexagynia*, having six Pistilla. Ex. *Butomus*, (*flowering rush*.)

☞ 842. Class X. *Decandria*, (*ten stamina*,) contains five Orders.

843. Order 1. *Monogynia*, having one Pistillum. Ex. *Arbutus*, (*strawberry tree*.) *Ruta*, F. (*rue*.) *Pyrola*, (*winter green*.)

844. Order 2. *Digynia*, having two Pistilla. Ex. *Saxifraga*, (*saxifrage*.) *Dianthus*, (*pink*.) *Saponaria*, (*soap-wort*.)

845. Order 3. *Trigynia*, having three Pistilla. Ex. *Cucubalus*, (*spatling poppy*.) *Stellaria*, (*stichwort*.)

846. Order 4. *Pentagynia*, having five Pistilla. Ex. *Sedum*, (*stonecrop*.) *Oxalis*, (*wood-sorrel*.) *Agrostemma*, (*cockle*.) *Lychnis*, (*meadow pink*.)

847. Order 5. *Decagynia*, having ten Pistilla. Ex. *Basella*, F. (*American night-shade*.)

☞ 848. Class XI. *Dodecandria*, (*twelve to nineteen stamina*,) contains six Orders.

849. Order 1. *Monogynia*, having one Pistillum. Ex. *Asarum*, (*asarabacca*.) *Lythrum*, (*purple striped loosestrife*.)

850. Order 2. *Digynia*, having two Pistilla. Ex. *Agrimonia*, (*agrimony*.) *Heliocarpus*, F.

851. Order 3. *Trigynia*, having three Pistil-

1a. Ex. Reseda, (*dier's weed.*) Euphorbia, (*spurge.*)

852. Order 4. *Pentagynia*, having five Pistilla. Ex. Glinus, F.

853 Order 5. *Dodecagynia*, having twelve Pistilla. Ex. Sempervivum, (*houseleek.*)

854. Order 6. *Polygynia*, having many Pistilla. Ex. Alisma, F.

☞ 855. Class XII. *Icosandria*, (*twenty or more stamina on the calyx or corolla,*) contains five Orders.

856. Order 1. *Monogynia*, having one Pistillum. Ex. Prunus, (*black thorn.*) Myrtus, F. (*myrtle.*) Amygdalus, F. (*almond.*)

857. Order 2. *Digynia*, having two Pistilla. Ex. Cratægus, (*hawthorn.*)

858. Order 3. *Trigynia*, having three Pistilla. Ex. Sorbus, (*mountain ash.*)

859 Order 4. *Pentagynia*, having five Pistilla. Ex. Mespilus, (*medlar.*) Spiræa Ulmaria, (*meadow sweet.*) S. Filipendula, (*drop-wort.*)

860. Order 5. *Polygynia*, having many Pistilla. Ex. Rosa, (*rose.*) Rubus, (*bramble.*) Tormentilla, (*tormentil.*) Fragaria, (*strawberry.*)

☞ 861. Class XIII. *Polyandria*, (*twenty or more stamina on the receptacle,*) contains seven Orders.

862. Order 1. *Monogynia*, having one Pistillum. Ex. Papaver, (*poppy.*) Chelidonium, (*celandine.*) Nymphæa, (*water lily.*)

863. Order 2. *Digynia*, having two Pistilla.

Ex. *Fothergilla*, F.—*Calligonum*, F.—*Pæonia*, F.—(*piony*.)

864. Order 3. *Trigynia*, having three Pistilla. Ex. *Delphinium*, (*larkspur*.) *Aconitum*, (*monkshood*.)

865. Order 4. *Tetragynia*, having four pistilla. Ex. *Cimicifuga*, F.—*Tetracera*, F.—*Caryocar*, F.

866. Order 5. *Pentagynia*, having five Pistilla. Ex. *Aquilegia*, (*columbine*.) *Reaumuria*, F.—*Nigella*, F. (*fennel flower*.)

867. Order 6. *Hexagynia*, having six Pistilla. Ex. *Stratiotes*, (*fresh-water soldier*.)

868. Order 7. *Polygynia*, many Pistilla. Ex. *Adonis*, (*pheasant's eye*.) *Ranunculus*, (*crowfoot*.) *Helleborus*, (*hellebore*.)

☞ 869. Class XIV. *Didynamia*, (*four long stamens, two short*,) contains two Orders.

870. Order 1. *Gymnospermia*, Seeds naked in the bottom of the calyx. Ex. *Glechoma*, (*ground ivy*.) *Lamium*, (*dead nettle*.) *Melissa*, (*baum*.)

871. Order 2. *Angiospermia*, Seeds contained in a pericarp. Ex. *Antirrhinum*, (*snap dragon*.) *Digitalis*, (*foxglove*.) *Scrophularia*, (*water betony*.)

☞ 872. Class XV. *Tetradynamia*, (*four long stamens, two short*,) contains two Orders.

873. Order 1. *Siliculosa*, Seeds in a small, short, or round pod. Ex. *Draba*, (*whitlow-grass*.) *Hesperis*, (*honesty*.) *Thlaspi Bursa Pastoris*, (*shepherd's-purse*.)

874. Order 2. *Siliquosa*, Seeds in a long slen-

der pod. Ex. *Cheiranthus*, (*wall-flower*.) *Brassica*, (*cabbage*.) *Sinapis*, (*mustard*.)

☞ 875. Class XVI. *Monadelphia*, (*filaments united at bottom into one body*,) contains five Orders.

876. Order 1. *Pentandria*, having five stamina. Ex. *Hermannia*, F.—*Waltheria*, F.—*Melochia*, F.

877. Order 2. *Decandria*, having ten stamina. Ex. *Geranium*, (*crane's-bill*.)

878. Order 3. *Endecandria*, having eleven stamina. Ex. *Brownea*, F.

879. Order 4. *Dodecandria*, having twelve stamina. Ex. *Pentapetes*, F.

880. Order 5. *Polyandria*, having many stamina. Ex. *Malva*, (*mallow*.)

☞ 881. Class XVII. *Diadelphia*, (*ditto united at bottom into two bodies*,) contains four Orders.

882. Order 1. *Pentandria*, having five stamina. Ex. *Monniera*, F.

883. Order 2. *Hexandria*, having six stamina. Ex. *Fumaria*, (*fumitory*.)

884. Order 3. *Octandria*, having eight stamina. Ex. *Polygala*, (*milk-wort*.)

885. Order 4. *Decandria*, having ten stamina. Ex. *Pisum*, (*pea*.) *Ulex*, (*furze*.) *Trifolium*, (*trefoil*.)

☞ 886. Class XVIII. *Polyadelphia*, (*ditto, united at bottom into three or more bodies*,) contains four Orders.

887. Order 1. *Pentandria*, having five stamina. Ex. *Theobroma*, F.

888. Order 2. *Dodecandria*, having twelve stamina. Ex. *Monsonia*, F.

889. Order 3. *Icosandria*, having twenty stamina. Ex. *Citrus*, F. (*orange*.)

890. Order 4. *Polyandria*, having many stamina. Ex. *Hypericum*, (*St. John's wort*.)

☞ 891. Class XIX. *Syngenesia*, (*five united anthers*,) contains six Orders.

892. Order 1. *Polygamia æqualis*, when all the flosculi, or florets, are bisexual. Ex. *Leontodon*, (*dandelion*.) *Sonchus*, (*sow thistle*.) *Hieracium*, (*hawkweed*.) *Carduus*, (*common thistle*.)

893. Order 2. *Polygamia superflua*, when the florets in the centre are bisexual, and those in the circumference female. Ex. *Anthemis*, (*mayweed*.) *Bellis*, (*daisy*.) *Senecio*, (*groundsel*.) *Chrysanthemum*, (*ox-eye daisy*.) *Tussilago*, (*coltsfoot*.) *Inula*, (*elecampane*.)

894. Order 3. *Polygamia frustranea*, when the florets in the centre are bisexual, and those in the circumference barren. Ex. *Centaurea*, (*blue bottle, knapweed*.) *Helianthus*, F. (*sunflower*.) *Rudbeckia*, F.

895. Order 4. *Polygamia necessaria*, when the bisexual florets in the centre produce no seed, but the pistil florets in the circumference produce perfect seed. Ex. *Calendula*, F. (*marigold*.) *Silphium*, F.—*Gnaphalium*, (*cudweed*.) *Arctotis*, F.

896. Order 5. *Polygamia segregata*, many partial or proper calyxes within the common ca-

lyx, separating the flosculi or florets. Ex. Echinops, F. (*globe thistle*.) Gundelia, F.—Stœbe, F.—Ædera, F.—Speranthus, F.

897. Order 6. *Polygamia monogamia*, contains simple flowers, (i. e. not compound,) which have their anthers united. Ex. Viola, (*violet*.) Impatiens, (*touch-me-not, balsam*, F.) Lobelia, (*cardinal flower*, F.)

☞ 898. Class XX. Gynandria, (*stamens growing out of the pistil, or an elongated receptacle*,) contains eight Orders.

899. Order 1. *Diandria*, having two stamina. Ex. Orchis. Cypripedium, (*ladies'-slipper*.)

900. Order 2. *Triandria*, having three stamina. Ex. Sisyrinchium, F.—Ferraria, F.

901. Order 3. *Tetrandria*, having four stamina. Ex. Nepenthes, F.

902. Order 4. *Pentandria*, having five stamina. Ex. Passiflora, F. (*passion flower*.) Gluta, F.

903. Order 5. *Hexandria*, having six stamina. Ex. Aristolochia, F.—Pistia, F.

904. Order 6. *Decandria*, having ten stamina. Ex. Kleinhovia, F.—Helicteres, F. (*screw tree*.)

905. Order 7. *Dodecandria*, having twelve stamina. Cytinus, F.

906. Order 8. *Polyandria*, having many stamina. Ex. Arum, (*cuckoo-pint*.)

☞ 907. Class XXI. Monoecia, contains eleven Orders.

908. Order 1. *Monandria*, having one stamen.

Ex. Chara. Zannichellia, (*horned pondweed*.)
Elaterium, F. (*wild cucumber*.)

909. Order 2. *Diandria*, having two stamina.

Ex. Lemna, (*duckmeat*.) Anguria, F.

910. Order 3. *Triandria*, having three stamina. Ex. Sparganium, (*burr-reed*.) Typha, (*cat's tail*.) Carex.

911. Order 4. *Tetrandria*, having four stamina. Ex. Urtica, (*nettle*.) Morus, F. (*mulberry*.) Buxus, (*box*.) Betula, (*birch*.)

912. Order 5. *Pentandria*, having five stamina. Ex. Xanthium, (*lesser burdock*.) Amaranthus, F. (*amaranth*.)

913. Order 6. *Hexandria*, having six stamina. Ex. Zizania, F.—Pharus, F.

914. Order 7. *Heptandria*, having seven stamina. Ex. Guettarda.

915. Order 8. *Polyandria*, more than seven stamina. Ex. Fagus, (*beech*.) Sagittaria, (*arrow head*.) Corylus, (*hazel*.) Quercus, (*oak*.)

916. Order 9. *Monadelphica*, Filaments united in one body. Ex. Pinus, (*fir*.) Hura, F. (*sand-box tree*.) Thuya, F. (*arbor vitæ*.) Cupressus, F. (*cypress*.) Ricinus, F. (*palmi christi*.)

917. Order 10. *Syngenesia*, anthers united. Ex. Cucumis, F. (*cucumber*.) Tricosanthes, F. (*serpent cucumber*.) Cucurbita, F. (*gourd*.) Momordica, (*balsam apple*.)

918. Order 11. *Gynandria*, stamina growing out of the pistillum. Ex. Andrachne, (*bastard orpine*.) Agueja, F.

☞ 919. Class XXII. Dioecia, contains fourteen Orders.

920. Order 1. *Monandria*, having one stamen. Ex. *Najas*, F.

921. Order 2. *Diandria*, having two stamina. Ex. *Salix*, (*willow*.) *Vallisneria*, F.

922. Order 3. *Triandria*, having three stamina. Ex. *Empetrum*, (*crow berries*.) *Osyris*, F. (*poet's cassia*.)

923. Order 4. *Tetrandria*, having four stamina. Ex. *Hippohæ*, (*sea-buckthorn*.) *Viscum*, (*mistletoe*.) *Myrica*, (*gale*.)

924. Order 5. *Pentandria*, having five stamina. Ex. *Cannabis*, F. (*hemp*.) *Humulus*, (*hop*.) *Spinachia*, F. (*spinach*.) *Pistachia*, F. (*pistachia nut*.)

925. Order 6. *Hexandria*, having six stamina. Ex. *Tamus*, (*black bryony*.) *Smilax*, F. (*rough bindwood*.) *Dioscorea*, F.

926. Order 7. *Octandria*, having eight stamina. Ex. *Populus*, (*poplar*.) *Rhodiola*, (*rose root*.)

927. Order 8. *Enneandria*, having nine stamina. Ex. *Mercurialis*, (*mercury*.) *Hydrocharis*, (*frogbit*.)

928. Order 9. *Decandria*, having ten stamina. Ex. *Carica*, F. (*papaw*.) *Schinus*, (*Indian mastic*.)

929. Order 10. *Dodecandria*, having twelve stamina. Ex. *Menispermum*, F. (*moon seed*.) *Datisca*, F. (*bastard hemp*.)

930. Order 11. *Polyadelphia*, having many stamina. Ex. *Cliffortia*, F.

931. Order 12. *Monadelphia*, filaments united. Ex. *Juniperus*, (*juniper.*) *Taxus*, (*yew.*) *Ephedra*, F. (*shrubby horsetail.*)

932. Order 13. *Syngenesia*, anthers united. Ex. *Ruscus*, (*butcher's broom.*)

933. Order 14. *Gynandria*, stamina growing out of the pistillum. Ex. *Clusia*.

¶ 934. Class XXIII. *Polygamia*, contains three Orders.

935. Order 1. *Monœcia* bisexual, and male or female flowers on the same plant. Ex. *Valantia*, (*cross-wort.*) *Acer*, (*maple.*) *Parietaria*, (*pellitory of the wall.*) *Atriplex*, (*orach.*)

936. Order 2. *Diœcia*, bisexual, and male or female flowers on separate plants. Ex. *Fraxinus*, (*ash.*) *Diospyrus*, F. (*Indian date plumb.*) *Pisonia*, F. (*figgrigo.*) *Gleditsia*, F. (*three-thorned acacia.*)

937. Order 3. *Triœcia*, bisexual, male and female flowers, growing separately on three distinct plants of the same species. Ex. *Ceratonia*, F. (*carob tree.*) *Ficus*, F. (*fig tree.*)

¶ 938. Class XXIV. *Cryptogamia*, contains five Orders.

939. Order 1. *Filices*, comprehending the *Filices*, (*ferns.*) *Ophioglossum*, (*adder's tongue.*) *Equisetum*, (*horsetail.*) *Pilularia*, (*pepper-grass, &c.*)

940. Order 2. *Musci*, comprehending the *Musci*, (*mosses of different kinds.*)

941. *Order 3. Algæ*, including the fuci, (*sea-weed*.) *Jungermannia*, &c.

942. *Order 4. Fungi*, containing the *Agaricus*, (*mushroom*.) *Lycoperdon*, (*puff ball*), and other plants of that tribe.

943. *Order 5. Hepaticæ*, possessing the Liver-worts.

Observation. The Sexual System, as it is called, has of late undergone several changes. The enlightened pupil of Linnæus, Thunburg, has abolished classes XX. XXI. XXII. and XXIII. Gmelin, professor at Gottingen, has abolished likewise class XII.; and we have attempted almost a *New System*, formed out of the ashes of the *old*, which has met with the approbation of Professor Martyn, &c.

THE
REFORMED
SEXUAL SYSTEM.

BY DR. THORNTON.

XLI. THE CLASSES.

I. *Classes taken from the number of stamina.*

I. <i>Monandria</i>	one stamen.
II. <i>Diandria</i>	two stamina.
III. <i>Triandria</i>	three stamina.
IV. <i>Tetrandria</i>	four stamina.
V. <i>Pentandria</i>	five stamina.
VI. <i>Hexandria</i>	six stamina.
VII. <i>Heptandria</i>	seven stamina.
VIII. <i>Octandria</i>	eight stamina.
IX. <i>Enneandria</i>	nine stamina.
X. <i>Decandria</i>	ten stamina.
XI. <i>Dodecandria</i>	12 to 19 stamina.
XII. <i>Polyandria</i>	20 or more stamina.

I. *A class taken from the obscurity of the stamina.*

XIII. <i>Cryptogamia</i>	concealed stamina
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XLII. ORDERS.

II. *Orders taken from the number of pistilla.*

I. <i>Monogynia</i>	one pistillum.
II. <i>Digynia</i>	two pistilla.
III. <i>Trigynia</i>	three pistilla.
IV. <i>Tetragynia</i>	four pistilla.
V. <i>Pentagynia</i>	five pistilla.
VI. <i>Hexagynia</i>	six pistilla.
VII. <i>Heptagynia</i>	seven pistilla.
VIII. <i>Octogynia</i>	eight pistilla.
IX. <i>Enneagynia</i>	nine pistilla.
X. <i>Decagynia</i>	ten pistilla.
XI. <i>Dodecagynia</i>	12 to 19 pistilla.
XII. <i>Polygynia</i>	20 or more pistilla.

II. *Orders taken from some curious particularity in the stamina.*

XIII. <i>Didynamia</i>	{ four stamina, two long, two short.
XIV. <i>Tetradynamia</i>	{ six stamina, four long, two short.
XV. <i>Icosandria</i>	{ twenty or more stami- na, inserted on the calyx or corolla.
XVI. <i>Monadelphina</i>	{ filaments united in one body.
XVII. <i>Diadelphia</i>	{ filaments united, forming two bodies.

- | | | |
|----------------------------|---|--|
| XVIII. <i>Polyadelphia</i> | { | filaments united, forming three, or more bodies. |
| XIX. <i>Syngenesia</i> | | five anthers, united. |
| XX. <i>Gynandria</i> | { | stamina arising from the pistil. |
| XXI. <i>Monœcia</i> | | stamina apart from the pistil on the same plant. |
| XXII. <i>Diœcia</i> | { | stamina arising from the pistil on different plants. |
| XXIII. <i>Polygamia</i> | | bisexual and unisexual flowers. |

Class *Cryptogamia* has the Natural Orders,

- I. *Filices*. II. *Musci*. III. *Algæ*. IV. *Fungi*.
V. *Hepaticæ*.

XLIII. *Remarks on some parts of the Sexual System, including Reasons for our Reform.*

I. The Class IV. *Tetrandria*, being a numerous one, Linnæus chose to separate it into two, and an opportunity presented itself from the consideration of the differences which occurred in plants having four stamina, from the proportion of these. *Didynamia* expresses this difference; and the flowers are either *ringent*, or *personate*, a natural tribe. But as *all* the *ringent* flowers are not included in the class *Didynamia*, some coming

under class II. *Diandria*, there can be no good reason for not making this real division of a class into an order. The system hence becomes more easy and regular, and in fact more frequently approaches to a perfect or natural system.

II. The class VI. *Hexandria*, also readily separates into two parts, from the like consideration of the *proportion* in the stamina, and *Tetradynamia* contains the natural tribe of cruciform plants, which, according to the just rules of art, is an order.

III. The class XIII. *Polyandria*, also readily divides into two parts, from the consideration of the *insertion* of the stamina; and one of these, the *Icosandria*, of Linnæus, possesses many edible fruits, but as it is not altogether a natural class, therefore no one can regret seeing this class also made to form an order.

IV. In the class XVII. *Monadelphica*, of Linnæus, many of the numerical names, which had been used to characterize the classes, are employed to distinguish the orders, or subdivisions, as *Pentandria*, *Decandria*, &c. and hence arises a confusion unavoidably perplexing to the young student, and which our reform, as is evident, completely removes. The same observation applies to the classes XVII. *Diadelphia*, XVIII. *Polyadelphia*, XX. *Gynandria*, XXI. *Monœcia*, XXII. *Diœcia*, where the same, (may I call it so?) impropriety occurs.* These classes in

* The reader is requested to consult now the Classes and Orders of the Sexual System before given, the better to understand the remarks, p. 111.

Linnæus are *not natural*, but being made into *orders*, many of them then become *natural as orders*, as the *Columniferæ*.

V. The *Papilionaceous flowers*, as they are generally termed, form the order *Decandria* in the class XVII. *Diadelphia*, of Linnæus ; but the author, unwilling, as it should seem, to make any breach in so natural an assemblage of plants, has so far deviated from the principles of his system, as to refer to that class several genera, which strictly belong to the preceding class, being in fact *Monadelphious*. This inconvenience is entirely obviated in the present scheme, where *Monadelphia* and *Diadelphia* constitute two successive orders to the class X. *Decandria*.

VI. *Polyadelphia* is a small, and, as Dr. Smith observes, "*rather an unnatural class.*" Most persons are shocked to see citrus, the orange, in this class, and not in the *Icosandria* class ; for Linnæus describes it of the class XVIII. *Polyadelphia*, order III. *Icosandria*. Now in our *Reformed Sexual System*, it comes under class XIII. *Polyandria*, order *Icosandria*, in juxta-position with other edible fruits, entering into our subdivision *Polyadelphia*.

VII. Class V. *Pentandria*, a very numerous class, is subdivided by *Syngenesia*, and so formed into two classes by Linnæus, the latter of which, however, as containing an order, *Monogamia*, is not, therefore, altogether a *natural class*. We obviate this by making *Syngenesia* an order, and the subdivision *Polygamia* to contain the natural

tribe of compound flowers; whilst, under another subdivision, *Monogamia*, several plants not having compound flowers, would arrange themselves.

VIII. Against *Gynandria*, which Dr. Smith calls "an odd and miscellaneous class," there lies the same objection, as we observed above, as against the class *Diadelphia*, the numerical names of classes being applied to orders. In our scheme, class II. *Diandria*, has an order *Gynandria*, which contains the *natural tribe* of orchises; and thus the mind is delighted to see a *natural assemblage* an *order*, if not as a *class*. The separation of the remainder cannot be regretted, as not possessing amongst each other the smallest affinity.

IX. *Monæcia* is a miscellaneous class, and borrows the name of its secondary divisions from most of the other classes, as *Monandria*, *Dian-dria*, &c.; nay, even from *Monadelpia*, *Syngenesia*, and *Gynandria*; for all these become, in Linnæus's Sexual System, *orders*. In our scheme, class *Triandria*, which contains mostly grasses, has order *Monæcia*; hence it is we retain this *natural assemblage* in the same class *at least*, if not in the same order.

X. *Diæcia*. The same remarks apply here, as to *Monæcia*.

XI. *Polygamia* is subdivided by the classes *Monæcia* and *Diæcia*; these, in the logic of science are, therefore, in reality orders.

XLIV. *Explanation of the Words, Class, Order, Genus, and Species.*

The number of plants formed by the omnipotent and all-wise Creator, are so vast, that, without the aid of method, the mind of man would be overpowered by this profusion in the bounty of God, and he could only imperfectly treasure up in the store-house of his brain, the various beings of the vegetable race. But by the aid of method, the difficulty arising from number is in a great part obviated.

The student, when examining any plant, has to settle, which has been before explained, 1st, the Class, 2dly, the Order, and then, 3dly, the Genus, which three advances in the science of Botany, it is of the utmost importance to well understand.

Other sciences also have recourse to the aid of art, and as the latter is contrived to mount up with facility to a great height, so we rise to the acquisition of science step by step.

For example, let us take astronomy, and we shall find that the philosopher has invented two hemispheres, the northern and the southern, divided by the ecliptic circle; and the stars are situate in one or the other of these two hemispheres. He next has fancied figures in the heavens, which are called constellations, which mean a cluster or assemblage of certain stars, and this greatly facilitates the acquirement of astronomy. So the botanist has also his greater

divisions, or classes ; his smaller divisions, or orders ; and thirdly, his subaltern divisions, his genera, or assemblages of plants, all which agree in certain characters, and these possess one common appellation ; for otherwise the memory must have been over-burthened with names.

It is the same as respects the appellation of persons, as the several family names, and some have, instead of using the term genera of plants, called these assemblages by the title, “ the families of plants.”

The most common observer has not failed to notice the different sorts or kinds of Roses, constituting one family ; as the common Dog Rose of the fields, and the garden Moss Rose, &c.

Thus the several species of Geraniums naturally arrange together, constituting one genus, all agreeing, if not in the character of the corolla, in that of the germen, which resembles in each a crane’s-bill ; hence its appellation.

The different sorts of Ranunculus all agree in having a nectary at the base of the unguis of the petal ; hence one common appellation, or generic name. The Pheasant’s-eye, Adonis, is not a ranunculus, only as wanting this generic character.

Thus the several Passion Flowers all agree in a curious formed nectary, and the same classical character ; the stamina being five, beneath, and the nectaries in each species being rayed. And each genus, or family, contains a greater or less number of species : thus we have two Marvels

of Peru, (Miribalis,) varying in the length of the tube, &c.

GENERIC CHARACTERS. These are always taken from the parts of fructification, and no other; and here some prominent feature must run through each species, as has been explained before, to constitute a genus.* Let us take for an example—

The Rose, (ROSA.)

GENERIC CHARACTERS. CALYX, *perianth*, (No. 594, p. 87,) *multifid*, (No. 598, p. 88,) *unequal*, (No. 601, p. 88.) COROLLA, *pentapetalous*, (No. 653, p. 94.)

SPECIFIC CHARACTERS. These are derived from every consideration, but chiefly from the leaves, as thus—

Species 1. *Dog rose, (ROSA ARVENSIS.)* FLOWERS, *cy-mose*, (No. 580, p. 85.) GERMEN, *globular*, (No. 728, p. 104.) PEDUNCLES, *smooth*, (No. 444, p. 71.) STEM and PETIOLES, *prickly*, (No. 111, p. 27.) Prickles bowed downwards, (vide observation 1, p. 27.)

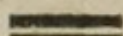
Species 2. *Burnet rose, (ROSA SPINOSISSIMA.)* PEDUNCLES, *hispid*, (No. 444, p. 71.) STEM and PETIOLES, *very prickly*, (No. 111, p. 27.) Prickles, straight. (Vide observation 1, p. 27.)

* These generic characters of plants may be seen in a work lately published, called "Practical Botany," where the characters are given, with a plate of dissections to each genus. The specific characters in the "species of plants," by Linnæus.

BOTANICAL QUESTIONS,

FOR THE

EXERCISE OF YOUTH.



1. What is the *science* of Botany ? (*vide* p. 5, where the answer will be found.)

2. Is *botany* a mere *vocabulary* of words ? (*vide* p. 6.)

3. What is a tree ? (p. 7.)

4. How does a shrub differ from a tree, and an undershrub from a shrub ? (p. 7, 8.)

5. What is an herb ? (p. 8.)

6. What is an exotic plant ? (p. 8.)

7. When is a plant indigenous ? (p. 8.)

8. Describe the *places* where plants are found to grow ? (p. 9.)

9. What advantages can be derived from knowing the *natural stations* of plants ? (p. 10.)

10. What are *cotyledons* ? (p. 11.)

11. How are all plants divided into *four* distinctions of *cotyledons* ? (p. 11.)

12. Do these parts serve the office of *breasts* to the young plant ? (p. 12.)

13. What is the *definition* of a root ? (p. 12.)

14. What are the *radicles* of roots ? (p. 12.)

15. What is called the *caudex* of roots? (p. 12.)
16. What are the *useful observations* made on roots? (p. 12.)
17. Define an annual and biennial root? (p. 13.)
18. What is a fruticose plant? (p. 14.)
19. When are plants said to be perennial? (p. 14.)
20. What is a bulbous root? (p. 14.)
21. What is a tuberous root? (p. 15.)
22. What is a fibrous root? (p. 15.)
23. Describe the *twofold structure* of roots? (p. 15.)
24. When is a root said to be *perpendicular*?
When _____ *horizontal*?
When _____ *repent*? (p. 15, 16.)
25. What are the *forms* of roots? (p. 16.)
26. How do the following roots differ, viz. the globular, solid, scaly, tunicated, knotty, articulated, fascicular, grumous, granulated, twin, palmated, fibrous, and premorse? (p. 16, 17.)
27. Give the *definition* of a stem? (p. 18.)
28. What is the *descending* and *ascending caudex*? (p. 18.)
29. What are the *kinds* of stems? (p. 18.)
30. How do the *culm*, *scape*, *stem*, and *stipe* differ? (p. 18.)
31. What do botanists mean by herbaceous, suffruticose, fruticose, and arboreous plants? (p. 19.)
32. Define the following terms as respects the

consistency of stems, viz. solid, succulent, corked, medullary, empty, rigid, and lax? (p. 19, 20.)

33. What difference is there betwixt the botanical terms *erect* and *straight*? (p. 20.)

34. Define the following *directions* of stems, viz. the ascending, geniculate, flexuose, declined, nodding, procumbent, prostrate, repent, stoloniferous, sarmentose, climbing, and twining? (p. 21, 22, 23.)

35. Are some plants found to twine always in the *same* direction? (p. 23.)

36. Name the plants that follow *opposite* directions. (p. 23.)

37. Define the following *forms* of stems, viz. the round, half-cylindric, compressed, ancipital, angular, triquetrous, four-cornered, membranous, and articulated. (p. 23, 24.)

38. Define these botanical expressions, respecting the *cloathing* of plants, viz. naked, leafless, leafy, scaly, sheathed, imbricated, winged. (p. 24, 25.)

39. Define the *surfaces* of stems, as respects their being polished, striated, furrowed, channelled, smooth, pubescent, hairy, hirsute, tomentose, scabrous, muricated, stinging, prickly, thorny, chinky. (p. 25, 26, 27.)

40. What is the difference betwixt polished and smooth? (p. 25.)

41. What is the difference betwixt striated, furrowed, and channelled? (p. 25.)

42. What is the difference betwixt pubescent and hairy ? (p. 25, 26.)

43. How does hirsute differ from the foregoing terms ? (p. 26.)

44. Do any other plants sting besides the nettle ? (p. 27.)

45. How does the prickle and thorn differ ? (p. 27.)

46. Define the *composition* of stems, viz. simple, without knots, knotty, jointed, branched, dichotomous, stoloniferous, twiggy, proliferous, paniculate, and fastigate. (p. 27, 28, 29.)

47. How are knotty and jointed stems particularly distinguished ? (p. 27, 28.)

48. What are branches ? (p. 29.)

49. What are branchlets ? (p. 29.)

50. Does the *medullary* part in branches unite with the same in trees, as does the *cortical* ? (p. 29.)

51. What difference exists between branches which from their *situation* are said to be alternate, opposite, decussated, verticillate, two-ranked, scattered, and crowded ? (p. 29, 30.)

52. When are branches from their *directions*, said to be erect, spreading, horizontal, incurved, recurved, reflexed, declined, divaricate, diffuse, and fastigate ? (p. 30, 31.)

53. What difference is there betwixt erect and straight ? (p. 30.)

54. What is the difference betwixt the terms spreading and much-spreading ? (p. 31.)

55. What is the difference of recurved and reflexed? (p. 31.)

56. Give the definition of leaves. (p. 32.)

57. Are leaves at both surfaces always green? (p. 32.)

58. Are leaves always of a green colour? (p. 32.)

59. What essential office does leaves perform? (p. 32.)

60. By whom was the *foliation* of leaves chiefly studied? (p. 32.)

61. Of what use is this inquiry? (p. 32.)

62. What term is opposed to *foliation*? (p. 33.)

63. What are buds? (p. 33.)

64. When are these formed? (p. 33.)

65. At what time are they best examined? (p. 33.)

66. Explain the differences of the terms, involute, revolute, obvolute, convolute, imbricated, equitant, conduplicate, plicate, circinal. (p. 33, 34.)

67. Explain the *insertions* of leaves, as being radical, cauline, rameal, and floral. (p. 34.)

68. When are leaves said to be *situated* alternate, opposite, decussated, twin, verticillate, or stellate, distichous, scattered, clustered, imbricated, fascicled? (p. 34, 35.)

69. When from their *attachment* are leaves called adnate, sessile, petiolate, peltate, confluent, perfoliate, amplexicaul, semi-amplexicaul, connate, vaginant, decurrent? (p. 36, 37.)

70. How do perfoliate and amplexicaul leaves differ? (p. 36.)

71. In the *direction* of leaves, when are they appressed, erect, spreading, much-spreading, horizontal, inflexed, recurved, reclined, reflexed, resupinate, involute, revolute, oblique, sunk, floating, emerged. (p. 37, 38, 39.)

72. In *circumscription*, when are leaves round, roundish, ovate, obovate, oval or elliptic, oblong, lanceolar, lanceolate, parabolic, spatula-shaped, or spatulate, wedge-shaped, linear, subulate, acerose, setaceous, ovate-oblong, linear-lanceolate? (p. 39, 40, 41, 42.)

73. How does the oval resemble the ovate leaf? (p. 39, 40.)

74. In what way does the ovate leaf differ from the elliptic? (p. 39, 40.)

75. In a word compounded of two terms, which of those two terms are to predominate? (p. 41.)

76. Define the *angles* of leaves, as intire, angular, triangular, deltoid, rhomboid, trapeziform. (p. 42.)

77. How does Linnæus define a deltoid leaf? (p. 42.)

78. Describe the *Sinuses* and *Lobes* of leaves, as heart-shaped, kidney-shaped, or reniform, crescent-shaped, or lunate, arrow-shaped or sagittate, spear-shaped, or hastate, lyre-shaped, or lyrate, runcinate, fiddle-shaped, or panduriform, pinnatifid, laciniated, or jagged, lobed, palmated. (p. 43, 44.)

79. In spear-shaped, or hastate leaves how do the *angles* point? (p. 43.)

80. Are the *jags* in the lyre-shaped leaves all of an equal size? (p. 43.)

81. How do lyrate and runcinate leaves differ? (p. 43, 44.)

82. How do palmate leaves resemble the hand? (p. 45.)

83. Describe the *borders* of leaves, as intire, quite-intire, crenate, serrated, dentate, or toothed, ciliate, spiny, cartilaginous, revolute, repand, ecrose, lacerated. (p. 45, 46.)

84. May a leaf be intire, whose edge is *indented* or *toothed*? (p. 45.)

85. When are the *summits* acute, acuminate, cuspidate, mucronate, tendrilled, obtuse, emarginate, retuse, truncated, premorse? (p. 46, 47.)

86. How do acute and acuminate differ? (p. 46.)

87. When are plants said to be stipuled, and when without this appendage? (p. 47.)

88. When are the *surfaces* of leaves called smooth, pubescent, velvety, or downy, tomentose, silky, hirsute, scabrous, aculeate, strigose, level, polished, viscous, coloured, nerveless, nerved, three-nerved, triple-nerved, lineate, striate, sulcale, veiny, wrinkled, bullate, pitted, dotted, glandular, papillose, pimply? (p. 47, 48, 49, 50.)

89. How does bullate and wrinkled differ? (p. 49.)

90. What terms does Linnæus use to express our term dotted ? (p. 50.)

91. Does papillose and warted mean the same ? (p. 50.)

92. In the *expansion* of leaves, when are they called flat, channelled, concave, convex, cucullate, plicate, waved, curled ? (p. 51, 52.)

93. To what term is convex opposed ? (p. 51.)

94. How do the terms plicate and waved differ ? (p. 51, 52.)

95. In the *substance* of leaves, when are they membranaceous, scariose, thick, fleshy ? (p. 52.)

96. In the *forms* of leaves, when are they round, gibbous, depressed, compressed, triquetrous, sword-shaped, or ensiform, strap-shaped, or tongue-shaped, faulchion-shaped, or acinaciform, hatchet-shaped, or dolabriform ? (p. 52, 53, 54.)

97. In the sword-shaped leaves, how many sharp edges are there ? (p. 53.)

98. In the *duration* of plants, when are they caducous, deciduous, persisting, ever-green ? (p. 54.)

99. What plants are chiefly ever-greens ? (p. 54.)

100. How do we know when transplanted trees have succeeded ? (p. 54.)

101. In the *composition* of leaves, when are they compound, joined, conjugate, binate, digitate, pedate, ternate, pinnate, two-yoked, or bi-

jugous, three-yoked, or trijugous, unequally-pinnate, abruptly-pinnate? (p. 55, 56.)

102. How are compound leaves especially known? (p. 55.)

103. In the *recomposition* of leaves, when are they decompose, bigeminate, biternate, bipinnate? (p. 56, 57.)

104. In the *supercomposition*, when are leaves superdecompose, tergeminate, triternate, tripinnate. (p. 57, 58.)

105. What is called the sleep of plants? (p. 58.)

106. Is the cause heat or light? (p. 59.)

107. In what plants is this more particularly seen? (p. 59.)

108. In the *position of leaves in sleep*, when are they conniving, including, environing, defending, conduplicate, involving, diverging, depending, investing, imbricate? (p. 59, 60.)

109. As respects the *petioles*, when are they linear, winged, clubbed, compressed, round, triquetrous, channelled, spinescent? (p. 60, 61.)

110. As respects the *direction* of the petioles, when are they erect, patent, recurved? (p. 61.)

111. Define the *surfaces* of petioles, as being smooth, prickly, naked, articulate. (p. 61, 62.)

112. How is the difference expressed, as to the *sizes* of petioles, as very short, short, equal, long, very long? (p. 62.)

113. As respects the *divisions* of petioles, when are these simple, and when compound? (p. 62.)

114. What are stipules ? (p. 62.)

115. As regards the *number*, when are these solitary, when twin ? (p. 63.)

116. As to *situation*, when are stipules lateral, extra-foliaceous, intra-foliaceous, opposite-leaved ? (p. 63.)

117. Considering *attachment*, when are stipules sessile, adnate, decurrent, vaginant ? (p. 63.)

118. As respects *structure*, when are stipules subulate, spinescent, lanceolate, sagittate, lunate ? (p. 64.)

119. As regards *direction*, when are stipules erect, patent, reflexed ? (p. 64.)

120. As regards the *border*, define stipules as being intire, ciliate, cerrate, dentate, pinnatifid. (p. 64, 65.)

121. Considering *duration*, when are stipules called caducous, deciduous, permanent ? (p. 65.)

122. As to *size*, when are stipules very short, equal, long ? (p. 65.)

123. What are the distinctions of the *arms of plants*, as hairs, bristles, silkiness, down, cotton, wool, &c. ? (p. 65, 66.)

124. Define *these* as being simple, branched, hooked, feathery, stellate, toothed. (p. 66.)

125. Go on with the arms of plants, and discriminate spines, prickles, stings. (p. 66, 67.)

126. Define these as being simple, forked, branched, in pairs, in threes, in fours, in bundles, verticillate, conic. (p. 67.)

127. Are all animals kept away from plants by this armature ? (p. 67.)

128. Is there not another part esteemed amongst the arms of plants, as glands ? (p. 68.)

129. Define these as being miliary, vesicular, utricular, globular, lenticular, cupped. (p. 68.)

130. Define this part as being coloured, caducous, falling, persisting, two or three. (p. 69.)

131. How is the *bractea* distinguished from the *calyx* ? (p. 69.)

132. What were esteemed once as the props of plants ? (p. 69.)

133. What is a tendril ? (p. 70.)

134. Define these as being foliar, petiolar, peduncular, axillary, convolute, revolute, leafed, simple, forked, trifid, multifid. (p. 70, 71.)

135. What are the essential *uses* of tendrils ? (p. 71.)

136. When are these called equal, and when long ? (p. 71.)

137. What is the peduncle of flowers ? (p. 71.)

138. What is the *use* of the peduncle ? (p. 72.)

139. In the *structure* of peduncles, when are they simple, compound, common, partial ? (p. 72.)

140. From *insertion*, when are peduncles radical, cauline, ramose ? (p. 72, 73.)

141. From *situation*, when are they terminal, axillary, extra-axillary, opposite the leaf ? (p. 73.)

142. From *direction*, when oppressed, erect, patent, drooping, flaccid, zig-zag? (p. 73, 74.)

143. From *form*, when round, triquetrous, four-cornered, filiform, or thread-shaped, attenuated, incrassated, geniculate, articulate? (p. 74, 75.)

144. From *cloathing*, when scaly, leafy, naked, bracteated? (p. 75.)

145. From *measure*, when short, middling-sized, long, very short, very long? (p. 75.)

146. What is the *intention of nature*, in producing flowers? (p. 76.)

147. What is the meaning of the word *inflorescence*? (p. 76.)

148. When are flowers from their *insertions*, called radical, cauline, ramose? (p. 76.)

149. When are flowers from their *situations*, called terminal, axillary, supra-axillary, extra-axillary, opposite, alternate, scattered? (p. 76, 77.)

150. When from their *attachment*, are flowers sessile, peduncled? (p. 77.)

151. When from their *directions*, are they erect, horizontal, drooping, nodding, turned up, distichous, unilateral, uniform? (p. 77, 78.)

152. What is the difference betwixt nodding and drooping? (p. 78.)

153. When are flowers from *numbers*, called single, two-together, three-together, clustered, fasciculate? (p. 78, 79.)

154. When are flowers from their *forms*, verticillate, capitate, spicate, amentaceous, race-

mous, thyrsoid, corymbose, paniculate, umbellate, cymous, spadiceous? (p. 79, 80, 81, 82, 83, 84, 85, 86.)

155. When are *verticillate* flowers sessile, pedunculate, terminal, axillary, roundish, globular, conical, dimidiate or halved, leafy, naked? (p. 79, 80.)

156. When are *spicate* flowers terminal, axillary, simple, compound, glomerate, ovate, ventricose or bellied, cylindrical, spiral, interrupted, ramose, articulate, leafy, comose? (p. 80, 81.)

157. When are *amentaceous* flowers, globular, ovate, cylindrical, filiform, scaly, naked? (p. 82.)

158. When are *racemous* flowers simple, compound, one-sided or unilateral, uniform, leafy, naked, erect, pendulous? (p. 82, 83.)

159. When are *thyrsoid* flowers ovate, oblong, leafy, naked? (p. 83.)

160. When are *corymbose* flowers, simple, compound? (p. 84.)

161. When are *paniculate* flowers pressed together, one-sided, divaricate? (p. 84.)

162. When are *umbellate* flowers sessile, peduncled, simple, compound, partial? (p. 84, 85.)

163. When are *involucered* flowers, naked, globose, convex, flat, unequal? (p. 85.)

164. When are *cymose* flowers sessile, trifid, quadrifid, tripartite, bractate, naked? (p. 86.)

165. How does the *corymbus*, *cyme*, and *umbel*, differ from each other? (p. 86.)

166. When are *spadiceous* flowers simple, branched, spathed, naked, flat? (p. 87.)

167. When is a calyx called a *perianth*? (p. 87.)

168. When are the *segments* of the calyx termed lobed, partite, bifid, multifid, tripartite, equal, unequal, irregular, labiate or lipped? (p. 87, 88.)

169. When is the *surface* of the calyx coloured, petal-like, smooth, downy, villose, rough, tomentose, striated? (p. 88, 89.)

170. From *duration*, when is the calyx caducous, deciduous, permanent? (p. 89.)

171. When from *size*, is the calyx called long, short, intermediate? (p. 89.)

172. When is a *calyx*, called a common calyx, involucre, spatha, glume, calyptra, volva? (p. 90, 91, 92, 93.)

173. When is a *common calyx*, called simple, double, or many-ranked, polyphyllous, imbricated, squarrose, calyculate, or calyced? (p. 90.)

174. When is an *involucre*, called a universal involucre, a partial involucre, dimidiate, monophyllous, polyphyllous, simple, pinnatifid? (p. 91.)

175. When is a *spatha* called plane, cucullate, or hooded, convolute, boat-shaped, or navicular, one-valved, two-valved, bipartite, six-parted, one-flowered, many-flowered? (p. 92, 93.)

176. Define a one-flowered, and two-flowered *glume*. (p. 93.)

177. Give the definition of the *corolla*? (p. 93.)

178. What is the supposed *origin* of the *corolla*? (p. 94.)

179. What is the usual *texture* of the *calyx* and *corolla*? (p. 94.)

180. What is the usual *colour* of *calyx* and *corolla*? (p. 94.)

181. Are there no *exceptions* to this *general rule*? (p. 94.)

182. How does Linnæus distinguish the *calyx* from *corolla*? (p. 94.)

183. As to the *number of parts*, how do you define the *corolla* as monopetalous, bipetalous, tripetalous, tetrapetalous, pentapetalous, hexapetalous, polypetalous? (p. 94.)

184. To what does Linnæus *oppose* the term *monopetalous*? (p. 94.)

185. What are the *offices* of the *corolla*, *leaves*, or *petals*? (p. 95.)

186. Define the *monopetalous*, *regular corollas*, as being bell-shaped or campanulate, globular or globose, funnel-shaped or infundibuliform, salver-shaped or hypocrateriform, wheel-shaped or rotate. (p. 95, 96.)

187. Describe the *tubes* of *regular monopetalous corollas*, as being straight, bent or bowed, cylindrical or round, filiform, bellied or ventricose, appendaged. (p. 96.)

188. Describe the *orifices* of *regular monopetalous corollas*, as being closed, dilated, five-sided

or pentagonal, prominent, naked, crowned, cloathed, tuberculated or scaled. (p. 96, 97.)

189. Describe the *limb* of *regular monopetalous corollas*, as being plicate, spreading, straight, reflexed? (p. 97, 98.)

190. When are *irregular monopetalous corollas*, called ringent, personate, tubular, ligulate, compound? (p. 98, 99.)

191. What are the *upper* and *lower lips* of a *ringent flower*? (p. 98.)

192. Are not these parts called sometimes *galea* or *helmet*, and *barba* or *beard*? (p. 98.)

193. What do we mean by the *gape*, *throat*, *jaws*, *gullet* and *neck* of a flower? (p. 98.)

194. How do *ringent* and *personate* flowers differ, as respects the lips being open or shut? (p. 98.)

195. What is the meaning of a *compound flower*? (p. 99.)

196. What part is called the *disk*, and what the *ray* of a *compound flower*? (p. 99.)

197. When are *regular, polypetalous corollas*, called *rosaceous* or *rose-like*, *cruciform* or *cross-shaped*, *pink-like* or *caryophyllous*? (p. 99, 100.)

198. What is the *lumen* or *border*, and *unguis* or *claw*, of a petal? (p. 100.)

199. What *kind* of *cross* do *cruciform* flowers resemble? (p. 100.)

200. Define the *irregular polypetalous corollas*, as *papilionaceous* or *butterfly-shaped*, and *anomalous*. (p. 100.)

201. Do the butterfly-shaped flowers turn against the wind ? (p. 100.)

202. Where are situated the vexillum, *standard*, or *banner*, the two *alæ* or *wings*, and the *carina* or *keel*, in the butterfly-shaped flowers ? (p. 100.)

203. In the *duration* of corollas, when are they called *caducous*, *deciduous*, *marcescent* ? (p. 101.)

204. What are the *colours* of flowers ? (p. 101.)

205. What is implied by the term *nectary*, as used by botanists ? (p. 102.)

206. Describe the principal *forms* of *nectaries*. (p. 101, 102, 103.)

207. Define the seven *constituent parts* of *flowers*, as the *pistil*, *stamen*, *corolla*, *calyx*, *nectary*, *pericarp*, *receptacle*. (p. 104, 105.)

208. How are the *stamens* and *pistils* of *flowers* discriminated ? (p. 104.)

209. What is called a *perfect* or *complete* *pistil* ? (p. 104.)

210. What is called a *perfect* or *complete* *stamen* ? (p. 104.)

211. Is the *receptacle* equally *conspicuous* in all *flowers* ? (p. 105.)

212. Define the *different pericarps*, as the *drupe*, *pome*, *berry*, *follicle*, *silique*, *silicle*, *legume*, *capsule*, *nut*, *strobile*. (p. 105, 106.)

213. Explain the following *terms applied to pericarps*, viz. *valves*, *sutures*, *column*, *parti-*

tions, cells, one-seeded, two-seeded, and so on. (p. 107.)

214. Describe the seeds that are most conspicuous. (p. 107.)

215. Explain the following *terms as applied to seeds*, viz. aril, eye, heart, plume, radicle, cotyledons, seminal-leaves, pappus, stipe. (p. 108.)

216. Define the twenty-four classes, viz. monandria, diandria, triandria, tetrandria, pentandria, hexandria, heptandria, octandria, enneandria, decandria, icosandria, polyandria, didynamia, tetradinamia, monadelphina, diadelphia, polyadelphia, syngenesia, gynandria, monoecia, dioecia, polygamia, cryptogamia. (p. 109, 110, 111.)

217. How many classes depend on *number* alone, and name these? (p. 109, 110.)

218. How many classes on *number* and *insertion*? (p. 110.)

219. How many classes on *number* and *proportion*? (p. 110.)

220. How many classes on the *union* of *filaments*? (p. 110.)

221. How many classes on *union* of *anthers*? (p. 110.)

222. How many classes on *union* of *stamina* and *pistilla*? (p. 110.)

223. How many classes on the *separation* of *stamens* and *pistils*? (p. 110, 111.)

224. What is the name of the class, where these parts, the *stamens* and *pistils*, are invisible? (p. 111.)

225. What are the *leading observations* re-

specting the *quality* and *nature* of the plants, contained in the respective *classes*? (p. 111.)

226. How many orders has class i, and name them? (p. 111, 112.)

227. _____ class ii. ?
(p. 112.)

228. _____ class iii. ?
(p. 112.)

229. _____ class iv. ?
(p. 112, 113.)

230. _____ class v. ?
(p. 113.)

231. _____ class vi. ?
(p. 113, 114.)

232. _____ class vii. ?
(p. 114.)

233. _____ class viii. ?
(p. 114.)

234. _____ class ix. ?
(p. 114, 115.)

235. _____ class x. ?
(p. 115.)

236. _____ class xi. ?
(p. 115, 116.)

237. _____ class xii. ?
(p. 116.)

238. _____ class xiii. ?
(p. 116, 117.)

239. What is the meaning of the two orders, 1, gymnospermia, and 2, angiospermia, to class xiv. ? (p. 117.)

240. What is the meaning of the two orders,

1, siliculosa, and 2, siliquosa, to class xv. ? (p. 117.)

241. Why could not the orders to classes xiv. and xv. be derived from the *number of pistilla* ? (p. 117.)

242. Name the orders to class xvi. (p. 118.)

243. _____ class xvii. (p. 118.)

244. _____ class xviii. (p. 118, 119.)

245. Why are the *terms* of the other classes used in these *three classes* for orders ? (p. 118, 119.)

246. What are the *names* of six orders of class xix, and define Or. 1. *Polygamia æqualis*. 2. *Polygamia superflua*. 3. *Polygamia frustranea*. 4. *Polygamia necessaria*. 5. *Polygamia segregata*. 6. *Polygamia monogamia* ? (p. 119, 120.)

247. Name and define the 8 orders of class xx. (p. 120.)

248. _____ — 11 orders of class xxi. (p. 120, 121.)

249. _____ 14 orders of class xxii. (p. 122, 123.)

250. _____ 3 orders of class xxiii. (p. 123.)

251. Name the *natural orders* of class xxiv. (p. 123, 124.)

252. Name the classes and orders in the reformed sexual system, by Doctor Thornton. (p. 125, 126.)

253. In what does *this reformed system* differ from the *sexual system* of Linnæus, and from what

remarks did this *reformed system* arise ? (p. 127, 128, 129, 130.)

254. Explain the *term* class, order, genus, species. (p. 131, 132, 133.)

255. Explain the *botanic terms*, class, (p. 131.)

256. _____ order, (p. 131.)

257. _____ genus, (p. 131.)

258. _____ species, (p. 132.)

259. Give an example of the *generic* and *specific characters* of plants. (p. 133.)

GLOSSARY

OF THE

CHIEF BOTANICAL TERMS.*

A.

Acuminate. Very sharp pointed. Ending in an awl-shaped point.

Aggregate, flower. When several small flowers are so combined by the intervention of some part of the fructification, that taking away one of them destroys the uniformity of the whole. This common bond is either the receptacle or the calyx.

Approximating. Approaching, or very near to.

Awl-shaped, (*Subulatus*.) Linear below, but gradually tapering towards the end, like a cobbler's awl.

Awn, (*Arista*.) A projection from the glume or chaff, in corn or grasses, commonly called the beard in corn.

Awnless. Having no awn.

B.

Banner or Standard, (*Vexillum*.) The upper large petal of a papilionaceous or pea-flower.

Biennial. Enduring two years, and then perishing.

Bracte, Bractea, or Floral leaf. A leaf different from the other leaves in shape and colour, generally situated on the peduncle, and often so near the corolla, as easily to be mistaken for the calyx.

* Copied from the "Flora Rustica" of Professor Martyn, by his liberal permission, this venerable man being ever found anxious to promote and extend science, and to him it is the botanic world is indebted for settling the Language of Botany.

C.

Calyx. The flower-cup, or outer green covering of the flower.

Ciliate. Guarded on the edge by parallel hairs, resembling the eye-lashes.

Compound leaf. Connecting several leaflets on one petiole.

Connate. United, cleaving together.

Corolla. The inner covering of the flower, which being commonly larger and more beautiful than the other parts, is in common language frequently called the flower.

Creeping stem. Running along the ground, and putting out roots.

Culm. The stem of corn and grasses.

Cusp. The point of a lance, a word applied to the calyx.

D.

Dichotomous, or forked. Dividing constantly by pairs.

Digitate leaf. Compound, having a simple petiole connecting several leaflets, spreading like the fingers when open, and usually five in number.

Divaricate, or straddling. Parting from the stalk or branch at an obtuse angle.

E.

Elliptic leaf. A long oval.

Emarginate. Notched at the end.

F.

Filament. The thread-like part of a stamen, supporting the anther, and connecting it with some other part of the flower.

Flexuose stem. Changing its direction in a curve at every joint.

Floscule, or Floret. One of the small component flowers of an aggregate flower.

Footstalk. See Petiole.

G.

Germ, Ovary, or Seed-bud. The rudiment of the fruit yet in embryo.

Glaucous. Of a sea-green colour.

Globular or spherical. Round like a globe, sphere, or ball.

Glomerate. Growing close, having the form of a ball.

Glume. The calyx or corolla of corn and grasses, called the husk or chaff, when dry.

H.

Head. A manner of flowering, in which the flowers are in a close roundish form.

Hirsute. Shaggy, rough with hairs.

I.

Imbricate. Lying over each other, like tiles on a roof.

Involucre. A calyx remote from the flower.

K.

Keel, (*Carina*.) The lower petal of a papilionaceous corolla, enclosing the stamens and pistil, shaped like a boat.

L.

Lanceolate leaf. Oblong, and gradually tapering to each extremity, shaped like the head of a lance.

Leaflet. A diminutive of leaf, and put for the component leaf in compound leaves.

Legume, or Pod. A membranaceous seed-vessel of one cell and two valves, in which the seeds are fixed alternately along one suture only, as in Pea, &c. In the siliqua, which is also called a pod in English,

the seeds are ranged along a partition, dividing it into two cells, and they are fastened to both sutures, as in Stock, Wall-flower, Turnip, &c.

Leguminous Plants. Having a legume or pod for a seed-vessel.

Linear. Of the same breadth from one end to the other.

M.

Melliferous. Bearing honey, as the nectary.

Monopetalous. Consisting of one petal.

Multifid leaf. Divided into several parts, which have the edges straight, and therefore linear sinuses between them.

N.

Nectary or Nectarium. A part of the flower secreting honey, or whatever is not calyx, corolla, stamina, or pistil.

Nerve. A simple unbranched vessel in a leaf, stipule, &c.

O.

Ovate, or egg-shaped leaf. Longer than broad, the base the segment of a circle, and narrower at the extremity. In the oval leaf the curvature is the same at both ends, but the proportion of breadth to length nearly as in the section of an egg.

P.

Panicle. A form or manner of flowering, wherein the flowers or fruits are dispersed on peduncles variously subdivided.

Papilionaceous corolla. Butterfly-shaped, consisting of four irregular petals; one called the banner or standard, two wings, and the keel, as in Pea, &c.

Peduncle. The flower or fruit-stalk, supporting the fructification only.

Perennial. Continuing several years.

Petal. The leaf of the corolla. In monopetalous flowers it is the whole corolla; in polypetalous flowers each separate part is a petal.

Petiole. The leaf-stalk or foot-stalk connecting the leaf with the branch.

Pinnate leaf. A compound leaf, having a simple petiole, connecting two rows of leaflets.

Pistil or Pointal. An organ in flowers for the reception of the farina or pollen. It usually consists of the germ, style, and stigma.

Pollen. The farina, fine meal, or impregnating dust, contained in the anther of flowers.

Procumbent stem or stalk. Lying along the ground, without putting forth roots.

Pubescent. Covered with hairs.

R.

Receptacle. The base connecting the other parts of the fructification.

S.

Scabrous, Rugged. Rough with tubercles or prominent stiffish points.

Serrate. Toothed like a saw.

Serrulate. Having very small teeth.

Sessile. Sitting close: in leaves without any petiole; in flowers and fruits, without any peduncle.

Sinuate leaves. Having wide openings in the sides. As the Oak.

Spatha or Spathe. A kind of calyx, opening or bursting longitudinally, in form of a sheath. As in Arum, Narcissus, &c.

Spike. A form or manner of flowering, wherein sessile flowers are placed alternately on a common simple peduncle. As in an ear of wheat, rye, or barley; in many of the grasses, in lavender, &c.

Spikelet, or Spicule. A partial spike, or subdivision of a spike.

Spinule, dimin. of Spina. A little thorn.

Stamen. An organ in flowers, for preparing the farina or pollen. It usually consists of the filament and anther.

Stigma. The top of the pistil; pubescent and moist, in order to detain and burst the pollen.

Stipula or Stipule. A scale at the base of the nascent petiole or peduncle.

Style. The middle part of the pistil, connecting the stigma with the germ.

Subcylindric. Almost cylindric.

Subflexuose. Somewhat or slightly flexuose.

Subglobular. Almost globular, spherical or round.

Subovate. Nearly or almost ovate.

Subquinquefid. Slightly cloven into five parts.

T.

Tendril or Clasper, (*Cirrhus*.) A filiform spiral band, by which a weak plant supports itself on other bodies, as the Vine, Pea, &c.

Ternate leaf. Having three leaflets on one petiole; as in the Trefoils.

Throat, (*Faux*.) The opening of the tube in the corolla, or between the segments of the corolla, where the tube ends.

Trifid. Three-cleft, or cloven into three parts.

Truncate. Cut off at the end in a transverse line, as the leaf of the Tulip-tree.

V.

Valve. The outer covering of a seed-vessel, or the several pieces which compose it—also the leaflets of the calyx and corolla in grasses, and the scales which close the tube in some flowers, as in Borage.

Verticillate plants. Having the flowers growing in a whorl, (*Verticillus*.)

Villous. Covered with soft hairs, like the pile of velvet.

Umbel. A kind of receptacle, extending slender proportional peduncles from a common centre, like the sticks of an umbrella. As in Parsley, &c.

W.

Wings, (*Alæ*.) The two side petals in a papilionaceous corolla or pea-flower.

Whorl, (*Verticillus*) A manner of flowering, in which several flowers surround the stem or branch in a ring.

* * For the other terms, vide the preceding part of our work, or Martyn's admirable "Language of Botany," which is alphabetically arranged.

PLATE I.

FORMS OF PLANTS.

Fig. 1. A tree, vide No. 1. p. 7.

Fig. 2. A shrub, vide No. 2. p. 7.

Fig. 3. Under shrub, vide No. 3. p. 8.

Fig. 4. Herb, vide No. 4. p. 8.

Observation. Instead of leaving the spaces wholly blank, we shall fill them up with occasional observations.

——— Some within a finer mould
Are wrought, and temper'd with a purer flame.
To these the SIRE OMNIPOTENT unfolds
The world's harmonious volume, there to read
The transcript of HIMSELF. On every part
They trace the bright impressions of HIS mind,
As seen in *tree*, or *shrub*, or tender *herb*.

How beautiful the diversity of nature ! How each plant is adapted for its station ! The earth is covered as with a carpet with lowly herbs, a little above them rise the shrubs, and undershrubs, and next, towering high in air are seen the trees, in which last more especially birds are found to build. How magnificent a scene !

What tho' I trace each herb and flower,
That drinks the morning dew ;
Did I not own JEHOVAH's power,
How vain were all I knew.

From Solomon's Song.

PLATE II.

COTYLEDONS OF PLANTS.

Fig. 1. Monocotyledonous, vide No. 23. p. 11.

Fig. 2. Dicotyledonous, vide No. 24. p. 11.

Fig. 3. Ditto.

Fig. 4. Polycotyledonous, vide No. 25. p. 11.

Observations. These are sometimes of a very thick substance, as the Lupine, but usually the cotyledons are seminal leaves, and differ essentially from the other leaves. In the Turnip they are smooth, whilst the other leaves are rough. The former are therefore attacked by the fly, whilst the rough leaves are left untouched. To avoid this evil, agriculturists have discovered, that it is right to sow seeds with the turnips whose cotyledons are found to be a greater delicacy to this insect, so that whilst they are devouring these, they leave untouched the turnips, which are safe in their rough leaves, for if the cotyledons are removed by art or accident, the infant plant becomes stunted of food, and either perishes altogether, or becomes dwarfish. Gardeners keep melon and cucumber seeds for a few years, in order that the future plants may run less to leaf, and be more abundant in fruit. This arises from the cotyledons becoming a little damaged, and hence affording a sparer diet to the young plantule. How much cause have we to admire the goodness of God in providing cotyledons to nourish the young plant! Monocotyledonous plants are usually furnished with bulbs.

PLATE III.

ROOTS OF PLANTS.

Kinds.

- Fig. 1. Bulbous, vide No. 31. p. 14.
Fig. 2. Tuberous, vide No. 32. p. 15.
Fig. 3. Fibrous, vide No. 33. p. 15.
Fig. 4. Branched, vide No. 35. p. 15.
Fig. 5. Perpendicular, vide No. 36. p. 15.
Fig. 6. Repent, vide No. 38. p. 16.
Fig. 7. Globular and Solid, vide No. 39 and
40. p. 16.
Fig. 8. Scaly, vide No. 41. p. 16.
Fig. 9. Tunicated, vide No. 42. p. 16.
Fig. 10. Knotty, vide No. 43. p. 16.
Fig. 11. Articulated, vide No. 44. p. 17.
Fig. 12. Grumous, vide No. 46. p. 17.
Fig. 13. Twin, vide No. 48. p. 17.
Fig. 14. Palmated, vide No. 49. p. 17.
Fig. 15. Premorse, vide No. 51. p. 17.

Observations. Bulbous roots contain in the winter, perfect plant, even flowers with their stamens and pistils, but in a blanched state. The perpendicular, or tap roots, absorb nourishment deep in the earth. This, if cut, shoots out horizontal or side radicles, taking another direction in the search of food. If a trench be dug, and water poured in it, roots will find their way thither.

PLATE IV.

STEMS OF PLANTS.

Kinds.

Fig. 1. Culm, vide No 53. p. 18.

Fig. 2. Scape, vide No. 54. p. 18.

Fig. 3. Stem, vide No. 55. p. 18.

Fig. 4. Stipe, vide No. 56. p. 18.

Observations. The culm is a stem peculiar to grasses, or plants allied to them. How much are we indebted to this tribe of plants, which forms the groundwork to the rest, and is of a green colour, which best relieves the sight and contrasts with the blue of heaven! The more this tribe is trodden under foot, the more it grows; hence in husbandry we observe heavy rollers are used, without destroying it. How has God adapted the food to the stomach! Grass is the natural purge to the dog and cat, but food to horse and sheep. What state would man be in were there no grass, which includes also corn? The leaves how beautifully do they close the ears of corn, and, after serving this office, roll round the stem, presenting a leaf like a flag. The scape elevates the fructification from the root. How magnificent in the towering aloe, how small in the dandelion! Stems, how they multiply the plant, and expose the leaves and flowers in the best manner to the influence of light! Stipes belong to the fern tribe, which serve for beds to shelter the poor wanderer lost in an uncultivated track. The fungus tribe are both food and poison.

PLATE V.

FOLIATION OF LEAVES.

- Fig. 1. Involute, vide No. 147. p. 33.
Fig. 2. Revolute, vide No. 148. p. 33.
Fig. 3. Obvolute, vide No. 149. p. 33.
Fig. 4. Convolute, vide No. 150. p. 33.
Fig. 5. Imbricated, vide No. 151. p. 33.
Fig. 6. Equitant, vide No. 152. p. 34.
Fig. 7. Conduplicate, vide No. 153. p. 34.
Fig. 8. Plicate, vide No. 154. p. 34.
Fig. 9. Circinal, vide No. 155. p. 34.

Observations. How are leaves in their early state confined together, and protected against cold! Trees in hot climates have no buds, in cold they have them. Besides, being thus crowded together for warmth and safety, they possess often an additional guard, as scales, glued together by a resin, as the horse-chestnut. Like young birds, these are protected also by a kind of wooliness. Each particular plant has its own mode of enfolding their infant leaves, which never alters. Whence all this intention, regularity, and design? If a bud be taken out of one tree, and put into the bark of another tree of the same genus, though a different species, it will become a tree, and produce branches and fruit of its own kind. This is called inoculation. "How manifold are thy works, O Lord, in wisdom hast thou made them all."

PLATE VI.

LEAVES.

Insertion.

Fig. 1. Rameal, vide No. 158. p. 34.

Fig. 2. Floral, vide No. 159. p. 34.

Situation.

Fig. 3. Alternate, vide No. 160. p. 34.

Fig. 4. Opposite, vide No. 161. p. 35.

Fig. 5. Twin, vide No. 163. p. 35.

Fig. 6. Verticillate, or Stellate, vide No. 164.

p. 35.

Fig. 7. Distichous, vide No. 165. p. 35.

Fig. 8. Scattered, vide No. 166. p. 35.

Fig. 9. Clustered, vide No. 167. p. 35.

Fig. 10. Imbricated, No. 168. p. 35.

Fig. 11. Adnate, vide No. 170. p. 36.

Fig. 12. Sessile, vide No. 171. p. 36.

Fig. 13. Petiolate and Peltate, vide Nos. 172,
73. p. 36.

Fig. 14. Perfoliate, vide No. 175. p. 36.

Fig. 15. Amplexicaul, vide No. 176. p. 36.

Fig. 16. Semi-amplexicaul, vide No. 177. p.
37.

Fig. 17. Connate, vide No. 178. p. 37.

Fig. 18. Vaginant, vide No. 179. p. 37.

Fig. 19. Decurrent, No. 180. p. 37.

PLATE VII.

LEAVES CONTINUED.

Direction.

- Fig. 1. Appressed, vide No. 181, p. 37.
- Fig. 2. Erect, vide No. 182, p. 38.
- Fig. 3. Spreading, vide No. 183, p. 38.
- Fig. 4. Horizontal, vide No. 185, p. 38.
- Fig. 5. Inflexed, vide No. 186, p. 38.
- Fig. 6. Revolute, vide No. 192, p. 39.
- Fig. 7. Reclined, vide No. 188, p. 38.
- Fig. 8. Reflexed, vide No. 189, p. 39.
- Fig. 9. Oblique, vide No. 193, p. 39.
- Fig. 10. Sunk, vide No. 194, p. 39.
- Fig. 11. Floating, vide No. 195, p. 39.
- Fig. 12. Emerged, vide No. 196, p. 39.

Observations. How ornamental are leaves to the plants themselves, how artfully disposed! Who adjusted them in such regular disposition? How are they seen to court the light, by which they receive their colour! Take, for instance, a Geranium, and change the aspect of its position, and you will see it at first as if in disorder, and afterwards all the leaves will be turned in an opposite direction to what they had before in order to face the light. A plant having been left in a dark garret, has been found to extend its branches, and creep to a hole, and thereby escape from its confinement, in the search of light.

PLATE VIII.

LEAVES CONTINUED.

Circumscription.

- Fig. 1. Round, vide No. 197, p. 39.
Fig. 2. Roundish, vide No. 198, p. 39.
Fig. 3. Ovate, vide No. 199, p. 39.
Fig. 4. Obovate, vide No. 200, p. 40.
Fig. 5. Oval, vide No. 201, p. 40.
Fig. 6. Oblong, vide No. 202, p. 40.
Fig. 7. Lanceolar, vide No. 203, p. 40.
Fig. 8. Parabolic, vide No. 205, p. 40.
Fig. 9. Spatula-shaped, No. 206, p. 41.
Fig. 10. Wedge-shaped, No. 207, p. 41.
Fig. 11. Linear, vide No. 208, p. 41.
Fig. 12. Subulate, vide No. 209, p. 41.
Fig. 13. Acerose, vide No. 210, p. 41.
Fig. 14. Ovate-oblong, No. 212, p. 41.
Fig. 15. Linear-lanceolate, vide No. 213, p.
42.

Angles.

- Fig. 16. Angular, vide No. 215, p. 42.
Fig. 17. Triangular, No. 216, p. 42.
Fig. 18. Deltoid, vide No. 217, p. 42.

Sinuses and Lobes.

- Fig. 19. Heart-shaped, No. 220, p. 43.
Fig. 20. Kidney-shaped, or reniform, vide No.
221, p. 43.
Fig. 21. Crescent-shaped, vide No. 222, p.
43.

PLATE IX.

LEAVES CONTINUED.

Sinuses and Lobes continued.

Fig. 1. Arrow-shaped, or sagittate, vide No. 223, p. 43.

Fig. 2. Spear-shaped, or hastate, vide No. 224, p. 43.

Fig. 3. Lyre-shaped, or lyrate, vide No. 225, p. 43.

Fig. 4. Runcinate, vide No. 226, p. 44.

Fig. 5. Fiddle-shaped, or panduriform, vide No. 227, p. 44.

Fig. 6. Pinnatifid, vide No. 228, p. 44.

Fig. 7. Sinuate, vide No. 229, p. 44.

Fig. 8. Laciniated, or jagged, vide No. 230, p. 44.

Fig. 9. Lobed, vide No. 231, p. 44.

Fig. 10. Palmated, vide No. 232, p. 44.

Borders.

Fig. 11. Crenate, vide No. 235, p. 45.

Fig. 12. Serrated, vide No. 236, p. 45.

Observations. Plants placed in a dark room will even turn their leaves to the light of a candle. Light seems to enter as a component part of vegetables, as leaves become blanched when excluded from light. It probably helps the decomposition of water, and the liberation of the oxygen, for the formation with caloric of oxygen gas which is the support of all animated nature.

PLATE X.

LEAVES CONTINUED.

Borders continued.

Fig. 1. Dentate, or toothed, vide No. 237, p. 45.

Fig. 2. Ciliate, vide No. 238, p. 45.

Fig. 3. Spiny, vide No. 239, p. 45.

Fig. 4. Cartilaginous, vide No. 240, p. 46.

Fig. 5. Erosc, vide No. 243, p. 46.

Fig. 6. Lacerated, vide No. 244, p. 46.

Summits.

Fig. 7. Acute, vide No. 245, p. 46.

Fig. 8. Acuminate, vide No. 246, p. 46.

Fig. 9. Cuspidate, vide No. 247, p. 46.

Fig. 10. Mucronate, vide No. 248, p. 46.

Fig. 11. Tendrilled, vide No. 249, p. 46.

Fig. 12. Obtuse, vide No. 250, p. 47.

Fig. 13. Emarginate, vide No. 251, p. 47.

Fig. 14. Truncated, vide No. 253, p. 47.

Fig. 15. Præmorse, vide No. 254, p. 47.

Observations. The petiolus or foot-stalk of the leaf, shoots forth into several fine ramifications, which anastomizing, that is, uniting, form a regular and beautiful series of ligneous vessels, or web-work, which is filled up with parenchyma, or pulp, and this when eat away produces those skeletons of leaves, so exquisite in their different appearances, infinitely superior to the finest laces, and which are formed also by maceration in water.

PLATE XI.

LEAVES CONTINUED.

Surface.

- Fig. 1. Smooth, vide No. 257, p. 47.
- Fig. 2. Pubescent, vide No. 258, p. 47.
- Fig. 3. Velvety, vide No. 259, p. 48.
- Fig. 4. Tomentose, vide No. 260, p. 48.
- Fig. 5. Silky, vide No. 261, p. 48.
- Fig. 6. Hirsute, vide No. 262, p. 48.
- Fig. 7. Scabrous, vide No. 263, p. 48.
- Fig. 8. Aculeate, vide No. 264, p. 48.
- Fig. 9. Strigose, vide No. 265, p. 48.
- Fig. 10. Nerveless, vide No. 270, p. 49.
- Fig. 11. Three-nerved, vide No. 272, p. 49.
- Fig. 12. Many-nerved, vide No. 273, p. 49.

Observations. The upper and under surfaces usually differ, the upper being mostly polished. The under is replete with absorbing vessels, which imbibe moisture.—Hence, in dry weather plants hang their leaves down. If two leaves be placed on water in different surfaces, that placed on the under surface will survive for many days and weeks, whereas the other will soon perish. The absorbent power of leaves will be again treated of, p. 175.

PLATE XII.

LEAVES CONTINUED.

Surface continued.

- Fig. 1. Lineate, vide No. 274, p. 49.
- Fig. 2. Striate, vide No. 275, p. 49.
- Fig. 3. Sulcate, vide No. 276, p. 49.
- Fig. 4. Veiny, vide No. 277, p. 49.
- Fig. 5. Wrinkled, vide No. 278, p. 49.
- Fig. 6. Bullate, vide No. 279, p. 49.
- Fig. 7. Pitted, vide No. 280, p. 50.
- Fig. 8. Glandular, vide No. 282, p. 50.

Expansion.

- Fig. 9. Channelled, vide No. 286, p. 51.
- Fig. 10. Cucullate, vide No. 289, p. 51.
- Fig. 11. Flat, vide No. 285, p. 51.

Observations. Leaves are organs of perspiration. Dr. Hales found that the great sun-flower lost 1 lb. 14 oz. weight in the course of twelve hours in a hot dry day. In a dry night it lost about 3 oz.; in a moist night scarcely any alteration was observable, but in a rainy night it gained 2 or 3 oz. The same experiment was made on the vine, cabbage, &c. with various results as to the exact degree of the perspiration, but all proving it to be considerable. Evergreens are found to perspire much less than other shrubs,

PLATE XIII.

LEAVES CONTINUED.

Expansion continued.

Fig. 1. Convex, vide No. 288, p. 51.

Fig. 2. Plicate, vide No. 290, p. 51.

Fig. 3. Waved, vide No. 291, p. 52.

Fig. 4. Curled, vide No. 292, p. 52.

Form.

Fig. 5. Round, vide No. 297, p. 52.

Fig. 6. Gibbous, vide No. 298, p. 53.

Fig. 7. Depressed, vide No. 299, p. 53.

Fig. 8. Compressed, vide No. 300, p. 53.

Fig. 9. Triquetrous, vide No. 301, p. 53.

Observations. It is reported that there is a tree of great extent in Madagascar which is continually dropping water like heavy rain. And Dr. Smith has observed, that groves of poplar and willow exhibit this phenomenon, even in England, in hot calm weather, when drops of clear water trickle from their leaves like a light shower of rain. Ovid has made an elegant use of resinous exudation of the Lombardy poplars, which he supposes to be the tears of Phæton's sisters, who were transformed into those trees.

PLATE XIV.

LEAVES CONTINUED.

Forms continued.

Fig. 1. Sword-shaped, or ensiform, vide No. 302, p. 53.

Fig. 2. Strap-shaped, or tongue shaped, vide No. 303, p. 53.

Fig. 3. Faulchion-shaped, or acinaciform, vide No. 304, p. 53.

Fig. 4. Hatchet-shaped, or dolabriform, vide No. 305, p. 54.

Composition.

Fig. 5. Jointed, vide No. 311, p. 55.

Fig. 6. Compound, vide No. 310, p. 55.

Fig. 7. Stipuled, vide No. 255, p. 47.

Observations. Of sixteen trees tried by Bonnet, the aspen, (*populus tremula*,) and lilac, were the only leaves that seemed to imbibe water equally well by either surface, whilst all the others evidently succeeded best with their under sides laid upon the water, being in that respect the reverse of herbaceous plants. Of these, the white mulberry leaf was the most remarkable, not living more than five days when supplied by the upper surface, whilst such as floated on their backs continued in perfection near six months. The vine and the walnut were not less remarkable for fading almost as soon, when fed by their upper surface, as when left without any water at all. Leaves of hazelnut and the rose, when laid upon the water, imbibe sufficient moisture to nourish other leaves on the same branch: so will one leaflet of a French bean supply its neighbour, that does not touch the water.

PLATE XV.

LEAVES CONTINUED.

Composition continued.

- Fig. 1. Binate, vide No. 313, p. 55.
Fig. 2. Digitate, vide No. 314, p. 55.
Fig. 3. Pedate, vide No. 315, p. 55.
Fig. 4. Pinnate, vide No. 317, p. 56.
Fig. 5. Ternate, vide No. 316, p. 56.

Observations. All plants produce fresh leaves every year ; but all do not renew them at the same precise period. Amongst woody plants, the elder, and most of the honey-suckles ; amongst herbaceous, the crocus and tulip, are the first which put out or expand their leaves. The oak, walnut, and ash, are constantly the latest in putting forth their leaves. The greatest number of plants unfold their leaves in spring ; but the mosses in winter. These striking differences, with respect to so capital a circumstance in plants, as that of unfolding their leaves, seem to indicate that each species of plant has a temperature proper or peculiar to itself, and requires a certain degree of heat to extricate the leaves from their buds, and produce the appearance in question. In general, plants stript of many of their leaves cannot shoot vigorously ; witness those that have undergone the depredations of insects, and animals, which diminishes the number of their shoots, and sometimes wholly suspends their growth. Young gardeners are very apt to strip away leaves to let the sun get at the fruit : but this should only be done when the fruit is nearly ripe, as the leaves absorb from the air nourishment to the fruit. The mulberry, the proper food for silkworms, however, bears the loss of its foliage three or four times a year, without the least injury, so wisely has Providence adapted all things !

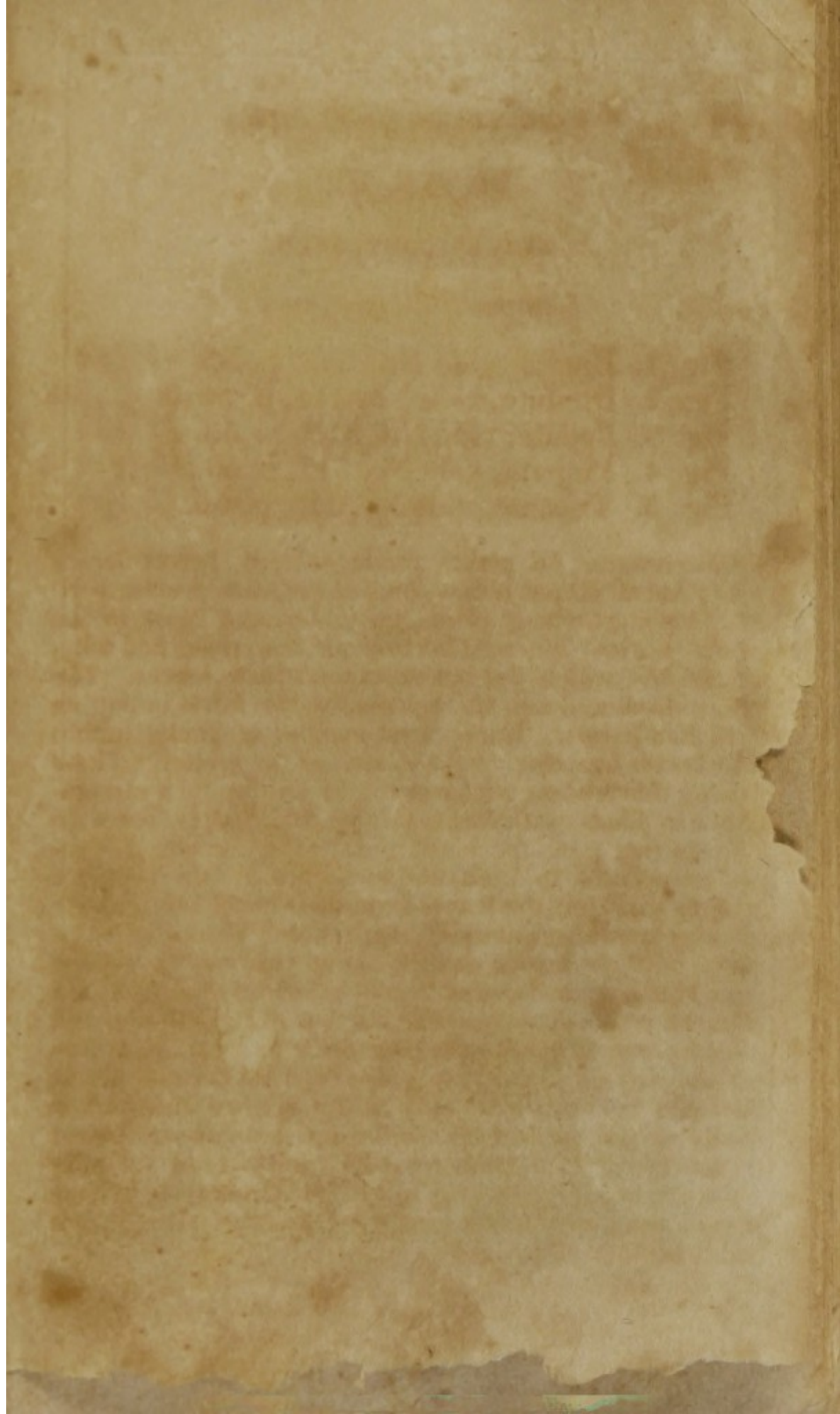




PLATE XVI.

LEAVES CONTINUED.

Composition continued.

Fig. 1. Two-yoked, or bijugous, vide No. 318, p. 56.

Fig. 2. Three-yoked, or trijugous, vide No. 319, p. 56.

Fig. 3. Unequally pinnate, vide No. 320, p. 56.

Fig. 4. Abruptly pinnate, vide No. 321, p. 56.

Recomposition.

Fig. 5. Decompound, vide No. 322, p. 56.

Fig. 6. Bigeminate, vide No. 323, p. 56.

Fig. 7. Biternate, vide No. 324, p. 57.

Of all leaves the compound are most affected by light, insomuch that it appears in several cases the sole cause of their expansion, and when withdrawn they fold over each other, and are then in that state called their *sleep*. They appear to possess even a greater degree of vitality than other leaves, and some of them are sensitive, as the *mimosa sensitiva*, and *pudica*, *oxalis sensitiva*, and *smithia sensitiva*. The smallest touch to the sensitive plant, as it is called, will contract its leaf, a still wider stroke, a branch, and a stroke on the branch, almost the entire plant.

PLATE XVII.

LEAVES CONTINUED.

Recomposition continued.

Fig. 1. Super-decompound, vide No. 326, p. 57.

Fig. 2. Tergeminate, vide No. 327, p. 57.

Fig. 3. Triternate, vide No. 328, p. 58.

Fig. 4. Tripinnate, vide No. 329, p. 58.

Light acts beneficially upon the upper surface of leaves, and hurtfully upon the under side, hence the former is always turned towards the light, in whatever situation the plant may happen to be placed. Trees nailed against a north wall turn their leaves from the wall, and in direct opposition to those on a southern wall against them. Plants in a hot house all present the fronts of their leaves, and this influences even the posture of the branches, to the side where there is more light, but neither to the quarter where most air is admitted, nor to the flue in search of heat. If the branches of a trained fruit tree in full leaf be disturbed in their position, the leaves resume their original direction in the course of a day or two, the brighter the day, the more quickly is this accomplished. Succulent leaves, though so thick and firm, and unapt for motion, are peculiarly sensible of light. M. Caldroni found vine-leaves turn to the light when separated from the stem, and suspended by a thread. Of this any one may be easily satisfied, provided the experiment be made with sufficient care and delicacy.





PLATE XVIII.

STIPULES.

Fig. 1. Twin, vide No. 365, p. 63.

ARMS OF PLANTS.

Fig. 2. Glands, vide No. 417, p. 68.

Fig. 3. Bractea, vide No. 424, p. 68.

Fig. 4. Prickles, vide No. 406, p. 67.

Fig. 5. Spines, or thorns, vide No. 405, p. 66.

Fig. 6. In threes, ternate, vide No. 412, p. 67.

Linnaeus observes, that thorns often disappear by culture, thus the pear-tree in its wild state is protected with thorns, but from cultivation it loses this defence. In the white thorn, or what is commonly called May, the spines proceed in such a regular direction, that if the leaves be stript off from a branch, it will present a regular *chevaux de frize*. Some tendrils after taking a number of turns in one direction, have a power of twining a contrary way, by which their chances of seizing objects are multiplied, some plants twine with the sun, some against his motion. The flower-stalk of the *cardiospermum holicacabum* ends in a hook, by which it grasps a neighbouring bow, and so gains a support for its heavy fruit which hangs like a bunch of grapes. At every step we observe the power and goodness of the all-wise Creator !

PLATE XIX.

DIFFERENT CALYXES.

- Fig. 1. Perianth, vide No. 594, p. 87.
Fig. 2. Involucre, vide No. 624, p. 90.
Fig. 3. Spathe, vide No. 632, p. 92.
Fig. 4. Glume, vide No. 643, p. 93.
Fig. 5. Calyptra, vide No. 646, p. 93.
Fig. 6. Volva, vide No. 647, p. 93.
Fig. 7. Amentum, vide No. 540, p. 81. Which is rather to be considered as a receptacle than a Calyx.

Observations. Of 1021 Genera, known in the time of Professor Alston, 673 had a perianth, 72, a spathe ; 75, an involucre ; 29, a glume ; 18, an ament ; and 3, a calyptra ; and about 110 want a calyx altogether. We cannot fail to admire the goodness of Providence in this affair ; thus, in the lily, there needed no calyx, the petals being fleshy and firm ; but in the carnation, whose petals are long and slender, there is a strong calyx, a perianth, increased with scales at bottom, and with five large teeth at top, which close inwards before the flower expands, and outwards afterwards, as a rest or prop, so of the involucre, it first, as in the anemony, closes the flower, afterwards is found at a distance on the flower-stem, the ament is like a tiled house at first, and the spathe as a hood, as in the calyptra and volva, and the chaff of corn is at first covered with glumes, some containing one or two or more flowers.





PLATE XX.

DIFFERENT COROLLAS.

- Fig. 1. Monopetalous, vide No. 649, p. 94.
- Fig. 2. Tripetalous, vide No. 651, p. 94.
- Fig. 3. Tetrapetalous, vide No. 642, p. 94.
- Fig. 4. Pentapetalous, vide No. 653, p. 94.
- Fig. 5. Bell-shaped, vide No. 657, p. 95.
- Fig. 6. Funnel-shaped, vide No. 659, p. 95.
- Fig. 7. Ringent, vide No. 680, p. 98.
- Fig. 8. Personate, vide No. 681, p. 98.
- Fig. 9. Rosaceous, vide No. 685, p. 99.
- Fig. 10. Cruciform, vide No. 686, p. 99.
- Fig. 11. Papilionaceous, vide No. 688, p. 100.
- Fig. 12. Anomalous, No. 689, p. 100.

The Tubular, Ligulate and Compound flowers will be found in the orders.

Observations. How is the sight regaled by this exuberance of the goodness of God! Had he not designed to please us, would he have created so many delightful objects for our contemplation and wonder? and have added the regale of smell to the charms of beauty?—Solomon in all his glory is not arrayed like one of these. How then will heaven be spread over with flowers!

PLATE XXI.

DIFFERENT NECTARIES.

- Fig. 1. Spur or horn, vide No. 704, p. 102.
Fig. 2. Like a funnel, vide No. 708, p. 102.
Fig. 3. Fringed scales, vide No. 721, p. 103.
Fig. 4. Five petals resembling a nest of doves, vide No. 715, p. 103.
Fig. 5. Top like dolphins, elevated on a pillar, vide No. 716, p. 103.
Fig. 6. A simple cavity, vide No. 710, p. 102.

Observations. At every advance we have more and more cause to be grateful to Providence. It has been the will of God to elevate even inanimate flowers to distinction. The stamina and pistilla are the males and females in plants, and these generally are produced in the same flower protected and nourished by the corolla and calyx. Sometimes these organs are found apart as in the cucumber, when bees carry the farina of the male flower to the pistilla of the female flower, and thus produce the espousals of flowers. The residuary farina is now made by them into wax, which is the material of their octagon cells, a fabric which has been the astonishment of mathematicians. In these cells the honey of flowers is deposited, sucked in by a proboscis evidently marking design, and what a whole city could not have accomplished, is performed for us by these little industrious labourers. Their economy is a source of incessant admiration, and an admirable epitome of a well ordered state. How ought we also, gifted with reason, but of a superior kind, to elevate our thoughts to the Supreme Disposer of all things.





PLATE XXII.

WHITE LILY.

In this flower there is NO CALYX.

Fig. 1, 2, 3, 4, 5, 6. A Corolla, Hexapetalous, composed of six petals, vide No. 654, p. 94.

Fig. 7, 8, 9, 10, 11, 12. Has six stamina, vide No. 822, p. 113.

STAMENS perfect, composed of

Fig. 13. The Anther, vide No. 729, p. 104.

Fig. 14. Filament, vide No. 730, p. 104.

PISTILLUM perfect, composed of

Fig. 15. Stigma, vide No. 726, p. 104.

Fig. 16. Style, vide No. 727, p. 104.

Fig. 17. Germen, vide No. 728, p. 104.

Observations. This flower has been usually selected for teaching, as possessing six large fleshy petals, three of which have a ridge in the middle and excavations of each side of this elevation, into which the sides or edges of the other petals are locked, when the flower is in bud, marking most evident design in Providence. These petals, when expanded, form a beautiful basin, out of which project the six stamina, whose anthers hang upon a point, so that they vibrate with every gale, and open their cells by the sides folding back, disclosing the farina. The stigma of the pistillum is large for the reception of the globules of farina, (or rather a fine essence,) which passes down the style to vivify the seeds lodged in the germen, which afterwards becomes a pericarp. The other parts of the flower have been before treated of.

PLATE XXIII.

THE TWENTY FOUR CLASSES.

Fig. 1. Monandria, vide No. 776, p. 109, also No. 800, p. 111.

Fig. 2. Diandria, vide No. 777, p. 109, also No. 803, p. 112.

Fig. 3. Triandria, vide No. 778, p. 109, also No. 807, p. 112.

Fig. 4. Tetrandria, vide No. 779, p. 109, also No. 811, p. 112.

Fig. 5. Pentandria, vide No. 780, p. 109, also No. 815, p. 113.

Fig. 6. Hexandria, vide No. 781, p. 109, also No. 822, p. 113.

Fig. 7. Heptandria, vide No. 782, p. 109, also No. 828, p. 114.

Fig. 8. Octandria, vide No. 783, p. 110, also No. 833, p. 114.

Fig. 9. Enneandria, vide No. 784, p. 110, also No. 838, p. 114.

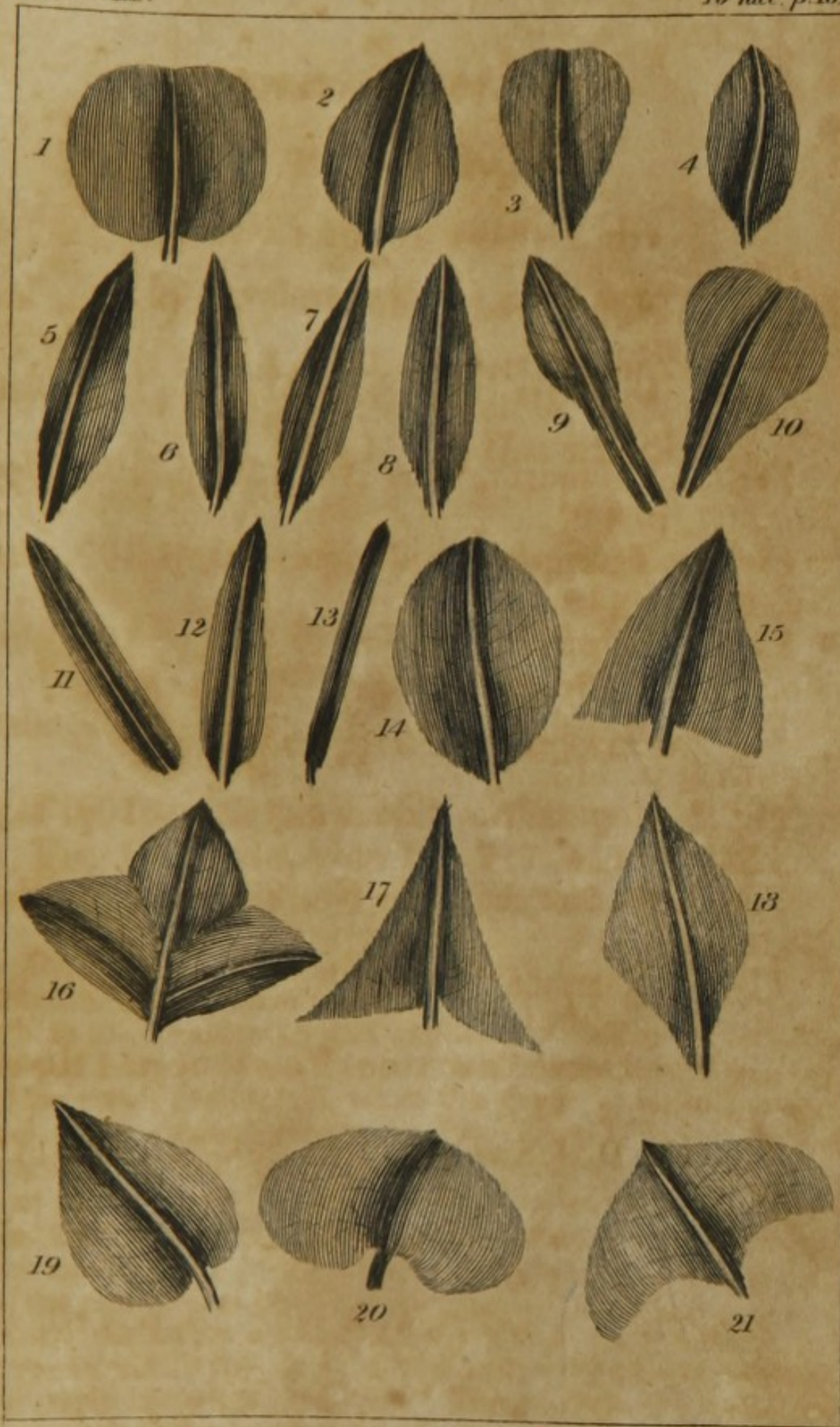
Fig. 10. Decandria, vide No. 785, p. 110, also No. 842, p. 115.

Fig. 11. Dodecandria, vide No. 786, p. 110, also No. 848, p. 115.

Fig. 12. Icosandria, vide No. 787, p. 110, also No. 855, p. 116.

Fig. 13. Polyandria, vide No. 788, p. 110, also No. 861, p. 116.

Fig. 14. Didynamia, vide No. 789, p. 110, also No. 869, p. 117.



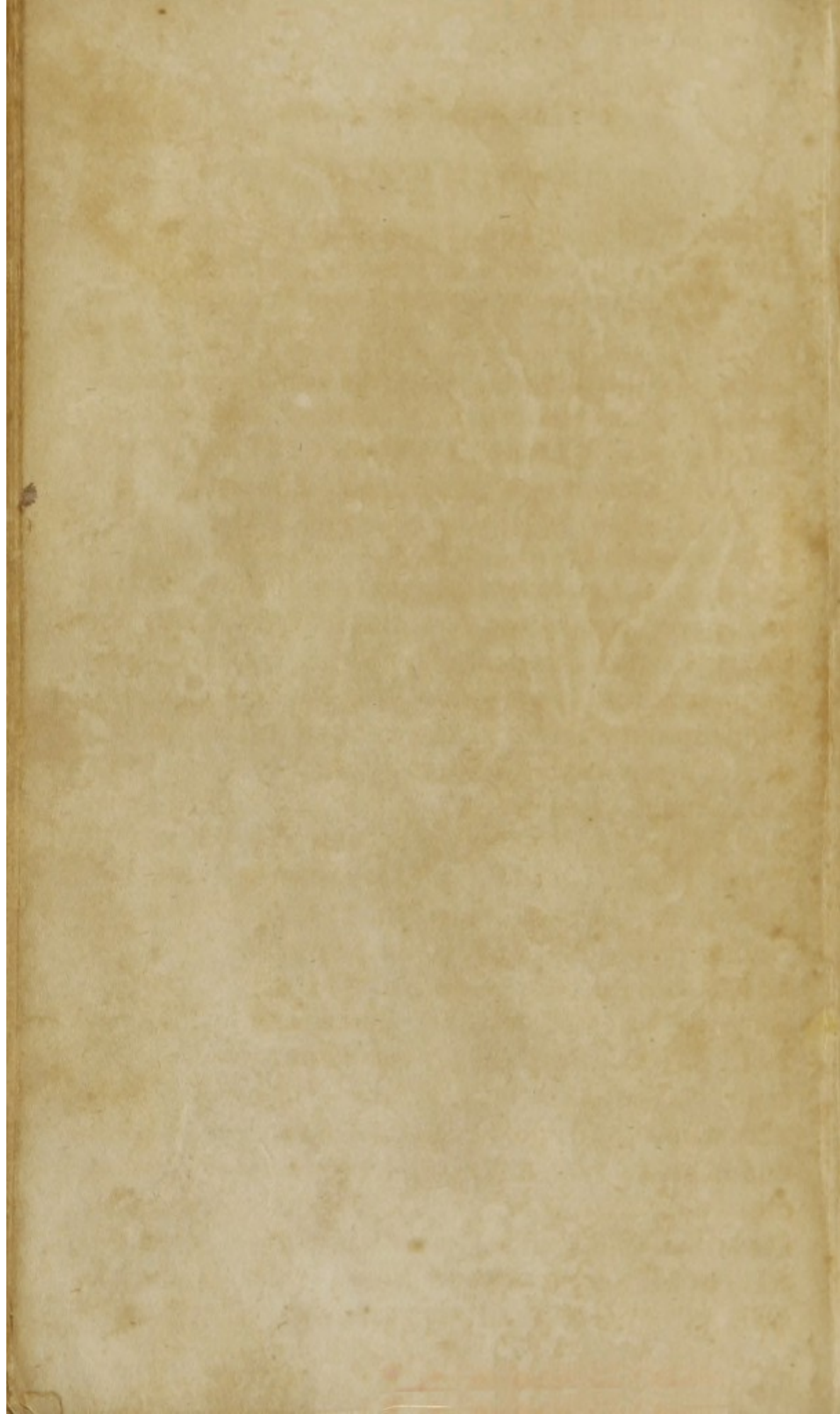


PLATE XXVII.

BOTANICAL EXERCISES.

We suppose the reader must now wish to put into *Practice* the knowledge previously acquired, and we will therefore conduct him into the fields and garden. Suppose he was to see the following plant, he would then describe it—

RED VALERIAN.

(*Valeriana rubra.*)

Is an herb (vide No. 4. p. 8 ;) an exotic (vide No. 5. p. 8.) cultivated in gardens (vide No. 10. p. 9.) and producing two cotyledons (vide No. 24. p. 11.) an annual (vide No. 27. p. 13.) having a tuberous root (vide No. 32. p. 15.) shooting perpendicularly in the ground (vide No. 36. p. 15.) possessing a stem (vide No. 55. p. 18.) herbaceous (vide No. 57. p. 19.) succulent (vide No. 62. p. 19.) nearly erect (vide No. 68. p. 20.) round (vide No. 83. p. 23.) smooth (vide No. 103. p. 25.) simple (vide No. 114. p. 27) leaves, cauline (vide No. 157. p. 34.) opposite (vide No. 161. p. 35.) sessile (vide No. 171. p. 36.) reclined (vide No. 188. p. 38.) lanceolate (vide No. 204. p. 40.) upper leaves (linear-lanceolate) (vide No. 213. p. 42.) intire (vide No. 214. p. 42.) without stipules (vide No. 256. p. 47.) deciduous (vide No. 307. p. 54.) flowers on peduncles (vide No. 444. p. 71.) forming an umbel (vide No. 568. p. 84.) which is simple (vide No. 571. p. 85.) each flower has a calyx (vide No. 593. p. 87.) a perianth (vide No. 594. p. 87.)

PLATE XXVII. CONTINUED.

short (vide No. 616. p. 89.) and a corolla (vide No. 648. p. 93.) monopetalous (vide No. 649. p. 94.) funnel-shaped (vide No. 659. p. 95.) tube bent (vide No. 663. p. 96.) orifice naked (vide No. 672. p. 97.) limb spreading (vide No. 677. p. 98.) cut into five laciniae, or segments (vide observations page 101.) having a nectary, a spur (vide No. 704. p. 102.) possessing one stamen (vide No. 725. p. 104.) and one pistillum (vide No. 724. p. 104.) Therefore of Class 1. monandria, (vide No. 800. p. 111.) Order 1. monogynia, (vide No. 801. p. 112.) in the Sexual System, (vide No. 774. p. 109.) or an exceptional species, of class iii. since the other valerians have three stamina.





PLATE XXVIII.

MALE SPEEDWELL, (*Veronica officinalis*.)

Or the description may be drawn out thus :

Fig. 1. ROOT, (No. 26, p. 12,) perennial (No. 30,) fibrous (33)

Fig. 2. STEM, (55) rigid (66) round (83) hirsute (106)

Fig. 3. LEAVES, (145) opposite (161) petiolate (172) ovate (199) serrated (236) somewhat hirsute (262)

Fig. 4. PEDUNCLES, (444) simple (445) bracteate (473)

Fig. 5. (454) a narrow leaf.

Fig. 6. FLOWERS, (479) terminal (483) peduncles (491) single (500) spicate (525)

Fig. 7. CALYX, a perianth (594) 4-partite (596) rough (609)

Fig. 8. COROLLA, (648) monopetalous (649) wheel-shaped, or rotate (661) tube straight (662) limb 4-partite (vide observation, p. 101) segments ovate, unequal (vide p. 101,) blue (697)

Fig. 9. STAMINA, (725) two, therefore of class Diandria (803) perfect, having an anther (729) at top, and filament (730)

Fig. 10. PISTILLUM, (724) one, therefore of the order Monogynia, (804) perfect, having a stigma obscure (726) style (727) and germen (728)

Fig. 11. PERICARP, (734) a capsule (743) many seeded (752)

Fig. 12. SEEDS, small, flat.

Fig. 13. NATIVE of Great Britain, found in gardens (10) meadows (14) and mountains (15)

PLATE XXIX.

YELLOW FLAG (*Iris Pseudacorus.*)

Fig. 1. ROOT, perennial (30) fibrous (33)

Fig. 2. STEM, medullary (64) erect (68) geniculate (72) round (83) smooth (103)

Fig. 3. LEAVES, radical (156) and cauline (157) alternate (160) sessile (171) vaginant (179) erect (182) ensiform (302)

Fig. 4. PEDUNCLES, axillary (453)

Fig. 5. FLOWERS, axillary (484) erect (492) yellow (700)

Fig. 6. CALYX, a spatha (632) two, or three-flowered (642) of 1 or 4 valves, or leaves (vide observation to No. 594)

Fig. 7. COROLLA, six-partite (vide observation, p. 101,) segments 3, large, ovate, reflexed, 3 segments, small, upright, pointed.

Fig. 8. STAMINA, 3, perfect, anther oblong, under the stigma of the pistillum, of class triandria, (807)

Fig. 9. PISTILLUM, 1, perfect, stigma, remarkable, being like 3, petals, each of which appears bifid, segments pointed, serrate at top, concealing the stamina. Style simple, germen triangular. Of the order, 1. monogynia (808)

Fig. 10. PERICARP, a capsule (743)

Fig. 11. SEEDS, numerous.

Fig. 13. NATIVE of Britain (6) near rivers (20)





PLATE XXX.

LACINIATED TEASEL, (*Dipsacus laciniatus*.)

Fig. 1. STEM, (55) rigid (66) erect (68) articulated (91) striated (100) hirsute (106) branched (118) branches, spreading (136)

Fig. 2. LEAVES, two at each joint, opposite (161) connate (178) recurved (187) middle rib aculeate (264)

Fig. 3. CALYX, common, polyphyllous (620) rough (609) permanent (614) long (615) the proper perianth (594) 4-toothed.

Fig. 4. COROLLA, monopetalous (649) tube, straight (662) limb straight (678) quadrifid (vide observation, p. 101,) segments ending acute.

Fig. 5. STAMINA 4, perfect, filaments long, anthers incumbent, hence of Class IV. TETRANDRIA (811)

Fig. 6. PISTILLUM 1, style filiform, stigma, simple, hence of Order 1, MONOGYNIA (808)

Fig. 7. PERICARP, none.

Fig. 8. SEED, single, crowned (764)

PLATE XXXI.

PRIMROSE (*Primula acaulis.*)

Fig. 1. ROOT, perennial (30) perennose (vide 51 and observation) scaly.

Fig. 2. STEM, none.

Fig. 3. LEAVES, radical (156) erect (182) somewhat revolute (192) oblong-ovate (212 and 199, vide observation to No. 212) unequally crenate (235) smooth above (257) hirsute on the under side (262) veiny (277) wrinkled (278) somewhat waved (291) peduncle very short (356)

Fig. 4. STIPULES, subulate (374)

Fig. 5. FLOWERS on very long petioles (478) radical (480) erect (492) single (500) of a sulphur colour.

Fig. 7. CALYX, a perianth (594) monophyllous (vide observation to No. 594) 5-toothed, rough (609) permanent (614) intermediate size (617)

Fig. 8. COROLLA, monopetalous (649) salver-shaped (660) tube, cylindrical (664) prominent (671) orifice, dilated (669) limb, spreading (677) five-parted, segments, emarginate.

Fig. 9. STAMINA 5, perfect, anthers, erect, oblong. Filaments very short. Comes under Class V. Pentandria (815)

Fig. 10. PISTILLUM 1, perfect, stigma very conspicuous, style long, germen round. Hence of order 1, monogynia.

Fig. 11. PERICARP, a capsule (743)

Fig. 12. SEEDS many.

Fig. 13. NATIVE of England, found common in meadows (14)





PLATE XXXII.

BELLADONNA (*Amaryllis*.)

Fig. 1. ROOT, bulbous (31) perennial (30) tunicated (42)

Fig. 2. STEM, a scape (54) succulent (62) round (83) smooth (103)

Fig. 3. LEAF, radical (156) linear (208)

Fig. 4. FLOWERS, umbellate (568) pedunculed (570) simple (571) a beautiful flesh colour.

Fig. 5. CALYX, common (vide sect. xiii. p. 90) two-valved (638) many flowered (642)

Fig. 6. COROLLA, hexapetalous (654) bell-shaped (657) petals lanceolate, with a hook at each alternate petal.

Fig. 7. STAMINA 6, perfect, conspicuous, filaments long, anthers incumbent. Hence of Class VI. Hexandria.

Fig. 8. PISTILLA, perfect, having a conspicuous stigma, long style, and large germen. Hence of order 1. Monogynia (823)

Fig. 9. PERICARP, a capsule (743)

Fig. 10. SEEDS, many, globular (756)

Fig. 11. NATIVE of the Caribee Islands, Barbadoes and Surinam.

PLATE XXXIII.

HORSE CHESTNUT (*Æsculus hippocastanum*.)

Fig. 1. TRUNK, arboreous (60) solid (61) branched (118) branches spreading (136) somewhat erect (135)

Fig. 2. LEAVES, opposite (161) petiolate (172) palmated (232) folioles seven, cuneiform and oblong (202) and (207) serrated (236) acute (245) somewhat wrinkled (278) middle one largest.

FLOWERS, thyrsoïd (556)

Fig. 4. CALYX, a perianth (594) monophyllous (vide observation, p. 87) quinquefid, or 5-cleft (vide Nos. 597 and 598.)

Fig. 5. COROLLA, tetrapetalous (652) subrotund, margins plicate (vide 676) and spreading (vide 677) anomalous (687)

Fig. 6. STAMINA 7, perfect, filaments pilous (vide No. 105) anthers large. Comes under class VII. Heptandria (828)

Fig. 7. PISTILLUM, perfect, stigma, subulate, style, villous (vide No. 259) germen, ovate. Hence of order 1, monogynia (829)

Fig. 8. PERICARP, a capsule (743) muricated (vide No. 109) trilocular (vide No. 749) trivalvular (vide No. 746) two or three-seeded (752)

Fig. 9. SEEDS, globular, (756.)

Fig. 10. NATIVE of Asia.





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PLATE XXXIV.

EVENING PRIMROSE (*Oenothera*.)

Fig. 1. STEM, rigid (66) erect (68) hairy (105.)

Fig. 2. LEAVES, alternate (160) sessile (171) spreading (183) under leaves ovate-lanceolate (204) obscurely toothed (237) ending acute (245) smooth (257) flat (285.)

Fig. 3. FLOWERS, axillary (484) peduncled (491) yellow, single (500) spicate (525.)

Fig. 4. CALYX, a perianth, monophyllous (594) quadripartite (vide No. 596) laciniae, oblong, acute, deflexed, deciduous (613.)

Fig. 5. COROLLA, tetrapetalous (652) regular (656) petals obcordate.

Fig. 6. STAMINA 8, perfect, filaments long, anthers incumbent. Hence of class VIII. octandria (833.)

Fig. 7. PISTILLA 1, perfect, stigma quadrifid, style long, germen beneath the calyx. Falls under order 1, monogynia.

Fig. 8. PERICARP, a capsule.

Fig. 9. SEEDS, many.

Fig. 10. NATIVE of Virginia.

PLATE XXXV.

FLOWERING-RUSH (*Butomus umbellatus*.)

Fig. 1. ROOT, horizontal (37) repent (38.)

Fig. 2. STEM, a scape (54) succulent (62) round (83) smooth (103.)

Fig. 3. LEAVES, equitant (152) erect (182) triangular (216) quite intire (234) acute (254) smooth (257.)

Fig. 4. FLOWERS, single (500) umbellate, simple (571) a pale red.

Fig. 5. CALYX, an involucre (624) universal (625) three-leaved (vide No. 622.)

Fig. 6. COROLLA, hexapetalous (654) marcescent (692)

Fig. 7. STAMINA 9, perfect. Hence of class IX. enneandria.

Fig. 8. Pistilla 6, perfect, stigmas bifid, styles inconspicuous, germens oblong, producing order 3, hexagynia (841.)

Fig. 9. PERICARP, capsules (743) six.

Fig. 10. SEEDS, many.

Fig. 11. NATIVE of Britain, on the borders of rivers. (20)





PLATE XXXVI.

GRANULATED SAXIFRAGE (*Saxifraga granulata*.)

Fig. 1. ROOT, tuberous (82) granulated (47.)

Fig. 2. STEM, round (83) hairy (105.)

Fig. 3. LEAVES, radical (156) and cauline (157) petio-
late (172) kidney-shaped (221) crenate (235)

Fig. 4. CALYX, a perianth, monopetalous (594) quin-
quepartite (vide No. 596) segments ending acute, perma-
nent (614)

Fig. 5. COROLLA, pentapetalous (653)

Fig. 6. STAMINA 10. Hence of class X. decandria
(842.)

Fig. 7. PISTILLA 2, that is, there is a common germen,
ending in two styles. Hence falls under order 2. dygynia
(844.)

Fig. 8. PERICARP, a capsule.

Fig. 9. SEEDS, many, small.

Fig. 10. NATIVE of Europe.

PLATE XXXVII.

ASERABACCA (*Asarum Canadense.*)

Fig. 1. STEM, the termination of the leaves, which are in pairs.

Fig. 2. LEAVES, radical (156) twin (163) petiolate (172) petioles very long (460) villous at the base, intire (214) kidney-shaped (221) mucronate (248.)

Fig. 3. FLOWERS arise from the centre of the two petioles, small, and always under the shelter of the leaves.

Fig. 4. CALYX, a perianth, monophyllous (594) three-cleft (vide No. 597.)

Fig. 5. No Corolla.

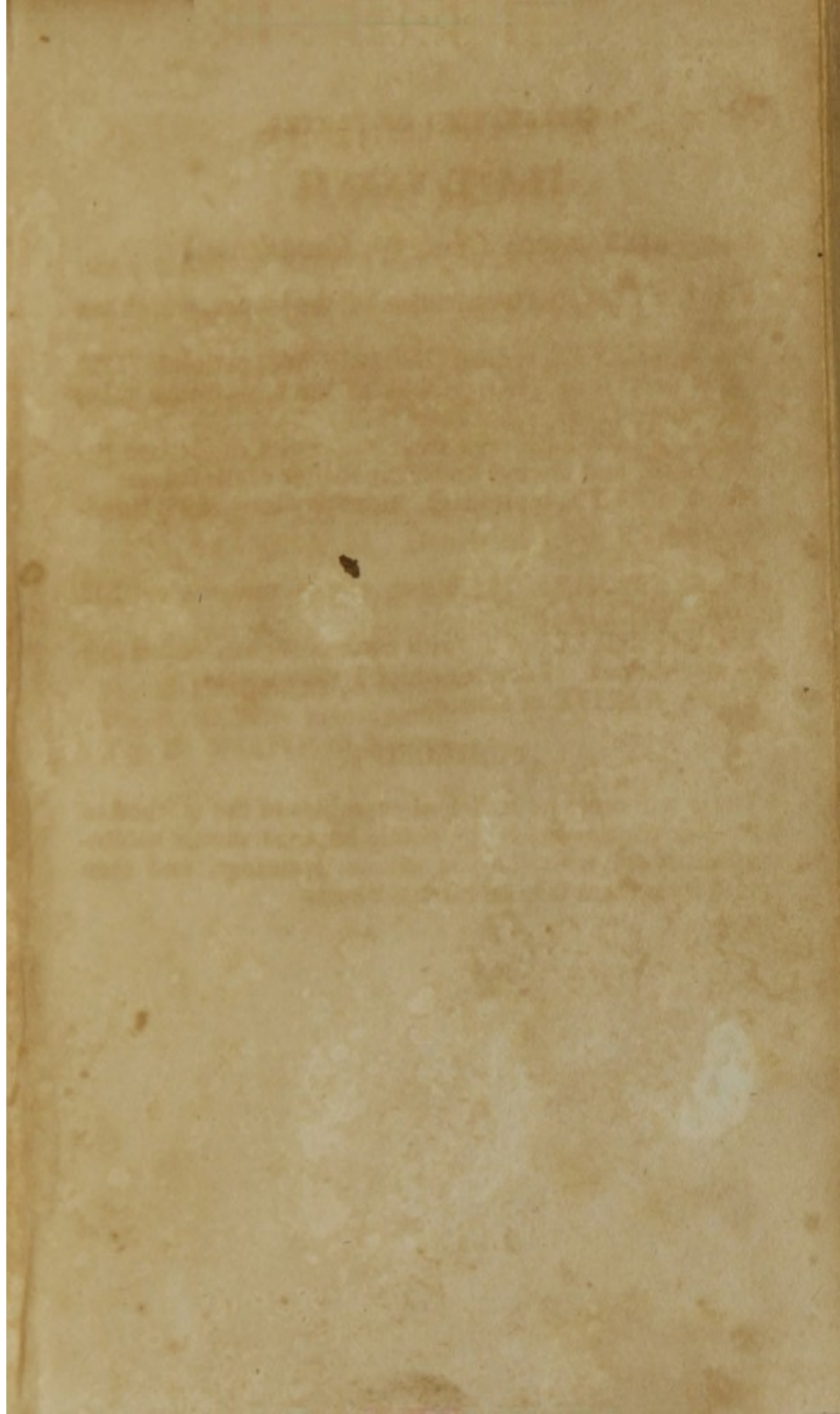
Fig. 6. STAMINA 12; hence comes under class XII. DODECANDRIA (843.)

Fig. 7. PISTILLUM 1, with curious stigma, called stelate, star-shaped Forming order 1, monogynia.

Fig. 8. NATIVE of Canada.

POSTSCRIPT.

These will serve as sufficient examples of the method of describing plants, which the young botanist should habituate himself to, with the aid of our grammar, and then should form them into an Hortus Siccus.

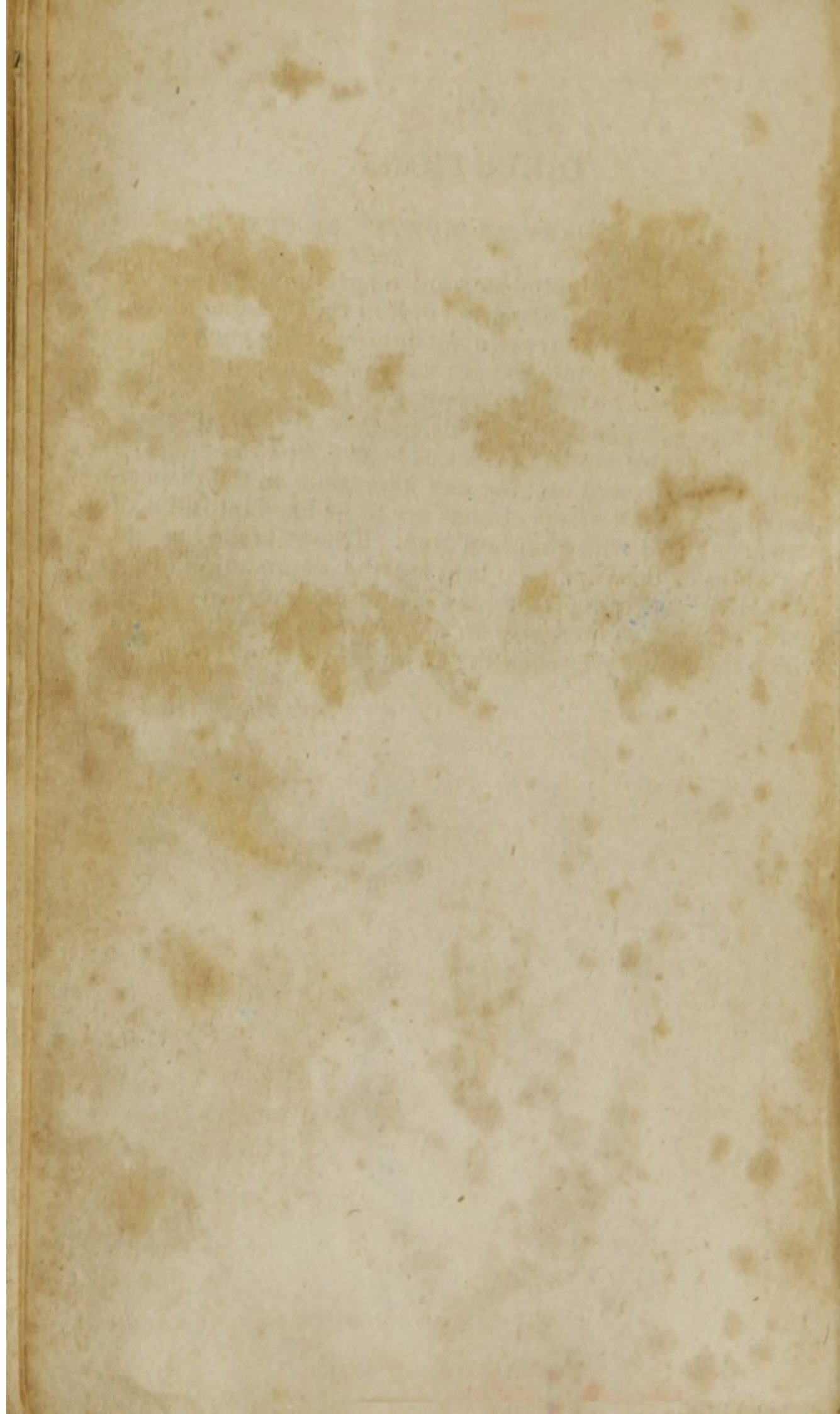




DIRECTIONS

HOW TO MAKE AN HORTUS SICCUS.

AFTER having collected as good a specimen as possible of the plant, lay it flat, disposing of it in the best manner, so that the flowers and leaves do not interfere with each other, betwixt a sheet of white paper; put this on a quire of blotting paper, and also a quire over it, and then apply a weight on the top. Books answer this purpose very well. The next day put dry blotting paper as before, first opening the sheet of paper, and making any alterations in the disposition of parts. Dried specimens are to be fixed into slips of paper, or glued with common glue. These should be kept in shelves or drawers. To prevent the depredation of insects, Dr. Smith recommends a solution of corrosive sublimate, muriate of mercury, in some spirits of wine, with which the plants are when dry to be gently moistened.







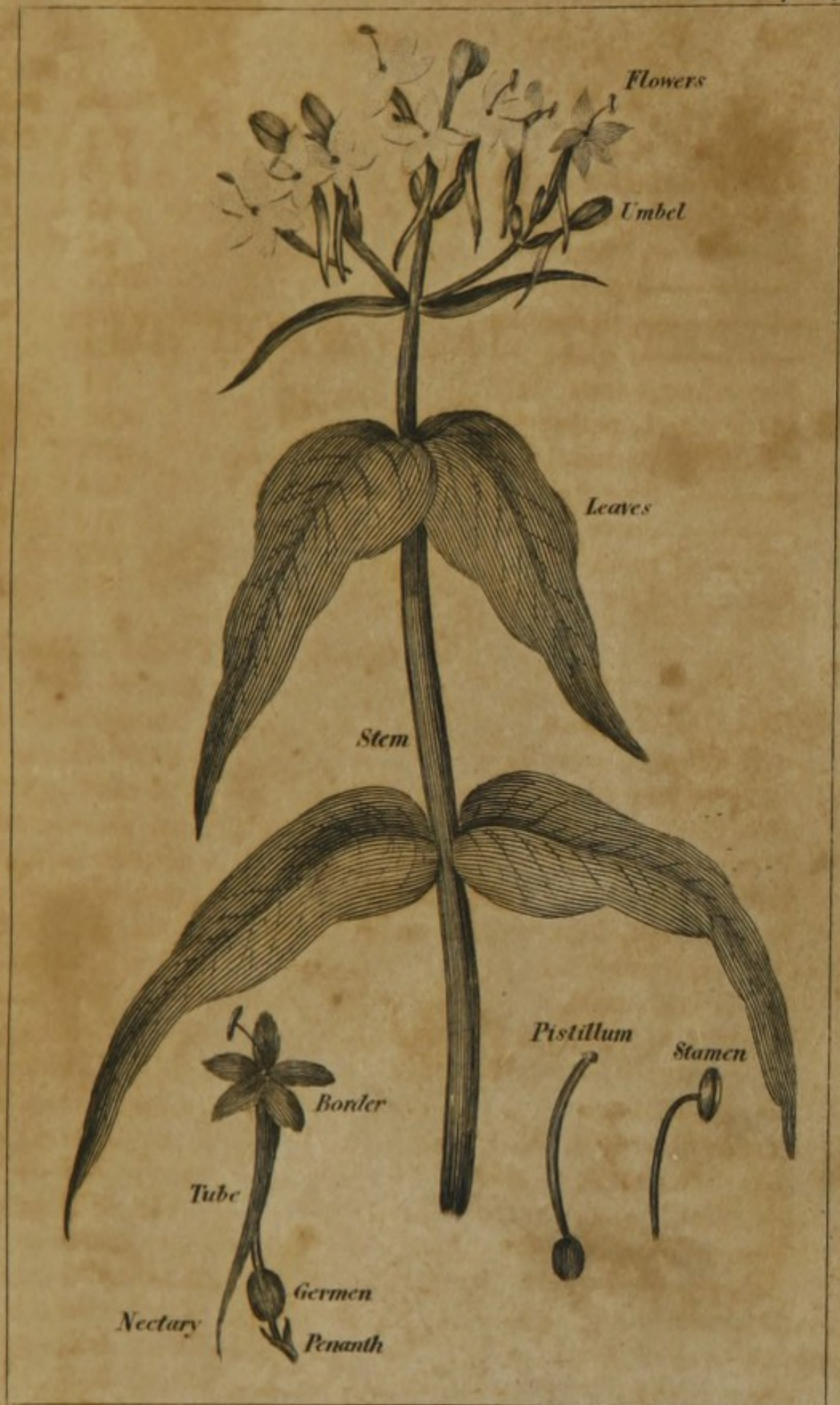
I N D E X
OF
THE BOTANICAL TERMS
EXPLAINED IN
THE GRAMMAR.

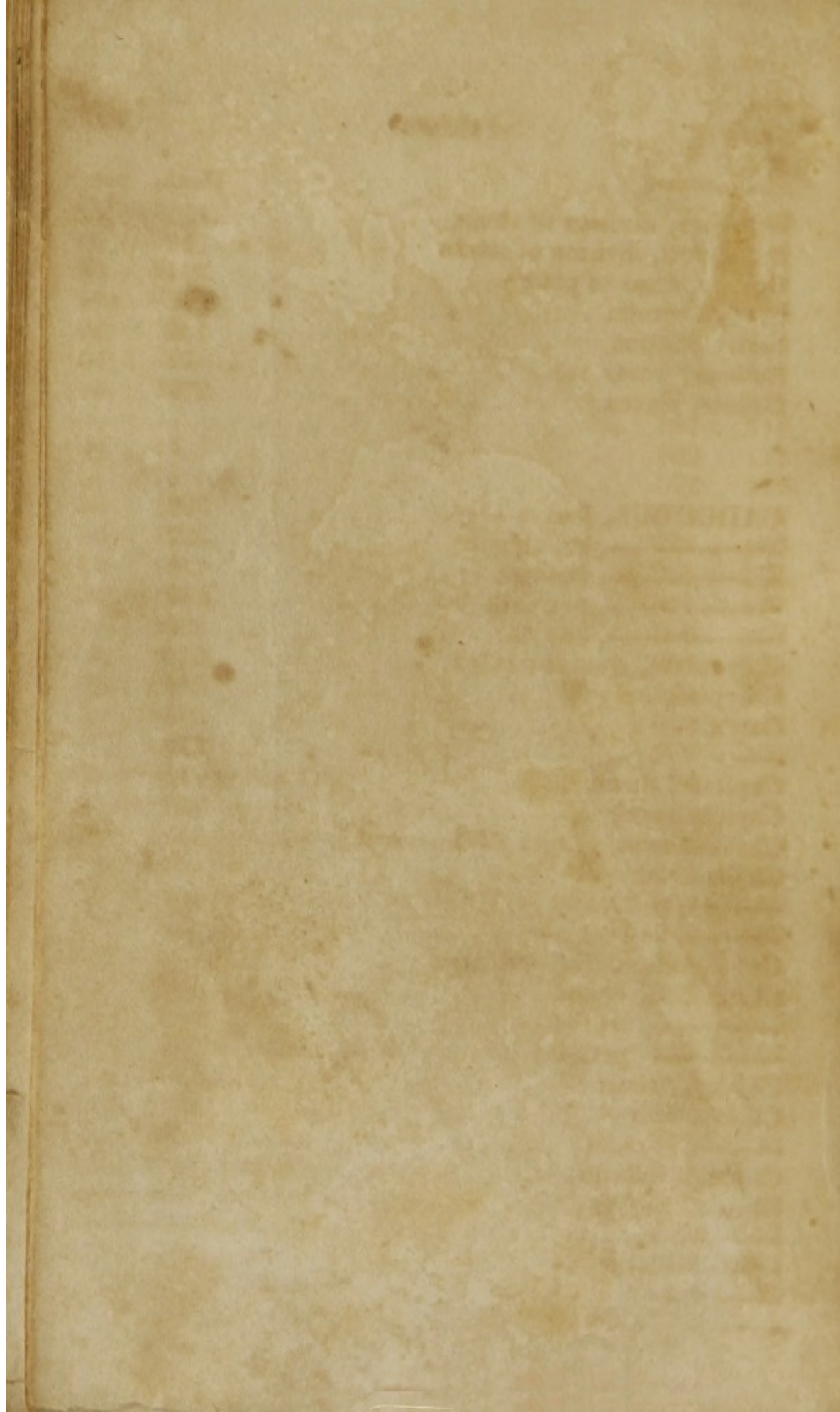
	Numb.	page
ABRUPTLY-PINNATE, leaves	321	56
Acerose, leaves	210	41
Acotyledonous	22	11
Aculeate, leaves	264	48
Acute, leaves	245	46
Acuminate, leaves	246	46
Adnate, leaves	170	36
——, stipules	371	63
Alternate, branches	123	29
——, leaves	160	34
——, flowers	488	77
Amentaceous, flowers	540	81
Amplexicaul, leaves	176	36
Ancipital, stem	86	23
Angular, stem	87	23
——, leaves	215	42
Annual, plant	27	13
Anomalous, corollas	689	100
Anther, part of the flower	729	104
Appendaged, corolla	667	96
Appressed, peduncles	456	73
——, leaves	181	37
Arboreous, stem	60	19

	Numb.	page
Aril, part of seed	767	108
Arrow-shaped, leaves	223	43
Articulated, root	44	17
————, stem	91	24
————, petiole	355	62
————, peduncles	469	75
————, spike	537	81
Ascending, stem	71	21
Attenuated, peduncle	466	74
Axillary, peduncles	453	73
————, flowers	484	76
————, flower	518	80
————, spike	527	80
Azure, colour	698	101

B.

BELLIED, tube	666	96
Bell-shaped, corolla	657	95
Bent or bowed, tube	663	96
Berry, pericarp	733	106
Biennial, root	28	13
Bifid, calyx	597	88
Bigeminate, leaves compound	323	56
Binate, leaves	313	55
Bipartite, spathe	639	92
Bipinnate, leaves compound	325	57
Biternate, leaves compound	324	57
Blue, corolla	697	101
Boat-shaped, spathe	636	92
Bractea, arms of plants	424	68
Bracteated, peduncles	473	75
————, flowers	510	79
————, cyme	585	86
Branched, roots	35	15
————, wool	400	66
————, stings	410	67
————, spadix	589	87





	Numb.	page
Branches, division of stems	125	29
Branchlets, division of stems	126	29
Bristles, arms of plants	394	66
Brown, corolla	701	101
Buds, foliation	146	33
Bulbous, roots	31	14
Bullate, leaves	279	49

C.

CADUCOUS, leaves	306	54
————, stipules	387	65
————, bractea	426	69
————, perianth	612	89
————, corolla	690	101
Calyculate, common calyx	623	90
Calyptra, calyx	646	93
Calyx	593	87
————	732	105
Capitate, flowers	514	79
Capsule, pericarp	743	106
Cartilaginous, border of leaves	240	46
Cauline, leaves	157	34
————, peduncles	460	73
————, flowers	481	76
Cells, divisions in pericarps	750	107
Channelled, stems	102	25
————, leaves	286	51
————, petioles	347	61
Chinky, stems	113	27
Ciliate, leaves	238	45
————, stipules	383	64
Circinal, foliation	155	34
Class 1	800	111
—— 2	803	112
—— 3	807	112
—— 4	811	112
—— 5	815	113

	Numb.	page
Class 6	822	113
— 7	828	114
— 8	833	114
— 9	838	114
— 10	842	115
— 11	848	115
— 12	855	116
— 13	861	116
— 14	869	117
— 15	872	117
— 16	875	118
— 17	881	118
— 18	886	118
— 19	891	119
— 20	898	120
— 21	907	120
— 22	919	122
— 23	934	123
— 24	938	123
Cloathed, orifice	674	97
Clustered, leaves	167	35
—, flowers	503	78
Climbing, stems	81	23
Closed, orifice	668	97
Clubbed, petioles	343	60
Coloured, leaves	269	48
—, bractea	425	69
—, calyx	604	88
Column, part of pericarp	748	107
Concave, leaves	287	51
Compressed, leaves	300	53
—, stems	85	23
Compound, leaves	310	65
—, petioles	362	62
—, peduncles	446	72
—, flowers	529	81
—, raceme	549	82





	Numb.	page
Compound, corymbus	563	84
———, umbel	572	85
———, radiate	684	99
Common, peduncles	447	72
Comose, spike	539	81
Compressed, petiole	344	61
Conduplicate, foliation	153	34
———, leaves	335	59
Conic, spines	416	67
Conical, capitate	521	80
Connate, leaves	178	37
Conniving, leaves	331	59
Convex, involucre	577	85
———, leaves	288	51
Convolute, tendril	435	70
———, spathe	635	92
———, leaves	150	33
Conjugate, compound leaf	312	55
Corolla	648	93
———	731	105
Corked, stem	63	19
Corymbose, flower	561	83
Cotton, arms of plants	397	66
Cotyledons	772	109
Crowded, branches	134	30
Crowned, orifice	673	97
Crenate, leaves	235	45
Crowded, verticillate	512	79
Cucullate, leaves	289	51
———, spathe	634	92
Culm, stem	53	18
Cup, closed by a lid, nectary	706	102
Cupped, glands	423	68
Curled, leaves	292	52
Cuspidate, leaves	247	46
Cylindrical, spike	533	81
———, ament	540	81

	Numb.	page
Cylindrical, tube	664	96
Cylindric, seeds	759	103

D.

Deciduous, leaves	307	54
———, stipules	388	65
———, calyx	613	89
———, corolla	691	101
Declined, stem	74	21
———, branches	141	31
Decompound, leaf	322	56
Decurrent, leaves	180	37
———, stipules	372	63
Decussated, branches	130	30
———, leaves	162	35
Defending, sleep of leaves	334	59
Depending, sleep of leaves	338	60
Digitate, compound leaf	314	55
Deltoid, leaves	217	42
Dentate, leaves	237	45
———, stipules	385	65
Depressed, leaves	299	53
Dichotomous, stem	119	28
Dicotyledonous	24	11
Dilated, orifice	669	97
Dimidate, capitate flowers	522	80
Dimidiate, umbel	627	91
Dipetalous, corolla	650	94
Distichous, leaves	165	35
———, flowers	497	78
Divaricate, branches	142	31
———, panicle	567	84
Diverging, leaves in sleep	337	60
Dotted, leaves	281	50
Double, calyx	619	90
Double seed, each resembling a boat	753	107
Down, an armature	396	66





	Numb.	page
Downy, calyx	607	88
Drooping, peduncle	459	74
———, flowers	494	77
Drupe, pericarp	736	105

E.

Eighth class	783	110
Eighteenth class	793	110
Eleventh class	786	110
Emarginate, leaves	251	47
Emerged, leaves	196	39
Empty, stem	65	20
Environing, leaves in sleep	333	59
Equitant, foliation	152	34
Erect, stem	68	20
———, branches	135	30
———, leaves	182	38
———, petioles	349	61
———, stipules	379	64
———, peduncles	457	73
———, flowers	492	77
———, raceme	554	83
Erose, leaves	243	46
Equal, petiole	358	62
———, stipule	391	65
———, peduncle	442	71
———, calyx	600	88
Ever-green, leaves	309	54
Eye, seed	768	108
Exotics	5	8
Extra foliaceous, stipules	367	63
Extra-axillary, peduncles	454	73
———, flowers	486	77

F.

Falchion-shaped, leaves	304	52
Falling, bractea	427	69

	Numb.	page
Fascicular, root	45	17
Fasciculate, flowers	504	79
Fastigate, stem	124	29
———, branches	144	31
Feathery, wool	402	66
Fibrous, root	33	15
———	50	17
Fiddle-shaped, leaves	227	44
Fifth class	780	109
Fifteenth class	790	110
Filament	730	104
Filaments without anthers, imitating stamina, nectary	713	102
Filiform, peduncles	465	74
———, ament	544	82
———, tube	665	96
First class	776	109
Five-sided, corollas	670	97
Flaccid, peduncles	460	74
———, involucre	578	85
Flat, leaves	285	51
———, spadix	592	87
———, involucre	578	85
Fleshy, leaves	296	52
Flexuose, stem	73	21
Floral, leaves	159	34
Foliar, tendril	431	70
Foliate, pericarp	739	106
Forked, spines	409	67
———, tendril	439	70
Four cornered, stems	89	24
———, peduncles	464	74
Fourth class	779	109
Fourteenth class	789	110
Fringed scale, nectary	721	103
Funnel-shaped, corolla	659	95
Furrowed, stem	101	25



B. Brown sc. N. York.



G.

	Numb.	page
Geniculate, stem	72	21
————, peduncle	468	75
Germen	728	104
Gibbous, leaves	298	53
Glands	417	68
———, at the insertions of the stamens, nec-		
tary	723	103
———, upon the stamens, nectary	722	103
Glandular, leaves	282	50
Globose, involucre	576	85
Globular, roots	39	16
———, glands	421	68
———, capitate	520	80
———, ament	541	82
———, corolla	658	95
———, seed	756	108
Glomerate, spike	530	81
Glume, stem	643	93
Granulated, root	47	17
Green, corolla	699	101
Grumous, root	46	17

H.

Hairs, armature	393	65
Half-cylindric, stem	84	23
Hatchet-shaped leaf	305	54
Heart, part of seed	769	109
Heart-shaped, leaf	220	43
Herb	4	8
Herbaceous, stem	57	19
Hersute, stem	106	26
———, leaves	262	48
Hexapetalous, corolla	654	94
Horizontal, root	37	16
———, leaves	185	38

	Numb.	page
Horizontal, flowers	493	77
Hooked, wool	401	66

I.

Imbricate, leaves asleep	340	60
Imbricated, foliation	151	33
-----, leaves	168	35
-----, common calyx	621	90
Including, leaves asleep	332	59
Incrassated, peduncles	467	74
Incurved, branches	138	31
Indigenous	6	8
Imbricated	97	24
Inflexed, leaves	186	38
Inflorescence	479	76
Intermediate, calyx	617	89
Intire, leaves	214	42
-----	233	45
-----, stipules	332	64
Interrupted, spike	535	81
Intra-foliaceous, stipules	368	63
Inverting, leaves asleep	339	60
Involute, foliation	147	33
Involucre	624	90
Involucred, verticillus	509	79
-----, flowers	574	85
Involving, leaves asleep	336	60
Irregular, segments	602	88
Jointed, leaves compound	311	55

K.

Kidney-shaped, leaves	221	43
Knotty, roots	43	16
-----, stems	116	27



B. Brown Sc. NYork.



L.

	Numb.	page
Labiate, calyx	640	92
Lacerated, leaves	244	46
Laciniated, leaves	230	44
Lanceolar, leaves	203	40
Lanceolate, leaves	204	40
————, leaves	376	64
Lateral, stipules	366	63
Lax, stem	67	20
Leafy, stems	94	24
——, peduncles	471	75
——, capitate flowers	523	80
——, spike	538	81
——, raceme	552	83
Leafy, thyrse	559	83
Leafless, stem	93	24
Leaves	145	32
Leaved, tendril	437	70
Legume, pericarp	742	106
Lenticular gland	422	68
Level, leaves	266	48
Ligulate, corolla	683	99
Like the cut finger of a glove, nectary	707	102
Like a funnel, nectary	708	102
Like a slipper, nectary	709	102
Like a tongue, nectary	717	103
Linear, leaves	208	41
Linear, petiole	341	60
Linear-lanceolate, leaves	213	42
Lineate, leaves	274	49
Lobed, leaves	231	44
——, perianth	595	87
Long, petiole	359	62
——, stipules	392	65
——, tendril	443	71
——, peduncles	476	75
——, perianth	615	89

	Numb.	page
Lunate, stipules	378	64
Lyre-shaped	225	43

M.

Many-flowered, spathe	642	93
Marcescant, corolla	692	101
Medullary, stem	64	20
Membranous, stem	90	24
Membranaceous, leaves	293	52
Monocotyledonous, leaves	23	10
Monopetalous, corolla	649	94
Monophyllous, involucre	628	91
Middling size, peduncles	475	75
Miliary, glands	418	68
Muriated, stems	109	26
Much spreading, leaves	184	38
Multifid, perianth	598	88
———, tendril	441	71

N.

Naked, stems	92	24
———, petioles	354	62
———, peduncles	472	75
———, verticil	508	79
———, head of flower	524	80
———, ament	546	82
———, raceme	553	83
———, thyrese	560	83
———, involucre	575	85
———, cyme	586	86
———, spadix	591	87
———, orifice of tube	672	97
——— channel, nectary	711	102
——— scale	720	103
Nectary	703	101
———	733	105





	Numb.	page
Nerved, leaves	271	49
Nerveless, leaves	270	49
Nineteenth class	794	110
Nodding, stem	75	21
———, flower	495	77
Nut pericarp	744	106

O.

Oblong, leaves	202	40
———, thyrses	558	83
Oblique, stem	70	21
———, leaves	193	39
Obovate, leaves	200	40
Obtuse, leaves	250	47
Obvolute, leaves	149	33
One-flowered, glume	644	93
———, spathe	641	93
One-seeded, pericarp	751	107
One-sided, raceme	550	82
———	566	84
One-valved	637	92
Opposite, branches	129	30
———, leaves	161	35
———, flowers	487	77
Opposite-leaved, stipule	369	63
Opposite the leaf, peduncle	455	73
Oval, leaves	201	40
Ovate, leaves	199	39
———, spike	531	81
———, ament	542	82
———, seed	755	108
Ovate-oblong	212	41

P.

Palmated, root	49	17
———, leaf	232	44

	Numb.	page
Panicate, stem	123	28
————, flower	564	84
Papilionaceous, flower	688	100
Papillose, leaves	283	50
Pappus, part of the seed	774	109
Partite, perianth	596	88
Partitions, pericarp	749	107
Parabolic, leaves	205	40
Partial, peduncles	448	72
———, umbel	573	85
———, involucre	626	91
Patent, petioles	350	61
———, stipules	380	64
———, peduncles	458	73
Peduncular, tendril	433	70
Peduncle	444	71
Peduncled, flower	491	77
———, verticil	507	79
———, umbel	570	84
Pedunculate, head	516	80
Pedate, leaf	315	55
Peltate, leaf	173	36
Pendulous, raceme	555	83
Pentapetalous, flower	653	94
Perfoliate, leaf	175	36
Perennial, root	30	14
Perianth, calyx	594	87
Pericarp	734	105
Permanent, stipules	389	65
———, calyx	614	89
Persisting, leaves	308	54
———, bractea	428	69
Perpendicular, root	36	15
Personate, corolla	681	98
Petal-like, calyx	605	88
———, nectary	714	103
Petiolate, leaves	172	36



	Numb.	page
Betiolar, leaves	432	70
Pimply, leaves	284	50
Pinnate, leaf	317	56
Pinnatifid, leaf	228	44
———, stipules	386	65
———, involucre	631	91
Pink-like, corolla	687	100
Pistil, part of flower	724	104
Pitted, leaves	280	50
Plicate, foliation	154	34
———, limb of corolla	676	97
———, leaves	290	51
Plane, spatha	633	92
Plume, part of seed	770	109
Polished, stem	99	25
———, leaves	267	48
Polycotyledonous	25	11
Polyphyllous, calyx	620	90
———, involucre	629	91
Polypetalous, flower	655	94
Pome, pericarp	737	105
Premorse, root	51	17
Præmorse, leaf	254	47
Pressed together, panicle	565	84
Prickles, arms	406	67
Prickly, stems	111	27
———, petioles	353	61
Procumbent, stem	76	22
Proliferous, stem	122	28
Prominent, orifice of tube	671	97
Prostrate, stem	77	22
Pubescent, stem	104	25
———, leaves	258	47
Purple, corolla	694	101

Q.

Quadrifid, cyme	583	86
Quite intire, leaf	234	45

R.

	Numb.	page
Racemous	547	82
Radical, leaves	156	34
———, peduncles	449	72
———, flowers	480	76
Radicle, part of seed	771	109
Rameal, leaves	153	34
Ramose	482	76
———, peduncles	451	73
———, flowers	536	81
Receptacle	735	105
Reclined, leaves	188	38
Recurved, leaves	187	38
———, petioles	351	61
Reflexed, branches	140	31
———, leaves	189	39
———, stipules	381	64
———, limb of corolla	679	98
Regular, corolla	656	95
Repand, leaves	242	46
Repent, roots	38	16
———, stems	78	22
Resembling a nest of doves, nectary	715	103
——— dolphins, nectary	716	103
——— a particular shell, nectary	760	108
——— rays of glory, nectary	718	103
——— the head of a monkey, nectary	763	108
——— a single crown, nectary	764	108
——— a double crown, nectary	765	108
——— a shuttle-cock, nectary	766	108
Resupinate, leaves	190	39
Retuse, leaves	252	47
Revolute, foliation	148	33
———, leaves	192	39
———, border	241	46
———, tendril	436	70
Rhomboid, leaves	218	42



Tea Tree.

R. Brown sc. NY.



Coffee.

	Numb.	page
Rigid, stems	66	20
Ringent, corolla	680	98
Root	26	12
Rosaceous, flower	685	99
Rough, calyx	609	89
Round, stem	83	23
———, circumscription	197	39
———, form of leaf	297	52
———, petiole	345	61
———, peduncle	462	74
Roundish, leaf	198	39
———, flower	519	80
Runcinate, leaf	226	44

S.

Sagittate leaf	377	64
Salver-shaped, corolla	660	95
Sarmentose, stem	80	22
Scabrous, stem	108	26
———, leaf	263	48
Scaly, root	41	16
———, stem	95	24
———, peduncle	470	75
———, ament	545	82
Scape, stem	54	18
Scariose, leaf	294	52
Scarlet, corolla	695	101
Scattered, leaf	166	35
———, flowers	489	77
Second class	777	109
Semi-amplexicaul, leaf	177	37
Seminal leaves	773	109
Serrate, leaf	384	64
Serrated, leaf	236	45
Sessile, leaf	171	36
———, stipule	370	63
———, flower	490	77

	Numb.	page
Sessile, verticil	506	79
———, head	515	79
———, umbel	569	84
———, cyme	581	86
Setaceous, leaf	211	41
Seventh class	782	109
Seventeenth class	792	110
Striated, stem	100	25
Short, petiole	357	62
———, peduncle	474	75
———, calyx	616	89
Shrubs	2	7
Silicle, pericarp	741	106
Silkiness, armature	395	66
Silky, leaf	261	48
Silique, pericarp	740	106
Simple, root	34	15
———, stem	114	27
———, petiole	361	62
———, wool	399	66
———, tendril	438	70
———, spine	408	67
———, peduncle	445	72
———, spike	528	81
———, raceme	548	82
———, corymb	562	84
———, umbel	571	85
———, spadix	588	87
———, calyx	618	90
———, involucre	630	91
Simple cavity, nectary	710	102
Single, flower	500	78
Sinuate, leaf	229	44
Six-flowered, verticil	511	79
Six-parted, spathe	640	92
Sixteenth class	791	110
Sixth class	781	109



Tobacco.

B. Brown sc. NY.



Nutmeg.

R. Brown sc. NY

	Numb.	page
Sleep of leaves	330	58
Small open cup, nectary	705	102
Smooth, stem	103	25
———, leaf	257	47
———, petiole	352	61
———, calyx	606	88
Solid, root	40	16
Solitary, stipules	364	63
Spadiceous	587	86
Spicate	525	80
Spathe	632	92
Spathed, spadix	590	87
Spatula-shaped, leaf	206	41
Spear-shaped, leaf	224	43
Spines, or thorns	405	66
Spinescent, petiole	348	61
———, stipule	375	64
Spiny, leaf	239	45
Spreading, branches	136	31
———, leaves	183	38
———, flowers	513	79
———, limb or corolla	677	98
Spur, nectary	704	102
Square, seed	757	108
Squarrose, calyx	622	90
Stamen	725	104
Stellate, arms	403	66
Stem	52	18
Stipules	363	62
Stinging, stem	110	27
Stings, arms	407	67
Stipe, stem	56	81
———, part of seed	775	109
Stipuled, leaves	255	47
Stigma, part of flower	726	104
Stoloniferous, stem	79	22
———	120	28

	Numb.	page
Strap-shaped, leaves	303	53
Straight, stem	69	20
———, tube of corolla	662	96
———, limb of corolla	678	98
Strobile, pericarp	745	106
Striate, leaves	275	49
Striated, calyxes	611	89
Strigose, leaves	265	48
Style, part of the flower	727	104
Subulate, leaf	209	41
Succulent, stem	62	19
Suffructicose, stem	58	19
Sulcate, leaves	276	49
Sunk, leaves	194	39
Super-decompound, leaf	326	57
Super axillary, flowers	485	76
Sutures, pericarp	747	107
Sword-shaped, leaf	302	53

T.

Tendrill	430	70
Tendrilled, leaf	249	46
Tenth class	785	110
Tergeminate, leaf	327	57
Terminal, peduncle	452	73
———, flower	483	76
———, head	517	80
———, spike	526	80
Ternate, leaf	316	56
Thick, leaf	295	52
Third class	778	109
Thirteenth class	788	110
Thorny, stem	112	27
Three-nerved, leaf	272	49
Three-yoked, leaf	319	56
Thryoid	556	83
Toothed, arms	404	66



Flax.

B. Brown sc. N.



Sugar Cane.

B. Brown sc. N.Y.

	Numb.	page
omentose, leaf	260	48
-----, calyx	610	89
Tetrapetalous, flower	652	94
Trapeziform, leaf	219	42
Tree	1	7
Triangular, leaf	216	42
-----, seed	758	103
Trifid, tendril	440	71
-----, cyme	582	86
Tripartite, cyme	584	86
-----, perianth	599	88
Tripetalous, corolla	651	94
Tripinnate, compound leaf	329	58
Triple-nerved, leaf	273	49
Triquetrous, stem	88	24
-----, leaf	301	53
-----, petiole	346	61
-----, peduncle	463	74
Triterminate, leaf	328	58
Truncated, leaf	253	47
Tuberous, root	32	15
Tuberculated, orifice of tube	675	97
Tubular, corolla	682	99
Tunicated, root	42	16
Turned up, flowers	496	78
Twelfth class	787	110
Twentieth class	795	110
Twenty-first class	796	110
Twenty-second class	797	110
Twenty-third class	798	111
Twenty-fourth class	799	111
Twiggy, stem	121	28
Twin, root	48	17
-----, leaf	163	35
-----, stipules	365	63
Twining, stem	82	23
Two-together, flowers	501	78

	Numb.	page
Two-valved, spathe	638	92
Two-flowered, glume	645	93
Two-seeded, pericarp	752	107
Two-yoked, leaf	318	56

V.

Vaginant, stipule	373	63
Valves, part of pericarp	746	107
Variegated, corolla	702	101
Veiny, leaf	277	49
Velvetty, leaf	259	48
Ventricose, spike	632	81
Verticillate, branches	131	30
———, leaf	164	35
———, spines	415	67
———, flower	505	79
Very short, petiole	356	62
———, peduncles	477	75
———, stipules	390	65
Very long, petioles	360	62
———, peduncles	478	75
Very much branched, branches	127	29
Vesicular, arms	419	68
Villose, calyx	608	88
Villous projections, nectary	712	102
Violet, colour	696	101
Viscous, leaf	268	48
Volva, calyx	647	93

U.

Umbellate	568	84
Under shrubs	3	8
Unequal, involucre	579	85
———, segments of calyx	601	88
Unequally-pinnate, leaf	320	56
Uniform, flowers	499	78

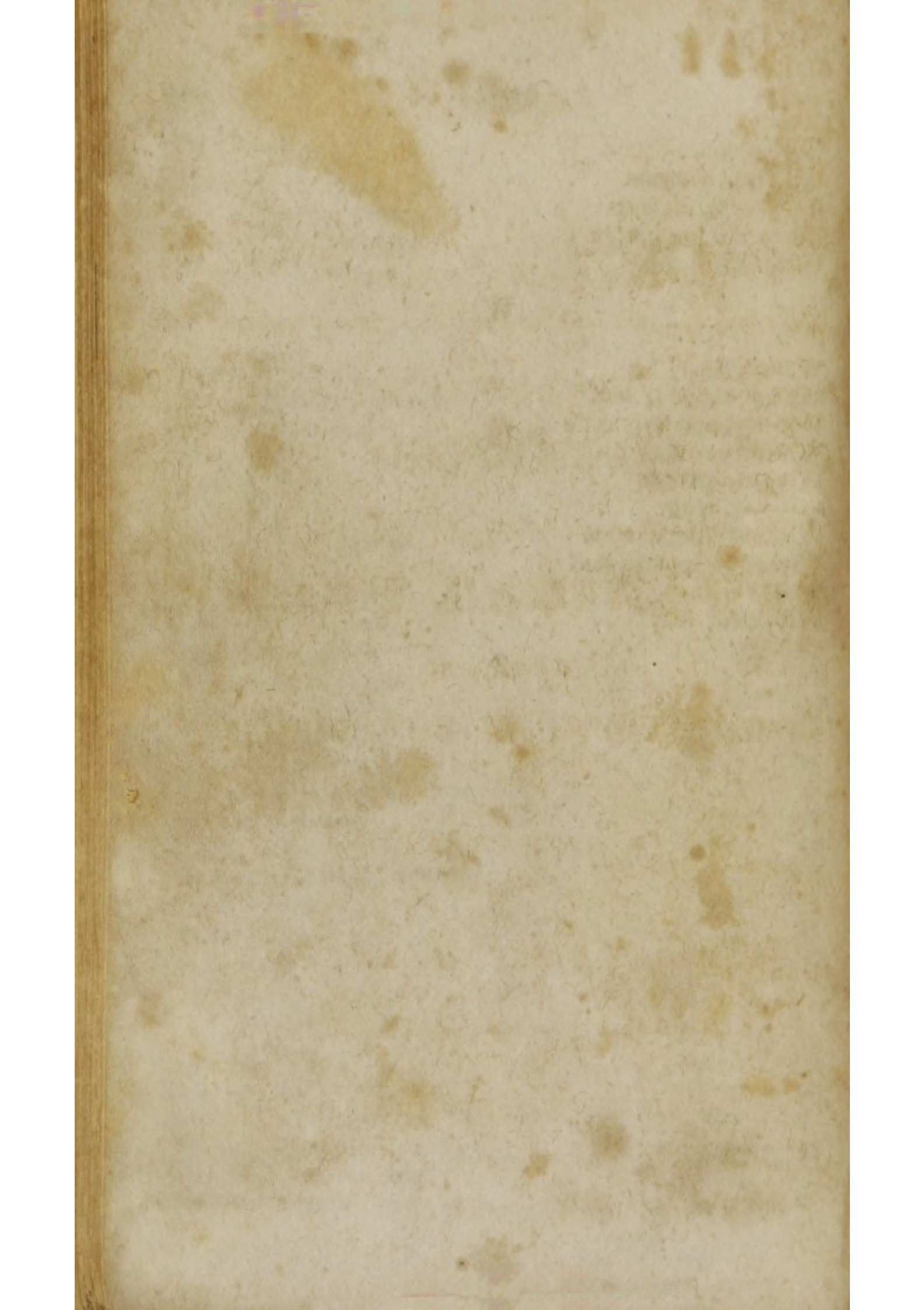
	Numb.	page
Uniform, raceme	551	82
Unilateral, flowers	498	78
Universal, involucre	625	91
Utricular, arms	420	63

W.

Waved, leaf	291	52
Wedge-shaped, leaf	207	41
Wheel-shaped, corolla	661	96
White, corolla	693	101
Winged, petiole	342	60
———, stem	98	25
Without knots, stem	115	27
Without stipules, leaf	256	47
Wool, arms	398	66
Wrinkled, leaf	278	49

Z.

Zig-zag, stem	461	74
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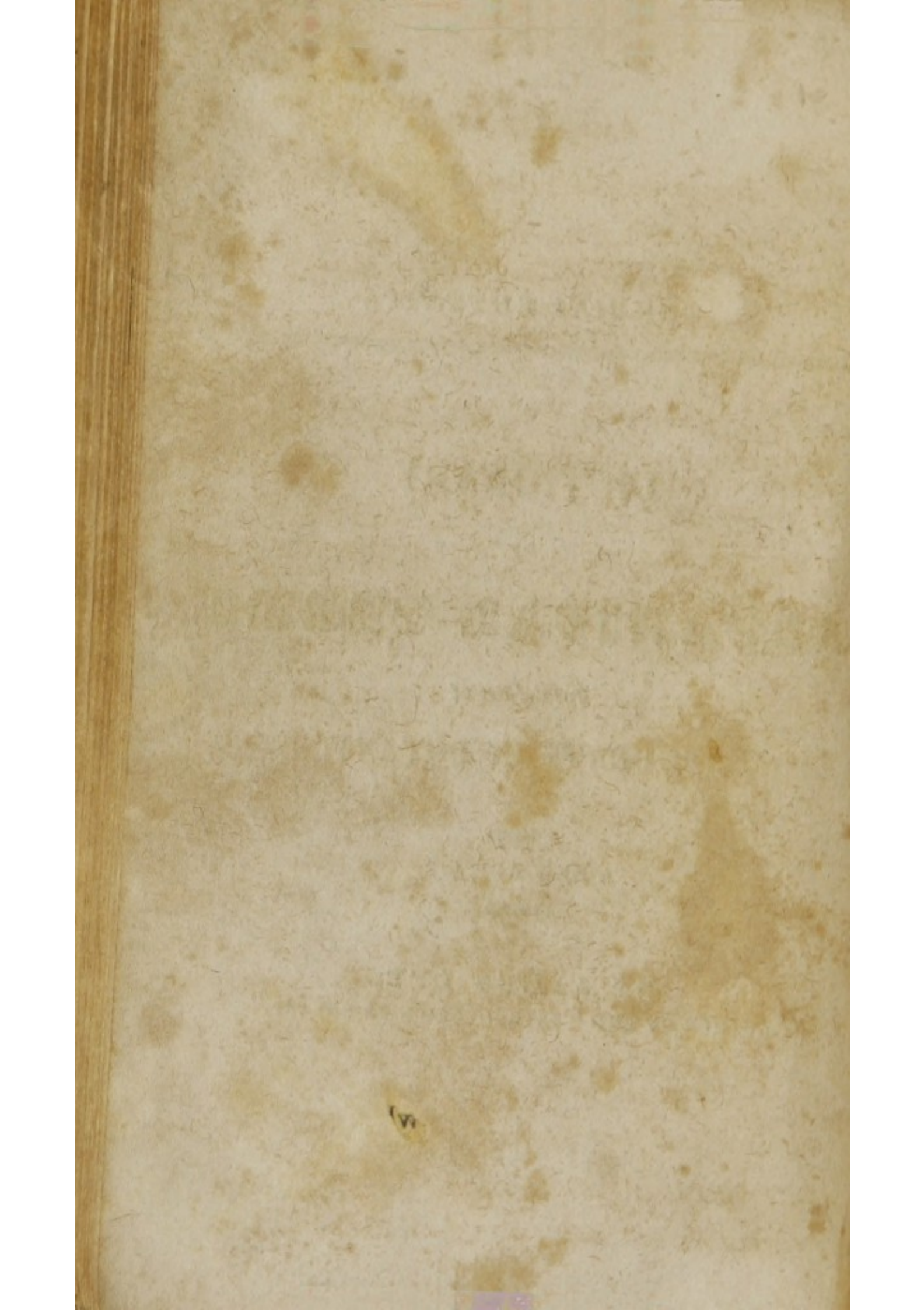
TERMINI BOTANICI.

A
DICTIONARY
OF
BOTANICAL TERMS,

For the Use of
STUDENTS IN BOTANY.

==
A NEW EDITION.
==

BY JAMES LEE,
AUTHOR OF THE "INTRODUCTION TO BOTANY."



EDITOR'S PREFACE.

THIS Dictionary first appeared as an Appendix to Mr. LEE's Introduction to Botany, as early as the year 1765. It has been several times reprinted, but not with any improvements, and errors have been multiplied by inattention.

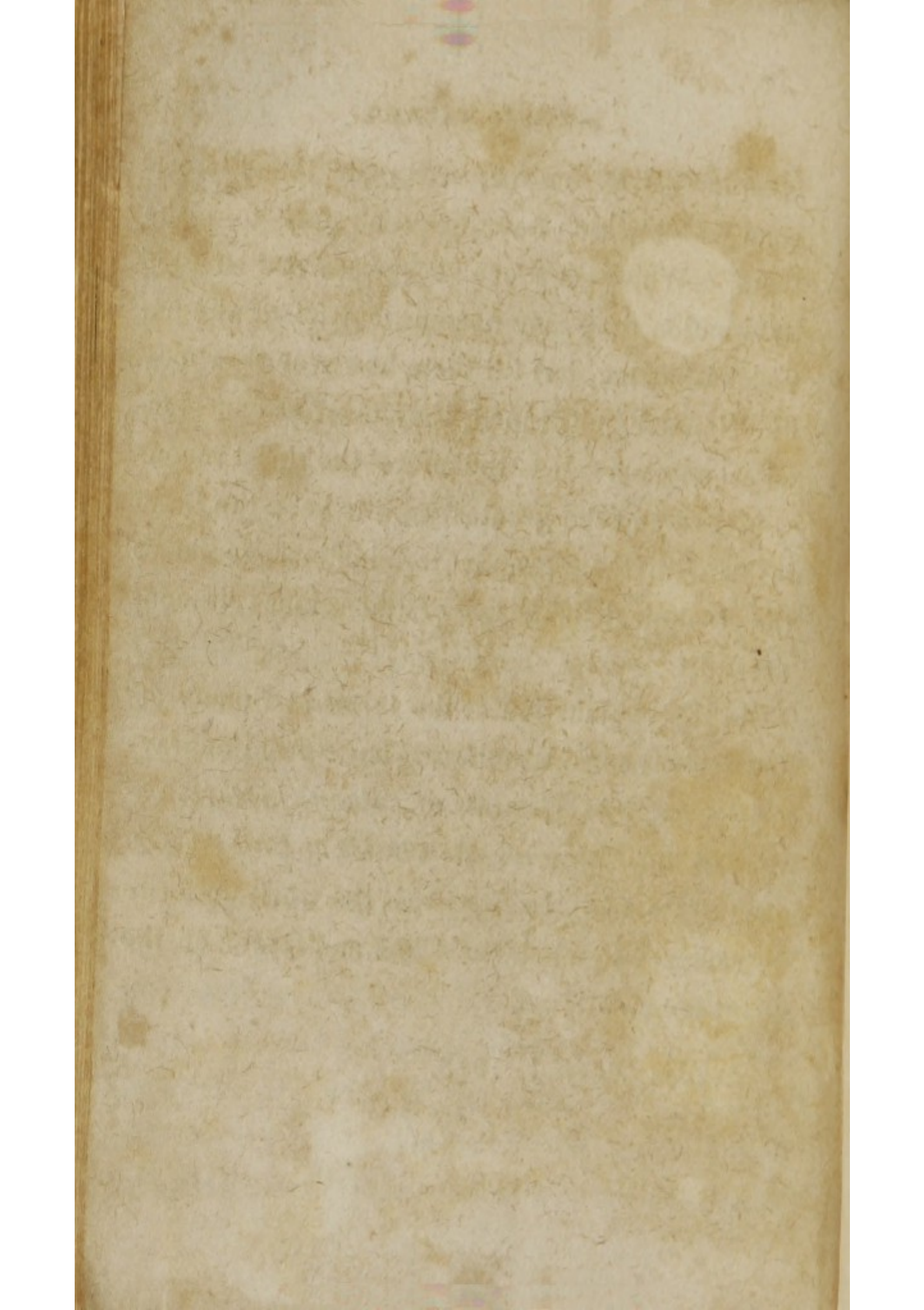
This edition has been carefully compared with the works of Linnæus, from which the Dictionary was originally compiled: some errors in the translation have been corrected, and some additional terms have been added. There is one circumstance, however, upon which it may be necessary to say a few words. Among Botanists there is a difference of opinion with respect to the *anglicising* the Latin technical terms, how far the original words should be kept and naturalized to our language, in what degree they may be mutilated conformably to our idiom, or to what extent they may be entirely rejected, and

words purely English adopted to supply their place. These points have created considerable dispute. Here, the Latin words are used with their plural, wherever they occur as technical words ; nor, from what has been said to the contrary by Professor Martyn and Dr. Smith, is the Editor able to discover any good reason to reject this principle as a general rule : and in proportion as he is no friend to the revolutionizing his vernacular tongue, so he is inclined to oppose the making Latin words, by barbarous mutilation, into very bad English words : which, from the circumstance of their being considered as *English*, may in time be interwoven with the texture of the English language, which, in their original state, will not be likely to undergo any change in their use or application. Although *perianthium* may be called perianth, and *scapus* scape, &c. as has been adopted by Professor Martyn ; yet, with all due deference to his authority, it is to be observed that words which are abridged of their terminations are not, there-

fore, in reality *English words* more than the original words which have been clipped to make them. When they are recognised and adopted by a nation they may become a part of the national language, but till then, however they may be trimmed and pruned, they must be considered as exotics. It is therefore the least inconvenience and the greatest gain to keep the Latin terms with their proper terminations, so far as the technical language of the science is concerned.

As the explanation of the terms in Botany often derives considerable assistance from engraved figures, *The Elements of Botany, in three volumes, illustrating all the Classes and all the Orders of the Linnæan System*, is the work uniformly referred to when the Class and Order of the plant are mentioned.

London, April 1, 1813.



A
DICTIONARY
OF
BOTANICAL TERMS.

The Latin word in *Italic* characters denotes that it is often combined with the previous word, and the explanation implies that conjunction. The Latin words themselves are explained according to their alphabetical order.

- ABBREVIATUM *perianthium*. When the calyx is shorter than the tube of the corolla. See Tobacco, *Elements of Botany*, Class v. Order 1.
- Abortiens, *flos*. A barren flower, such as produces neither fruit nor seed ; as the stamiferous blossoms of Dioecious plants. See *Elements of Botany*, Class xxii. *Vallisneria spiralis*, *Cannabis*, *Juniperus*, &c.
- Abruptum, *folium pinnatum*. A term used only in pinnate leaves, which are said to be abruptly pinnate when they have neither leaflet nor tendril at the end, as *Mimosa pudica*. Class xxiii. Order 1.
- ACAULIS, without stalk or stem, as *Carduus acaulis*.

Acerosum folium. A linear and permanent leaf, as in the Pine-tree. Class xxi. Order 8. In form of a needle, usually inserted at the base into the branch by articulation, as in the cone-bearing trees. *Philos. Bot.*

Acicularis, needle-shaped, as in *Scirpus acicularis*.

Acinaciforme folium, falchion or cimeter-shaped, as in *Mesembryanthemum acinaciforme*.

Acini. The small external berries which compose the fruit of the mulberry, blackberry, and raspberry.

Acotyledones plantæ. Plants whose seeds have no cotyledons or lobes to the seed or seed-leaves.

Aculei. Prickles, fixed in the rind or surface of the bark, as in the stem of the Rose. See Class xii. Order 3.

Aculeatus. Armed wltth prickles, as the stem of the Rose.

Acuminatum folium. A leaf ending in a point. See *Ruscus aculeatus*. Class xxii. Order 3.

Acutangulus. Sharp-angled.

Acutum folium. A leaf terminating in an acute or sharp angle.

ADNATUM folium. The upper surface of the leaf pressing close to the stem of the plant.

Adpressum folium. The upper surface of the leaf so near to the stem, as to seem as if pressed towards it.

Adscendens, ascending from a horizontal direction gradually across, or bowed upwards, as

the *Vexillum* of the corolla of papilionaceous flowers. See *Spartium*.

Adscendens caulis. A stalk or branch inclining upwards.

Adversum folium. When the upper side of the leaf is turned to the south.

ÆQUALIA. Equal, of the same length.

Æstivatio. The disposition of the petals within the floral germ or bud.

AGGREGATUS flos. An assemblage of flowers produced in clusters, as in *Scabiosa succisa*.
Class iv. Order 1.

Aggregatæ. The 48th Order of Linnæus's Fragments of a natural arrangement.

ALA (plural *Alæ*.) A wing, the side petals of a papilionaceous blossom, or a membrane fixed to a seed, stalk, &c. See *Spartium*, Class xvii. and the seed of the *Pinus Sylvestris*, Class xxi.

Alatus petiolus. When the foot-stalk of a leaf is winged with membranes, as the Orange, Class xviii. Order 1.

Alburnum. The white and newly-formed wood which lies immediately underneath the inner bark; by workmen commonly called the sap.

Algæ. Flags. One of the nine Linnæan tribes of plants.

Alterna folia. When leaves come out singly, and follow in gradual order, as in the *Mimosa*.
Class xxiii. Order 1.

Alveolatum. Divided into open cells, like a honey-comb, with a seed lodged in each, as in *Onopordum*.

AMENTACEÆ. The 10th Order of Linnæus's Fragments of a natural arrangement.

Amentum. A Catkin. A kind of inflorescence consisting of many chaffy scales ranged along a stalk as slender as a thread, which is the common receptaculum. See Lizard's-tail, Class vii. Order 3.

Amplexicaule folium. A leaf embracing the stalk.

ANCEPS caulis. Double-edged, when a stalk is compressed, and forms two opposite acute angles. There is also an ancipital leaf, having two prominent longitudinal angles with a convex disk, as in *Sisyrinchium bermudiana*, Class xvi. Order 1.

Androgyna planta. Plants bearing stamina and pistilla in different flowers on the same root; such as compose the Class Monoecia, as the common Cucumber, *Carex*, &c.

Androgynous flowers: such flowers as have only stamina, or only pistilla.

Angulatus caulis. Angulated stalks, as Ground Ivy, &c.

Angustifolia. Narrow-leaved, as *Hippurus vulgaris*, Class i. Order 1.

Angiospermia. The second Order in the Class *Dydinamia*, containing plants whose seeds are covered with a capsula.

Annua radix. A root which lives but one year.

Anomalous. Irregular. Applied to a plant, calyx, corolla, germ or bud, &c.

Anthera, (plural *Antheræ*.) The summit of the

stamen bearing the pollen. See Plate 1 and 2. Vol. I.

APERTURA. An aperture. An opening in some kinds of anthera.

Apetalus *flos*. Without petal or corolla, as *Hippuris*, *Salicornia*. Class i. Order 1.

Apex. The top, summit, or end. When applied to leaves, it is the extremity farthest from the base or insertion. Ray calls the *Anthera* by this name.

Aphyllus *caulis*. A stem without a leaf, as *Salicornia*, Class i. Order 1.

Apophysis. An excrescence from the receptaculum of mosses.

Appendiculatus *petiolus*. A little appendage hanging from the extremity of the foot-stalk.

Approximata *folia*. Leaves growing very near to each other. Opposed to *remote*.

ARACHNOIDEUS. Cobwebbed.

Arbor. A tree.

Arbustiva. A copse of shrubs or trees. The 39th Order in Linnæus's Fragments of a natural arrangement.

Arcuatum *legumen*. Arched. A legumen, curved or bent.

Arillus. The proper exterior coat of a seed which falls off spontaneously, and is either cartilaginous or succulent.

Arista. Awn: the beard of corn or grasses. See *Anthoxanthum odoratum*, Class ii. Order 2.

Arma. Arms, Weapons. The prickles or spines of plants.

Articulata, interrupted by arched joints.

Articulatus, jointed, as in *Salicornia annua*.

Class i. Order 1.

Articulus culmi. The straight part of the stalk between two joints.

ASPARAGUS. The first tender sprout or young shoot of an herb from the ground, before any leaves unfold themselves. *Ray*.

Asper. Rough without hairs.

Asperifolia. Rough-leaved plants. The name of the 43d Order in Linnæus's Fragments of a natural arrangement.

Assurgentia folia. First bent down, but rising erect towards the apex.

ATTENUATUS, tapered, lessening gradually in thickness towards the point.

AUCTUS calyx. Augmented. Having a series of distinct leaves surrounding the base of the flower, as in the *Scabiosa succisa*. Class iv. Order 1. *Centaurea cyaneus*, Class xix. Order 3.

Auritus. Eared.

Avenia folia. Leaves without any visible veins.

Auriculatum folium. An ear-shaped leaf, when the leaf towards the base has a lobe on each side.

Awn. The beard of corn or grasses. See *Anthoxanthum odoratum*, Class ii. Order 2.

AXILLA. The angle formed by a branch with the stem, or by a leaf with the branch; so named from its similarity to the armpit.

Axillaria folia. Leaves growing out of the angles formed by the branches and the stem, as Tea-tree, Class xiii.

BACCA. A berry; or a pulpy pericarpium without a valvular covering, in which the seeds are naked, as Barberry, Class vi. and Misseltoe, Class xxii. &c.

Bacciferous. Berry-bearing.

Barba. A beard. A kind of pubescence, sometimes on the leaves of plants, as on the *Mesembryanthemum barbatum*.

Barbatus. Having parallel hairs, or tufts of hairs.

BICAPSULARIS. Two Capsulæ. Tricapsularis, &c. three Capsulæ, according to the number.

Bicornes. Plants whose antheræ have the appearance of two horns. The name of the 24th Order in Linnæus's Fragments of a natural arrangement.

Biennis radix. A root which continues to vegetate for two years, and then perishes.

Bifaria folia. Each leaf pointing two ways, or coming out only on opposite sides of a branch.

Biferæ plantæ. Flowering twice a year. "*Biferique rosaria Pæsti.*" Virg.

Bifidium folium. A leaf divided or cloven into two parts, two-cleft.

Biflorus pedunculis. Bearing two flowers on a foot stalk.

Bigeminum folium. A forked foot-stalk, with two little leaves on the apex of each division.

Bijugum folium. A winged leaf, bearing two pair of foliolæ.

- Bilabiata corolla.** A corolla with two lips, as in the Class *Dydinamia*.
- Bilamellatum stigma.** The form of a flatted sphere longitudinally two-cleft.
- Bilobum folium.** A leaf consisting of two lobes.
- Bilocularis.** Two cells, &c. according to the number.
- Bina folia.** Two-fold leaves ; or rather coming out two and two together from the same place, or at the same joint of a branch.
- Binatum folium.** Having a simple foot-stalk connecting two leaflets at the top of it : a kind of digitate leaf.
- Bipartile.** Divisible into two : as the fruit of umbellate plants, into two seeds.
- Bipartium folium.** A leaf divided into two segments or parts, almost down to the base.
- Bipinnatum folium.** Doubly winged, when the leaflets of a pinnate leaf are pinnate.
- Biternatum folium.** When there are three leaflets on a foot-stalk, and each leaflet is ternate ; as in *Epimedium*, Class iv.
- Bivalve pericarpium.** Consisting of two valves, as in *siliqua* and *legumen*.
- BOLE.** The naked trunk of a tree.
- BRACHIATUS caulis.** A stem branching in pairs ; each pair standing at right angles with those above and below.
- BRACHIUM.** The arm. Tenth degree in the Linnæan scale for measuring plants, being twenty-four inches.
- Bractea** (plural, *Bracteæ*) A floral leaf ; these

are generally of a different shape and colour from the other leaves of the plant, and are always seated near the fructification. See *Holostium umbellatum*, Class iii. Order 3. Fig. 2.

Bracteatus. Furnished with floral leaves.

BULBIFEROUS *caulis*. A stalk bearing bulbs, as in a species of Lily, called *Lilium bulbiferum*.

Bulbus. A hybernaculum, or winter receptacle of a plant, vulgarly called the root, but in reality, is a single bud, enveloping the whole plant.

Bulbosa radix. A bulbous root; *squamosa*, scaly, as in the Lily; *tunicata*, coated, as in *Cepæ*; *duplicate*, double, as in *Fritillaria*; or *solida*, as in *Tulipa*.

Bullatum folium. When the surface of the leaf rises above the veins, so as to appear like blisters.

CADUCUS *calyx*. To fall off; a term signifying the shortest time of duration of the calyx, falling off at the first opening of the flower, as in the Poppy. This term also applies to leaves which fall off before the end of the summer.

Calimariæ (from *Calamus*, a reed.) The 19th Order in Linnæus's Fragments of a natural arrangement in the *Philosophia Botanica*. It contains sedges and other plants allied to grasses.

Calcar. Spur.

Calcariatum nectarium. A kind of nectarium re-

- sembling a spur, as in the *Delphinium*, Class xiii. Order 3.
- Calyculatus calyx*. A little calyx added to a larger one, as in *Dianthus*, Class x. Order 2.
- Calycanthemi*. The 40th Order in Linnæus's Fragments of a natural arrangement.
- Calyptra*. A veil, in mosses, where it is placed over the pericarpium, and is supposed to be the corolla.
- Calyx* (plural *Calyses*.) A flower-cup, of which there are seven kinds enumerated, See Vol. I. p. 7.
- Campanaceæ* (*Campana*, a bell.) The 32d Order in Linnæus's Fragments of a natural arrangement, containing plants with bell-shaped flowers.
- Campanulata corolla*. Bell-shaped flowers, as Harebell. See *Elements of Botany*, Class vi. Order 1.
- Canaliculatum folium*. A leaf having a deep channel from the base to the tip.
- Cancellatus*. Latticed.
- Candelares* (*Candela*, a candle.) The 62d Order in Linnæus's Fragments of a natural arrangement.
- Capillaceum folium*. (From *capillus*, hair,) exemplified in the leaves of *Ranunculus aquatilis*, &c.
- Capillaris*. Hairs undivided.
- Capillarus pappus*. Hairy down, as in the Dandelion. See *Elements of Botany*, Class xix.
- Capillus*. Hair. The first degree of the Lin-

næan scale for measuring plants, the diameter of a hair, the twelfth part of a line.

Capitati flores. Flowers collected into heads, as Thistles and other plants, with compound flowers growing with a head.

Capitatus. Headed.

Capitulum. A little head, a kind of inflorescencia, in which the flowers are connected into close heads on the tops of the flower-stalks, as in *Adoxa moschatellina*, *Elements of Botany*, Class viii. Order 4.

Capreolus. A tendril, one of the appendages of plants. See *Elements of Botany*, Vol. II. p. 40.

Capsula (plural *Capsulæ*.) A hollow pericarpium which cleaves or opens in some determinate manner; as the seed-vessel of the Tea, Class xiii. the Fox-glove, Class xiv. &c.

Carina. The keel of a boat or ship. The lower petal of the papilionaceous corolla. See *Spartium*, *Elements of Botany*, Class xvii. Order 4.

Carinatum folium. When the back of a leaf resembles the keel of a ship.

Cariophyllæus flos. Clove tree, or flowers growing in the manner of carnations.

Carnosum folium. A fleshy leaf; the substance more stiff than in the *folium pulposum*.

Cartilagineum folium. A leaf whose brim is hard and tough, of a different substance from the disk.

Caryophillæ. Carnations or pinks, a natural Or-

der of plants in Linnæus's Fragments of a natural arrangement.

Catenulata scabrities. A kind of glandular roughness, hardly visible to the naked eye, resembling little chains, on the surface of some plants.

Catkin. One of the seven kinds of calyx of Linnæus. See *Elements of Botany*, Class vii. Order 3.

Cauda. A thread terminating the seed.

Caudex. The stem of a tree.

Caulescens. Having a stalk or stem different from that which produces the flower.

Caulina folia. Leaves growing immediately on the stem.

Caulis. (καυλος.) A stem. The signification of the Greek word is more extensive than that of the Latin, καυλος comprehending the trunk of a tree, whereas the Latin term is confined to the stalk of herbs only.

Cavus. Hollow.

CERNUUS, Drooping, pointing directly to the ground.

Cespitosa. Plants which produce many stems from one root, and form a surface of turf or sod.

CILIATUM. Whose margin is guarded by parallel bristles, formed like the eyelash.

Circinalea folia. A term of foliation, expressive of the leaves within the gemma being rolled spirally downward, the tip occupying the centre.

Circumcissa capsula. Cut round. A capsula opening, not longitudinally or vertically, as in most Capsulæ, but transversely or horizontally, like a snuff-box, usually about the middle, so as to fall nearly into two equal hemispheres, as in *Anagallis*, *Hyoscyamus*, &c.

Circumsepiens. When leaves growing in an horizontal position, erect themselves in the night, by clasping together in the form of a funnel.

Cirrhiferus pedunculus. A peduncle bearing a tendril, as in the Vine. Passion-flower, Class v. Order 3, &c.

Cirrhosum folium. A leaf which terminates in a clasper, or tendril, as in *Gloriosa*.

Cirrus. A clasper, or tendril, one of the fulchra of plants, as in the Passion-flower and Anguria. See *Elements of Botany*, Class v. and Class xxi.

CLASIS. A class, according to the Linnæan system, is an agreement of plants by those two parts of fructification, the Stamen and Pistillum.

Clavatus. Clubbed, becoming thicker toward the top.

Clavicula. A little key. A tendril, the same as *Capreolus*, or *Cirrus*.

Clausa corolla. When the neck of the corolla is closely shut in with valves.

COADUNATA. Several growing together at their base.

Coarctatus. Close pressed together, opposed to *divaricatus*.

Cochleatum legumen. A legumen like the shell of a snail, as in the seed-vessel of the Medicago. See Martyn's Eclogues of Virgil, new Edition, Plate 3.

Collum. Neck.

Coloratum folium. When a leaf, which is generally green, is of a different colour, as in the common Beet.

Columnella. A little column, the substance that passes through the capsula, and connects the several partitions and seeds.

Columniferi. Pillar-shaped. The name of the 34th Order in Linnæus's Fragments of a natural arrangement.

Coma. (Κομη, a head of hair.) A kind of bractea, terminating the stem in a tuft or bush, as in *Crown Imperial*, &c.

Communis gemma. Regards the contents of the gemma, containing both flower and fruit.

Communis calyx. When a calyx contains both receptaculum and flower.

Commosæ. The name of the 36th Order in Linnæus's Fragments of a natural arrangement.

Comosa radix. The fibres which put forth at the base of a bulbous root, resembling a head of hair.

Compactum folium. When the leaf is of a compact and solid substance.

Completo flos. When the stamen and pistillum are both in the same blossom.

Compositus flos. A compound flower, as those of the Class Syngenesia. The essential cha-

racter of a compound flower is, that the antheræ should be united together, so as to form a cylinder, and the filament separate at the base.

Compositus. Compound, as, when every foot-stalk of a general umbel produces a partial umbel.

Compositum folium. When the foot-stalk bears more than one leaf, of which there are the following kinds, *Articulatum*, *Digitatum*, *Conjugatum*, *Pedatum*, *Pinnatum*, *Decompositum*, *Supra-decompositum*.

Compositæ. The name of the 21st Order in Linnæus's Fragments of a natural arrangement.

Compressa. Flatted, the opposite sides coming nearly together.

Compressus caulis. A stem resembling a cylinder compressed on the opposite sides.

Concavum folium. Hollowed, the margin of the leaf forming an arched disk.

Conceptaculum. A pericarpium of a single valve, which opens longitudinally, and the seeds not affixed to it.

Conduplicata. Doubled together. A term in veneration or leafing; signifying, that in the bud, the two sides of the leaf are doubled over each other at the midrib.

Confertus. Crowded or clustered together.

Conferti verticilli, flores. When flowers are crowded together, and formed into whorles

round the stalk, as *Lythrum salicaria*, Class xi.
Order 1.

Confluentia folia. To flow together, as in the pinnated leaf, when the pinnæ run into one another.

Conglobatus flos. When flowers are collected into globular heads.

Conglomeratus flos. Flowers irregularly crowded together.

Congesta umbella. Flowers collected into a spherical shape, as in garlick.

Conicum. Cone-shaped, rounded and lessening towards the point.

Conica scabrities. A kind of setaceous scabrities, scarce visible to the naked eye, on the surface of plants, formed line cones.

Coniferæ. The 15th Order in Linnæus's Fragments of a natural arrangement, containing cone-bearing trees.

Conjugatum. To join or couple together, a kind of pinnate leaf, where the leaflets are by pairs.

Connatum. To grow together, when two opposite leaves unite at their base, so as to have the appearance of one leaf, as in the common *Garden Honeysuckle*. This term is applied also to filaments or antheræ, united into one body, as in the Classes *Monadelphica* and *Syngenesia*.

Connivens corolla. When the tops of the petals converge, so as to close the flower, as in *Trollius Europæus*.

Conniventes antheræ. Antheræ approaching or

inclining towards each other, as in the Class *Dydinamia*.

Continuatum folium. Continued, when the leaf appears to be a continuation of the substance of the stalk.

Contorta corolla. A twisted corolla, where the edge of one petal lies over the next in an oblique direction, as in *Hermannia althaeifolia*, Class xvi. Order 2. Applied to the corolla where the lips of the petals meet.

Contortæ. The 29th Order of Linnæus's Fragments of a natural arrangement.

Contraria valvulæ. Valves are termed *contraria*, when the partition is placed transversely between them.

Convexum folium. A leaf rising from the margin to its centre.

Convolutus cirrhus. A tendril twining in the same direction as the apparent motion of the sun, as the *Convolvulus*.

Convolutus. A term in veneration or foliation, when the leaves are rolled up like a scroll of paper.

Conus. Cone. See *Strobilus*, Class xxii. Order 8.

Corculum. The heart or essence of a new plant within the seed.

Cordatum folium. Heart-shaped leaf.

Cordiformus. Shaped like a heart.

Corolla. In common language, this part is called the *flower*. In Botany it is composed of one or more petals. As, *Linnæa*, Class xiv. which

is a corolla of one petal, and the *Rosa*, Class xii. a corolla of five petals.

Corollula. A little corolla.

Corona seminis. A crown adhering to many kinds of seeds, serving them as wings, by which they are dispersed.

Coronariæ. The 9th Order of Linnæus's Fragments of a natural arrangement.

Cortex. The rind or outer bark of vegetables.

Corticalis gemma. Having its origin from the scales of the bark.

Corydalæ. From *κορυς*, a helmet. The 28th Order of Linnæus's Fragments of a natural arrangement.

Corymbus. (*Κορυμβος*, from *κορυς* a helmet, and that from *καφα* the head.) An inflorescence, where the flower-stalks are inserted at different distances from each other in a common stem, but produce their flowers nearly even at the top, of which, *Achillea* is a good example, Class xix. Order 2.

Costatum folium. A ribbed leaf.

Cotyledon. A side lobe of the seed. The term is used also to express the seed-leaves of young plants, as may be well seen in the Radish when it first appears above the ground.

CRENATUM folium. A notched leaf, when the margin is cut at right angles to the centre, inclining to neither of the extremities, as in *Sibthorpia*, Class xiv. Order 2.: obtusely crenate, when the angles are rounded: acutely crenate, when the angles are pointed.

Crinitus. (*Crinis*, hair.) Hairy, having long hair, or beards resembling hair, as in *Phleum crinitum*.

Crispum folium. A curled leaf, when the circumference becomes larger than the disk admits of, as in *Malva crispa*.

Cristatus flos. When the flower has a tufted crest, as the flower of *Polygala*. Class xvii. Order 3.

Cruciformes flores. Cross-shaped flowers, consisting of four petals, disposed in the form of a cross, as in the Class *Tetradynamia*. See *Elements of Botany*, *Dentaria bulbifera*, Class xv. Order 2.

Cryptogamia. The 24th Class of the Linnæan system.

CUBITUS. A cubit, the ninth degree of the Linnæan scale for measuring plants, from the elbow to the extremity of the middle finger, or seventeen Parisian inches.

Cucullatum folium. A leaf rolled up lengthways, from the base, forming an inverted cone in shape like the paper rolled up conically by grocers ; as in *Geranium cucullatum*.

Cucurbitacæ. Gourds, and Gourd-like plants. The 45th Order of Linnæus's Fragments of a natural arrangement.

Culminæ. (*Culmen*, the top.) The 26th Order of Linnæus's Fragments of a natural arrangement. The top or crown.

Culmus. A reed or straw, the proper stem of grasses.

Cuspidatum folium. A leaf whose apex resembles the point of a spear or lance.

Cuneiforme folium. A wedge-shaped leaf, tapering from the tip to the base.

CYATHYFORMIS corolla. A corolla in the form of a cup.

Cylindracea spica. A spike of flowers in form of a cylinder.

Cymbiformis. Boat-shaped.

Cymus. An inflorescence, which in general appearance resembles an umbel, but the flower-stalks of the smaller sub-divisions are irregular, and do not, as the larger ones, proceed from a centre. See *Cornus sanguinea*, Class iv. Order 1.

Cymosus flos. A flower with a cymus inflorescence.

Cymosæ. The 63d Order of Linnæus's Fragments of a natural arrangement.

DÆDALIUM folium. Winding and torn. Where the margin of the leaf has many various windings and turnings.

Debilis caulis. A feeble stalk, see *Elements of Botany*, *Zannichellia palustris*. Class xxi. Order 1.

Decagynia. The fifth Order in the tenth Class of the Linnæan system. Flowers having ten pistilla, as *Phytolacca decandra*, Class x. Order 5.

Decandria. The tenth Class of the Linnæan system.

Decaphyllus calyx. A calyx consisting of ten leaves, as in *Hibiscus*.

Decemfidus calyx. Cut into ten parts. A ten-cleft calyx, or rather *perianthium*: as in *Potentilla* and *Fragaria*.

Decemloculare pericarpium. A ten-celled pericarpium or seed-vessel, as in *Linum*, Class v. Order 5.

Deciduum folium. The leaf that falls off in the winter.

Declinatus caulis. A declined or declining stem. Descending archwise. The least degree of curvature towards the earth.

Decomposita folia. When a petiolus is so divided, that each part forms a compound leaf.

Decumbens flos. Having the stamina and pistilla declined or bending down to the lower side of it.

Decurrens folium. Running down: when the base of a sessile leaf extends itself downwards along the stem, beyond the proper base or termination of the leaf, as in *Symphytum*, *Carduus*, &c.

Decursive, folium pinnatum. When the bases of the leaflets are continued along the sides of the leaf-stalk.

Decussata folia. When leaves grow in pairs, and opposite, each pair being opposed alternately, as in *Melaleuca*, *Elements of Botany*, Class xviii. Order 2.

Deflexus ramus. A branch bowed, or bending downwards.

Deflorata stamina. Having shed or discharged the farina of the anthera.

Defoliatio. The time in autumn when plants shed their leaves. *Eng. Bot Plate 1910.*

Dehiscentia. The gaping or opening of capsulæ: is also put for the season in which this usually happens.

Deltoides folium. A leaf formed like the Greek Delta (Δ) as in *Mesembryanthemum deltoides* and *Populus nigra*. *Eng Bot. Pl. 1910.*

Demersum folium In aquatic plants, leaves sunk below the surface of the water; as *Apogoneton*, *Elements of Botany*, Class xi. Order 4.

Densa panicula. Numerous flowers closely compacted. A greater degree of *congesta*, heaped.

Dentroides surculus. Shrub-like, a subdivision of the surculus in the genus *Hypnum*.

Dentata radix. (*Dens*, a tooth.) A toothed root.

Dentatum folium. Toothed. A leaf having horizontal points as teeth, of the same consistence of the leaf, and standing at a little distance from each other.

Denticulatus, (from the diminutive *Denticulus*, derived from *dens* a tooth.) Having small teeth or notches. This term is applied to leaves, calyses, and to seeds.

Denudatæ. Stripped naked. The 7th Order in *Linnaeus's Fragments of a natural arrangement.*

Dependens folium. Hanging down, the leaf pointing towards the ground.

Depressum folium. Hollow in the middle ; or having the disk more depressed than the sides. This term has reference to succulent leaves only ; and is opposed to *convex*.

Determinate ramosus, abruptly branched ; when each branch, after terminating in flowers, produces a number of fresh shoots in a circular order from just below the origin of those flowers ; as *Erica tetralix*, *Elements of Botany*, Class viii. Order 1.

Dextrosus caulis. A stem twining from right to left, as the Hop and Honeysuckle.

DIADELPHIA. The 17th Class in the Linnæan system.

Diagnosis plantæ. Consists in the affinity of the Genus and the difference or distinction of the species. The specific characters in the *Species Plantarum*, *Systema Vegetabilium*, and other works of Linnæus, are true *Diagnoses*.

Diandria. The second Class in the Linnæan system.

Dichotomus caulis. When the divisions of a stem are produced by two and two, as in *Chlora perfoliata*. Class viii. Order 1. and *Viscum*, Class xxii.

Dicotyledones. When the seeds have two cotyledons, which are afterwards the seed-leaves.

Didymus. Twin.

Didyma anthera. When antheræ come by twos on each filament, as in *Salvia*.

Didynamia. The 14th Class in the Linnæan system.

Difformia folia. Different forms : when leaves on the same plant are of different shapes.

Diffusus caulis. When the branches of the stalk spread different ways.

Digitatum folium. Fingered, when the top of a leaf-stalk connects many leaflets. The horse-chestnut-leaf is a good example of this kind of leaf.

Digynia. Two pistilla. The second Order in each of the first thirteen Classes, except the ninth, of the Linnæan system.

Dimidiatum. Halved, or hemispherical ; when applied to a *capitulum*, or head, it means, resembling half a head, round on one side and flat on the other ; when applied to a *spatha*, investing the fructification on one side only. In an *involucellum* the word is well illustrated in *Æthusa cynapium*, where the three long narrow pendulous leaves, which compose its partial involucre, are wholly on one side. See Class v. Order 2.

Dioecia. (Derived from *Dioica* *dis* and *οἶκος*.) the twenty-second Class in the Linnæan system.

Dipetala corolla. Flowers consisting of two petals, as in the *Circæa lutetiana*, Class ii. Order 1.

Diphyllus calyx. A calyx consisting of two leaves, as in the Poppy.

Discus. Disk. When applied to a leaf it means the whole surface. *Discus supinus*, the upper surface. *Discus pronus*, the under surface. *Discus* as applied to a flower ; in radiate compound flowers, it is the central part, consisting generally of regular florets. The term is also applied to other aggregate flowers, when the florets towards the middle differ from those in the circumference, as in umbels.

Disperma. Plants producing their seeds by twos, as in the Umbellatæ, Class v. Order 2.

Dissectum folium. A gashed leaf. A leaf cut into numerous irregular portions, as *Ranunculus parviflorus*. *Eng. Bot.* Plate 120

Dissepimentum. Partitions of the fruit which divide the pericarpium into cells.

Dissiliens siliqua. Pods that burst with elasticity, as in *Dentaria*, Class xv. Order 2.

Distans verticillus. When the whorles of flowers in verticillate plants, stand at a great distance from one another.

Disticha folia. Two-ranked : when leaves all grow on two sides of the branches only, as in the Yew-tree.

Distinctæ. Not cohering.

Divaricati rami. Branches standing wide from each other in different directions ; making an obtuse angle with the trunk.

Divergens somnus. When the leaflets, in their

state of repose, approach each other at the base, but spread out at the tips.

Divergentes rami. Making a right angle with the stem.

DODECANDRIA. The eleventh Class in the Linnæan system.

Dodrans. A long span, or nine inches.

Dolabrilforme folium. A leaf resembling an ax, compressed, roundish, obtuse, gibbous on the outside with a sharp edge, roundish below, as in *Mesembryanthemum dolabrilforme*.

Dorsalis arista. An awn, or beard, fixed to the back or external part of the gluma, as in *Anthoxanthum odoratum*, Class ii. Order 2.

DRUPA. A pulpy pericarpium, without valves, containing a stone, as in the Plum and Peach, and the *Rhamnus lotus*, Class v. Order 1.

Drupaceæ. The 38th Order in Linnæus's Fragments of a natural arrangement.

Dumosæ. Bushy. The 19th Order in Linnæus's Fragments of a natural arrangement.

Duplicata radix. A double root, a kind of bulbous root, consisting of two solid bulbs, as in some species of *Orchis*.

Duplicato serratum folium. A leaf sawed double, with lesser teeth within the greater, as in the *Ulmus campestris*. Class iv. Order 2.

EBRACTEATUS racemus. Without a bractea, or floral leaf.

ECALCARETA corolla. A corolla without any spur, or spur-shaped nectarium.

Echinus. A Burr, or prickly pericarpium.

Echinatum pericarpium. Beset with prickles, like a hedge-hog, as the outside covering of the chestnut.

EFFLORESCENTIA. Flowering season. The precise time when a plant first shows its flowers.

EGRET. From *Aigret*. The French term for the down or feathery crown of some seeds.

ELLIPTICUM. Elliptical. Like an ellipsis whose ends are equal.

EMARGINATUM folium. When the tip of a leaf terminates in a notch ; the same term is applied to a petal and a stigma.

ENERVIUM folium. A leaf having no apparent nerves.

Enneandria. The ninth Class in the Linnæan system.

Enneapetala corolla. A flower consisting of nine petals.

Enodis. Without knot or joint.

Ensatae. (From *ensis* a sword.) Plants having sword-shaped leaves. The fifth Order in Linnæus's Fragments of a natural arrangement. Containing some of the liliaceous plants which have sword-shaped leaves.

Ensiforme folium. A leaf shaped like a two-edged sword, tapering towards the point. As *Iris*, Class iii. Order 1.

EPIDERMIS. The outermost, dry and very thin coat or covering of a plant ; somewhat analogous to the cuticle in the human body.

EQUITANTIA folia. Riding. When two op-

posite leaves converge so to each other with their edges, as that one encloses the other, as in the Genus *Iris*, *Carex*, &c.

ERECTUS *caulis, ramus*. Upright, or perpendicular to the horizon; applied to a stem, branch, &c.

Erosum *folium*. Gnawed When the leaf is sinuate, and the margin appears as if it were gnawed or bitten Dr. Smith also applies this term to the ends of the stigmata of the *Crocus sativus*, Class iii. Order 1.

EXARATUS. Scored.

Exasperatus. Roughened.

Expansus. Expanded, spread out.

Explanatus. Unfolded, or spread out flat.

Exserta *stamina*. Standing forth, when the stamina appear beyond the corolla, as in the *Fuchsia*, Class viii. Order 1.

Exstipulatus. Without a stipula.

Exsuccum *folium*. When the substance of the leaf is juiceless and dry.

Extrafoliacæ *stipulæ*. Stipulæ growing on the outside of leaves, or below them.

FARCTUM *folium*. (*Farcio*, to stuff or cram) A stuffed leaf, full with pith or pulp, in opposition to tubular or hollow. The term is also applied to a stem and to a pericarpium.

Fasciculus. A bundle. A kind of inflorescence, or manner of flowering in which several approximating flowers are collected together, as in the common Sweet William, *Dianthus barbatus*.

Fasciculata folia. Leaves growing in bundles or bunches from the same point.

Fascicularis radix. Tuberous roots growing in parcels.

Fasciata planta. When many stalks grow together, like a faggot or bundle.

Fastigiati. Linnæus's definition of this term is, *ramis æqualis altitudinis*, a stem having branches of an equal height. Flower-stalks are fastigiate when they elevate the flowers or fructifications in a branch, so that they are all of an equal height, as if they had been shorn off horizontally.

Fauces. Jaws, chaps, throat, or opening of the tube of the corolla.

FEMINA planta. Plants, the flowers of which are produced with pistilla only, and without stamina.

Ferrugineus. The colour of rusty iron.

FIBROSA radix. A fibrous root.

Fibula. The name for *stigma* by old authors.

Filamentum. The name given to that part of the stamen which in some plants resembles a thread. See Plate i. and ii. Vol. I.

Filices. Ferns. One of the nine divisions of the vegetable kingdom of Linnæus, and the 64th Order in his Fragments of a natural arrangement.

Filiformis. Thread-shaped, every where of an equal thickness.

Fimbriata petala. Fringed petals, as in *Menyanthes trifoliata*.

























































































foot-stalk, as in *Trifolium pratense*, Class xvi.
Order 4.

Terni pedunculi. The foot-stalks of flowers in threes, or three together from the same axilla.

Terni flores. Flowers growing three and three together, as in *Beta maritima*.

Tesselatum folium. A chequered leaf, whose squares are of different colours.

Tetradynamia. The fifteenth Class in the Linnæan system.

Tetrædra siliqua. A four-sided pod.

Tetragonus caulis. A four-cornered or square stalk, as in the plants of Class xiv.

Tetragynia. One of the Orders in several Classes in the Linnæan system of plants which have four pistilla.

Tetrandria. The fourth Class in the Linnæan system.

Tetrapetala corolla. A flower consisting of four petals, as *Dentaria bulbifera*, Class xv. Order 2.

Tetraphyllus calyx. A four-leaved Calyx.

Tetrasperma planta. Producing four seeds in each flower.

Textura vegetabilium. The texture of vegetables.

THALAMUS. A bed. Used by Vaillant for receptaculum.

Theca. (A Sheath.) Scopoli has distinguished such seeds as have an *arillus* by this name.

Thyrsum. A spike like a Pine cone.































